Traffic Impact Study for the Petaluma Appellation Hotel Project

Prepared for the City of Petaluma

Submitted by
W-Trans

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Executive Summary

The proposed project is a 93-guestroom boutique hotel with 4,394 square feet of restaurant space to be located at 2 Petaluma Boulevard South in the City of Petaluma. The proposed operation includes a valet service to pick vehicles up at the project frontage on Petaluma Boulevard and take them around the block and back to the underground parking lot off B Street or to the existing parking structure at 149 C Street where 20 spaces have been acquired. Based on the application of standard trip generation rates and assumptions of the valet service, the development would be expected to generate an average of 966 trips daily, including 79 trips during the weekday evening peak hour.

Four intersections in downtown Petaluma were evaluated to assess potential traffic impacts. Three of the four have experienced collisions at rates near the statewide average for similar facilities based on records for a five-year period. During the weekday p.m. peak hour, the study intersections are currently operating at LOS D or better and would continue to operate at the same levels of service with project volumes added.

Based on projected future volumes, Petaluma Boulevard/D Street is anticipated to operate unacceptably at LOS E during the evening peak period, but the other three intersections would continue operating acceptably at LOS D. The addition of project-generated trips would be expected to result in nominal increases in overall average delay and all intersections would continue operating at the same levels of service, indicating an acceptable impact on traffic operation.

The site's proximity to the Downtown Petaluma SMART station qualifies the project for VMT screening according to criteria established by the City, meaning the project can be presumed to have a less-than-significant impact on VMT. Beyond VMT screening there are several additional factors including proximity to two bus transit hubs, anticipated shifts in hotel guest VMT (rather than net increases in guest VMT), and the site's presence in a zone with low employee VMT according to the regional travel demand model that support a less-than-significant VMT finding.

With the planned allocation of space on the project's Petaluma Boulevard South frontage for a future transit stop together with existing transit facilities, the project site is adequately served by transit. Bicycle facilities will be adequate with the planned improvements within the area implemented. With the construction of the project, while the existing driveway on Petaluma Boulevard South would be filled in to be level with the sidewalk, the project driveway on B Street may conflict with the existing crosswalk on B Street connecting the site to the Mystic Theatre commercial row. It is recommended that the applicant either redesign the crosswalk to reduce conflicts between vehicles entering and existing the driveways with pedestrians, install a warning system at the driveway to alert pedestrians of vehicles exiting the project garage or the City should remove the crosswalk.

Sight distance at the existing project driveway on B Street is adequate, though it is recommended that any additional landscaping or signage at the project driveway be placed outside the driver's vision triangle. Based on the assumed arrival and service rates for the proposed valet service, the five-vehicle queuing capacity on Petaluma Boulevard South would be adequate. There is an approximately three percent chance that more than three vehicles will arrive and want to queue on Petaluma Boulevard South, so it is likely that the proposed operation will be adequate and not spill onto the travel lanes.

Based on City requirements, the proposed parking supply is adequate based a hotel land use at this location. To meet City requirements, the applicant should include a minimum of eight bicycle parking spaces on-site.

Introduction

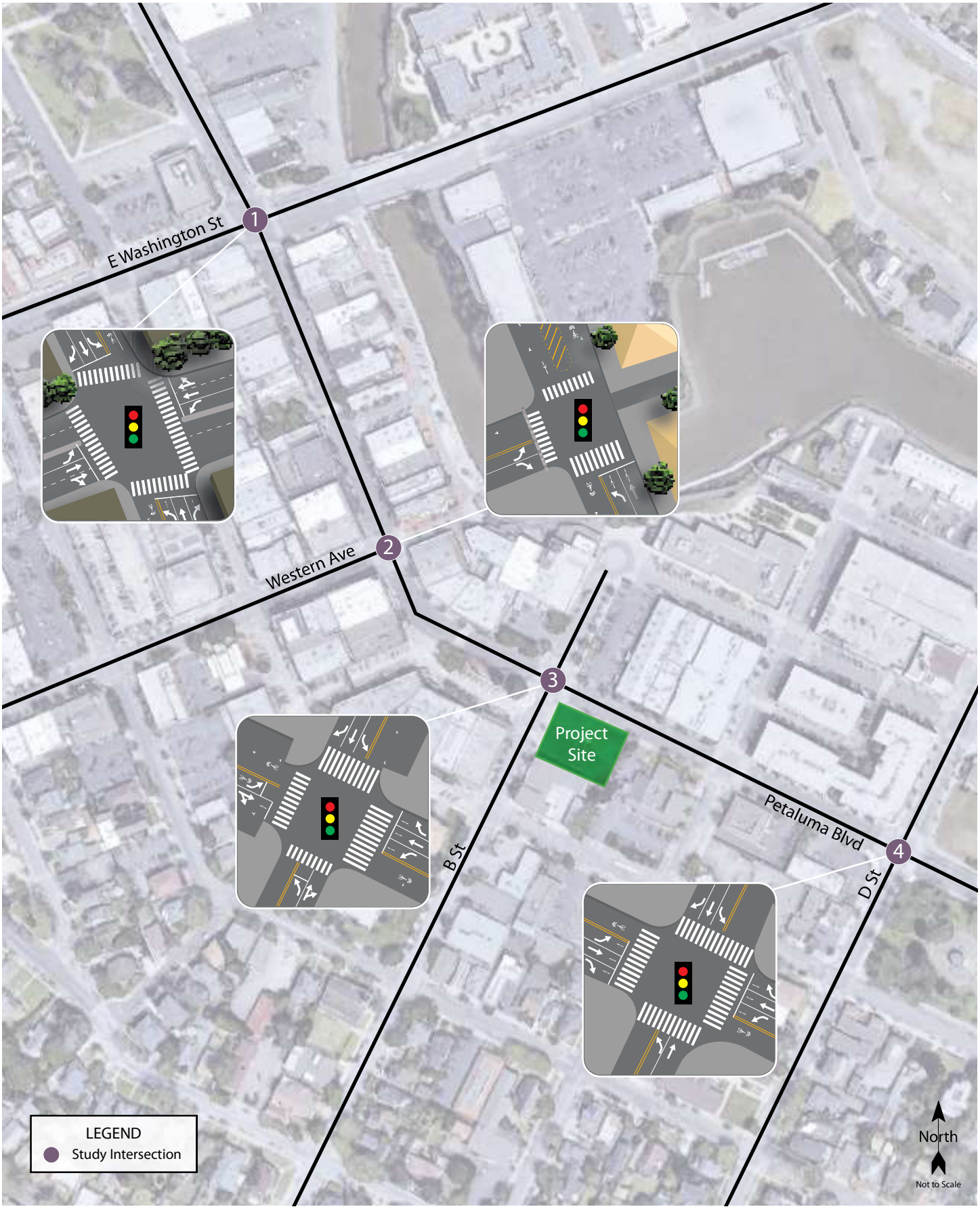
This report presents an analysis of the potential traffic impacts that would be associated with development of a proposed boutique hotel to be located at 2 Petaluma Boulevard South in the City of Petaluma. The traffic study was completed in accordance with the criteria established by the City of Petaluma and is consistent with standard traffic engineering techniques.

Prelude

The purpose of a traffic impact study is to provide City staff and policy makers with data they can use to make an informed decision regarding the potential traffic impacts of a proposed project, and any associated improvements that would be required to reduce these impacts to a level of acceptability as defined by the City's General Plan or other policies. Vehicular traffic impacts are typically evaluated by determining the number of new trips that the proposed use would be expected to generate, distributing these trips to the surrounding street system based on existing travel patterns or anticipated travel patterns specific to the proposed project, then analyzing the impact the new traffic would be expected to have on critical intersections or roadway segments. Impacts relative to access for pedestrians, bicyclists, and to transit are also addressed.

Project Profile

The project includes construction of a 93-guestroom boutique hotel, including 4,394 square feet of restaurant space. The project site is on the southwest corner of Petaluma Boulevard South/B Street in the City of Petaluma, as shown in Figure 1.



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Traffic Impact Study for the Petaluma Appellation Hotel Project

Figure 1 – Study Area and Existing Lane Configurations

Transportation Setting

Operational Analysis

Study Area and Periods

The study area consists of the following intersections:

1. Petaluma Boulevard/East Washington Street
2. Petaluma Boulevard/Western Avenue
3. Petaluma Boulevard/B Street
4. Petaluma Boulevard/D Street

Operating conditions during the weekday p.m. peak hour were evaluated, as this time period reflects the highest traffic volumes areawide and for the proposed project. The evening peak hour occurs between 4:00 and 6:00 p.m. and typically reflects the highest level of congestion of the day, during the homeward bound commute.

Study Intersections

Petaluma Boulevard/East Washington Street is a four-legged signalized intersection with protected left-turn phasing on all approaches. Sharrows, or pavement markings indicating that the lane is to be shared with bicycles, are present along Petaluma Boulevard, and crosswalks with pedestrian signal phasing are present at each leg of the intersection.

Petaluma Boulevard/Western Avenue is a signalized tee intersection with protected left-turn phasing serving the northbound approach. Sharrows are present along Petaluma Boulevard, and crosswalks with associated pedestrian phasing are present at each leg of the intersection.

Petaluma Boulevard/B Street is a four-legged signalized intersection, with protected left-turn phasing on the eastbound and westbound approaches of Petaluma Boulevard . There are crosswalks and pedestrian phasing at all four legs of the intersection, and sharrows are present along Petaluma Boulevard.

Petaluma Boulevard/D Street is a four-legged signalized intersection, with protected left-turn phasing on all four approaches. There are crosswalks with pedestrian phasing at all four legs, and sharrows are present along Petaluma Boulevard.

The locations of the study intersections and the existing lane configurations and controls are shown in Figure 1.

Study Roadway

Petaluma Boulevard runs in a diagonal direction through the City of Petaluma, and for the purpose of the study the roadway was assumed to be oriented in a north-south direction at the East Washington Street and Western Avenue intersections and in an east-west orientation at the B and D Street study intersections. The studied segment of Petaluma Boulevard South between East Washington Street and D Street runs through the City of Petaluma's downtown with one lane in each direction divided by either a painted median or a two-way left-turn lane in the center.

Collision History

The collision history for the study area was reviewed to determine any trends or patterns that may indicate a safety issue. Collision rates were calculated based on records available from the California Highway Patrol as published in their *Statewide Integrated Traffic Records System (SWITRS)* reports. The most current five-year period available is January 1, 2018 through December 31, 2022.

As presented in Table 1, the calculated collision rates for the study intersections were compared to average collision rates for similar facilities statewide, as indicated in *2016 Collision Data on California State Highways*, California Department of Transportation (Caltrans). Based on the five-year period evaluated, the intersections of Petaluma Boulevard/Western Avenue, Petaluma Boulevard/B Street, and Petaluma Boulevard/D Street experienced collision rates below the statewide average for similar facilities. The collision rate calculations are provided in Appendix A.

Table 1 – Collision Rates at the Study Intersections

Study Intersection	Number of Collisions (2018-2022)	Calculated Collision Rate (c/mve)	Statewide Average Collision Rate (c/mve)
1. Petaluma Blvd/E Washington St	23	**0.42**	0.33
2. Petaluma Blvd/Western Ave	6	0.30	0.33
3. Petaluma Blvd/B St	4	0.21	0.33
4. Petaluma Blvd/D St	12	0.32	0.33

Note: c/mve = collisions per million vehicles entering; **Bold** text = higher than state average

The intersection of Petaluma Boulevard/E Washington Street had a collision rate of 0.42 collisions per million vehicles (c/mve) which is above the statewide average for four-way signalized intersections in urban areas, which is 0.33 c/mve. The collision rate has not worsened since the last report, but the statewide average collision rate for similar intersections in California has improved. The collisions at the intersection of Petaluma Boulevard/E Washington Street were further reviewed to provide safety recommendations. Of the collisions reported at the intersection 14 were rear-ends, five were sideswipes, three were broadsides, and one hit object collision. Unsafe speeds were the cause of seven of the collisions, six were due to improper turning, five were caused by unsafe stating or backing, two were due to driving under the influence, two were due to ignoring traffic signals and signs, and one was caused by unsafe lane changes. Reflective backing around the traffic signals to increase visibility of the traffic signals should be considered at the intersection of Petaluma Boulevard/E Washington Street.

Alternative Modes

Pedestrian Facilities

Pedestrian facilities include sidewalks, crosswalks, pedestrian signal phases, curb ramps, curb extensions, and various streetscape amenities such as lighting, benches, etc. In general, a network of sidewalks, crosswalks, pedestrian signals, and curb ramps provide access for pedestrians in the vicinity of the proposed project site. Pedestrian-scaled streetlights are provided along Petaluma Boulevard South. There is an existing mid-block crosswalk approximately 70 feet south of Petaluma Boulevard South on B Street, connecting the Mystic Theater and the project site. It is noted during the time period evaluated for the collision analysis, there was a collision involving a pedestrian in the crosswalk on B Street which resulted in a minor injury.

Bicycle Facilities

The *Highway Design Manual*, Caltrans, 2017, classifies bikeways into four categories:

- **Class I Multi-Use Path** – a completely separated right-of-way for the exclusive use of bicycles and pedestrians with cross flows of motorized traffic minimized.
- **Class II Bike Lane** – a striped and signed lane for one-way bike travel on a street or highway.
- **Class III Bike Route** – signing only for shared use with motor vehicles within the same travel lane on a street or highway.
- **Class IV Bikeway** – also known as a separated bikeway, a Class IV Bikeway is for the exclusive use of bicycles and includes a separation between the bikeway and the motor vehicle traffic lane. The separation may include, but is not limited to, grade separation, flexible posts, inflexible physical barriers, or on-street parking.

West of the project site, Class II bike lanes exist on B Street between 4th Street and El Rose Drive. Petaluma Boulevard is classified as a bicycle route between Lakeville Street and D Street. Bicyclists ride in the roadway and/or on sidewalks along all other streets within the project study area. According to the SCTA *Countywide Bicycle and Pedestrian Master Plan*, there are planned bicycle lanes to connect to the existing lanes on Petaluma Boulevard between D Street and Kastania Road. A bicycle route is planned on B Street between 1st Street and 4th Street, connecting to the existing bicycle lanes on B Street. Table 2 summarizes the existing and planned bicycle facilities in the project vicinity, as contained in the *SCTA Countywide Bicycle and Pedestrian Master Plan*.

Table 2 – Bicycle Facility Summary

Status Facility	Class	Length (miles)	Begin Point	End Point
Existing				
Western Ave	II	1.50	City Limits	Petaluma Blvd
B St	II	0.70	4th St	El Rose Dr
D St	II	1.00	6th St	City Limits
Petaluma Blvd	III	0.70	Lakeville St	D St
Planned				
Petaluma Blvd	II	1.90	D St	Kastania Rd
D St	II	0.50	6th St	Lakeville St
B St	III	0.20	1st St	4th St

Source: *SCTA Countywide Bicycle and Pedestrian Master Plan*, Sonoma County Transportation Authority, 2014

Transit Facilities

The project site is within a one-quarter mile walking distance from bus stops serviced by both Golden Gate Transit and Petaluma Transit. The project site is also within an acceptable walking distance of 0.40 miles from the Copeland Transit Mall and Petaluma Downtown SMART station. The Copeland Transit Mall is serviced by the Golden Gate Transit, Sonoma County Transit, and Petaluma Transit.

Two bicycles can be carried on most transit buses. Bike rack space is on a first come, first served basis. Additional bicycles are allowed on buses at the discretion of the driver.

Petaluma Transit

The Petaluma Transit provides fixed route bus service within the City of Petaluma. Petaluma Transit Route 10 provides loop service between the Copeland Transit Mall and the Factory Outlets on Petaluma Boulevard North.

Route 10 operates Monday through Friday with approximately half-hour to one-hour headways between 7:32 a.m. and 6:29 p.m.

Route 11 provides loop bus service between the Copeland Transit Mall and the Safeway Transit Center on Maria Drive. Route 11 operates Monday through Friday with approximately one-half hour headways between 6:30 a.m. and 8:23 p.m. Weekend and Holiday service operates with one-half hour headways between 7:30 a.m. and 8:23 p.m.

Golden Gate Transit

The Golden Gate Transit (GGT) provides regional bus service within Sonoma County and throughout the Bay Area. Routes 72 and 74 provides commuter bus service between Santa Rosa and San Francisco Financial District. Route 72 stops at 4th Street/C Street at 7:51 a.m. southbound and at 7:45 p.m. northbound. Route 74 operates with approximately one-half hour to 40-minute headways between 4:34 a.m. and 9:03 a.m. and then between 3:02 p.m. and 7:41 p.m.

Route 101 provides regional service between Santa Rosa and San Francisco, with a stop at the Copeland Transit Mall. Weekday service operates Monday through Friday with approximately 20-minute to one-hour headways between 4:00 a.m. and 12:00 a.m. Saturday service operates with approximately one-half hour to one-hour headways and operates almost 24 hours between 3:00 a.m. and 2:30 a.m. Similarly, Sunday and holiday service operates with approximately one-half hour to one-hour headways between 3:49 a.m. and 2:30 a.m.

Sonoma County Transit

The Sonoma County Transit (SCT) provides regional route bus service between the City of Petaluma and surrounding areas within Sonoma County. SCT Routes 40 and 53 provide weekday service between the Copeland Transit Mall and the Sonoma Plaza. Service operates Monday through Friday with approximately two- to five-hour headways between 7:00 a.m. and 7:00 p.m.

Routes 44, 48 and 54 provide regional transit service between Petaluma and Santa Rosa, with stops in Rohnert Park, Cotati, and Penngrove. All routes stop at the Copeland Transit Mall and operate Monday through Friday with approximately 30-minute to one-hour headways between 5:20 a.m. and 10:29 p.m. Routes 44 and 48 provide weekend service with approximately one- to two-hour headways between 7:00 a.m. and 10:12 p.m.

Paratransit Service

Dial-a-ride, also known as paratransit, or door-to-door service, is available for those who are unable to independently use the transit system due to a physical or mental disability. Petaluma Transit Paratransit is designed to serve the needs of individuals with disabilities within the City of Petaluma. GGT Paratransit serves the needs of individuals within 0.75 miles of a GGT regional bus route stop. SCT Paratransit serves the needs of individuals with disabilities within the City of Petaluma and the greater Sonoma County area.

SMART

The Downtown Petaluma SMART Station is located approximately 0.40 miles north of the project site, and while not within the one-quarter mile walking distance typically considered "convenient," this station is within an acceptable walking distance for most people. The SMART Train provides service between the Sonoma County Airport and Larkspur, with stops in Santa Rosa, Rohnert Park, Cotati, Petaluma, Novato, and San Rafael. Weekday service operates with approximately 30-minute to one-hour headways between 4:30 a.m. and 9:46 p.m. Weekend service operates with one- to three-hour headways between 7:35 a.m. and 7:56 p.m.

Vehicle Capacity Analysis

Intersection Level of Service Methodologies

Level of Service (LOS) is used to rank traffic operation on various types of facilities based on traffic volumes and roadway capacity using a series of letter designations ranging from A to F. Generally, Level of Service A represents free flow conditions and Level of Service F represents forced flow or breakdown conditions. A unit of measure that indicates a level of delay generally accompanies the LOS designation.

The study intersections were analyzed using methodologies published in the *Highway Capacity Manual* (HCM), Transportation Research Board, 6th Edition, 2018. This source contains methodologies for various types of intersection control, all of which are related to a measurement of delay in average number of seconds per vehicle.

All four of the study intersections are controlled by a traffic signal and were evaluated using the signalized methodology from the HCM. This methodology is based on factors including traffic volumes, green time for each movement, phasing, whether the signals are coordinated or not, truck traffic, and pedestrian activity. Average stopped delay per vehicle in seconds is used as the basis for evaluation in this LOS methodology. For purposes of this study, delays were calculated using signal timing obtained from the City of Petaluma.

The ranges of delay associated with the various levels of service are indicated in Table 3.

Table 3 – Signalized Intersection Level of Service Criteria	
LOS A	Delay of 0 to 10 seconds. Most vehicles arrive during the green phase, so do not stop at all.
LOS B	Delay of 10 to 20 seconds. More vehicles stop than with LOS A, but many drivers still do not have to stop.
LOS C	Delay of 20 to 35 seconds. The number of vehicles stopping is substantial, although many still pass through without stopping.
LOS D	Delay of 35 to 55 seconds. The influence of congestion is noticeable, and most vehicles have to stop.
LOS E	Delay of 55 to 80 seconds. Most, if not all, vehicles must stop, and drivers consider the delay excessive.
LOS F	Delay of more than 80 seconds. Vehicles may wait through more than one cycle to clear the intersection.

Reference: *Highway Capacity Manual*, Transportation Research Board, 6th Edition, 2018

Traffic Operation Standards

City of Petaluma

The *Petaluma General Plan 2025* has an adopted Level of Service (LOS) standard for streets that indicates the minimum acceptable operation is LOS D, with the following criteria for motor vehicle circulation:

> ***Policy 5-P-10*** *– Maintain an intersection level of service (LOS) standard for motor vehicle circulation that ensures efficient traffic flow and supports multi-modal mobility goals. LOS should be maintained at Level D or better for motor vehicles due to traffic from any development project.*

With the current General Plan, the City is shifting toward a multimodal emphasis and LOS standard. "A multimodal analysis that, in addition to motor vehicles, takes into consideration the overall mobility and conditions for non-auto road users (i.e., bicycles and pedestrians) is highly encouraged." The Community Character Element of the General Plan also contains circulation-related objectives and policies. This element directs that pedestrian and

bicycle circulation be integrated into street designs and improvements. It also states that the amount of paving and the apparent width of streets should be reduced where possible.

Per the General Plan, the project would be considered responsible for intersection improvements if it causes the average delay at an intersection already operating or expected to operate at LOS D or E to deteriorate to the next lower level of service.

Existing Conditions

The Existing Conditions scenario provides an evaluation of current operation based on existing traffic volumes during the weekday p.m. peak period. This condition does not include project-generated traffic volumes. Peak hour traffic volumes were previously collected in May and August of 2019 as well as October of 2021. Previous versions of this traffic study used the 2019 data since the volumes were higher than the 2021 counts. For this effort, transportation analytics obtained from the Streetlight Data platform were acquired for the segment of Petaluma Boulevard between B Street and C Street along the hotel frontage, when comparing the 2023 Streetlight traffic volume data vs. the 2019 volumes, it was found that peak hour traffic volumes were two percent higher in 2023 compared to 2019. Therefore, the 2019 intersection turning movement volumes were factored up by two percent to represent 2023 conditions for this analysis.

Under existing conditions, the study intersections are all operating acceptably at LOS C or D. A summary of the intersection level of service calculations is contained in Table 4, and copies of the Level of Service calculations are provided in Appendix B. Existing traffic volumes are shown in Figure 2.

Table 4 – Existing PM Peak Hour Intersection Levels of Service

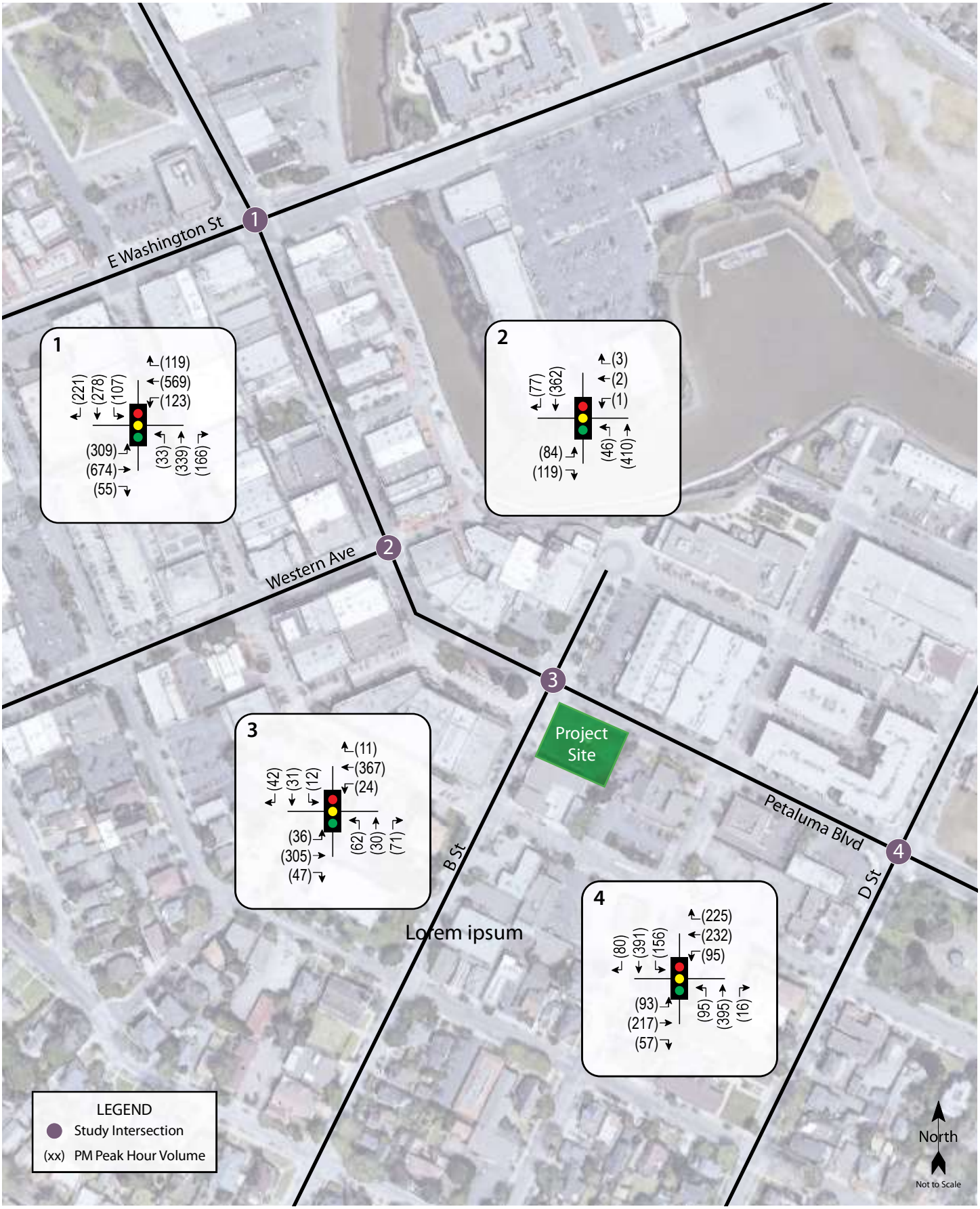
Study Intersection	PM Peak	
	Delay	LOS
1. Petaluma Blvd/E Washington St	44.3	D
2. Petaluma Blvd/Western Ave	31.7	C
3. Petaluma Blvd/B St	28.9	C
4. Petaluma Blvd/D St	53.8	D

Notes: Delay is measured in average seconds per vehicle; LOS = Level of Service

Future Conditions

Segment volumes for the horizon year of 2040 were obtained from the County's gravity demand model, maintained by the Sonoma County Transportation Authority (SCTA), and translated to weekday p.m. peak hour turning movement volumes at the study intersections using the "Furness" method. The Furness method is an iterative process that employs existing turning movement data, existing link volumes and future link volumes to project likely turning future movement volumes at intersections. Because the County's model does not project link volumes along B Street and projects a low future growth, a one-half percent per year growth was applied as the floor, or minimum anticipated increase in traffic volumes where model volumes were lower.

Under the anticipated Future volumes, operation at Petaluma Boulevard South/B Street would deteriorate from LOS C to LOS D, but the intersection would continue operating acceptably. Petaluma Boulevard/East Washington Street and Petaluma Boulevard/Western Avenue would operate at LOS D during the study period; it is noted that timing was optimized to match anticipated conditions in the *Petaluma General Plan 2025 Draft Environmental Impact Report* (DEIR), 2006, and since timing would reasonably be expected to change in the future as volumes change. Petaluma Boulevard/D Street would be expected to operate unacceptably at LOS E in the future p.m. peak hour, which is consistent with the *Petaluma General Plan 2025 DEIR*. Future volumes are shown in Figure 3 and operating conditions are summarized in Table 5.



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Traffic Impact Study for the Petaluma Appellation Hotel Project

Figure 2 – Existing Traffic Volumes

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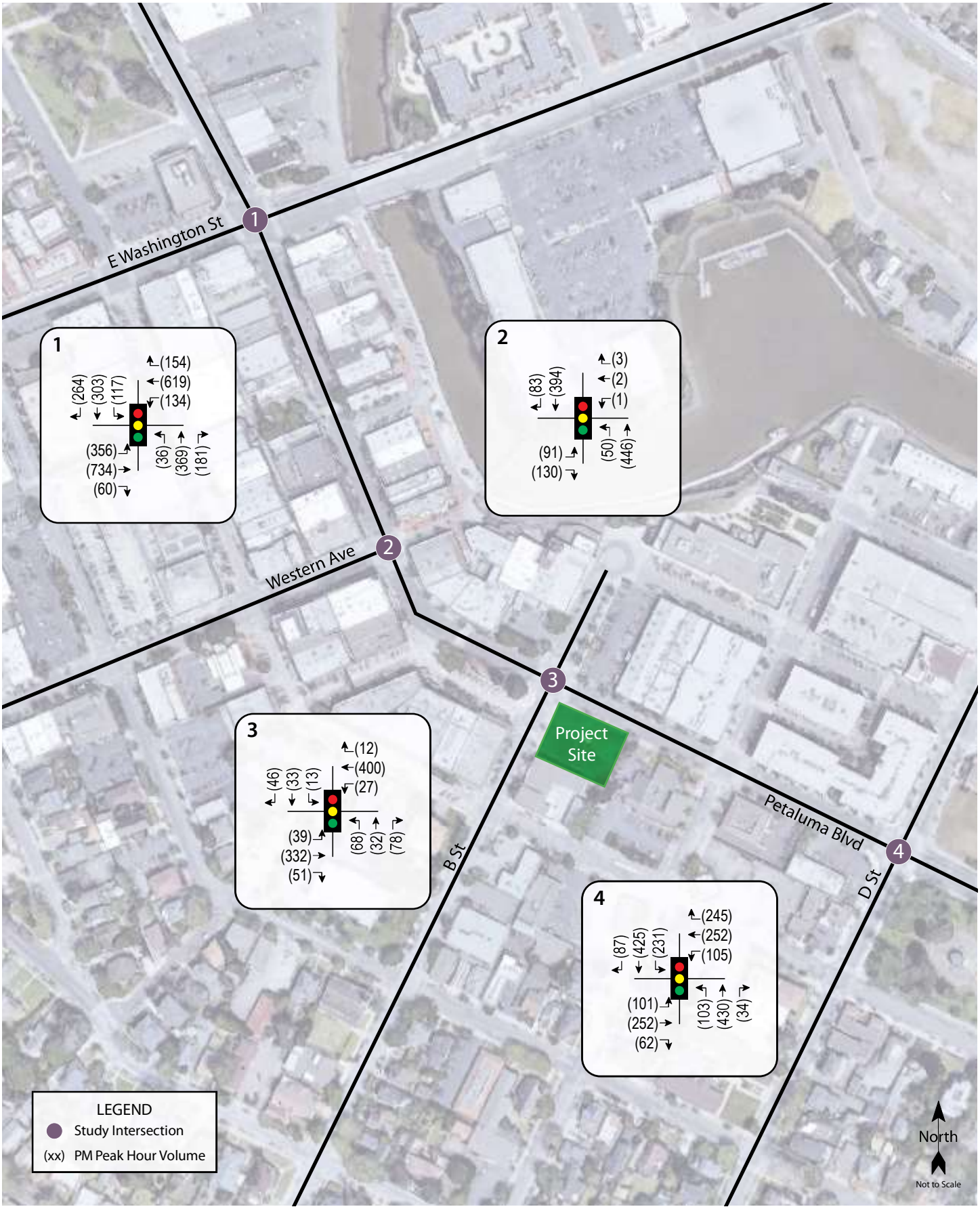

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Traffic Impact Study for the Petaluma Appellation Hotel Project

Figure 3 – Future Traffic Volumes

Table 5 – Future PM Peak Hour Intersection Levels of Service		
Study Intersection	**PM Peak**	
	Delay	**LOS**
1. Petaluma Blvd/E Washington St	48.4	D
2. Petaluma Blvd/Western Ave	36.2	D
3. Petaluma Blvd/B St	36.8	D
4. Petaluma Blvd/D St	**56.9**	**E**

Notes: Delay is measured in average seconds per vehicle; LOS = Level of Service; **Bold** text = deficient operation

Project Description

The proposed project is a new 93-guestroom boutique hotel at 2 Petaluma Boulevard South in the City of Petaluma. Additionally, a restaurant with 3,125 square feet of indoor dining on the first floor and a rooftop bar/restaurant with 1,269 square feet of outdoor dining is proposed for both guest and public use. The rooftop bar includes a total space of 5,600 square feet for events. For the purposes of this analysis, vehicle trips for the restaurant space were based on 3,125 square feet plus 1,269 square feet for a total of 4,394 square feet.

All parking at the hotel would be valet except for employees. There are 54 parking spaces proposed below ground-level plus two below-level loading spaces and 20 spaces have been secured at the existing parking structure located at 149 C Street in the Theatre District. There would also be three valet parking spots in front of the hotel on Petaluma Blvd. All the guest parking would be through a valet service which would occur on Petaluma Boulevard South along the project frontage. Employees would self-park and would be allowed to park in the underground lot if spaces are available. The project would include 26 full-time employees, including the four valets during peak operation.

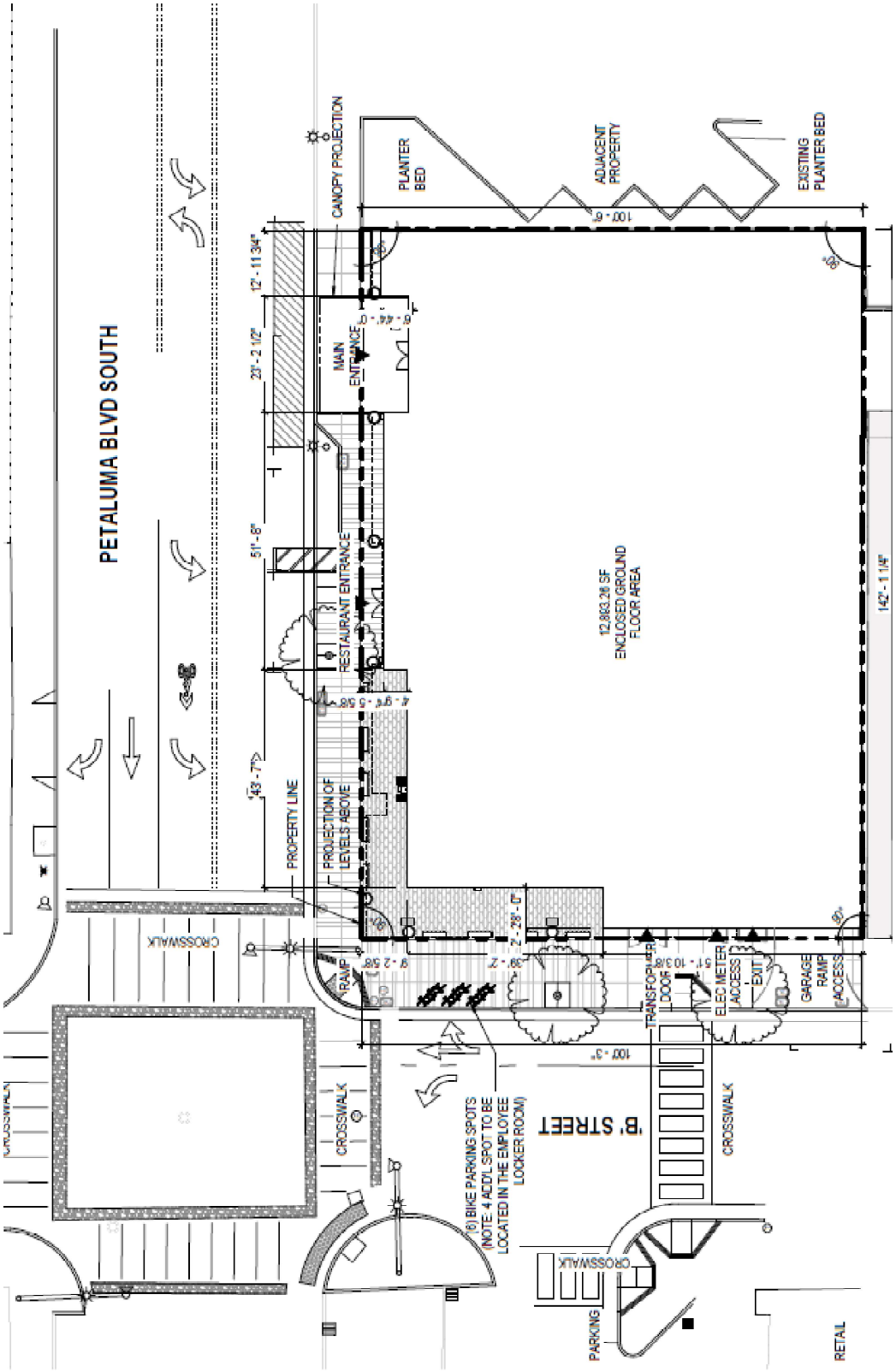
The proposed project site plan is shown in Figure 4.

Trip Generation

The anticipated trip generation for the proposed project was estimated using standard rates published by the Institute of Transportation Engineers (ITE) in *Trip Generation Manual*, 10th Edition, 2017 for "Hotel" (ITE LU #310) in a city center-core area since the proposed project would be located within the core of City of Petaluma's downtown area. (Note: Trip rates for a hotel in a city center-core area were lower in the 11th Edition compared to the 10th Edition, so the more conservative 10th Edition rates were used.) Since the restaurant is open to the public, the land use "Quality Restaurant" (ITE LU #931) was used for both the indoor and outdoor dining space. It should be noted that the Hotel land use already assumes supporting facilities such as restaurants. However, due to the size of the proposed restaurant component and the accessibility and potential marketing towards non-guests, a separate restaurant trip generation was applied.

Internal Capture Trips

The *Trip Generation Handbook* includes data and methodologies that can be applied to determine the proportion of internal trips that may occur within a development area that includes a variety of land uses. Internal trips occur at mixed-use developments, and in the case of the restaurant would consist of hotel guests patronizing adjacent restaurant uses, as well as hotel employees patronizing the restaurant. These trips would be made by walking so would not affect the adjacent street network. A 12 percent internal capture reduction was applied to the trip generation of the use with the lower total trip generation (in this case the hotel) and the opposite ends of these trips were then deducted from the restaurant trip generation to account for internal trips and restaurant trips already included in base Hotel rate.



Source: Page Design, Architecture, Engineering; 7/23

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Traffic Impact Study for the Petaluma Appellation Hotel Project

Figure 4 – Site Plan

Total Project Trip Generation

All overnight hotel guests would be required to use the valet service for on-site underground parking. Valet service staff would drive guest vehicles from the valet drop-off at the project frontage on Petaluma Boulevard to either the site's underground parking off B Street or to the existing parking structure at 149 C Street in the Theatre District. Therefore, valet staff would drive guest vehicles around the block through Petaluma Boulevard/C Street, and then park vehicles underground off B Street or depart the valet spaces and turn left onto C Street towards the parking structure and return the vehicle by crossing Petaluma Boulevard at C Street then travelling around the block to return to the guests. These routes would add traffic to the Petaluma Boulevard/B Street intersection with the drop-off/pick-up activity of vehicles.

To account for the vehicle trips related to the valet service, it was assumed that 25 percent of the base project sub-total would be overnight guest vehicles using the valet service at the lot. This is based on the assumed percentage of overnight guest trips versus employees, restaurant patrons, delivery, etc.

Based on application of these assumptions, the proposed project is expected to generate an average of 774 vehicle trips per day, including 63 trips during the p.m. peak hour. With the addition of valet trips, the total proposed project vehicle trip generation would be 966 trips daily, with 79 trips during the evening peak hour. These results are summarized in Table 6.

Table 6 – Trip Generation Summary

Land Use	Units	Daily		PM Peak Hour			
		Rate	Trips	Rate	Trips	In	Out
Base Project Trips							
Hotel	93 rooms	5.49	511	0.40	37	18	19
Internal Capture		-12%	*-61*	-12%	*-4*	*-2*	*-2*
Quality Restaurant	4.39 ksf	83.84	368	7.80	34	23	11
*Internal Capture***			*-44*		*-4*	*-2*	*-2*
Base Project Trips Sub-Total			**774**		**63**	**37**	**26**
Valet Trips							
Valet Percentage*		25%	192	25%	16	9	7
Total			**966**		**79**	**46**	**33**

Note: ksf = 1,000 square feet; *Valet Percentage of Base Project Trips Sub-Total; ** Opposite end of internally captured trips generated by the restaurant

Trip Distribution

Base Project Trip Distribution

The pattern used to allocate new project trips to/from the street network was determined by reviewing possible paths of travel between anticipated tourist attractors (i.e., the coast, wineries north of Petaluma, the Sonoma and Oakland/San Francisco Airports). The applied distribution assumptions and resulting trips are shown in Table 7.

Table 7 – Base Project Trip Distribution Assumptions			
Route	**Percent**	**Daily Trips**	**PM Trips**
To/From East via E Washington St	30%	233	19
To/From West via B St	10%	77	6
To/From South via Petaluma Blvd S	50%	387	32
To/From North via Petaluma Blvd S	10%	77	6
TOTAL	**100%**	**774**	**63**

Valet Trip Distribution

As proposed, guests would drop off vehicle at the project frontage on Petaluma Boulevard North, and valet employees would either drive the vehicle around the block clockwise and then enter the valet lot via the driveway on B Street or turn left onto C Street towards and Theatre District parking structure then return via C Street to 4th Street to B Street. Both the project and valet trip routes are shown in Figure 5.

Vehicle Miles Traveled

The Vehicle Miles Traveled (VMT) associated with a project are the basis for determining traffic impacts under CEQA. The City of Petaluma identifies VMT significance thresholds and screening criteria in the *Senate Bill 743 Vehicle Miles Traveled Implementation Guidelines*, Fehr & Peers, July 2021.

CEQA allows for the use of screening criteria to identify certain types of projects that can be expected to cause a less-than-significant impact without needing to conduct a detailed analysis (CEQA Guidelines sections 15063(c)(3)(C), 15128, and the environmental checklist included in CEQA Appendix G). In Petaluma's *Senate Bill 743 Vehicle Miles Traveled Implementation Guidelines*, one such screening parameter pertains to projects in proximity to a major transit stop, indicating that development projects within one-half mile of the Downtown Petaluma SMART station may generally be presumed to have a less than significant VMT impact. In addition to being within the defined area, projects must not: have a Floor Area Ratio (FAR) of less than 0.75, include more parking than required by the City, be inconsistent with Plan Bay Area, or replace affordable residential units.

The proposed hotel is approximately 0.4 miles from the Downtown Petaluma SMART rail station and would be accessible to the station by both walking and bicycling. The project's FAR exceeds 0.75 and the proposed parking supply would not exceed the City's minimum requirements. The project would not be inconsistent with Plan Bay Area or replace affordable residential units. As such, the project would meet all requirements for VMT screening, and may be presumed to have a less-than-significant VMT impact.

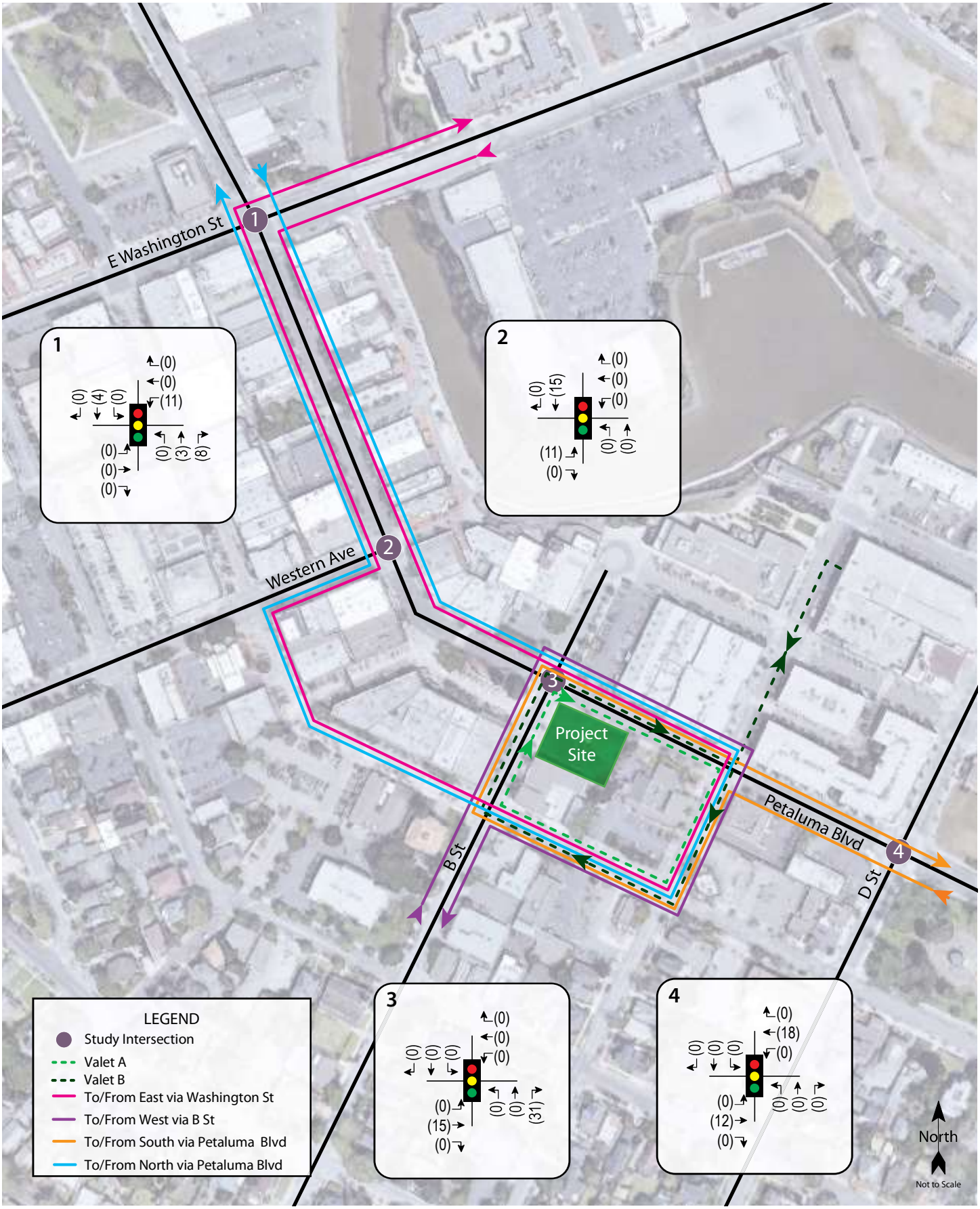
Finding – Based on the site's proximity to the Downtown Petaluma SMART station and application of screening criteria established by the City, the project can be presumed to have a less-than-significant impact on VMT.

Supplemental Information

As indicated above, the project qualifies for VMT screening criteria established by the City of Petaluma and may be presumed to have a less-than-significant VMT impact. In addition to the site's proximity to SMART, there are several additional factors that support a less-than-significant finding, as described below.

Proximity to Bus Transit

The hotel is located one block from the downtown transit hub on 4th Street and approximately 0.3 miles from the Copeland bus transit mall, both of which provide additional bus transit options to the hotel's employees, customers, and guests that further reduce the project's VMT potential.



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Traffic Impact Study for the Petaluma Appellation Hotel Project

Figure 5 – Project Traffic Volumes and Trip Distribution

Regional Shifts in Visitor/Guest VMT

At a regional level, such as measured at a Countywide or Bay Area geography, the addition of a new hotel would likely have similar effects to those shown to occur when adding new non-regional retail uses, in that guests of the new hotel would more than likely have simply stayed at a different lodging location if the new hotel did not exist (similar to retail uses, where new stores generally result in a redistribution of shopping trips rather than generation of entirely new trips). In other words, adding new hotel rooms does not necessarily change the overall demand for lodging in the region (such as the total numbers of tourists and business travelers), but instead changes the distribution of where those hotel stays occur. As such, the vehicle miles traveled associated with hotel guests can often be expected to result in a net zero change, or even a reduction in vehicle miles traveled if the new hotel is located in an area where there is an unmet lodging demand that is currently being served by more distant hotels (such as, for example, guests currently wanting to stay in downtown Petaluma but having to instead stay at locations further from downtown, or a hotel in Novato or Rohnert Park).

Low VMT per Employee

The proposed hotel would generate VMT associated with employee travel. The City of Petaluma has established a significance threshold of 18.9 VMT per employee for employment-based uses, which represents a reduction of 16.8 percent below the average regional VMT per employee of 22.7 miles. Based on VMT projections produced by the SCTM\19 regional travel demand model maintained by the Sonoma County Transportation Authority (SCTA), development within the project's traffic analysis zone (TAZ 796) is projected to result in a VMT per employee of 15.5 miles. This falls below the City's significance threshold, indicating that the VMT associated with employee travel would remain less-than-significant even if the project did not qualify for screening.

Intersection Operation

Existing plus Project Conditions

Upon the addition of project-related traffic to the Existing volumes, the study intersections are expected to operate acceptably at the same levels of service as without project trips. These results are summarized in Table 8. Project traffic volumes are shown in Figure 5.

Table 8 – Existing and Existing plus Project PM Peak Hour Intersection Levels of Service

Study Intersection	Existing Conditions		Existing plus Project	
	Delay	LOS	Delay	LOS
1. Petaluma Blvd/E Washington St	44.3	D	45.9	D
2. Petaluma Blvd/Western Ave	31.7	C	34.3	C
3. Petaluma Blvd/B St	28.9	C	30.9	C
4. Petaluma Blvd/D St	53.8	D	53.5	D

Notes: Delay is measured in average seconds per vehicle; LOS = Level of Service

It should be noted that with the addition of project-related traffic volumes, average delay at the intersection of Petaluma Boulevard South/D Street would be expected to decrease during the p.m. peak hour. While this is counter-intuitive, this condition occurs when a project adds trips to movements that are currently underutilized or have delays that are below the intersection average, resulting in a better balance between approaches and lower overall average delay. The project adds traffic to the through movement on Petaluma Boulevard South, which has an average delay that is lower than the average for the intersection as a whole, resulting in a slight reduction in the overall average delay. The conclusion could incorrectly be drawn that the project actually improves operation based on this data alone; however, it is more appropriate to conclude that the project trips

are expected to make use of excess capacity, so drivers will experience little, if any, change in conditions as a result of the project.

Finding – The study intersections are expected to continue operating acceptably at the same levels of service upon the addition of project-generated traffic.

Future plus Project Conditions

Upon the addition of project-generated traffic to the anticipated Future volumes, the study intersections would continue operating at the same levels of service as without project volumes.

According to the General Plan, while Petaluma Boulevard/D Street is expected to operate unacceptably, since the project would not cause the intersection to deteriorate to a worse level, LOS F, the project's effect on operation would be considered acceptable. The Future plus Project operating conditions are summarized in Table 9.

Table 9 – Future and Future plus Project PM Peak Hour Intersection Levels of Service

Study Intersection	Future Conditions		Future plus Project	
	Delay	LOS	Delay	LOS
1. Petaluma Blvd/E Washington St	48.4	D	48.9	D
2. Petaluma Blvd/Western Ave	36.2	D	38.0	D
3. Petaluma Blvd/B St	36.8	D	38.3	D
4. Petaluma Blvd/D St	**56.9**	**E**	**56.8**	**E**

Notes: Delay is measured in average seconds per vehicle; LOS = Level of Service; **Bold** text = deficient operation

Similar to the Existing Conditions plus Project scenario, the project adds trips to the through movements on Petaluma Boulevard South at Petaluma Boulevard South/D Street, which results in a decrease of overall delay. As stated previously, in the *Petaluma General Plan 2025 DEIR*, the intersection Petaluma Boulevard/D Street is anticipated to operate unacceptably at LOS E, and since the project would not cause the intersection to deteriorate to LOS F, the project would be acceptable under the General Plan standards.

Finding – The study intersections would be expected to continue operating at the same LOS with or without the project traffic added. Because there are no deteriorations in service level, the minor increase in delay due to the project would be acceptable under the standards applied.

Alternative Modes

Pedestrian Facilities

Given the proximity of the downtown surrounding the site, it is reasonable to assume that some project patrons and employees will want to walk, bicycle, and/or use transit between the project site and the surrounding area.

Sidewalks exist along the project frontages of Petaluma Boulevard South and B Street. Based on the proposed site plan, the existing driveway curb cut along the project frontage on Petaluma Boulevard South would be eliminated to provide a level sidewalk.

The planned driveway to the parking garage below the street level is in very close proximity with the existing crosswalk that traverses B Street and provides a connection to the Mystic Theater commercial row. This design may present vehicle/pedestrian conflicts. There are three options for addressing this issue:

- The crosswalk can be moved slightly towards Petaluma Boulevard South, thus reducing any conflicting driveway-related movements with pedestrians. The relocation of the crosswalk would require an extension of the curb on the north side of B Street to receive the other end of the crosswalk. The curb extension would "shadow" the existing diagonal parking located in the Mystic Theater commercial row. This new crosswalk location may require that the existing streetlight on the project side of B Street be moved to allow for a curb ramp. The street trees may also need to be located in such a way as to keep a minimum distance clear of the curb ramp per ADA guidelines. It is understood that as part of the project, the sidewalk frontage along the project will be removed and reconstructed. As part of this work, the location of the streetlights and street trees should be considered with the shifting of the crosswalk.
- A warning system consisting of sound and light to alert pedestrians to vehicles exiting the garage could be added.
- The crosswalk could be removed as there is the existing signalized crosswalk at the intersection with Petaluma Boulevard only 70 feet to the north. It is understood that the City is already considering removal of this crosswalk.

Finding – Pedestrian facilities serving the project site are expected to be adequate to meet demand; however, the proposed driveway may present vehicle/pedestrian conflicts with the existing crosswalk on B Street.

Recommendation – At the discretion of the City Engineer, either a) the B Street crosswalk should be moved slightly towards Petaluma Boulevard South with a new curb extension added on the north side of B Street to receive the relocated crosswalk or b) a warning system consisting of sound and light warnings to alert pedestrians of vehicles exiting the garage could be added or c) the crosswalk be removed.

Bicycle Facilities

Existing bicycle facilities, including bike routes on Petaluma Boulevard, together with shared use of minor streets provide adequate access for bicyclists.

Finding – Bicycle facilities serving the project site are adequate.

Transit

Existing transit routes are adequate to accommodate project-generated transit trips. Existing stops are within an acceptable walking distance of the site. It is understood that as part of the proposed project, City staff are requiring that a portion of the project frontage on Petaluma Boulevard South be allocated for a future Petaluma Transit bus stop.

Finding – Transit facilities serving the project site are adequate.

Access and Circulation

Site Access

The two-way driveway and ramp to access the below grade parking would be constructed on B Street approximately 100 feet south and west of the intersection with Petaluma Boulevard South. The driveway would be located at the southern terminus of the existing crosswalk on B Street. Impacts and mitigation to the crosswalk were discussed previously. Because of the low traffic volumes on B Street, movements into this driveway would not be expected to result in any substantial conflicts.

Exiting vehicles would, however, need to yield to any vehicles on the B Street approach. There is adequate sight distance in all directions which would allow motorists to access B Street in either direction.

Queuing Conditions

For the valet service, there are three allocated on-street spaces at the project frontage on Petaluma Boulevard South for vehicle pick-up/drop-off. A queueing evaluation was completed to determine if the capacity of the three on-street valet spots would be adequate given the anticipated number of guests dropping-off or picking-up vehicles at the site. It is assumed that between the four valet employees at peak operation, there would be a service rate of 32 vehicles per hour for incoming and outgoing vehicles using the valet service. With an assumed 16 inbound and outbound trips during the peak hour using the valet service, there would be an approximate 6.3 percent probability that there would be a queue of three vehicles in the pick-up/drop-off on-street spaces on Petaluma Boulevard South. Additionally, there is a 3.1 percent or less probability that more than three vehicles would queue on Petaluma Boulevard South for the valet service, so it is unlikely the queue would ever extend past the allocated on-street spots. The results of the queuing evaluation worksheets are provided in Appendix C.

It is anticipated that a portion of the hotel guests or restaurant patrons will arrive at the site via taxi or rideshare services such as Uber or Lyft, thus not using the valet service. Additionally, project employees would self-park within the below-ground parking lot and not queue on Petaluma Boulevard South. To ensure that there are not more than three drivers waiting to queue in the valet spaces at one time, the applicant should develop a valet service plan.

Finding – The proposed valet service would be adequate to accommodate the assumed peak valet demand. There is a 3.1 percent probability that the vehicle queue on Petaluma Boulevard South would exceed three spaces.

Recommendation – The applicant should develop a valet service plan and monitor ongoing activities once the service is operational to ensure the on-street queue does not exceed three vehicles.

Parking

The project was analyzed to determine whether the proposed parking supply would be sufficient for the anticipated parking demand. The project site as proposed would provide a total of 56 parking spaces in a below-ground garage and 20 spaces will be utilized from the existing parking structure at 149 C Street. The provided parking would mainly be for hotel guests and employees; however, non-hotel guests visiting the restaurant could also use the provided parking if there are available spaces. It is assumed that a majority of the restaurant guests would also be hotel guests, thus not generating additional parking demand. The addition of the project driveway would result in the elimination of one parking space from the south side of B Street.

The City of Petaluma's parking supply requirements are contained in the *Implementing Zoning Ordinance (IZO)*, Chapter 11; Parking and Facilities, Off-Street. The parking requirement for the hotel at this location is a total of 54 spaces with the project providing 76 off-street spaces when including the 20 spaces in the Theatre District. The restaurant portion's parking requirement was considered; however, it is assumed that the hotel land use includes some level of restaurant activity so estimation of the use's individual parking requirement would be overly conservative and not reflect anticipated parking activity. As stated previously, it is anticipated that a portion of the hotel guests or restaurant patrons will arrive via taxi or rideshare services, thus not generating need for a parking space. Similarly, since the site is located within the Petaluma downtown it is assumed that restaurant patrons would also visit other places within the downtown and may park elsewhere and then walk to the site.

Finding – The proposed parking supply would be adequate to meet City requirements.

Bicycle Parking

Short-term bicycle parking would be provided at the site by bike racks to be located on the project frontage on Petaluma Boulevard South, though the number of spaces to be provided is not specified on the site plan. Based on the City's requirements, bicycle parking is required at 10 percent of the total required automobile parking spaces. Based on the City's required parking spaces for the proposed project of 76 spaces, eight bicycle parking spaces would be required on-site.

Finding – The site plan should be updated to indicate eight bicycle parking spaces on-site.

Conclusions and Recommendations

Conclusions

- The project as proposed would be anticipated to generate an average of 966 daily trips, including 79 trips during the p.m. peak hour.
- The intersections of Petaluma Boulevard/Western Avenue, Petaluma Boulevard/B Street, and Petaluma Boulevard/D Street experienced collisions at rates below the statewide average for similar facilities.
- The intersection of Petaluma Boulevard/E Washington Street had a collision rate above the statewide average for similar facilities.
- Based on the site's proximity to the Downtown Petaluma SMART station and application of screening criteria established by the City, the project can be presumed to have a less-than-significant impact on VMT.
- Under existing conditions, the study intersections are operating acceptably at LOS D or better during the weekday p.m. peak hour. With project traffic added the study intersections would be expected to continue operating at the same levels of service as without.
- While Petaluma Boulevard/D Street is projected to operate unacceptably at LOS E under future conditions, the other three study intersections are expected to be operating acceptably at LOS D during the weekday p.m. peak hour. The addition of project-generated trips would be expected to result in nominal increases in overall average delay and all intersections would continue operating at the same levels of service, indicating an acceptable impact on traffic operation.
- The existing bicycle lanes on Petaluma Boulevard, along with planned improvements within the area, will be adequate for anticipated demand. Existing pedestrian and transit facilities are adequate; however, construction of the project driveway on B Street could conflict with the existing crosswalk between the project site and the Mystic Theatre commercial row.
- Sight distance at the project driveway is adequate.
- Based on the anticipated arrival and service rate for the valet service, there is a 3.1 percent chance that more than the three vehicles that could be accommodated in the proposed loading zone would queue on Petaluma Boulevard South.
- The proposed parking supply would be adequate based on the City requirements a hotel land use at this location.

Recommendations

- The applicant should either redesign the crosswalk on B Street at the project driveway to reduce conflict between project vehicles and pedestrians crossing at this location, construct a warning system to alert pedestrians of vehicles existing the project garage, or the City should remove the crosswalk.
- Reflective backing should be added to the signal heads at the intersection of Petaluma Boulevard/E Washington Street.
- It is recommended that landscaping or signage for the project be located outside of the driver's vision triangle at the project driveway to maintain adequate sight lines.
- The applicant should include a minimum of eight bicycle parking spaces on-site.

Study Participants and References

Study Participants

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VMT Review	Zack Matley, AICP
Technical Assistance	William Andrews
Editing/Formatting	Jessica Bender
Quality Control	Dalene J. Whitlock, PE, PTOE

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Appendix A

Collision Rate Calculations

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Intersection Collision Rate Worksheet

Petaluma Appellation Hotel TIS

Intersection # 1: Petaluma Boulevard & Washington Street
Date of Count: Thursday, August 29, 2019

Number of Collisions: 23
Number of Injuries: 12
Number of Fatalities: 0
Average Daily Traffic (ADT): 29900
Start Date: January 1, 2018
End Date: December 31, 2022
Number of Years: 5

Intersection Type: Four-Legged
Control Type: Signals
Area: Urban

$$\text{Collision Rate} = \frac{\text{Number of Collisions x 1 Million}}{\text{ADT x Days per Year x Number of Years}}$$

$$\text{Collision Rate} = \frac{23 \times 1{,}000{,}000}{29{,}900 \times 365 \times 5}$$

	Collision Rate	Fatality Rate	Injury Rate
Study Intersection	**0.42 c/mve**	**0.0%**	**52.2%**
Statewide Average*	**0.33 c/mve**	**0.6%**	**47.7%**

Notes
ADT = average daily total vehicles entering intersection
c/mve = collisions per million vehicles entering intersection
* 2019 Collision Data on California State Highways, Caltrans

Intersection # 2: Petaluma Boulevard & Western Avenue
Date of Count: Thursday, August 29, 2019

Number of Collisions: 6
Number of Injuries: 3
Number of Fatalities: 0
Average Daily Traffic (ADT): 11000
Start Date: January 1, 2018
End Date: December 31, 2022
Number of Years: 5

Intersection Type: Four-Legged
Control Type: Signals
Area: Urban

$$\text{Collision Rate} = \frac{\text{Number of Collisions x 1 Million}}{\text{ADT x Days per Year x Number of Years}}$$

$$\text{Collision Rate} = \frac{6 \times 1{,}000{,}000}{11{,}000 \times 365 \times 5}$$

	Collision Rate	Fatality Rate	Injury Rate
Study Intersection	**0.30 c/mve**	**0.0%**	**50.0%**
Statewide Average*	**0.33 c/mve**	**0.6%**	**47.7%**

Notes
ADT = average daily total vehicles entering intersection
c/mve = collisions per million vehicles entering intersection
* 2019 Collision Data on California State Highways, Caltrans

Intersection Collision Rate Worksheet

Petaluma Appellation Hotel TIS

Intersection # 3: Petaluma Boulevard & B Street
Date of Count: Thursday, August 29, 2019

Number of Collisions: 4
Number of Injuries: 2
Number of Fatalities: 0
Average Daily Traffic (ADT): 10400
Start Date: January 1, 2018
End Date: December 31, 2022
Number of Years: 5

Intersection Type: Four-Legged
Control Type: Signals
Area: Urban

$$\text{Collision Rate} = \frac{\text{Number of Collisions x 1 Million}}{\text{ADT x Days per Year x Number of Years}}$$

$$\text{Collision Rate} = \frac{4 \times 1{,}000{,}000}{10{,}400 \times 365 \times 5}$$

	Collision Rate	Fatality Rate	Injury Rate
Study Intersection	**0.21 c/mve**	**0.0%**	**50.0%**
Statewide Average*	**0.33 c/mve**	**0.6%**	**47.7%**

Notes
ADT = average daily total vehicles entering intersection
c/mve = collisions per million vehicles entering intersection
* 2019 Collision Data on California State Highways, Caltrans

Intersection # 4: Petaluma Boulevard & D Street
Date of Count: Wednesday, May 29, 2019

Number of Collisions: 12
Number of Injuries: 6
Number of Fatalities: 0
Average Daily Traffic (ADT): 20500
Start Date: January 1, 2018
End Date: December 31, 2022
Number of Years: 5

Intersection Type: Four-Legged
Control Type: Signals
Area: Urban

$$\text{Collision Rate} = \frac{\text{Number of Collisions x 1 Million}}{\text{ADT x Days per Year x Number of Years}}$$

$$\text{Collision Rate} = \frac{12 \times 1{,}000{,}000}{20{,}500 \times 365 \times 5}$$

	Collision Rate	Fatality Rate	Injury Rate
Study Intersection	**0.32 c/mve**	**0.0%**	**50.0%**
Statewide Average*	**0.33 c/mve**	**0.6%**	**47.7%**

Notes
ADT = average daily total vehicles entering intersection
c/mve = collisions per million vehicles entering intersection
* 2019 Collision Data on California State Highways, Caltrans

Appendix B

Intersection Level of Service Calculations

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Intersection Level Of Service Report
Intersection 1: Petaluma Blvd/Washington St

Control Type:	Signalized	Delay (sec / veh):	44.3
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.724

Intersection Setup

Name	Petaluma Blvd			Petaluma Blvd			Washington St			Washington St		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	0	1	0	0
Entry Pocket Length [ft]	75.00	100.00	95.00	120.00	100.00	110.00	105.00	100.00	100.00	310.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00			25.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Petaluma Blvd			Petaluma Blvd			Washington St			Washington St		
Base Volume Input [veh/h]	33	339	166	107	278	221	309	674	55	123	569	119
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	26	0	0	18	0	0	4	0	0	13
Total Hourly Volume [veh/h]	33	339	140	107	278	203	309	674	51	123	569	106
Peak Hour Factor	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	9	91	38	29	75	55	83	181	14	33	153	28
Total Analysis Volume [veh/h]	35	365	151	115	299	218	332	725	55	132	612	114
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major stree	9			14			6			12		
v_di, Inbound Pedestrian Volume crossing major street [	6			12			9			14		
v_co, Outbound Pedestrian Volume crossing minor stree	8			7			4			10		
v_ci, Inbound Pedestrian Volume crossing minor street [	10			4			7			8		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	3			4			3			3		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	125
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	75.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protect	Permis	Overla	Protect	Permis	Overla	Protect	Permis	Permis	Protect	Permis	Permis
Signal Group	5	2	3	1	6	7	7	4	0	3	8	0
Auxiliary Signal Groups			2,3			6,7						
Lead / Lag	Lag	-	-	Lead	-	-	Lag	-	-	Lead	-	-
Minimum Green [s]	4	8	4	4	8	4	4	10	0	4	11	0
Maximum Green [s]	30	30	30	30	30	30	30	30	0	30	30	0
Amber [s]	3.0	3.6	3.0	3.0	3.6	3.0	3.0	3.6	0.0	3.0	3.6	0.0
All red [s]	1.0	1.0	1.0	1.0	1.1	1.0	1.0	1.2	0.0	1.0	1.6	0.0
Split [s]	32	31	14	38	37	15	15	41	0	14	40	0
Vehicle Extension [s]	2.0	4.0	2.0	2.0	4.0	2.0	2.0	4.0	0.0	2.0	4.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	17	0	0	19	0	0	21	0	0	27	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.6	2.0	2.0	2.7	2.0	2.0	2.8	0.0	2.0	3.2	0.0
Minimum Recall	No	Yes	No	No	Yes	No	No	No		No	No	
Maximum Recall	No	No	No	No	No	No	No	No		No	No	
Pedestrian Recall	No	No	No	No	No	No	No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	C
C, Cycle Length [s]	125	125	125	125	125	125	125	125	125	125	125	125
L, Total Lost Time per Cycle [s]	4.00	4.60	4.00	4.00	4.70	4.70	4.00	4.80	4.80	4.00	5.20	5.20
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.60	0.00	2.00	2.70	0.00	2.00	2.80	2.80	2.00	3.20	3.20
g_i, Effective Green Time [s]	3	35	50	11	42	75	28	52	52	10	33	33
g / C, Green / Cycle	0.03	0.28	0.40	0.09	0.34	0.60	0.23	0.41	0.41	0.08	0.26	0.26
(v / s)_i Volume / Saturation Flow Rate	0.02	0.22	0.11	0.07	0.18	0.15	0.21	0.23	0.24	0.08	0.22	0.23
s, saturation flow rate [veh/h]	1603	1683	1401	1603	1683	1414	1603	1683	1630	1603	1683	1549
c, Capacity [veh/h]	44	473	557	138	570	844	362	695	674	129	446	410
d1, Uniform Delay [s]	60.46	41.30	25.32	56.23	33.24	12.00	47.27	28.13	28.19	57.49	43.42	43.77
k, delay calibration	0.04	0.50	0.50	0.04	0.50	0.50	0.19	0.33	0.33	0.04	0.15	0.15
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	11.36	11.61	1.20	4.84	3.42	0.74	14.92	2.22	2.36	28.12	5.90	7.47
d3, Initial Queue Delay [s]	0.00	2.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.80	0.77	0.27	0.83	0.52	0.26	0.92	0.57	0.57	1.02	0.84	0.86
d, Delay for Lane Group [s/veh]	71.82	55.09	26.51	61.07	36.66	12.74	62.19	30.35	30.55	85.61	49.32	51.24
Lane Group LOS	E	E	C	E	D	B	E	C	C	F	D	D
Critical Lane Group	No	Yes	No	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	1.25	11.93	3.27	3.79	7.92	3.09	11.64	9.56	9.37	5.12	11.69	11.31
50th-Percentile Queue Length [ft/ln]	31.32	298.16	81.67	94.72	198.07	77.23	291.04	238.98	234.30	128.08	292.26	282.83
95th-Percentile Queue Length [veh/ln]	2.26	17.59	5.88	6.82	12.54	5.56	17.24	14.63	14.39	8.90	17.30	16.83
95th-Percentile Queue Length [ft/ln]	56.38	439.76	147.00	170.50	313.47	139.02	430.94	365.75	359.81	222.49	432.44	420.73

Movement, Approach, & Intersection Results

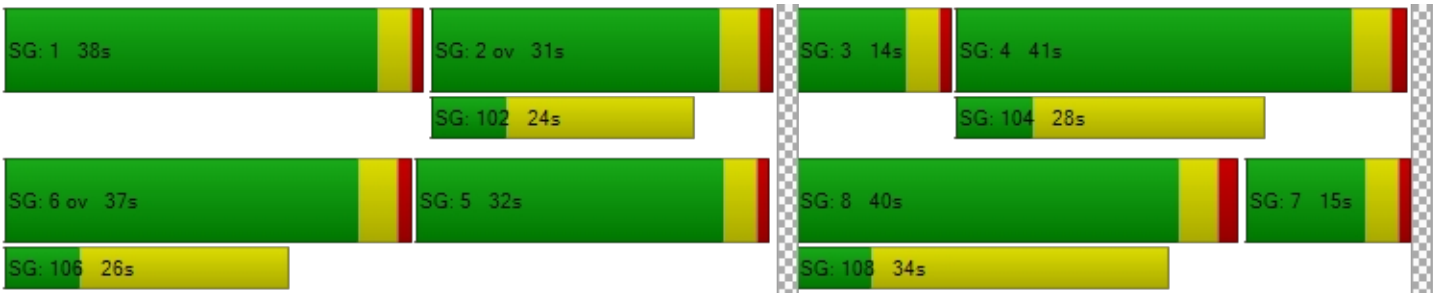
d_M, Delay for Movement [s/veh]	71.82	55.09	26.51	61.07	36.66	12.74	62.19	30.44	30.55	85.61	50.07	51.24
Movement LOS	E	E	C	E	D	B	E	C	C	F	D	D
d_A, Approach Delay [s/veh]	48.32			32.85			39.93			55.69		
Approach LOS	D			C			D			E		
d_I, Intersection Delay [s/veh]	44.27											
Intersection LOS	D											
Intersection V/C	0.724											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	641.88	326.21	631.37	516.84
d_p, Pedestrian Delay [s]	52.00	52.00	52.00	52.00
l_p,int, Pedestrian LOS Score for Intersection	2.401	2.472	2.646	2.641
Crosswalk LOS	B	B	B	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	422	517	579	557
d_b, Bicycle Delay [s]	38.96	34.45	31.60	32.60
l_b,int, Bicycle LOS Score for Intersection	2.512	2.632	2.480	2.278
Bicycle LOS	B	B	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 2: Petaluma Blvd/Western Ave

Control Type:	Signalized	Delay (sec / veh):	31.7
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.437

Intersection Setup

Name	Petaluma Blvd			Petaluma Blvd			Western Ave			Water St		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	0	0	0	1	0	0	0
Entry Pocket Length [ft]	65.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	85.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00			25.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Petaluma Blvd			Petaluma Blvd			Western Ave			Water St		
Base Volume Input [veh/h]	46	410	0	0	362	77	84	0	119	1	2	3
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	5	0	0	62	0	0	3
Total Hourly Volume [veh/h]	46	410	0	0	362	72	84	0	57	1	2	0
Peak Hour Factor	0.9200	0.9200	1.0000	1.0000	0.9200	0.9200	0.9200	1.0000	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	13	111	0	0	98	20	23	0	15	0	1	0
Total Analysis Volume [veh/h]	50	446	0	0	393	78	91	0	62	1	2	0
Presence of On-Street Parking	No		Yes	No		Yes	No		Yes	No		No
On-Street Parking Maneuver Rate [/h]	0	0	5	0	0	5	0	0	5	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major stree	7			28			29			33		
v_di, Inbound Pedestrian Volume crossing major street	33			29			28			7		
v_co, Outbound Pedestrian Volume crossing minor stree	35			27			39			13		
v_ci, Inbound Pedestrian Volume crossing minor street	39			13			35			27		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	2			2			3			3		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	118
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	12.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protect	Permis	Permis	Permis	Permis	Permis	Permis	Permis	Permis	Permis	Permis	Permis
Signal Group	3	8	0	0	4	0	2	0	0	0	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	-	-	-	Lag	-	-	-	-	-
Minimum Green [s]	8	8	0	0	8	0	8	0	0	0	8	0
Maximum Green [s]	20	73	0	0	73	0	39	0	0	0	39	0
Amber [s]	3.0	3.0	0.0	0.0	3.0	0.0	3.0	0.0	0.0	0.0	3.2	0.0
All red [s]	1.0	1.0	0.0	0.0	1.0	0.0	1.0	0.0	0.0	0.0	1.3	0.0
Split [s]	20	77	0	0	57	0	41	0	0	0	41	0
Vehicle Extension [s]	2.0	4.0	0.0	0.0	4.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0
Walk [s]	0	8	0	0	13	0	8	0	0	0	8	0
Pedestrian Clearance [s]	0	10	0	0	5	0	10	0	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No		No				No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	0.0	2.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	0.0	2.0	0.0	2.0	0.0	0.0	0.0	2.5	0.0
Minimum Recall	No	Yes			Yes		No				No	
Maximum Recall	No	No			No		No				No	
Pedestrian Recall	No	No			No		No				No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	R	C
C, Cycle Length [s]	118	118	118	118	118	118
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	2.00	0.00	2.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	0.00	2.00	2.50
g_i, Effective Green Time [s]	45	94	45	16	16	15
g / C, Green / Cycle	0.38	0.80	0.38	0.13	0.13	0.13
(v / s)_i Volume / Saturation Flow Rate	0.03	0.30	0.34	0.07	0.07	0.00
s, saturation flow rate [veh/h]	1603	1473	1403	1318	880	1379
c, Capacity [veh/h]	611	1176	538	190	118	219
d1, Uniform Delay [s]	23.33	3.44	33.83	47.78	46.61	44.81
k, delay calibration	0.50	0.50	0.50	0.04	0.04	0.04
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.26	0.93	17.93	0.69	1.35	0.01
d3, Initial Queue Delay [s]	0.00	0.30	0.97	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.08	0.38	0.88	0.48	0.53	0.01
d, Delay for Lane Group [s/veh]	23.59	4.68	52.73	48.47	47.96	44.82
Lane Group LOS	C	A	D	D	D	D
Critical Lane Group	Yes	No	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.95	2.83	15.14	2.52	1.72	0.08
50th-Percentile Queue Length [ft/ln]	23.83	70.68	378.55	63.04	43.11	1.96
95th-Percentile Queue Length [veh/ln]	1.72	5.09	21.52	4.54	3.10	0.14
95th-Percentile Queue Length [ft/ln]	42.90	127.23	538.09	113.46	77.59	3.53

Movement, Approach, & Intersection Results

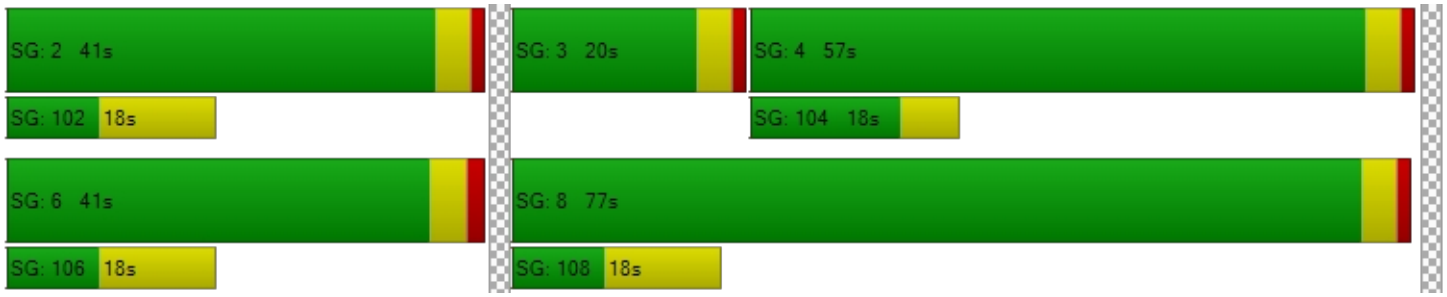
d_M, Delay for Movement [s/veh]	23.59	4.68	0.00	0.00	52.73	52.73	48.47	0.00	47.96	44.82	44.82	44.82
Movement LOS	C	A			D	D	D		D	D	D	D
d_A, Approach Delay [s/veh]	6.58			52.73			48.26			44.82		
Approach LOS	A			D			D			D		
d_I, Intersection Delay [s/veh]	31.72											
Intersection LOS	C											
Intersection V/C	0.437											

Other Modes

g_Walk,mi, Effective Walk Time [s]	12.0	12.0	17.0	12.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	162.20	198.70	208.20	197.08
d_p, Pedestrian Delay [s]	47.64	47.64	43.25	47.64
l_p,int, Pedestrian LOS Score for Intersection	2.228	2.274	2.132	1.445
Crosswalk LOS	B	B	B	A
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1237	898	627	618
d_b, Bicycle Delay [s]	8.61	17.94	27.87	28.21
l_b,int, Bicycle LOS Score for Intersection	2.378	2.345	1.560	1.570
Bicycle LOS	B	B	A	A

Sequence

Ring 1	-	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 3: Petaluma Blvd/B St

Control Type:	Signalized	Delay (sec / veh):	28.9
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.329

Intersection Setup

Name	B St			B St			Petaluma Blvd			Petaluma Blvd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	1	0	1	1	0	0	1	0	1
Entry Pocket Length [ft]	100.00	100.00	65.00	30.00	100.00	30.00	85.00	100.00	100.00	70.00	100.00	40.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00			25.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	B St			B St			Petaluma Blvd			Petaluma Blvd		
Base Volume Input [veh/h]	62	30	71	12	31	42	36	305	47	24	367	11
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	30	0	0	14	0	0	6	0	0	0
Total Hourly Volume [veh/h]	62	30	41	12	31	28	36	305	41	24	367	11
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	16	8	11	3	8	7	9	80	11	6	97	3
Total Analysis Volume [veh/h]	65	32	43	13	33	29	38	321	43	25	386	12
Presence of On-Street Parking	No		Yes	No		No	No		Yes	No		No
On-Street Parking Maneuver Rate [/h]	0	0	5	0	0	0	0	0	5	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major stree	29			11			5			38		
v_di, Inbound Pedestrian Volume crossing major street	5			38			29			11		
v_co, Outbound Pedestrian Volume crossing minor stree	5			12			35			2		
v_ci, Inbound Pedestrian Volume crossing minor street	2			35			12			5		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	4			2			2			2		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	59
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	54.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permis	Permis	Permis	Permis	Permis	Permis	Protect	Permis	Permis	Protect	Permis	Permis
Signal Group	0	2	0	0	6	0	7	4	0	3	8	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	8	0	0	8	0	8	9	0	6	9	0
Maximum Green [s]	0	35	0	0	35	0	10	50	0	20	50	0
Amber [s]	0.0	3.0	0.0	0.0	3.2	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.3	0.0	0.0	1.3	0.0	1.0	1.3	0.0	1.0	1.3	0.0
Split [s]	0	28	0	0	28	0	15	16	0	15	16	0
Vehicle Extension [s]	0.0	2.5	0.0	0.0	2.5	0.0	2.0	4.0	0.0	2.0	4.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	12	0	0	11	0	0	9	0	0	9	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.3	0.0	0.0	2.5	0.0	2.0	2.3	0.0	2.0	2.3	0.0
Minimum Recall		No			No		No	Yes		No	Yes	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	R	L	C	L	C	R
C, Cycle Length [s]	59	59	59	59	59	59	59	59	59	59
L, Total Lost Time per Cycle [s]	4.30	4.30	4.50	4.50	4.50	4.00	4.30	4.00	4.30	4.30
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	2.30	2.50	2.50	2.50	2.00	2.30	2.00	2.30	2.30
g_i, Effective Green Time [s]	10	10	10	10	10	18	18	18	18	18
g / C, Green / Cycle	0.17	0.17	0.16	0.16	0.16	0.31	0.31	0.31	0.31	0.31
(v / s)_i Volume / Saturation Flow Rate	0.05	0.06	0.01	0.02	0.02	0.02	0.26	0.02	0.23	0.01
s, saturation flow rate [veh/h]	1293	1297	1175	1683	1198	1603	1426	1603	1683	1287
c, Capacity [veh/h]	231	219	222	279	198	498	438	498	517	395
d1, Uniform Delay [s]	24.01	21.66	24.99	20.99	21.00	14.39	19.07	14.26	18.41	14.31
k, delay calibration	0.08	0.08	0.08	0.08	0.08	0.50	0.50	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.49	0.68	0.08	0.14	0.25	0.30	16.65	0.19	9.47	0.14
d3, Initial Queue Delay [s]	0.00	4.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.28	0.34	0.06	0.12	0.15	0.08	0.83	0.05	0.75	0.03
d, Delay for Lane Group [s/veh]	24.49	26.43	25.07	21.12	21.25	14.69	35.72	14.45	27.88	14.45
Lane Group LOS	C	C	C	C	C	B	D	B	C	B
Critical Lane Group	No	Yes	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	0.78	0.92	0.17	0.38	0.34	0.38	6.28	0.25	5.72	0.12
50th-Percentile Queue Length [ft/ln]	19.39	22.90	4.19	9.56	8.51	9.44	157.05	6.14	143.07	3.03
95th-Percentile Queue Length [veh/ln]	1.40	1.65	0.30	0.69	0.61	0.68	10.39	0.44	9.65	0.22
95th-Percentile Queue Length [ft/ln]	34.90	41.23	7.53	17.21	15.32	16.99	259.81	11.06	241.15	5.45

Movement, Approach, & Intersection Results

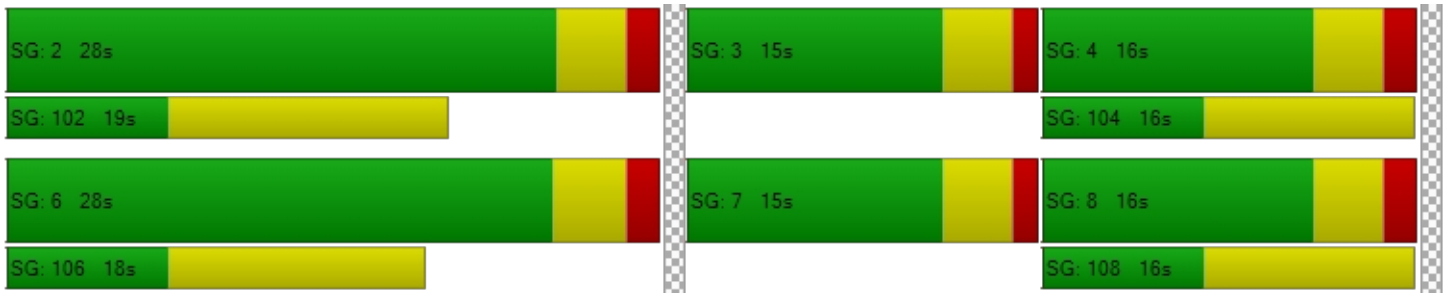
d_M, Delay for Movement [s/veh]	24.49	26.43	26.43	25.07	21.12	21.25	14.69	35.72	35.72	14.45	27.88	14.45
Movement LOS	C	C	C	C	C	C	B	D	D	B	C	B
d_A, Approach Delay [s/veh]	25.53			21.86			33.73			26.71		
Approach LOS	C			C			C			C		
d_I, Intersection Delay [s/veh]	28.91											
Intersection LOS	C											
Intersection V/C	0.329											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	602.47	732.09	506.56	4598.80
d_p, Pedestrian Delay [s]	19.55	19.55	19.55	19.55
l_p,int, Pedestrian LOS Score for Intersection	2.034	2.162	2.259	2.295
Crosswalk LOS	B	B	B	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	803	796	396	396
d_b, Bicycle Delay [s]	10.61	10.71	19.01	19.01
l_b,int, Bicycle LOS Score for Intersection	1.840	1.706	2.233	2.258
Bicycle LOS	A	A	B	B

Sequence

Ring 1	-	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 4: Petaluma Blvd S/D St

Control Type:	Signalized	Delay (sec / veh):	53.8
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.550

Intersection Setup

Name	D St			D St			Petaluma Blvd S			Petaluma Blvd S		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	1	1	0	0	1	0	0
Entry Pocket Length [ft]	80.00	100.00	100.00	100.00	100.00	40.00	175.00	100.00	100.00	150.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00			25.00			25.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	D St			D St			Petaluma Blvd S			Petaluma Blvd S		
Base Volume Input [veh/h]	95	395	16	156	391	80	93	217	57	95	232	225
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	23	0	0	21	0	0	105
Total Hourly Volume [veh/h]	95	395	16	156	391	57	93	217	36	95	232	120
Peak Hour Factor	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	24	101	4	40	100	15	24	55	9	24	59	31
Total Analysis Volume [veh/h]	97	403	16	159	399	58	95	221	37	97	237	122
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major stree	4			7			4			1		
v_di, Inbound Pedestrian Volume crossing major street [	1			4			7			4		
v_co, Outbound Pedestrian Volume crossing minor stree	6			1			8			4		
v_ci, Inbound Pedestrian Volume crossing minor street [	8			4			6			1		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	4			3			0			2		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	124
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	48.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protect	Permis	Permis	Protect	Permis	Permis	Protect	Permis	Permis	Protect	Permis	Permis
Signal Group	3	8	0	7	4	0	1	6	0	5	2	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lag	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	8	9	0	8	9	0	8	9	0	8	9	0
Maximum Green [s]	30	50	0	35	50	0	30	45	0	30	45	0
Amber [s]	3.0	3.6	0.0	3.0	3.6	0.0	3.0	3.6	0.0	3.0	3.6	0.0
All red [s]	1.0	1.1	0.0	1.0	1.3	0.0	1.0	1.0	0.0	1.0	1.1	0.0
Split [s]	22	33	0	23	33	0	27	51	0	17	42	0
Vehicle Extension [s]	2.0	4.0	0.0	2.0	4.0	0.0	2.0	2.5	0.0	2.0	2.5	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	19	0	0	18	0	0	15	0	0	19	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.7	0.0	2.0	2.9	0.0	2.0	2.6	0.0	2.0	2.7	0.0
Minimum Recall	No	Yes		No	Yes		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	124	124	124	124	124	124	124	124	124	124	124
L, Total Lost Time per Cycle [s]	4.00	4.70	4.00	4.90	4.90	4.00	4.60	4.60	4.00	4.70	4.70
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.70	2.00	2.90	2.90	2.00	2.60	2.60	2.00	2.70	2.70
g_i, Effective Green Time [s]	9	29	14	34	34	9	54	54	9	54	54
g / C, Green / Cycle	0.07	0.24	0.11	0.27	0.27	0.07	0.44	0.44	0.07	0.44	0.44
(v / s)_i Volume / Saturation Flow Rate	0.06	0.25	0.10	0.24	0.04	0.06	0.13	0.03	0.06	0.14	0.09
s, saturation flow rate [veh/h]	1603	1669	1603	1683	1368	1603	1683	1408	1603	1683	1391
c, Capacity [veh/h]	119	395	183	462	376	117	733	613	119	734	607
d1, Uniform Delay [s]	56.63	47.41	54.09	42.83	34.05	56.71	22.77	20.30	56.65	23.00	21.60
k, delay calibration	0.04	0.22	0.04	0.19	0.15	0.04	0.50	0.50	0.04	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.96	47.54	4.82	8.35	0.27	4.95	1.06	0.19	5.02	1.17	0.75
d3, Initial Queue Delay [s]	6.41	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.81	1.06	0.87	0.86	0.15	0.81	0.30	0.06	0.81	0.32	0.20
d, Delay for Lane Group [s/veh]	67.99	94.96	58.91	51.18	34.32	61.66	23.82	20.49	61.67	24.16	22.35
Lane Group LOS	E	F	E	D	C	E	C	C	E	C	C
Critical Lane Group	No	Yes	Yes	No	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	3.19	17.45	5.17	12.76	1.38	3.12	4.48	0.67	3.16	4.80	2.33
50th-Percentile Queue Length [ft/ln]	79.65	436.26	129.17	318.91	34.46	78.02	112.06	16.73	79.12	119.99	58.29
95th-Percentile Queue Length [veh/ln]	5.73	25.15	8.89	18.61	2.48	5.62	7.95	1.20	5.70	8.39	4.20
95th-Percentile Queue Length [ft/ln]	143.36	628.69	222.37	465.35	62.04	140.44	198.87	30.12	142.42	209.82	104.91

Movement, Approach, & Intersection Results

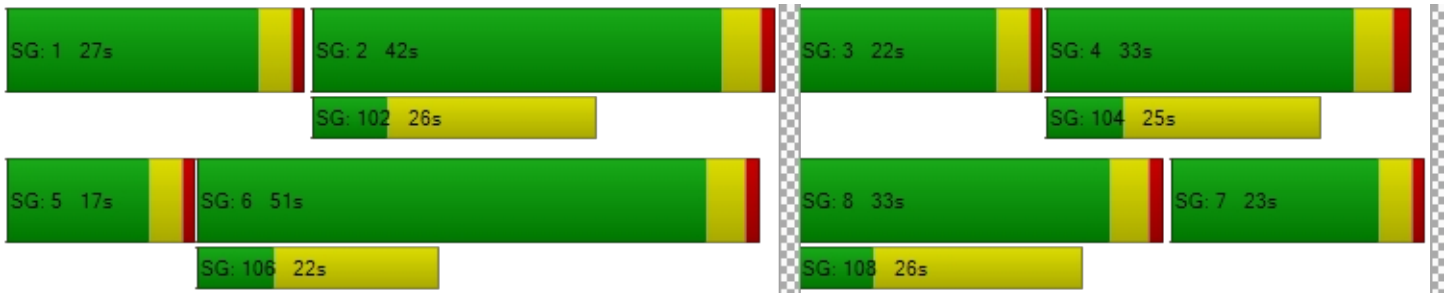
d_M, Delay for Movement [s/veh]	67.99	94.96	94.96	58.91	51.18	34.32	61.66	23.82	20.49	61.67	24.16	22.35
Movement LOS	E	F	F	E	D	C	E	C	C	E	C	C
d_A, Approach Delay [s/veh]	89.89			51.59			33.66			31.65		
Approach LOS	F			D			C			C		
d_I, Intersection Delay [s/veh]	53.83											
Intersection LOS	D											
Intersection V/C	0.550											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	908.36	2007.51	1061.25	2624.57
d_p, Pedestrian Delay [s]	51.54	51.54	51.54	51.54
l_p,int, Pedestrian LOS Score for Intersection	2.245	2.456	2.337	2.529
Crosswalk LOS	B	B	B	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	456	453	748	601
d_b, Bicycle Delay [s]	37.05	37.19	24.33	30.39
l_b,int, Bicycle LOS Score for Intersection	2.411	2.614	2.177	2.485
Bicycle LOS	B	B	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 1: Petaluma Blvd/Washington St

Control Type:	Signalized	Delay (sec / veh):	45.9
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.725

Intersection Setup

Name	Petaluma Blvd			Petaluma Blvd			Washington St			Washington St		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	0	1	0	0
Entry Pocket Length [ft]	75.00	100.00	95.00	120.00	100.00	110.00	105.00	100.00	100.00	310.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00			25.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Petaluma Blvd			Petaluma Blvd			Washington St			Washington St		
Base Volume Input [veh/h]	33	339	166	107	278	221	309	674	55	123	569	119
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	3	8	0	4	0	0	0	0	11	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	26	0	0	18	0	0	4	0	0	13
Total Hourly Volume [veh/h]	33	342	148	107	282	203	309	674	51	134	569	106
Peak Hour Factor	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	9	92	40	29	76	55	83	181	14	36	153	28
Total Analysis Volume [veh/h]	35	368	159	115	303	218	332	725	55	144	612	114
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major stree	9			14			6			12		
v_di, Inbound Pedestrian Volume crossing major street [	6			12			9			14		
v_co, Outbound Pedestrian Volume crossing minor stree	8			7			4			10		
v_ci, Inbound Pedestrian Volume crossing minor street [	10			4			7			8		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	3			4			3			3		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	125
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	75.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protect	Permis	Overla	Protect	Permis	Overla	Protect	Permis	Permis	Protect	Permis	Permis
Signal Group	5	2	3	1	6	7	7	4	0	3	8	0
Auxiliary Signal Groups			2,3			6,7						
Lead / Lag	Lag	-	-	Lead	-	-	Lag	-	-	Lead	-	-
Minimum Green [s]	4	8	4	4	8	4	4	10	0	4	11	0
Maximum Green [s]	30	30	30	30	30	30	30	30	0	30	30	0
Amber [s]	3.0	3.6	3.0	3.0	3.6	3.0	3.0	3.6	0.0	3.0	3.6	0.0
All red [s]	1.0	1.0	1.0	1.0	1.1	1.0	1.0	1.2	0.0	1.0	1.6	0.0
Split [s]	32	31	14	38	37	15	15	41	0	14	40	0
Vehicle Extension [s]	2.0	4.0	2.0	2.0	4.0	2.0	2.0	4.0	0.0	2.0	4.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	17	0	0	19	0	0	21	0	0	27	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.6	2.0	2.0	2.7	2.0	2.0	2.8	0.0	2.0	3.2	0.0
Minimum Recall	No	Yes	No	No	Yes	No	No	No		No	No	
Maximum Recall	No	No	No	No	No	No	No	No		No	No	
Pedestrian Recall	No	No	No	No	No	No	No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	C
C, Cycle Length [s]	125	125	125	125	125	125	125	125	125	125	125	125
L, Total Lost Time per Cycle [s]	4.00	4.60	4.00	4.00	4.70	4.70	4.00	4.80	4.80	4.00	5.20	5.20
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.60	0.00	2.00	2.70	0.00	2.00	2.80	2.80	2.00	3.20	3.20
g_i, Effective Green Time [s]	3	35	50	11	42	75	28	52	52	10	33	33
g / C, Green / Cycle	0.03	0.28	0.40	0.09	0.34	0.60	0.23	0.41	0.41	0.08	0.26	0.26
(v / s)_i Volume / Saturation Flow Rate	0.02	0.22	0.11	0.07	0.18	0.15	0.21	0.23	0.24	0.09	0.22	0.23
s, saturation flow rate [veh/h]	1603	1683	1401	1603	1683	1414	1603	1683	1630	1603	1683	1549
c, Capacity [veh/h]	44	473	557	138	570	844	362	695	674	129	446	410
d1, Uniform Delay [s]	60.46	41.39	25.48	56.23	33.33	12.00	47.27	28.13	28.20	57.49	43.42	43.77
k, delay calibration	0.04	0.50	0.50	0.04	0.50	0.50	0.19	0.33	0.33	0.04	0.15	0.15
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	11.36	11.96	1.28	4.84	3.52	0.74	14.92	2.22	2.36	60.85	5.91	7.47
d3, Initial Queue Delay [s]	0.00	2.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.80	0.78	0.29	0.83	0.53	0.26	0.92	0.57	0.57	1.11	0.84	0.86
d, Delay for Lane Group [s/veh]	71.82	55.54	26.76	61.07	36.85	12.74	62.19	30.35	30.55	118.34	49.33	51.24
Lane Group LOS	E	E	C	E	D	B	E	C	C	F	D	D
Critical Lane Group	No	Yes	No	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	1.25	12.08	3.46	3.79	8.06	3.09	11.64	9.56	9.37	6.30	11.69	11.31
50th-Percentile Queue Length [ft/ln]	31.32	302.06	86.60	94.72	201.45	77.23	291.04	238.99	234.30	157.44	292.30	282.80
95th-Percentile Queue Length [veh/ln]	2.26	17.78	6.24	6.82	12.71	5.56	17.24	14.63	14.39	10.79	17.30	16.83
95th-Percentile Queue Length [ft/ln]	56.38	444.58	155.88	170.50	317.84	139.01	430.93	365.76	359.82	269.83	432.50	420.70

Movement, Approach, & Intersection Results

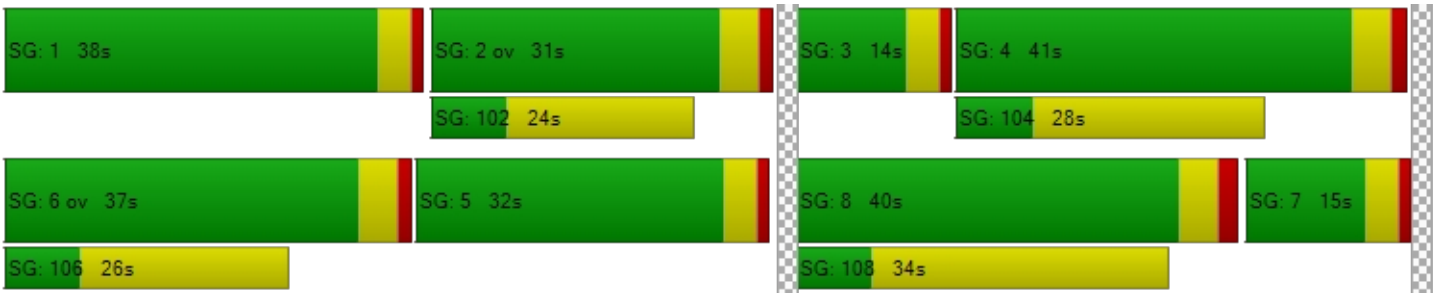
d_M, Delay for Movement [s/veh]	71.82	55.54	26.76	61.07	36.85	12.74	62.19	30.45	30.55	118.34	50.07	51.24
Movement LOS	E	E	C	E	D	B	E	C	C	F	D	D
d_A, Approach Delay [s/veh]	48.41			32.97			39.93			61.53		
Approach LOS	D			C			D			E		
d_I, Intersection Delay [s/veh]	45.94											
Intersection LOS	D											
Intersection V/C	0.725											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	641.88	326.21	631.37	509.47
d_p, Pedestrian Delay [s]	52.00	52.00	52.00	52.00
l_p,int, Pedestrian LOS Score for Intersection	2.406	2.473	2.646	2.644
Crosswalk LOS	B	B	B	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	422	517	579	557
d_b, Bicycle Delay [s]	38.96	34.45	31.60	32.60
l_b,int, Bicycle LOS Score for Intersection	2.530	2.639	2.480	2.288
Bicycle LOS	B	B	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 2: Petaluma Blvd/Western Ave

Control Type:	Signalized	Delay (sec / veh):	34.3
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.448

Intersection Setup

Name	Petaluma Blvd			Petaluma Blvd			Western Ave			Water St		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	0	0	0	1	0	0	0
Entry Pocket Length [ft]	65.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	85.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00			25.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Petaluma Blvd			Petaluma Blvd			Western Ave			Water St		
Base Volume Input [veh/h]	46	410	0	0	362	77	84	0	119	1	2	3
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	15	0	11	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	5	0	0	62	0	0	3
Total Hourly Volume [veh/h]	46	410	0	0	377	72	95	0	57	1	2	0
Peak Hour Factor	0.9200	0.9200	1.0000	1.0000	0.9200	0.9200	0.9200	1.0000	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	13	111	0	0	102	20	26	0	15	0	1	0
Total Analysis Volume [veh/h]	50	446	0	0	410	78	103	0	62	1	2	0
Presence of On-Street Parking	No		Yes	No		Yes	No		Yes	No		No
On-Street Parking Maneuver Rate [/h]	0	0	5	0	0	5	0	0	5	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major stree	7			28			29			33		
v_di, Inbound Pedestrian Volume crossing major street	33			29			28			7		
v_co, Outbound Pedestrian Volume crossing minor stree	35			27			39			13		
v_ci, Inbound Pedestrian Volume crossing minor street	39			13			35			27		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	2			2			3			3		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	118
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	12.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protect	Permis	Permis	Permis	Permis	Permis	Permis	Permis	Permis	Permis	Permis	Permis
Signal Group	3	8	0	0	4	0	2	0	0	0	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	-	-	-	Lag	-	-	-	-	-
Minimum Green [s]	8	8	0	0	8	0	8	0	0	0	8	0
Maximum Green [s]	20	73	0	0	73	0	39	0	0	0	39	0
Amber [s]	3.0	3.0	0.0	0.0	3.0	0.0	3.0	0.0	0.0	0.0	3.2	0.0
All red [s]	1.0	1.0	0.0	0.0	1.0	0.0	1.0	0.0	0.0	0.0	1.3	0.0
Split [s]	20	77	0	0	57	0	41	0	0	0	41	0
Vehicle Extension [s]	2.0	4.0	0.0	0.0	4.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0
Walk [s]	0	8	0	0	13	0	8	0	0	0	8	0
Pedestrian Clearance [s]	0	10	0	0	5	0	10	0	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No		No				No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	0.0	2.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	0.0	2.0	0.0	2.0	0.0	0.0	0.0	2.5	0.0
Minimum Recall	No	Yes			Yes		No				No	
Maximum Recall	No	No			No		No				No	
Pedestrian Recall	No	No			No		No				No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	R	C
C, Cycle Length [s]	118	118	118	118	118	118
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	2.00	0.00	2.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	0.00	2.00	2.50
g_i, Effective Green Time [s]	45	94	45	16	16	16
g / C, Green / Cycle	0.38	0.80	0.38	0.14	0.14	0.13
(v / s)_i Volume / Saturation Flow Rate	0.03	0.30	0.35	0.08	0.07	0.00
s, saturation flow rate [veh/h]	1603	1473	1405	1317	887	1381
c, Capacity [veh/h]	609	1172	536	194	121	223
d1, Uniform Delay [s]	23.43	3.54	34.58	47.97	46.31	44.53
k, delay calibration	0.50	0.50	0.50	0.04	0.04	0.04
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.26	0.94	21.94	0.84	1.24	0.01
d3, Initial Queue Delay [s]	0.00	0.30	0.97	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.08	0.38	0.91	0.53	0.51	0.01
d, Delay for Lane Group [s/veh]	23.69	4.78	57.49	48.81	47.55	44.54
Lane Group LOS	C	A	E	D	D	D
Critical Lane Group	Yes	No	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.96	2.89	16.45	2.87	1.72	0.08
50th-Percentile Queue Length [ft/ln]	23.89	72.17	411.17	71.76	42.90	1.95
95th-Percentile Queue Length [veh/ln]	1.72	5.20	23.10	5.17	3.09	0.14
95th-Percentile Queue Length [ft/ln]	43.01	129.91	577.45	129.17	77.21	3.51

Movement, Approach, & Intersection Results

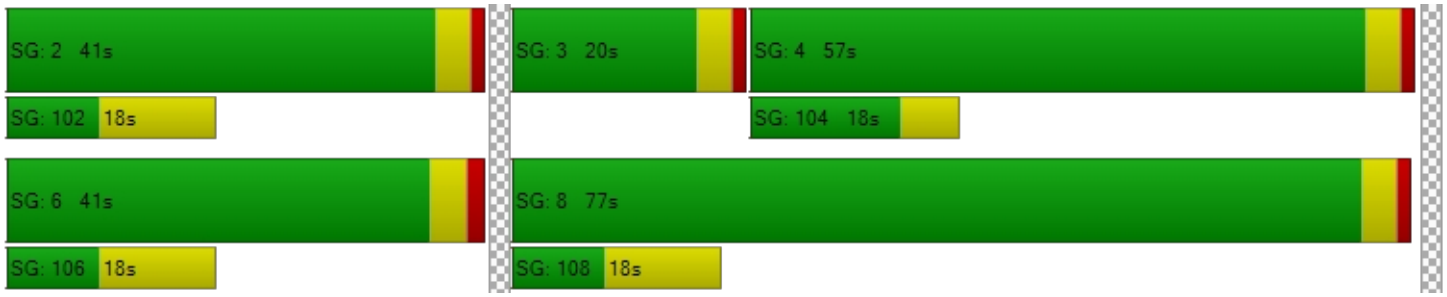
d_M, Delay for Movement [s/veh]	23.69	4.78	0.00	0.00	57.49	57.49	48.81	0.00	47.55	44.54	44.54	44.54
Movement LOS	C	A			E	E	D		D	D	D	D
d_A, Approach Delay [s/veh]	6.69			57.49			48.34			44.54		
Approach LOS	A			E			D			D		
d_I, Intersection Delay [s/veh]	34.27											
Intersection LOS	C											
Intersection V/C	0.448											

Other Modes

g_Walk,mi, Effective Walk Time [s]	12.0	12.0	17.0	12.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	162.20	191.47	208.20	197.08
d_p, Pedestrian Delay [s]	47.64	47.64	43.25	47.64
I_p,int, Pedestrian LOS Score for Intersection	2.233	2.302	2.135	1.445
Crosswalk LOS	B	B	B	A
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1237	898	627	618
d_b, Bicycle Delay [s]	8.61	17.94	27.87	28.21
I_b,int, Bicycle LOS Score for Intersection	2.378	2.373	1.560	1.570
Bicycle LOS	B	B	A	A

Sequence

Ring 1	-	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 3: Petaluma Blvd/B St

Control Type:	Signalized	Delay (sec / veh):	30.9
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.367

Intersection Setup

Name	B St			B St			Petaluma Blvd			Petaluma Blvd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	1	0	1	1	0	0	1	0	1
Entry Pocket Length [ft]	100.00	100.00	65.00	30.00	100.00	30.00	85.00	100.00	100.00	70.00	100.00	40.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00			25.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	B St			B St			Petaluma Blvd			Petaluma Blvd		
Base Volume Input [veh/h]	62	30	71	12	31	42	36	305	47	24	367	11
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	31	0	0	0	0	15	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	30	0	0	14	0	0	6	0	0	0
Total Hourly Volume [veh/h]	62	30	72	12	31	28	36	320	41	24	367	11
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	16	8	19	3	8	7	9	84	11	6	97	3
Total Analysis Volume [veh/h]	65	32	76	13	33	29	38	337	43	25	386	12
Presence of On-Street Parking	No		Yes	No		No	No		Yes	No		No
On-Street Parking Maneuver Rate [/h]	0	0	5	0	0	0	0	0	5	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major stree	29			11			5			38		
v_di, Inbound Pedestrian Volume crossing major street	5			38			29			11		
v_co, Outbound Pedestrian Volume crossing minor stree	5			12			35			2		
v_ci, Inbound Pedestrian Volume crossing minor street	2			35			12			5		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	4			2			2			2		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	59
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	54.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permis	Permis	Permis	Permis	Permis	Permis	Protect	Permis	Permis	Protect	Permis	Permis
Signal Group	0	2	0	0	6	0	7	4	0	3	8	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	8	0	0	8	0	8	9	0	6	9	0
Maximum Green [s]	0	35	0	0	35	0	10	50	0	20	50	0
Amber [s]	0.0	3.0	0.0	0.0	3.2	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.3	0.0	0.0	1.3	0.0	1.0	1.3	0.0	1.0	1.3	0.0
Split [s]	0	28	0	0	28	0	15	16	0	15	16	0
Vehicle Extension [s]	0.0	2.5	0.0	0.0	2.5	0.0	2.0	4.0	0.0	2.0	4.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	12	0	0	11	0	0	9	0	0	9	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.3	0.0	0.0	2.5	0.0	2.0	2.3	0.0	2.0	2.3	0.0
Minimum Recall		No			No		No	Yes		No	Yes	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	R	L	C	L	C	R
C, Cycle Length [s]	59	59	59	59	59	59	59	59	59	59
L, Total Lost Time per Cycle [s]	4.30	4.30	4.50	4.50	4.50	4.00	4.30	4.00	4.30	4.30
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	2.30	2.50	2.50	2.50	2.00	2.30	2.00	2.30	2.30
g_i, Effective Green Time [s]	10	10	10	10	10	18	18	18	18	18
g / C, Green / Cycle	0.18	0.18	0.17	0.17	0.17	0.31	0.30	0.31	0.30	0.30
(v / s)_i Volume / Saturation Flow Rate	0.05	0.09	0.01	0.02	0.02	0.02	0.27	0.02	0.23	0.01
s, saturation flow rate [veh/h]	1291	1263	1143	1683	1204	1603	1428	1603	1683	1286
c, Capacity [veh/h]	236	220	193	288	206	494	434	494	512	392
d1, Uniform Delay [s]	23.81	22.03	26.27	20.71	20.73	14.50	19.50	14.37	18.55	14.42
k, delay calibration	0.08	0.08	0.08	0.08	0.08	0.50	0.50	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.47	1.25	0.11	0.13	0.23	0.30	21.07	0.19	9.85	0.15
d3, Initial Queue Delay [s]	0.00	4.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.28	0.49	0.07	0.11	0.14	0.08	0.87	0.05	0.75	0.03
d, Delay for Lane Group [s/veh]	24.27	27.37	26.38	20.84	20.96	14.81	40.57	14.56	28.40	14.56
Lane Group LOS	C	C	C	C	C	B	D	B	C	B
Critical Lane Group	No	Yes	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	0.77	1.36	0.17	0.38	0.34	0.38	7.08	0.25	5.79	0.12
50th-Percentile Queue Length [ft/ln]	19.17	34.00	4.32	9.45	8.41	9.51	177.11	6.19	144.86	3.05
95th-Percentile Queue Length [veh/ln]	1.38	2.45	0.31	0.68	0.61	0.68	11.45	0.45	9.74	0.22
95th-Percentile Queue Length [ft/ln]	34.50	61.20	7.78	17.01	15.14	17.11	286.23	11.14	243.55	5.49

Movement, Approach, & Intersection Results

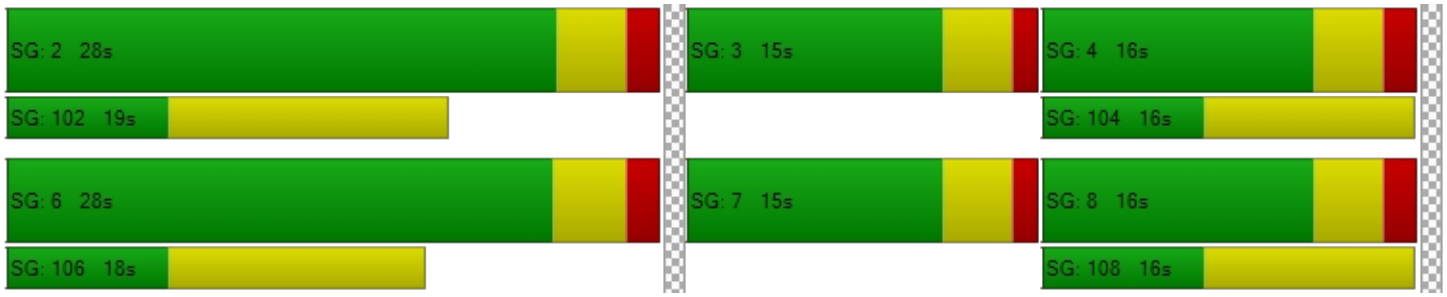
d_M, Delay for Movement [s/veh]	24.27	27.37	27.37	26.38	20.84	20.96	14.81	40.57	40.57	14.56	28.40	14.56
Movement LOS	C	C	C	C	C	C	B	D	D	B	C	B
d_A, Approach Delay [s/veh]	26.21			21.85			38.23			27.19		
Approach LOS	C			C			D			C		
d_I, Intersection Delay [s/veh]	30.90											
Intersection LOS	C											
Intersection V/C	0.367											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	602.47	732.09	506.56	4404.78
d_p, Pedestrian Delay [s]	19.55	19.55	19.55	19.55
l_p,int, Pedestrian LOS Score for Intersection	2.043	2.162	2.263	2.305
Crosswalk LOS	B	B	B	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	803	796	396	396
d_b, Bicycle Delay [s]	10.61	10.71	19.01	19.01
l_b,int, Bicycle LOS Score for Intersection	1.895	1.706	2.259	2.258
Bicycle LOS	A	A	B	B

Sequence

Ring 1	-	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 4: Petaluma Blvd S/D St

Control Type:	Signalized	Delay (sec / veh):	53.4
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.561

Intersection Setup

Name	D St			D St			Petaluma Blvd S			Petaluma Blvd S		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	1	1	0	0	1	0	0
Entry Pocket Length [ft]	80.00	100.00	100.00	100.00	100.00	40.00	175.00	100.00	100.00	150.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00			25.00			25.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	D St			D St			Petaluma Blvd S			Petaluma Blvd S		
Base Volume Input [veh/h]	95	395	16	156	391	80	93	217	57	95	232	225
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	12	0	0	18	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	23	0	0	21	0	0	105
Total Hourly Volume [veh/h]	95	395	16	156	391	57	93	229	36	95	250	120
Peak Hour Factor	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	24	101	4	40	100	15	24	58	9	24	64	31
Total Analysis Volume [veh/h]	97	403	16	159	399	58	95	234	37	97	255	122
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major stree	4			7			4			1		
v_di, Inbound Pedestrian Volume crossing major street [	1			4			7			4		
v_co, Outbound Pedestrian Volume crossing minor stree	6			1			8			4		
v_ci, Inbound Pedestrian Volume crossing minor street [	8			4			6			1		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	4			3			0			2		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	124
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	48.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protect	Permis	Permis	Protect	Permis	Permis	Protect	Permis	Permis	Protect	Permis	Permis
Signal Group	3	8	0	7	4	0	1	6	0	5	2	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lag	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	8	9	0	8	9	0	8	9	0	8	9	0
Maximum Green [s]	30	50	0	35	50	0	30	45	0	30	45	0
Amber [s]	3.0	3.6	0.0	3.0	3.6	0.0	3.0	3.6	0.0	3.0	3.6	0.0
All red [s]	1.0	1.1	0.0	1.0	1.3	0.0	1.0	1.0	0.0	1.0	1.1	0.0
Split [s]	22	33	0	23	33	0	27	51	0	17	42	0
Vehicle Extension [s]	2.0	4.0	0.0	2.0	4.0	0.0	2.0	2.5	0.0	2.0	2.5	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	19	0	0	18	0	0	15	0	0	19	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.7	0.0	2.0	2.9	0.0	2.0	2.6	0.0	2.0	2.7	0.0
Minimum Recall	No	Yes		No	Yes		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	124	124	124	124	124	124	124	124	124	124	124
L, Total Lost Time per Cycle [s]	4.00	4.70	4.00	4.90	4.90	4.00	4.60	4.60	4.00	4.70	4.70
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.70	2.00	2.90	2.90	2.00	2.60	2.60	2.00	2.70	2.70
g_i, Effective Green Time [s]	9	29	14	34	34	9	54	54	9	54	54
g / C, Green / Cycle	0.07	0.24	0.11	0.27	0.27	0.07	0.44	0.44	0.07	0.44	0.44
(v / s)_i Volume / Saturation Flow Rate	0.06	0.25	0.10	0.24	0.04	0.06	0.14	0.03	0.06	0.15	0.09
s, saturation flow rate [veh/h]	1603	1669	1603	1683	1368	1603	1683	1408	1603	1683	1391
c, Capacity [veh/h]	119	395	183	462	376	117	733	613	119	734	607
d1, Uniform Delay [s]	56.63	47.41	54.09	42.83	34.05	56.71	22.97	20.30	56.65	23.29	21.60
k, delay calibration	0.04	0.22	0.04	0.19	0.15	0.04	0.50	0.50	0.04	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.96	47.54	4.82	8.35	0.27	4.95	1.15	0.19	5.02	1.30	0.75
d3, Initial Queue Delay [s]	6.41	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.81	1.06	0.87	0.86	0.15	0.81	0.32	0.06	0.81	0.35	0.20
d, Delay for Lane Group [s/veh]	67.99	94.96	58.91	51.18	34.32	61.66	24.12	20.49	61.67	24.59	22.35
Lane Group LOS	E	F	E	D	C	E	C	C	E	C	C
Critical Lane Group	No	Yes	Yes	No	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	3.19	17.45	5.17	12.76	1.38	3.12	4.79	0.67	3.16	5.24	2.33
50th-Percentile Queue Length [ft/ln]	79.65	436.26	129.17	318.91	34.46	78.02	119.82	16.73	79.12	130.89	58.29
95th-Percentile Queue Length [veh/ln]	5.73	25.15	8.89	18.61	2.48	5.62	8.38	1.20	5.70	8.99	4.20
95th-Percentile Queue Length [ft/ln]	143.36	628.69	222.37	465.35	62.04	140.44	209.57	30.12	142.42	224.70	104.91

Movement, Approach, & Intersection Results

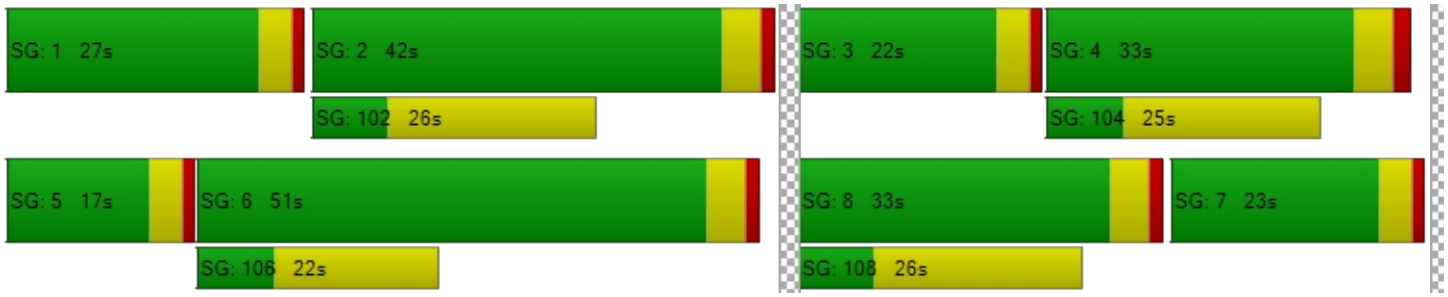
d_M, Delay for Movement [s/veh]	67.99	94.96	94.96	58.91	51.18	34.32	61.66	24.12	20.49	61.67	24.59	22.35
Movement LOS	E	F	F	E	D	C	E	C	C	E	C	C
d_A, Approach Delay [s/veh]	89.89			51.59			33.50			31.60		
Approach LOS	F			D			C			C		
d_I, Intersection Delay [s/veh]	53.45											
Intersection LOS	D											
Intersection V/C	0.561											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	908.36	2007.51	1061.25	2624.57
d_p, Pedestrian Delay [s]	51.54	51.54	51.54	51.54
l_p,int, Pedestrian LOS Score for Intersection	2.245	2.456	2.343	2.537
Crosswalk LOS	B	B	B	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	456	453	748	601
d_b, Bicycle Delay [s]	37.05	37.19	24.33	30.39
l_b,int, Bicycle LOS Score for Intersection	2.411	2.614	2.198	2.515
Bicycle LOS	B	B	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 1: Petaluma Blvd/Washington St

Control Type:	Signalized	Delay (sec / veh):	48.4
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.755

Intersection Setup

Name	Petaluma Blvd			Petaluma Blvd			Washington St			Washington St		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	0
Pocket Length [ft]	75.00	100.00	95.00	120.00	100.00	110.00	105.00	100.00	100.00	310.00	100.00	100.00
Speed [mph]	25.00			25.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Petaluma Blvd			Petaluma Blvd			Washington St			Washington St		
Base Volume Input [veh/h]	36	369	181	117	303	264	356	734	60	134	619	154
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	26	0	0	18	0	0	4	0	0	13
Total Hourly Volume [veh/h]	36	369	155	117	303	246	356	734	56	134	619	141
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	9	92	39	29	76	62	89	184	14	34	155	35
Total Analysis Volume [veh/h]	36	369	155	117	303	246	356	734	56	134	619	141
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	9			14			6			12		
v_di, Inbound Pedestrian Volume crossing m	6			12			9			14		
v_co, Outbound Pedestrian Volume crossing	8			7			4			10		
v_ci, Inbound Pedestrian Volume crossing mi	10			4			7			8		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	3			4			3			3		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	140
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	75.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Overlap	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	5	2	3	1	6	7	7	4	0	3	8	0
Auxiliary Signal Groups			2,3			6,7						
Lead / Lag	Lag	-	-	Lead	-	-	Lag	-	-	Lead	-	-
Minimum Green [s]	4	8	4	4	8	4	4	10	0	4	11	0
Maximum Green [s]	30	30	30	30	30	30	30	30	0	30	30	0
Amber [s]	3.0	3.6	3.0	3.0	3.6	3.0	3.0	3.6	0.0	3.0	3.6	0.0
All red [s]	1.0	1.0	1.0	1.0	1.1	1.0	1.0	1.2	0.0	1.0	1.6	0.0
Split [s]	15	30	17	16	31	49	49	77	0	17	45	0
Vehicle Extension [s]	2.0	4.0	2.0	2.0	4.0	2.0	2.0	4.0	0.0	2.0	4.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	17	0	0	19	0	0	21	0	0	27	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.6	2.0	2.0	2.7	2.0	2.0	2.8	0.0	2.0	3.2	0.0
Minimum Recall	No	Yes	No	No	Yes	No	No	No		No	No	
Maximum Recall	No	No	No	No	No	No	No	No		No	No	
Pedestrian Recall	No	No	No	No	No	No	No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	C
C, Cycle Length [s]	140	140	140	140	140	140	140	140	140	140	140	140
L, Total Lost Time per Cycle [s]	4.00	4.60	4.00	4.00	4.70	4.70	4.00	4.80	4.80	4.00	5.20	5.20
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.60	0.00	2.00	2.70	0.00	2.00	2.80	2.80	2.00	3.20	3.20
g_i, Effective Green Time [s]	4	39	57	12	47	85	34	58	58	13	37	37
g / C, Green / Cycle	0.03	0.28	0.41	0.09	0.34	0.61	0.24	0.42	0.42	0.09	0.27	0.27
(v / s)_i Volume / Saturation Flow Rate	0.02	0.22	0.11	0.07	0.18	0.17	0.22	0.24	0.24	0.08	0.23	0.24
s, saturation flow rate [veh/h]	1603	1683	1402	1603	1683	1415	1603	1683	1630	1603	1683	1526
c, Capacity [veh/h]	45	471	568	137	566	858	386	703	681	149	449	407
d1, Uniform Delay [s]	67.66	46.53	27.74	63.15	37.58	13.13	51.86	31.15	31.23	62.82	49.06	49.56
k, delay calibration	0.04	0.50	0.50	0.04	0.50	0.50	0.09	0.15	0.15	0.04	0.26	0.27
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	11.67	12.33	1.18	5.66	3.60	0.84	7.77	1.04	1.09	7.35	11.88	16.34
d3, Initial Queue Delay [s]	0.00	2.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.80	0.78	0.27	0.85	0.54	0.29	0.92	0.57	0.57	0.90	0.87	0.90
d, Delay for Lane Group [s/veh]	79.33	61.05	28.92	68.81	41.18	13.97	59.63	32.19	32.31	70.18	60.94	65.90
Lane Group LOS	E	E	C	E	D	B	E	C	C	E	E	E
Critical Lane Group	No	Yes	No	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	1.44	13.60	3.74	4.37	9.12	3.96	13.13	10.68	10.46	5.07	14.71	14.37
50th-Percentile Queue Length [ft/ln]	35.99	339.95	93.62	109.22	227.97	99.10	328.18	267.00	261.43	126.84	367.65	359.15
95th-Percentile Queue Length [veh/ln]	2.59	19.65	6.74	7.80	14.07	7.14	19.07	16.04	15.76	8.77	21.00	20.58
95th-Percentile Queue Length [ft/ln]	64.78	491.13	168.52	194.92	351.78	178.38	476.73	400.99	394.02	219.20	524.88	514.55

Movement, Approach, & Intersection Results

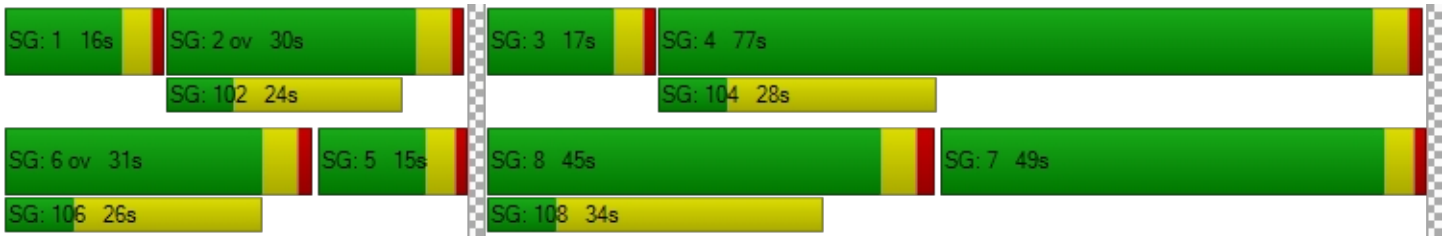
d_M, Delay for Movement [s/veh]	79.33	61.05	28.92	68.81	41.18	13.97	59.63	32.24	32.31	70.18	62.76	65.90
Movement LOS	E	E	C	E	D	B	E	C	C	E	E	E
d_A, Approach Delay [s/veh]	53.33			35.98			40.75			64.37		
Approach LOS	D			D			D			E		
d_I, Intersection Delay [s/veh]	48.40											
Intersection LOS	D											
Intersection V/C	0.755											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	561.40	255.76	467.38	442.88
d_p, Pedestrian Delay [s]	59.43	59.43	59.43	59.43
l_p,int, Pedestrian LOS Score for Intersection	2.409	2.495	2.663	2.655
Crosswalk LOS	B	B	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	363	376	1031	569
d_b, Bicycle Delay [s]	46.97	46.26	16.44	35.91
l_b,int, Bicycle LOS Score for Intersection	2.527	2.688	2.508	2.308
Bicycle LOS	B	B	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 2: Petaluma Blvd/Western Ave

Control Type:	Signalized	Delay (sec / veh):	36.2
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.453

Intersection Setup

Name	Petaluma Blvd			Petaluma Blvd			Western Ave			Water St		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	0	0	0	0	0	1	0	0	0
Pocket Length [ft]	65.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	85.00	100.00	100.00	100.00
Speed [mph]	25.00			25.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Petaluma Blvd			Petaluma Blvd			Western Ave			Water St		
Base Volume Input [veh/h]	50	446	0	0	394	83	91	0	130	1	2	3
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	5	0	0	62	0	0	3
Total Hourly Volume [veh/h]	50	446	0	0	394	78	91	0	68	1	2	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	13	112	0	0	99	20	23	0	17	0	1	0
Total Analysis Volume [veh/h]	50	446	0	0	394	78	91	0	68	1	2	0
Presence of On-Street Parking	No		Yes	No		Yes	No		Yes	No		No
On-Street Parking Maneuver Rate [/h]	0	0	5	0	0	5	0	0	5	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	7			28			29			33		
v_di, Inbound Pedestrian Volume crossing m	33			29			28			7		
v_co, Outbound Pedestrian Volume crossing	35			27			39			13		
v_ci, Inbound Pedestrian Volume crossing mi	39			13			35			27		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	2			2			3			3		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	160
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	12.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	3	8	0	0	4	0	2	0	0	0	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	-	-	-	Lag	-	-	-	-	-
Minimum Green [s]	8	8	0	0	8	0	8	0	0	0	8	0
Maximum Green [s]	20	73	0	0	73	0	39	0	0	0	39	0
Amber [s]	3.0	3.0	0.0	0.0	3.0	0.0	3.0	0.0	0.0	0.0	3.2	0.0
All red [s]	1.0	1.0	0.0	0.0	1.0	0.0	1.0	0.0	0.0	0.0	1.3	0.0
Split [s]	15	128	0	0	113	0	32	0	0	0	32	0
Vehicle Extension [s]	2.0	4.0	0.0	0.0	4.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0
Walk [s]	0	8	0	0	13	0	8	0	0	0	8	0
Pedestrian Clearance [s]	0	10	0	0	5	0	10	0	0	0	10	0
Rest In Walk		No			No		No				No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	0.0	2.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	0.0	2.0	0.0	2.0	0.0	0.0	0.0	2.5	0.0
Minimum Recall	No	Yes			Yes		No				No	
Maximum Recall	No	No			No		No				No	
Pedestrian Recall	No	No			No		No				No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	R	C
C, Cycle Length [s]	160	160	160	160	160	160
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	2.00	0.00	2.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	0.00	2.00	2.50
g_i, Effective Green Time [s]	65	135	65	17	17	17
g / C, Green / Cycle	0.41	0.84	0.41	0.11	0.11	0.10
(v / s)_i Volume / Saturation Flow Rate	0.03	0.30	0.34	0.07	0.09	0.00
s, saturation flow rate [veh/h]	1603	1473	1405	1314	796	1349
c, Capacity [veh/h]	654	1241	575	150	86	171
d1, Uniform Delay [s]	28.92	2.84	42.01	68.69	67.37	64.27
k, delay calibration	0.50	0.50	0.50	0.04	0.04	0.04
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.23	0.81	12.42	1.46	6.15	0.02
d3, Initial Queue Delay [s]	0.00	0.30	0.97	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.08	0.36	0.82	0.60	0.80	0.02
d, Delay for Lane Group [s/veh]	29.15	3.96	55.40	70.15	73.52	64.28
Lane Group LOS	C	A	E	E	E	E
Critical Lane Group	Yes	No	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	1.26	3.05	18.76	3.63	2.81	0.11
50th-Percentile Queue Length [ft/ln]	31.51	76.23	468.91	90.80	70.19	2.81
95th-Percentile Queue Length [veh/ln]	2.27	5.49	25.86	6.54	5.05	0.20
95th-Percentile Queue Length [ft/ln]	56.72	137.21	646.48	163.43	126.34	5.06

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	29.15	3.96	0.00	0.00	55.40	55.40	70.15	0.00	73.52	64.28	64.28	64.28
Movement LOS	C	A			E	E	E		E	E	E	E
d_A, Approach Delay [s/veh]	6.50			55.40			71.59			64.28		
Approach LOS	A			E			E			E		
d_I, Intersection Delay [s/veh]	36.24											
Intersection LOS	D											
Intersection V/C	0.453											

Other Modes

g_Walk,mi, Effective Walk Time [s]	12.0	12.0	17.0	12.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	108.64	131.34	143.08	144.54
d_p, Pedestrian Delay [s]	68.45	68.45	63.90	68.45
l_p,int, Pedestrian LOS Score for Intersection	2.245	2.289	2.149	1.459
Crosswalk LOS	B	B	B	A
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1550	1363	0	344
d_b, Bicycle Delay [s]	4.05	8.14	80.00	54.95
l_b,int, Bicycle LOS Score for Intersection	2.378	2.347	4.132	1.570
Bicycle LOS	B	B	D	A

Sequence

Ring 1	-	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 3: Petaluma Blvd/B St

Control Type:	Signalized	Delay (sec / veh):	36.8
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.349

Intersection Setup

Name	B St			B St			Petaluma Blvd			Petaluma Blvd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	1	1	0	1	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	65.00	30.00	100.00	30.00	85.00	100.00	100.00	70.00	100.00	40.00
Speed [mph]	25.00			25.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	B St			B St			Petaluma Blvd			Petaluma Blvd		
Base Volume Input [veh/h]	68	32	78	13	33	46	39	332	51	27	400	12
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	30	0	0	14	0	0	6	0	0	0
Total Hourly Volume [veh/h]	68	32	48	13	33	32	39	332	45	27	400	12
Peak Hour Factor	0.9500	0.9500	0.9500	1.0000	0.9500	1.0000	1.0000	1.0000	0.9500	0.9500	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	18	8	13	3	9	8	10	83	12	7	100	3
Total Analysis Volume [veh/h]	72	34	51	13	35	32	39	332	47	28	400	12
Presence of On-Street Parking	No		Yes	No		No	No		Yes	No		No
On-Street Parking Maneuver Rate [/h]	0	0	5	0	0	0	0	0	5	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	29			11			5			38		
v_di, Inbound Pedestrian Volume crossing m	5			38			29			11		
v_co, Outbound Pedestrian Volume crossing	5			12			35			2		
v_ci, Inbound Pedestrian Volume crossing mi	2			35			12			5		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	4			2			2			2		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	110
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	54.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	2	0	0	6	0	7	4	0	3	8	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	8	0	0	8	0	8	9	0	6	9	0
Maximum Green [s]	0	35	0	0	35	0	10	50	0	20	50	0
Amber [s]	0.0	3.0	0.0	0.0	3.2	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.3	0.0	0.0	1.3	0.0	1.0	1.3	0.0	1.0	1.3	0.0
Split [s]	0	37	0	0	37	0	12	60	0	13	61	0
Vehicle Extension [s]	0.0	2.5	0.0	0.0	2.5	0.0	2.0	4.0	0.0	2.0	4.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	12	0	0	11	0	0	9	0	0	9	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.3	0.0	0.0	2.5	0.0	2.0	2.3	0.0	2.0	2.3	0.0
Minimum Recall		No			No		No	Yes		No	Yes	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	R	L	C	L	C	R
C, Cycle Length [s]	110	110	110	110	110	110	110	110	110	110
L, Total Lost Time per Cycle [s]	4.30	4.30	4.50	4.50	4.50	4.00	4.30	4.00	4.30	4.30
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	2.30	2.50	2.50	2.50	2.00	2.30	2.00	2.30	2.30
g_i, Effective Green Time [s]	15	15	15	15	15	41	41	41	41	41
g / C, Green / Cycle	0.13	0.13	0.13	0.13	0.13	0.38	0.37	0.38	0.37	0.37
(v / s)_i Volume / Saturation Flow Rate	0.06	0.07	0.01	0.02	0.03	0.02	0.27	0.02	0.24	0.01
s, saturation flow rate [veh/h]	1290	1283	1162	1683	1147	1603	1427	1603	1683	1308
c, Capacity [veh/h]	163	172	126	223	152	604	534	604	630	490
d1, Uniform Delay [s]	47.64	44.14	50.00	42.27	42.34	21.90	29.32	21.74	28.24	21.71
k, delay calibration	0.08	0.08	0.08	0.08	0.08	0.50	0.50	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.39	1.62	0.26	0.24	0.51	0.21	7.78	0.14	4.82	0.09
d3, Initial Queue Delay [s]	0.00	4.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.44	0.49	0.10	0.16	0.21	0.06	0.71	0.05	0.63	0.02
d, Delay for Lane Group [s/veh]	49.03	49.85	50.26	42.51	42.84	22.11	37.10	21.89	33.06	21.80
Lane Group LOS	D	D	D	D	D	C	D	C	C	C
Critical Lane Group	No	Yes	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	1.86	2.24	0.35	0.87	0.80	0.69	9.65	0.49	9.49	0.21
50th-Percentile Queue Length [ft/ln]	46.38	56.05	8.87	21.67	20.04	17.24	241.35	12.29	237.14	5.30
95th-Percentile Queue Length [veh/ln]	3.34	4.04	0.64	1.56	1.44	1.24	14.75	0.88	14.54	0.38
95th-Percentile Queue Length [ft/ln]	83.49	100.89	15.97	39.01	36.07	31.04	368.75	22.11	363.41	9.53

Movement, Approach, & Intersection Results

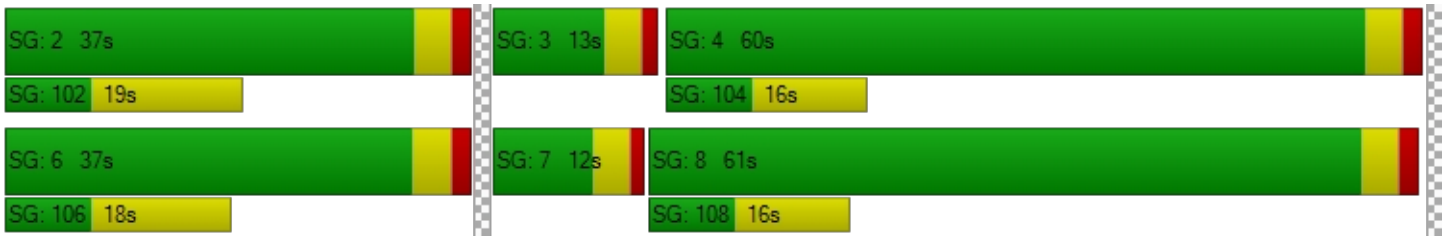
d_M, Delay for Movement [s/veh]	49.03	49.85	49.85	50.26	42.51	42.84	22.11	37.10	37.10	21.89	33.06	21.80
Movement LOS	D	D	D	D	D	D	C	D	D	C	C	C
d_A, Approach Delay [s/veh]	49.47			43.90			35.70			32.04		
Approach LOS	D			D			D			C		
d_I, Intersection Delay [s/veh]	36.80											
Intersection LOS	D											
Intersection V/C	0.349											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	298.85	385.27	234.67	2268.37
d_p, Pedestrian Delay [s]	44.55	44.55	44.55	44.55
l_p,int, Pedestrian LOS Score for Intersection	2.074	2.197	2.314	2.335
Crosswalk LOS	B	B	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	595	591	1013	1031
d_b, Bicycle Delay [s]	27.21	27.33	13.42	12.93
l_b,int, Bicycle LOS Score for Intersection	1.868	1.715	2.259	2.286
Bicycle LOS	A	A	B	B

Sequence

Ring 1	-	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 4: Petaluma Blvd S/D St

Control Type:	Signalized	Delay (sec / veh):	56.9
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.639

Intersection Setup

Name	D St			D St			Petaluma Blvd S			Petaluma Blvd S		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	0	0	1	1	0	0	1	0	0
Pocket Length [ft]	80.00	100.00	100.00	100.00	100.00	40.00	175.00	100.00	100.00	150.00	100.00	100.00
Speed [mph]	25.00			25.00			25.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	D St			D St			Petaluma Blvd S			Petaluma Blvd S		
Base Volume Input [veh/h]	103	430	34	231	425	87	101	252	62	105	252	245
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	23	0	0	21	0	0	105
Total Hourly Volume [veh/h]	103	430	34	231	425	64	101	252	41	105	252	140
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	26	108	9	58	106	16	25	63	10	26	63	35
Total Analysis Volume [veh/h]	103	430	34	231	425	64	101	252	41	105	252	140
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	4			7			4			1		
v_di, Inbound Pedestrian Volume crossing m	1			4			7			4		
v_co, Outbound Pedestrian Volume crossing	6			1			8			4		
v_ci, Inbound Pedestrian Volume crossing mi	8			4			6			1		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	4			3			0			2		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	160
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	48.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	1	6	0	5	2	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lag	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	8	9	0	8	9	0	8	9	0	8	9	0
Maximum Green [s]	30	50	0	35	50	0	30	45	0	30	45	0
Amber [s]	3.0	3.6	0.0	3.0	3.6	0.0	3.0	3.6	0.0	3.0	3.6	0.0
All red [s]	1.0	1.1	0.0	1.0	1.3	0.0	1.0	1.0	0.0	1.0	1.1	0.0
Split [s]	42	66	0	36	60	0	18	39	0	19	40	0
Vehicle Extension [s]	2.0	4.0	0.0	2.0	4.0	0.0	2.0	2.5	0.0	2.0	2.5	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	19	0	0	18	0	0	15	0	0	19	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.7	0.0	2.0	2.9	0.0	2.0	2.6	0.0	2.0	2.7	0.0
Minimum Recall	No	Yes		No	Yes		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	160	160	160	160	160	160	160	160	160	160	160
L, Total Lost Time per Cycle [s]	4.00	4.70	4.00	4.90	4.90	4.00	4.60	4.60	4.00	4.70	4.70
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.70	2.00	2.90	2.90	2.00	2.60	2.60	2.00	2.70	2.70
g_i, Effective Green Time [s]	12	48	25	60	60	12	58	58	12	58	58
g / C, Green / Cycle	0.08	0.30	0.16	0.38	0.38	0.07	0.36	0.36	0.08	0.36	0.36
(v / s)_i Volume / Saturation Flow Rate	0.06	0.28	0.14	0.25	0.05	0.06	0.15	0.03	0.07	0.15	0.10
s, saturation flow rate [veh/h]	1603	1657	1603	1683	1377	1603	1683	1403	1603	1683	1389
c, Capacity [veh/h]	122	493	250	634	519	119	608	506	123	611	504
d1, Uniform Delay [s]	73.00	54.85	66.57	41.62	32.57	73.17	38.43	33.64	72.96	38.20	36.00
k, delay calibration	0.04	0.29	0.04	0.15	0.15	0.04	0.50	0.50	0.04	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.92	19.63	5.86	1.76	0.15	6.13	2.08	0.31	6.09	2.05	1.37
d3, Initial Queue Delay [s]	6.41	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.84	0.94	0.92	0.67	0.12	0.85	0.41	0.08	0.85	0.41	0.28
d, Delay for Lane Group [s/veh]	85.33	74.48	72.43	43.39	32.72	79.30	40.52	33.96	79.05	40.25	37.37
Lane Group LOS	F	E	E	D	C	E	D	C	E	D	D
Critical Lane Group	No	Yes	Yes	No	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	4.43	21.10	9.81	14.56	1.70	4.35	7.98	1.13	4.50	7.88	4.14
50th-Percentile Queue Length [ft/ln]	110.74	527.59	245.37	364.00	42.52	108.82	199.41	28.25	112.40	197.01	103.38
95th-Percentile Queue Length [veh/ln]	7.88	28.64	14.95	20.82	3.06	7.77	12.61	2.03	7.97	12.48	7.44
95th-Percentile Queue Length [ft/ln]	197.03	715.94	373.82	520.45	76.54	194.36	315.21	50.85	199.34	312.10	186.08

Movement, Approach, & Intersection Results

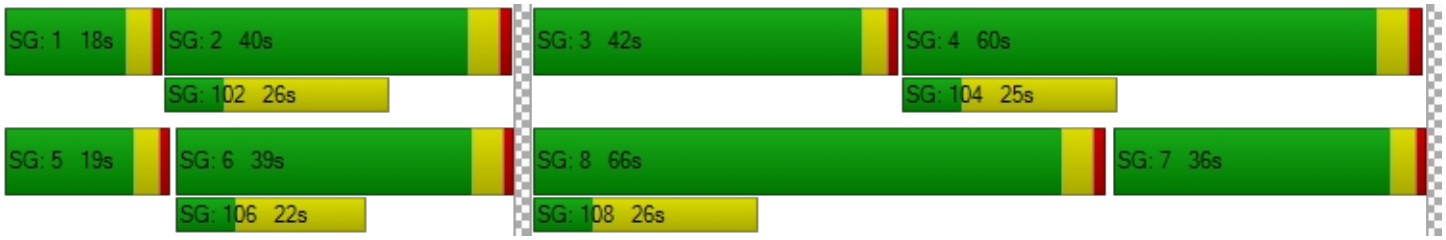
d_M, Delay for Movement [s/veh]	85.33	74.48	74.48	72.43	43.39	32.72	79.30	40.52	33.96	79.05	40.25	37.37
Movement LOS	F	E	E	E	D	C	E	D	C	E	D	D
d_A, Approach Delay [s/veh]	76.45			51.75			49.78			47.63		
Approach LOS	E			D			D			D		
d_I, Intersection Delay [s/veh]	56.89											
Intersection LOS	E											
Intersection V/C	0.639											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	676.30	1269.17	763.51	1887.09
d_p, Pedestrian Delay [s]	69.38	69.38	69.38	69.38
l_p,int, Pedestrian LOS Score for Intersection	2.281	2.500	2.362	2.581
Crosswalk LOS	B	B	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	766	689	430	441
d_b, Bicycle Delay [s]	30.50	34.44	49.30	48.64
l_b,int, Bicycle LOS Score for Intersection	2.495	2.786	2.244	2.553
Bicycle LOS	B	C	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 1: Petaluma Blvd/Washington St

Control Type:	Signalized	Delay (sec / veh):	48.9
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.757

Intersection Setup

Name	Petaluma Blvd			Petaluma Blvd			Washington St			Washington St		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	0
Pocket Length [ft]	75.00	100.00	95.00	120.00	100.00	110.00	105.00	100.00	100.00	310.00	100.00	100.00
Speed [mph]	25.00			25.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Petaluma Blvd			Petaluma Blvd			Washington St			Washington St		
Base Volume Input [veh/h]	36	369	181	117	303	264	356	734	60	134	619	154
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	3	8	0	4	0	0	0	0	11	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	26	0	0	18	0	0	4	0	0	13
Total Hourly Volume [veh/h]	36	372	163	117	307	246	356	734	56	145	619	141
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	9	93	41	29	77	62	89	184	14	36	155	35
Total Analysis Volume [veh/h]	36	372	163	117	307	246	356	734	56	145	619	141
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	9			14			6			12		
v_di, Inbound Pedestrian Volume crossing m	6			12			9			14		
v_co, Outbound Pedestrian Volume crossing	8			7			4			10		
v_ci, Inbound Pedestrian Volume crossing mi	10			4			7			8		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	3			4			3			3		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	140
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	75.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Overlap	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	5	2	3	1	6	7	7	4	0	3	8	0
Auxiliary Signal Groups			2,3			6,7						
Lead / Lag	Lag	-	-	Lead	-	-	Lag	-	-	Lead	-	-
Minimum Green [s]	4	8	4	4	8	4	4	10	0	4	11	0
Maximum Green [s]	30	30	30	30	30	30	30	30	0	30	30	0
Amber [s]	3.0	3.6	3.0	3.0	3.6	3.0	3.0	3.6	0.0	3.0	3.6	0.0
All red [s]	1.0	1.0	1.0	1.0	1.1	1.0	1.0	1.2	0.0	1.0	1.6	0.0
Split [s]	15	30	17	16	31	49	49	77	0	17	45	0
Vehicle Extension [s]	2.0	4.0	2.0	2.0	4.0	2.0	2.0	4.0	0.0	2.0	4.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	17	0	0	19	0	0	21	0	0	27	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.6	2.0	2.0	2.7	2.0	2.0	2.8	0.0	2.0	3.2	0.0
Minimum Recall	No	Yes	No	No	Yes	No	No	No		No	No	
Maximum Recall	No	No	No	No	No	No	No	No		No	No	
Pedestrian Recall	No	No	No	No	No	No	No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	C
C, Cycle Length [s]	140	140	140	140	140	140	140	140	140	140	140	140
L, Total Lost Time per Cycle [s]	4.00	4.60	4.00	4.00	4.70	4.70	4.00	4.80	4.80	4.00	5.20	5.20
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.60	0.00	2.00	2.70	0.00	2.00	2.80	2.80	2.00	3.20	3.20
g_i, Effective Green Time [s]	4	39	57	12	47	85	34	58	58	13	37	37
g / C, Green / Cycle	0.03	0.28	0.41	0.09	0.34	0.61	0.24	0.42	0.42	0.09	0.27	0.27
(v / s)_i Volume / Saturation Flow Rate	0.02	0.22	0.12	0.07	0.18	0.17	0.22	0.24	0.24	0.09	0.23	0.24
s, saturation flow rate [veh/h]	1603	1683	1402	1603	1683	1415	1603	1683	1630	1603	1683	1526
c, Capacity [veh/h]	45	471	568	137	566	858	386	703	681	149	449	407
d1, Uniform Delay [s]	67.66	46.63	27.91	63.15	37.69	13.13	51.86	31.15	31.23	63.30	49.06	49.56
k, delay calibration	0.04	0.50	0.50	0.04	0.50	0.50	0.09	0.15	0.15	0.04	0.26	0.27
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	11.67	12.71	1.27	5.66	3.70	0.84	7.77	1.04	1.09	15.17	11.89	16.34
d3, Initial Queue Delay [s]	0.00	2.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.80	0.79	0.29	0.85	0.54	0.29	0.92	0.57	0.57	0.97	0.87	0.90
d, Delay for Lane Group [s/veh]	79.33	61.54	29.18	68.81	41.39	13.97	59.63	32.19	32.32	78.47	60.95	65.90
Lane Group LOS	E	E	C	E	D	B	E	C	C	E	E	E
Critical Lane Group	No	Yes	No	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	1.44	13.77	3.97	4.37	9.27	3.96	13.13	10.68	10.46	5.83	14.71	14.36
50th-Percentile Queue Length [ft/ln]	35.99	344.33	99.14	109.22	231.82	99.10	328.17	267.01	261.44	145.71	367.71	359.12
95th-Percentile Queue Length [veh/ln]	2.59	19.86	7.14	7.80	14.27	7.14	19.07	16.04	15.76	9.79	21.00	20.58
95th-Percentile Queue Length [ft/ln]	64.78	496.49	178.44	194.92	356.67	178.38	476.72	401.00	394.03	244.69	524.95	514.52

Movement, Approach, & Intersection Results

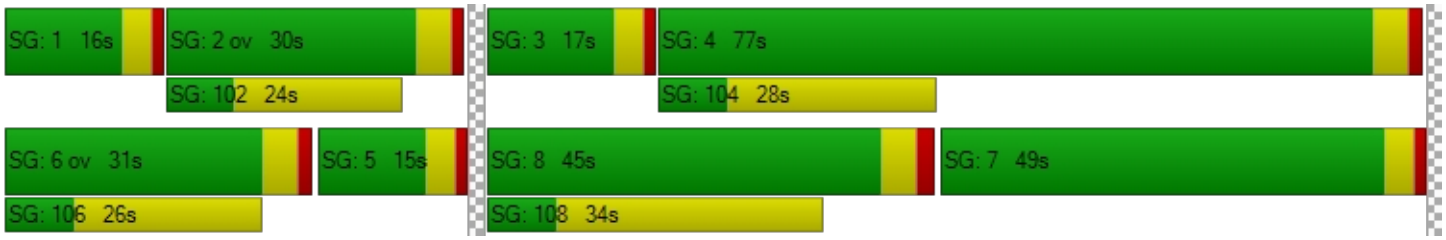
d_M, Delay for Movement [s/veh]	79.33	61.54	29.18	68.81	41.39	13.97	59.63	32.25	32.32	78.47	62.77	65.90
Movement LOS	E	E	C	E	D	B	E	C	C	E	E	E
d_A, Approach Delay [s/veh]	53.42			36.11			40.76			65.77		
Approach LOS	D			D			D			E		
d_I, Intersection Delay [s/veh]	48.88											
Intersection LOS	D											
Intersection V/C	0.757											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	561.40	255.76	467.38	435.52
d_p, Pedestrian Delay [s]	59.43	59.43	59.43	59.43
l_p,int, Pedestrian LOS Score for Intersection	2.414	2.497	2.663	2.658
Crosswalk LOS	B	B	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	363	376	1031	569
d_b, Bicycle Delay [s]	46.97	46.26	16.44	35.91
l_b,int, Bicycle LOS Score for Intersection	2.545	2.695	2.508	2.317
Bicycle LOS	B	B	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 2: Petaluma Blvd/Western Ave

Control Type:	Signalized	Delay (sec / veh):	38.0
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.462

Intersection Setup

Name	Petaluma Blvd			Petaluma Blvd			Western Ave			Water St		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	0	0	0	0	0	1	0	0	0
Pocket Length [ft]	65.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	85.00	100.00	100.00	100.00
Speed [mph]	25.00			25.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Petaluma Blvd			Petaluma Blvd			Western Ave			Water St		
Base Volume Input [veh/h]	50	446	0	0	394	83	91	0	130	1	2	3
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	15	0	11	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	5	0	0	62	0	0	3
Total Hourly Volume [veh/h]	50	446	0	0	409	78	102	0	68	1	2	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	13	112	0	0	102	20	26	0	17	0	1	0
Total Analysis Volume [veh/h]	50	446	0	0	409	78	102	0	68	1	2	0
Presence of On-Street Parking	No		Yes	No		Yes	No		Yes	No		No
On-Street Parking Maneuver Rate [/h]	0	0	5	0	0	5	0	0	5	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	7			28			29			33		
v_di, Inbound Pedestrian Volume crossing m	33			29			28			7		
v_co, Outbound Pedestrian Volume crossing	35			27			39			13		
v_ci, Inbound Pedestrian Volume crossing mi	39			13			35			27		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	2			2			3			3		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	160
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	12.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	3	8	0	0	4	0	2	0	0	0	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	-	-	-	Lag	-	-	-	-	-
Minimum Green [s]	8	8	0	0	8	0	8	0	0	0	8	0
Maximum Green [s]	20	73	0	0	73	0	39	0	0	0	39	0
Amber [s]	3.0	3.0	0.0	0.0	3.0	0.0	3.0	0.0	0.0	0.0	3.2	0.0
All red [s]	1.0	1.0	0.0	0.0	1.0	0.0	1.0	0.0	0.0	0.0	1.3	0.0
Split [s]	15	128	0	0	113	0	32	0	0	0	32	0
Vehicle Extension [s]	2.0	4.0	0.0	0.0	4.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0
Walk [s]	0	8	0	0	13	0	8	0	0	0	8	0
Pedestrian Clearance [s]	0	10	0	0	5	0	10	0	0	0	10	0
Rest In Walk		No			No		No				No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	0.0	2.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	0.0	2.0	0.0	2.0	0.0	0.0	0.0	2.5	0.0
Minimum Recall	No	Yes			Yes		No				No	
Maximum Recall	No	No			No		No				No	
Pedestrian Recall	No	No			No		No				No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	R	C
C, Cycle Length [s]	160	160	160	160	160	160
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	2.00	0.00	2.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	0.00	2.00	2.50
g_i, Effective Green Time [s]	65	135	65	17	17	17
g / C, Green / Cycle	0.41	0.84	0.41	0.11	0.11	0.11
(v / s)_i Volume / Saturation Flow Rate	0.03	0.30	0.35	0.08	0.08	0.00
s, saturation flow rate [veh/h]	1603	1473	1407	1314	802	1352
c, Capacity [veh/h]	653	1238	575	153	88	173
d1, Uniform Delay [s]	29.00	2.90	42.78	69.08	67.12	64.03
k, delay calibration	0.50	0.50	0.50	0.04	0.04	0.04
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.23	0.82	14.38	1.89	5.45	0.01
d3, Initial Queue Delay [s]	0.00	0.30	0.97	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.08	0.36	0.85	0.67	0.78	0.02
d, Delay for Lane Group [s/veh]	29.23	4.02	58.13	70.97	72.56	64.05
Lane Group LOS	C	A	E	E	E	E
Critical Lane Group	Yes	No	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	1.26	3.10	19.90	4.10	2.79	0.11
50th-Percentile Queue Length [ft/ln]	31.56	77.43	497.46	102.60	69.72	2.80
95th-Percentile Queue Length [veh/ln]	2.27	5.58	27.21	7.39	5.02	0.20
95th-Percentile Queue Length [ft/ln]	56.81	139.38	680.35	184.67	125.49	5.05

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	29.23	4.02	0.00	0.00	58.13	58.13	70.97	0.00	72.56	64.05	64.05	64.05
Movement LOS	C	A			E	E	E		E	E	E	E
d_A, Approach Delay [s/veh]	6.56			58.13			71.61			64.05		
Approach LOS	A			E			E			E		
d_I, Intersection Delay [s/veh]	38.00											
Intersection LOS	D											
Intersection V/C	0.462											

Other Modes

g_Walk,mi, Effective Walk Time [s]	12.0	12.0	17.0	12.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	108.64	124.70	143.08	144.54
d_p, Pedestrian Delay [s]	68.45	68.45	63.90	68.45
l_p,int, Pedestrian LOS Score for Intersection	2.249	2.315	2.152	1.459
Crosswalk LOS	B	B	B	A
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1550	1363	0	344
d_b, Bicycle Delay [s]	4.05	8.14	80.00	54.95
l_b,int, Bicycle LOS Score for Intersection	2.378	2.371	4.132	1.570
Bicycle LOS	B	B	D	A

Sequence

Ring 1	-	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 3: Petaluma Blvd/B St

Control Type:	Signalized	Delay (sec / veh):	38.3
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.386

Intersection Setup

Name	B St			B St			Petaluma Blvd			Petaluma Blvd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	1	1	0	1	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	65.00	30.00	100.00	30.00	85.00	100.00	100.00	70.00	100.00	40.00
Speed [mph]	25.00			25.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	B St			B St			Petaluma Blvd			Petaluma Blvd		
Base Volume Input [veh/h]	68	32	78	13	33	46	39	332	51	27	400	12
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	31	0	0	0	0	15	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	30	0	0	14	0	0	6	0	0	0
Total Hourly Volume [veh/h]	68	32	79	13	33	32	39	347	45	27	400	12
Peak Hour Factor	0.9500	0.9500	0.9500	1.0000	0.9500	1.0000	1.0000	1.0000	0.9500	0.9500	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	18	8	21	3	9	8	10	87	12	7	100	3
Total Analysis Volume [veh/h]	72	34	83	13	35	32	39	347	47	28	400	12
Presence of On-Street Parking	No		Yes	No		No	No		Yes	No		No
On-Street Parking Maneuver Rate [/h]	0	0	5	0	0	0	0	0	5	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	29			11			5			38		
v_di, Inbound Pedestrian Volume crossing m	5			38			29			11		
v_co, Outbound Pedestrian Volume crossing	5			12			35			2		
v_ci, Inbound Pedestrian Volume crossing mi	2			35			12			5		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	4			2			2			2		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	110
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	54.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	2	0	0	6	0	7	4	0	3	8	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	8	0	0	8	0	8	9	0	6	9	0
Maximum Green [s]	0	35	0	0	35	0	10	50	0	20	50	0
Amber [s]	0.0	3.0	0.0	0.0	3.2	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.3	0.0	0.0	1.3	0.0	1.0	1.3	0.0	1.0	1.3	0.0
Split [s]	0	37	0	0	37	0	12	60	0	13	61	0
Vehicle Extension [s]	0.0	2.5	0.0	0.0	2.5	0.0	2.0	4.0	0.0	2.0	4.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	12	0	0	11	0	0	9	0	0	9	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.3	0.0	0.0	2.5	0.0	2.0	2.3	0.0	2.0	2.3	0.0
Minimum Recall		No			No		No	Yes		No	Yes	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	R	L	C	L	C	R
C, Cycle Length [s]	110	110	110	110	110	110	110	110	110	110
L, Total Lost Time per Cycle [s]	4.30	4.30	4.50	4.50	4.50	4.00	4.30	4.00	4.30	4.30
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	2.30	2.50	2.50	2.50	2.00	2.30	2.00	2.30	2.30
g_i, Effective Green Time [s]	16	16	16	16	16	41	41	41	41	41
g / C, Green / Cycle	0.15	0.15	0.14	0.14	0.14	0.37	0.37	0.37	0.37	0.37
(v / s)_i Volume / Saturation Flow Rate	0.06	0.09	0.01	0.02	0.03	0.02	0.28	0.02	0.24	0.01
s, saturation flow rate [veh/h]	1286	1256	1132	1683	1167	1603	1428	1603	1683	1306
c, Capacity [veh/h]	177	183	107	242	168	594	527	595	621	482
d1, Uniform Delay [s]	46.48	44.27	51.67	41.18	41.24	22.32	30.26	22.15	28.73	22.09
k, delay calibration	0.08	0.08	0.08	0.08	0.08	0.50	0.50	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.11	2.75	0.38	0.20	0.40	0.21	9.37	0.15	5.08	0.10
d3, Initial Queue Delay [s]	0.00	4.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.41	0.64	0.12	0.14	0.19	0.07	0.75	0.05	0.64	0.02
d, Delay for Lane Group [s/veh]	47.59	51.11	52.05	41.38	41.65	22.53	39.64	22.30	33.82	22.18
Lane Group LOS	D	D	D	D	D	C	D	C	C	C
Critical Lane Group	No	Yes	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	1.82	3.16	0.36	0.85	0.79	0.70	10.43	0.50	9.61	0.21
50th-Percentile Queue Length [ft/ln]	45.51	79.04	9.08	21.32	19.68	17.44	260.72	12.42	240.26	5.35
95th-Percentile Queue Length [veh/ln]	3.28	5.69	0.65	1.53	1.42	1.26	15.72	0.89	14.69	0.39
95th-Percentile Queue Length [ft/ln]	81.92	142.28	16.34	38.37	35.43	31.39	393.12	22.36	367.36	9.64

Movement, Approach, & Intersection Results

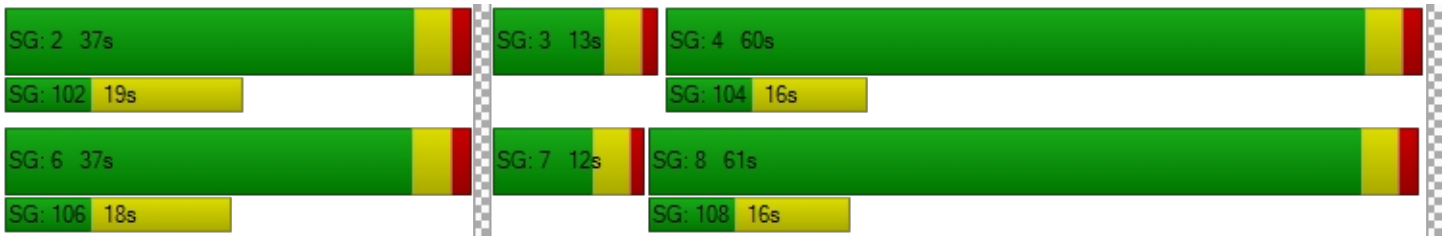
d_M, Delay for Movement [s/veh]	47.59	51.11	51.11	52.05	41.38	41.65	22.53	39.64	39.64	22.30	33.82	22.18
Movement LOS	D	D	D	D	D	D	C	D	D	C	C	C
d_A, Approach Delay [s/veh]	49.77			43.22			38.10			32.77		
Approach LOS	D			D			D			C		
d_I, Intersection Delay [s/veh]	38.33											
Intersection LOS	D											
Intersection V/C	0.386											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	298.85	385.27	234.67	2080.32
d_p, Pedestrian Delay [s]	44.55	44.55	44.55	44.55
l_p,int, Pedestrian LOS Score for Intersection	2.083	2.197	2.318	2.345
Crosswalk LOS	B	B	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	595	591	1013	1031
d_b, Bicycle Delay [s]	27.21	27.33	13.42	12.93
l_b,int, Bicycle LOS Score for Intersection	1.921	1.715	2.284	2.286
Bicycle LOS	A	A	B	B

Sequence

Ring 1	-	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 4: Petaluma Blvd S/D St

Control Type:	Signalized	Delay (sec / veh):	56.8
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.648

Intersection Setup

Name	D St			D St			Petaluma Blvd S			Petaluma Blvd S		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	0	0	1	1	0	0	1	0	0
Pocket Length [ft]	80.00	100.00	100.00	100.00	100.00	40.00	175.00	100.00	100.00	150.00	100.00	100.00
Speed [mph]	25.00			25.00			25.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	D St			D St			Petaluma Blvd S			Petaluma Blvd S		
Base Volume Input [veh/h]	103	430	34	231	425	87	101	252	62	105	252	245
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	12	0	0	18	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	23	0	0	21	0	0	105
Total Hourly Volume [veh/h]	103	430	34	231	425	64	101	264	41	105	270	140
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	26	108	9	58	106	16	25	66	10	26	68	35
Total Analysis Volume [veh/h]	103	430	34	231	425	64	101	264	41	105	270	140
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	4			7			4			1		
v_di, Inbound Pedestrian Volume crossing m	1			4			7			4		
v_co, Outbound Pedestrian Volume crossing	6			1			8			4		
v_ci, Inbound Pedestrian Volume crossing mi	8			4			6			1		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	4			3			0			2		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	160
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	48.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	1	6	0	5	2	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lag	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	8	9	0	8	9	0	8	9	0	8	9	0
Maximum Green [s]	30	50	0	35	50	0	30	45	0	30	45	0
Amber [s]	3.0	3.6	0.0	3.0	3.6	0.0	3.0	3.6	0.0	3.0	3.6	0.0
All red [s]	1.0	1.1	0.0	1.0	1.3	0.0	1.0	1.0	0.0	1.0	1.1	0.0
Split [s]	42	66	0	36	60	0	18	39	0	19	40	0
Vehicle Extension [s]	2.0	4.0	0.0	2.0	4.0	0.0	2.0	2.5	0.0	2.0	2.5	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	19	0	0	18	0	0	15	0	0	19	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.7	0.0	2.0	2.9	0.0	2.0	2.6	0.0	2.0	2.7	0.0
Minimum Recall	No	Yes		No	Yes		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	160	160	160	160	160	160	160	160	160	160	160
L, Total Lost Time per Cycle [s]	4.00	4.70	4.00	4.90	4.90	4.00	4.60	4.60	4.00	4.70	4.70
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.70	2.00	2.90	2.90	2.00	2.60	2.60	2.00	2.70	2.70
g_i, Effective Green Time [s]	12	48	25	60	60	12	58	58	12	58	58
g / C, Green / Cycle	0.08	0.30	0.16	0.38	0.38	0.07	0.36	0.36	0.08	0.36	0.36
(v / s)_i Volume / Saturation Flow Rate	0.06	0.28	0.14	0.25	0.05	0.06	0.16	0.03	0.07	0.16	0.10
s, saturation flow rate [veh/h]	1603	1657	1603	1683	1377	1603	1683	1403	1603	1683	1389
c, Capacity [veh/h]	122	493	250	634	519	119	608	506	123	611	504
d1, Uniform Delay [s]	73.00	54.85	66.57	41.62	32.57	73.17	38.76	33.64	72.96	38.68	36.00
k, delay calibration	0.04	0.29	0.04	0.15	0.15	0.04	0.50	0.50	0.04	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.92	19.63	5.86	1.76	0.15	6.13	2.26	0.31	6.09	2.31	1.37
d3, Initial Queue Delay [s]	6.41	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.84	0.94	0.92	0.67	0.12	0.85	0.43	0.08	0.85	0.44	0.28
d, Delay for Lane Group [s/veh]	85.33	74.48	72.43	43.39	32.72	79.30	41.01	33.96	79.05	40.99	37.37
Lane Group LOS	F	E	E	D	C	E	D	C	E	D	D
Critical Lane Group	No	Yes	Yes	No	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	4.43	21.10	9.81	14.56	1.70	4.35	8.44	1.13	4.50	8.57	4.14
50th-Percentile Queue Length [ft/ln]	110.74	527.59	245.37	364.00	42.52	108.82	210.91	28.25	112.40	214.13	103.38
95th-Percentile Queue Length [veh/ln]	7.88	28.64	14.95	20.82	3.06	7.77	13.20	2.03	7.97	13.36	7.44
95th-Percentile Queue Length [ft/ln]	197.03	715.94	373.82	520.45	76.54	194.36	329.99	50.85	199.34	334.12	186.08

Movement, Approach, & Intersection Results

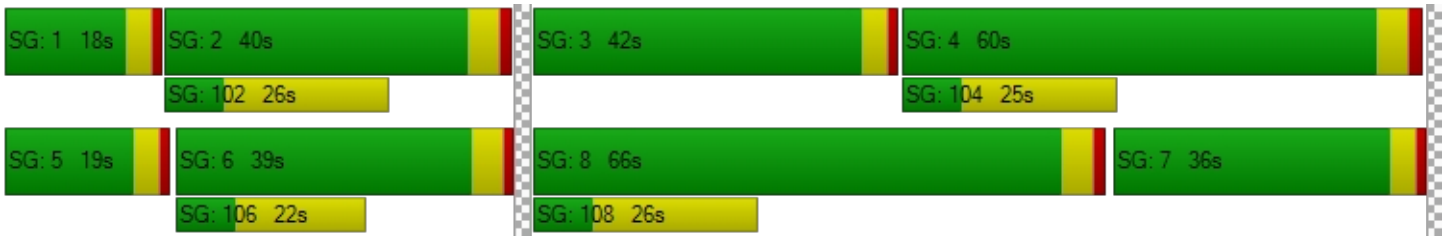
d_M, Delay for Movement [s/veh]	85.33	74.48	74.48	72.43	43.39	32.72	79.30	41.01	33.96	79.05	40.99	37.37
Movement LOS	F	E	E	E	D	C	E	D	C	E	D	D
d_A, Approach Delay [s/veh]	76.45			51.75			49.83			47.77		
Approach LOS	E			D			D			D		
d_I, Intersection Delay [s/veh]	56.81											
Intersection LOS	E											
Intersection V/C	0.648											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	676.30	1269.17	763.51	1887.09
d_p, Pedestrian Delay [s]	69.38	69.38	69.38	69.38
l_p,int, Pedestrian LOS Score for Intersection	2.281	2.500	2.368	2.588
Crosswalk LOS	B	B	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	766	689	430	441
d_b, Bicycle Delay [s]	30.50	34.44	49.30	48.64
l_b,int, Bicycle LOS Score for Intersection	2.495	2.786	2.264	2.583
Bicycle LOS	B	C	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Appendix C

Queuing Calculations

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Queuing Evaluation Worksheet

Project: Petaluma Appelation Hotel
Project No: PET169

By: SW
Date: 7/20/2023

Inputs		
Time Unit	Hour	
λ, Arrival Rate (veh/hr):	16	Veh/Hour
μ, Service Rate (veh/hr):	32	Veh/Hour
Intermediate Calculations		
Average Time between arrivals	0.063	hour
	225.0	seconds
Average Service Time	0.031	hour
	112.5	seconds
Performance Measures		
Rho (average Server Utilization)	0.500	
P0 (probability the System is empty)	50.0%	
L (average number in the system)	1.0	Vehicles
	25.0	Feet
Lq (average number waiting in the queue)	0.5	Vehicles
W (average time in the system)	0.063	hour
	3.8	minutes
Wq (average time in the queue)	0.031	hour
	1.9	minutes
Probability of a specific number of customers in the system		
Number of vehicles in the system (n)	4	
Probability	3.1%	

Note: the service rate must be greater than the arrival rate. If the servive rate is less than or equal to the arrival rate, the waiting line would eventually grow to be infinitely large.