City of Santa Barbara
Public Works Department

Memorandum

DATE: August 29, 2013

TO: Planning Commission

FROM: Robert J. Dayton, Principal Transportation Planner

SUBJECT: South Coast 101 High Occupancy Vehicle Project Draft EIR Traffic Analysis Summary Email to the SBCAG Board from Mayor Helene Schneider

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Attached, please find the South Coast 101 High Occupancy Vehicle (HOV) Project Draft Environmental Impact Report (EIR) Traffic Analysis Summary for the City of Santa Barbara recently prepared by Kittelson & Associates, Inc. This summary analysis was requested by staff to give the public and decision makers a better understanding of the Highway 101 HOV Lanes Project's traffic impacts within the City of Santa Barbara. Kittelson & Associates, Inc. (previously known as Dowling Associates, Inc.) conducted the original environmental traffic impact analysis for the proposed Highway 101 HOV Lanes Project. Kittelson & Associates, Inc. did not conduct any new analysis for the summary; rather, it used previous traffic analysis contained in the South Coast 101 HOV Traffic Study (October 19, 2009). The 2009 Study was prepared for Caltrans' South Coast 101 HOV Lanes Project Draft EIR, dated March 2012, and is referenced in the Draft EIR.

The attached summary analysis addresses traffic benefits and impacts to the City of Santa Barbara in three areas: freeway flow, traffic diversion, and intersection level of service. The analysis also summarizes the congestion relief and time savings benefit for commuters using the existing four-lane section of freeway.

Readers of the summary analysis should be aware that the analysis parameters were tailored to inform people familiar with the common practices of traffic evaluation used by the City of Santa Barbara. While the Draft EIR described the overall effects of traffic changes throughout the 27-mile freeway corridor, the summary analysis focuses on the freeway and its interchanges within the City limits between the Cabrillo and 154 Interchanges. The analysis also focuses on the AM and PM peak hours, the times when most of the community is using the roadway system to get to and from work, and the period commonly used by the City to evaluate traffic impacts.

The intersection impact evaluation of the Draft EIR was performed using the HCM and ICU (City method) methodologies. Traffic impact evaluation for the purposes of CEQA was done using the HCM method for State owned intersections and ICU for City intersections. Additionally, the project-level and cumulative thresholds used in the document were Caltrans'-developed thresholds for State-owned intersections and City thresholds for City-owned intersections.

2030 Plan Santa Barbara Key Impacted Intersections with Highway 101 HOV Project

Because the South Coast 101 HOV Project Draft EIR Traffic Analysis Summary uses Caltrans thresholds and the HCM method to make CEQA impact determinations at freeway interchanges, it is difficult to understand how the 101 HOV Project will affect City interchanges without additional

context. In order to give the public and decision makers a better understanding of the implications of freeway widening, City staff used the volume-to-capacity (V/C) change in the Draft EIR predicted for each intersection and compared this change to the key impacted intersections identified in the recent Plan Santa Barbara Final EIR, per Table 1(attached). The intersections and peak hours in Table 1 are limited to those found to be significantly impacted by the proposed General Plan. For simplicity of use, non-impacted intersections and peak hours were excluded.

In Table 1, Columns A through E show the conclusions of the Plan Santa Barbara Final EIR intersection analysis. Columns A and B show the existing 2008 baseline traffic conditions, while Columns C and D estimate the 2030 conditions predicted with the buildout of the City's General Plan. The purpose of Column E is to show the approximate change in V/C (or seconds of delay for unsignalized intersections) due to the added development expected over the next 20 years.

The South Coast 101 HOV Project Draft EIR and the Plan Santa Barbara Final EIR use different horizon years for their respective traffic evaluations. The South Coast 101 HOV Project Draft EIR uses the years 2020 and 2040, whereas the Plan Santa Barbara Final EIR uses 2030. In order to adjust for this difference, the change in V/C for the 2020 and 2040 horizon years with and without the 101 HOV lanes was averaged to estimate the difference for the year 2030.

The resulting change in V/C predicted in the South Coast 101 HOV Project Draft EIR is represented in Column F. Because this comparison exercise is a simple approximation, only V/C changes of 0.01 or more were included in Column F. The intersections that note "N/C" means that there is no significant change in V/C predicted at that location and peak hour with the 101 HOV Project in place. "N/S" means that the intersection was not studied as a part of the South Coast 101 HOV Project Draft EIR. The intersection at Olive Mill/Coast Village Road/SB on- NB off-ramps was analyzed as three separate intersections in the South Coast 101 HOV Project Draft EIR. As a result, no comparison could be made at this location to show the increased delay expected to result from the freeway project.

In some locations, traffic congestion is predicted to get better. Table 1 shows that the intersection of Las Positas and Modoc during the afternoon peak hour is predicted to improve. Because Table 1 was limited to the key impacted intersections of the Plan Santa Barbara Draft EIR for simplicity, other intersections and peak hours not listed may get better or worse and may even become impacted as a result of the project. This additional analysis could be performed for intersections where analysis was conducted in both studies, if more information is desired.

The main purpose of Table 1 is for the viewer to understand the size of impact the South Coast 101 HOV Project will have on City intersections when compared to land use growth over 20 years. One can do this by examining the V/C changes in Columns E and F due to land use growth and the freeway project.

Although the Upper State Street corridor was not analyzed as a part of the South Coast 101 HOV Project Draft EIR, the study shows increased congestion for both peak hours in both directions between Las Positas and Upper State Street. When congestion occurs today in this location on Highway 101, the Upper State Street corridor also becomes congested as freeway users divert to the Upper State Street corridor. The same effect is likely to occur in the future.

Left-Side Freeway Ramp Update

The July 3, 2013 staff report to the Planning Commission describes efforts by a community group known as Common Sense 101 to retain the left-side freeway ramps at the Cabrillo and Sheffield Interchanges. Staff concludes in the staff report that further review of the left-side ramps is unmerited because of previous Caltrans decisions, at the highest level, to remove the ramps. Since that time, Common Sense 101 has met with Caltrans Director Malcolm Dougherty; Business, Transportation, and Housing Secretary Brian Kelly; and a representative of Governor Brown to discuss the Highway 101 HOV Project and, specifically, the left-side ramps. Mayor Helene Schneider was asked to attend the meeting. She summarized the results of the meeting in an email to the Santa Barbara County Association of Governments Board (attached).

Exhibits:

A. South Coast 101 High Occupancy Vehicle Project Draft EIR Traffic Analysis Summary
B. Table 1, 2030 Key Impacted Intersections with Impacts of the Highway 101 HOV Project
C. Email from Mayor Helene Schneider to the SBCAG Board of Directors

MEMORANDUM

Date: August 26, 2013

Project #: 132080

To: Rob Dayton
City of Santa Barbara
630 Garden Street
Santa Barbara, California

From: Jim Damkowitch, Chirag Safi

Subject: SC 101 HOV Project DEIR Traffic Analysis Summary for the City of Santa Barbara

Kittelson & Associates, Inc. (KAI) conducted traffic analysis in preparation for the environmental process for the South Coast 101 HOV (High Occupancy Vehicle) Lanes Project. This memorandum draws from the analysis documented in the Draft Environmental Impact Report for the Highway 101 Project. This memorandum focuses on anticipated project effects on freeway sections 1) within the City of Santa Barbara (City); 2) within the Project limits south to Ventura County; and, 3) at City intersections near the freeway. It also limits the analysis of project effects to just the AM (7-9 AM) and PM (4-6 PM) peak periods. Readily available data and output worksheets produced for the South Coast 101 HOV DEIR were used to develop this report. No additional traffic analysis was required or performed to generate the information presented herein.

The proposed Highway 101 HOV Project (EA 05-0N7000) will add an HOV lane in each direction from 0.4 mile south of Carpinteria Creek (Post Mile 2.0) in the City of Carpinteria to Sycamore Creek Bridge (Post Mile 12.3) in the City of Santa Barbara. KAI evaluated the changes in traffic flow that are estimated to result following the completion of the Highway 101 HOV Project. Both the 2020 and 2040 year conditions were evaluated to predict traffic conditions with and without the proposed Highway 101 HOV Project. The study area in the original report from which this data was drawn encompasses 27.5 miles of freeway mainline (Rincon Point/Bates interchange to Cathedral Oaks interchange). The analysis in the South Coast 101 HOV DEIR used a method known as FREQ Measure of Effectiveness tool (pronounced “free-q”). The FREQ model can estimate vehicle speeds, volume to capacity ratios, level of service, potential bottleneck locations, queue lengths, and delays for the freeway mainline.

EXHIBIT A

City of Santa Barbara requested this report in order to further clarify and articulate the Highway 101 HOV Project's implications on motorist travel time within the City of Santa Barbara during AM/PM peak period weekday conditions.

As stated in the EIR, the purpose of the Highway 101 HOV Project is to reduce congestion and delay, improve travel time within the project limits, encourage a modal shift to transit and carpooling, provide for HOV connectivity with adjacent 101 projects to the south, and provide capacity for future travel demand. These objectives are proposed to be met by widening the four-lane section of freeway to six with the third or "median" lane in each direction. The additional travel lane is proposed to be used as an HOV lane at the morning and afternoon commute times (hours of HOV lane operation is yet to be determined). At these times, only vehicles carrying two or more passengers will be permitted in the HOV lanes.

Currently, motorists experience a bottleneck effect going southbound where the freeway converts from three to two lanes just prior to Olive Mill Road. In the northbound direction, the freeway is two lanes and widens to three just past Cabrillo Boulevard. In both directions, the number of vehicles that can pass through these points is limited by the capacity of two lanes. Once the freeway is widened, the available road capacity will increase by 1,650 vehicles per hour[1] during the morning and afternoon commuter's peak period and by approximately 2,150 vehicles per hour for other hours of a day. This increase in roadway capacity will increase the number of vehicles that can enter and leave the City at one time. This report attempts to summarize the traffic implications that are anticipated as a result of this change.

The traffic pattern changes are measured and summarized in the following categories:

A. Freeway Peak Hour Speed and Flow: How will the widening affect speeds on the freeway and where? What delay savings can be expected south of the City and within the City?
B. Peak Hour Traffic volumes added to City streets: Will the increase in traffic flow increase the amount of traffic on City streets? If so, what are the effects of this traffic?
C. Intersection Peak Hour Level of Service: How will the increase of traffic flow on the freeway affect the City's interchanges? Will the change effect congestion at freeway on and off ramps?

[1] A freeway travel lane has a capacity of approximately 2,150 vehicles per hour. For this analysis, this capacity was reduced to 1,650 vehicles per hour to account for the time the lane is a High Occupancy Vehicle lane (at least 2 people per vehicle). The lower HOV lane capacity reflects the premium service quality ostensibly afforded to the fewer carpools on the road. Although it is physically possible for a carpool lane to reach the capacity of a standard lane (2,150 vehicles per hour), HOV lanes are managed to operate at 70% capacity of conventional lanes by setting occupancy requirements.

A. Freeway Speed and Flow

Approximately 13,600[2] people commute daily from Ventura County into the South Coast Region, which includes Carpinteria, Santa Barbara and Goleta to work. Countywide, commuters predominately travel by single occupant vehicle (70%)[2]; however, some portion of commuters carpool or use alternative modes of travel (transit, bike, and walking). Based on 2008 traffic data, the weekday average vehicle occupancy on Highway 101 from the south in the northbound direction during the AM peak hour is 1.27 passengers per vehicle, while it is 1.40[3] passengers per vehicle during the PM peak hour in the southbound travel direction.

Existing Northbound

The 4-lane section of freeway from La Conchita through Montecito creates long delay times in the morning northbound direction and less delay in the afternoon southbound direction. These two peak congestion times differ in delay and how the congestion forms. Congestion in the morning northbound direction intensifies closer to Santa Barbara, causing traffic back up south of La Conchita. Motorists are primarily entering (as opposed to exiting) the northbound freeway at interchanges, intensifying congestion the further north one travels. In the morning, more motorists desire to use the northbound freeway at the same time than the capacity provided by the two northbound travel lanes. Consequently, motorists commonly shift their travel time to work to earlier or later times. This allows commuters get to work and through the "bottleneck" in a more reasonable time. This effect is commonly known as peak spreading. Instead of a "peak hour," the duration of the peak morning commute time exceeds more than an hour.

Existing Southbound

The congestion pattern in the afternoon southbound direction is somewhat different. The bottleneck in capacity occurs as the three freeway lanes at Cabrillo Boulevard merge to two lanes. Traffic backups or queues primarily occur prior to the two lane section of freeway in Downtown Santa Barbara. Slow moving queues, waiting to get through the bottleneck, can extend well into Santa Barbara's Downtown. As a result, motorists may shift their route (i.e., use local streets in an attempt to avoid the congested section of freeway) or queue hop (i.e., exit the freeway only to get right back

[2] 2007 Journey to Work Survey, Santa Barbara County Association of Governments. This survey was performed within a year of the traffic counts used as the bases for this analysis.

[3] PM peak occupancies are generally higher due to variety of trip types such as shopping, recreational, home based work, etc. relative to the AM peak hour.

on to bypass a portion of the queue). Once through the bottleneck, traffic tends to return to normal operating speeds (55 to 65 mph). Travel speeds generally increase past each interchange moving south on 101 as more motorists are exiting the freeway than entering.

Future Conditions

In the 2020 Build conditions, the number of people traveling from the south (Ventura and south) are estimated to double from the existing conditions during the AM and PM peak periods[4]. In the 2040 build Build conditions, approximately 26,100 and 27,600 people would be traveling northbound and southbound on this portion of Highway 101 during the AM and PM peak periods respectively. If this additional demand from the south materializes, motorists will incur significantly greater travel delay times. Peak spreading would continue to expand to additional hours because of the limited amount of freeway capacity to get all people to work at the times they desire.

Although difficult to predict, people traveling on this section may respond to this level of congestion and delay in several ways. Many may consider changing their commute schedule (i.e., leaving earlier or later to avoid the congestion or telecommuting) or change their mode of travel (i.e., switch to a carpool or vanpool, regional transit or passenger rail if feasible). In the long-term, people may even consider changing jobs or the location of their residence to reduce travel time and expense. The traffic growth analysis conducted assumed that people will make the commute regardless of the increased commute time.

Project Effects: Highway 101 – La Conchita to Cabrillo Interchange

The section of Highway 101 to be widened runs from Cabrillo Boulevard in the City to 0.4 miles south of Carpinteria Creek Bridge just north of the Ventura County Line. The southern terminus joins the existing six lane facility and continues south into Ventura County. This 12-mile section of freeway carries approximately 7,700 people in the northbound and 4,300 people in the southbound during the AM peak period (7-9 AM). Approximately 6,100 people travel northbound and 8,700 people travel southbound on this section of freeway during the PM peak period (4-6 PM).[5] This 4-lane section of freeway will incur the most project benefit and commuters using this section will experience the highest delay reduction.

[4] This analysis was performed in 2008 during the Great Recession. Regional economic health and corresponding traffic volumes progressively decreased from 2007 until approximately 2011. Although the regional economic health and corresponding traffic volumes have been increasing since 2011, traffic volumes on the freeway were below 2008 counts at the time this summary report was written.

[5] Disparity in peak period directional travel is primarily due to the job-housing imbalance in City of Santa Barbara. Affordable housing in Ventura County and employment in Santa Barbara has resulted in this travel pattern.

The table below summarizes the predicted travel time and speed benefits of the Highway 101 HOV Project between La Conchita and the Cabrillo Interchange. All measures in the table are based on the AM and PM peak periods of the 2020 and 2040 "No Build" and "Build" scenarios. The AM peak period was selected to be 7:00 AM to 9:00 AM, while the PM peak period was chosen as 4:00 PM to 6:00 PM. The definition of each performance measure is included in **Attachment 1**. It should be recognized that the results presented below only reflect a portion of the over-all project and its operational effectiveness. The results are limited to the areas south of the Cabrillo Interchange only and focus only on the peak periods (7-9 AM and 4-6 PM). For the "complete" summary of project benefits, refer to the South Coast 101 HOV DEIR technical traffic analysis.

Table 1. Freeway Performance Measures - La Conchita to the Cabrillo Interchange

Highway 101 – La Conchita to Cabrillo	Northbound				Southbound			
	AM Peak Period		PM Peak Period		AM Peak Period		PM Peak Period	
	2020	2040	2020	2040	2020	2040	2020	2040
Number of People Traveling	10,341	13,895	11,028	13,157	8,105	11,627	11,594	14,474
Average Speed Change from No Build (mph)	+23.4	+41.4	+13.7	+22.6	+0.4	+1.6	+8.8	+15.0
Estimated Average Time Savings per Person from No Build (minutes)	6.9	23.5	3.3	8.1	0.1	0.3	1.7	3.2

As shown above, the benefits of the Highway 101 HOV Project on mainline freeway travel south of the Cabrillo interchange are more profound in the northbound morning peak travel direction than the southbound direction. For AM northbound traffic flow, the performance measures indicate that the average speed per person is estimated to increase about 23 mph in 2020 and 41 mph in 2040 when compared to conditions without the project. This AM peak period northbound average speed increase equates to an average travel time savings of roughly 7 and 24 minutes for the 2020 and 2040, respectively.

The time savings benefit is far less in the southbound PM peak hour direction. In 2020, the average southbound PM peak hour travel time saving along this reach would be about 2 and 3 minutes per person for the 2020 and 2040 scenarios, respectively. It should be noted that the relative travel time benefits in 2040 will be greater given the amount of forecast delay projected without the HOV lanes.

Project Effects: Highway 101 – Cabrillo Interchange to State Route 154

The existing 6-lane section of freeway from Cabrillo Boulevard to State Route 154 within the City of Santa Barbara is 7 miles in length. This section of freeway has peak travel during the morning and afternoon commute peak times in both the northbound and southbound directions. According to 2008 traffic data, approximately 10,700 and 11,900 people travel northbound in this section of freeway during AM and PM peak periods, respectively, predominately to and from destinations within the South Coast Region from Santa Barbara and Goleta. Approximately 10,000 and 11,800 people travel this section in the southbound direction during the AM and PM peak periods respectively.

Traffic congestion patterns in this 7-mile section of 6-lane freeway vary by direction. Traffic congestion is generally in both directions for both the morning and afternoon peak travel times. The most obvious pattern is the afternoon southbound back up from the lane reduction or bottleneck at Cabrillo Boulevard. This back up, as stated above, can extend into Downtown. The other congestion point is between the Las Positas and Mission Interchanges. This is the most congested portion of Highway 101 in the County of Santa Barbara – primarily due to experiencing the greatest motorist demand combined with a sequence of several closely spaced interchanges which create "turbulence" in traffic flow when vehicles attempt to merge (or diverge) onto or off of the freeway. While there is no lane reduction here, the number of motorists wanting to use this section of freeway at peak commute times often approaches or exceeds the freeway's carrying capacity in both directions in both peak travel times. As a result, backups can occur to the south and north of this location.

The congestion in this 7-mile section of freeway is predicted to worsen in 2020 and 2040 predominantly in the afternoon southbound direction without the proposed HOV lane. Backups from Cabrillo Boulevard in the southbound direction are predicted to lengthen and persist for greater amounts of time in the afternoon.

With the construction of the HOV lane, travel patterns will shift considerably. With no more bottleneck at Cabrillo Boulevard, the vehicles previously queued into Downtown will flow freely southbound in the afternoon peak travel time, eliminating traffic congestion on the freeway south of Mission Interchange. Eliminating the bottleneck will also deter motorists from using local side streets (Old Coast Highway, Cabrillo Boulevard, and Coast Village Road) to skirt or get around the bottleneck. Without the bottleneck wait time to travel south, the number of commuters traveling at peak times will increase.

This change, however, will have the opposite effect for peak period motorists traveling southbound upstream from Las Positas. Because this section of freeway is already operating at capacity, the added peak period traffic (i.e., commuters selecting more desirable travel times as a result of the bottleneck south of Cabrillo being eliminated) will cause the backups from this location to extend further north, increasing delay. Although a slight increase in delay is predicted to occur for southbound afternoon peak hour traffic prior to Las Positas, on-balance, the total delay of the 7-mile City section is estimated to decrease about 3 minutes per person under 2020 peak period conditions.

Peak period motorists traveling in the northbound direction of this freeway section in the City will actually experience an increase in delay. This effect occurs because the capacity from the south will be increased by 1,650 vehicles per peak hour. Like opening a faucet wider, this will allow 1,650 more vehicles per hour to flow into the City portion of the freeway. The new injection of vehicles will exacerbate traffic backups from the capacity limitation between the Mission and Las Positas interchanges.

Table 2 shows the speed and time delay changes for the average commuter traveling the 7-mile length of freeway in each direction and peak hour. Again, it should be recognized that the results presented below only reflect a small portion of the over-all project and its operational effectiveness. The results are limited to the City of Santa Barbara only and focus only on the peak periods (7-9 AM and 4-6 PM). For instance, if the analysis time frame is expanded to include the current off-peak hours, overall total mainline delay within the City of Santa Barbara is projected to decrease by 26% by 2020 under the build condition. The interested reader is advised to read the South Coast 101 HOV DEIR traffic analysis in order to realize the "complete" picture of project effects.

Table 2. Freeway Performance Measures in the City of Santa Barbara

Highway 101 – Cabrillo to State Route 154	Northbound				Southbound			
	AM Peak Period		PM Peak Period		AM Peak Period		PM Peak Period	
	2020	2040	2020	2040	2020	2040	2020	2040
Number of People Traveling	13,198	15,081	15,826	14,685	14,612	16,022	15,142	17,062
Average Speed Change from No Build (mph)	-9.1	-7.6	-7.1	-4.5	+0.2	+14.0	+8.5	+23.8
Estimated Average Time Savings per Person from No Build (minutes)	-2.7	-3.1	-1.7	-3.5	0.0	3.1	1.6	8.4

In the 2020 Build conditions, the number of people traveling on this section of Highway 101 are estimated to increase by 2,500 during the AM peak period in the northbound direction and 3,400 during the PM peak period in the southbound direction. In the 2040 build conditions, approximately 4,400 and 5,300 additional people would be traveling on this portion of Highway 101 during the AM and PM peak periods in the northbound and southbound directions respectively.

The performance measures indicate that on the freeway mainline between Cabrillo Boulevard and SR 154 the average speed in 2020 would degrade in the northbound direction by 9 mph in the AM peak

period and 8 mph in the PM peak period. Subsequently, the average travel time would rise by 2 to 3 minutes. A similar trend is estimated for 2040 conditions.

Conversely, the HOV lane would generate traffic operational benefits in the southbound direction. This benefit will more profoundly be felt driving south of the Mission Interchange. Both average speed and travel time are projected to improve. This is intuitive given the widening of freeway for an HOV lane would eliminate bottleneck from three-lane to two-lane south of the Cabrillo Interchange, eliminating the back up into Downtown and allowing vehicles to move south without delay. Again, per reasons stated previously, queuing and delay during the southbound peak periods is expected to increase prior to the Mission Interchange. The 2020 analysis shows back-ups from the Mission Interchange extending back to Patterson Interchange during the worst portion of the PM peak hour.

Side by Side Comparison – Total Vehicle and Person Hours

Table 3 provides a Measure of Effectiveness summary comparison between the No Build (without HOV lane) and Build (with HOV lane project) conditions for the 2020 Opening Day and 2040 Design Year freeway operational analyses during the AM and PM peak periods (7-9 AM and 4-6 PM) of the two freeway segments. It also shows the Highway 101 traffic operations under the baseline (2008) conditions. To facilitate comparison, the table is formatted in the same manner as the published South Coast 101 HOV DEIR.

Total peak period mainline delay is described in Table 3 based on the increase in time delay from traveling a certain section of freeway when compared to free flow freeway conditions. When the freeway is at free flow conditions, zero total mainline delay is experienced. As congestion increases, greater amounts of total mainline delay are experienced. Total mainline delay is described in vehicle-hours and person-hours. Vehicle-hours of delay is the amount of time all cars are delayed across the section of freeway being described for a given time period. Person-hours of delay is the amount of increased time the people in the cars are delayed traveling the same section of freeway at a given time. Person-hours of delay are typically greater than vehicle-hours of delay for the same segment and time period given the presence of passengers who also delayed in the vehicle along with the driver.

Table 3. Freeway Detailed Performance Measures

Scenario	Direction and Peak Hour [1]	Highway 101 - La Conchita to Cabrillo									Highway 101 - Cabrillo to State Route 154								
		2008 Baseline			2020			2040			2008 Baseline			2020			2040		
		Total Mainline Delay [2]		Average Speed [3]	Total Mainline Delay [2]		Average Speed [3]	Total Mainline Delay [2]		Average Speed [3]	Total Mainline Delay [2]		Average Speed [3]	Total Mainline Delay [2]		Average Speed [3]	Total Mainline Delay [2]		Average Speed [3]
		veh-hrs	person-hrs	mph	veh-hrs	person-hrs	mph	veh-hrs	person-hrs	mph	veh-hrs	person-hrs	mph	veh-hrs	person-hrs	mph	veh-hrs	person-hrs	mph
NO BUILD																			
	Northbound AM Peak	326	414	44	934	1,288	41	2,606	3,596	22	131	166	49	444	613	42	685	945	36
	Southbound AM Peak	0	0	65	7	10	64	34	48	63	21	29	62	328	466	49	721	1,024	36
	Northbound PM Peak	0	0	65	392	541	51	1,027	1,417	37	70	89	57	401	553	46	1,403	1,937	26
	Southbound PM Peak	70	98	59	192	272	56	381	541	49	251	351	38	486	690	42	1,529	2,170	24
BUILD																			
	Northbound AM Peak				9	15	65	57	98	63				860	1,420	33	1,159	1,970	28
	Southbound AM Peak				0	0	65	4	7	65				322	547	49	301	512	50
	Northbound PM Peak				15	25	64	155	264	60				667	1,100	38	1,853	3,151	21
	Southbound PM Peak				0	0	65	13	22	64				276	469	50	386	656	47
CHANGE FROM NO BUILD																			
	Northbound AM Peak				-924	-1,273	23	-2,549	-3,499	41				416	807	-9	474	1,024	-8
	Southbound AM Peak				-7	-10	0	-30	-42	2				-6	-10	0	-420	-511	14
	Northbound PM Peak				-377	-516	14	-872	-1,153	23				266	547	-7	450	1,214	-5
	Southbound PM Peak				-192	-272	9	-368	-519	15				-210	-221	8	-1,143	-1,514	24

Notes:
1 Peak Period indicates 7-9 AM and 4-6 PM
2 Indicates sum of delays all vehicles and passengers during the peak period along the designated segment
3 Indicates average of speeds by all vehicles during the peak period along the designated segment

FREQ Detailed Results – The La Conchita to Cabrillo

Freeway mainline is projected to improve substantially within the project limits where the freeway widening will occur, both in 2020 and 2040. **Table 3** reiterates the performance measures provided in **Table 1**. An addition of an HOV lane will augment the capacity of the 12-mile long segment, which would result in increase in average speeds and reduction in system-wide delays. The improvement would nearly eliminate all morning and afternoon peak hour traffic delays in both directions.

FREQ Detailed Results – Cabrillo to SR 154 -Within the City of Santa Barbara

Overall, for northbound travel within the City of Santa Barbara, Highway 101 is predicted to experience increased peak period congestion when the HOV is constructed when compared to not building the HOV. Increased congestion is anticipated to occur because of the increase in peak period flow of traffic into the existing 6-lane section of freeway. Conversely, the delay in PM peak period southbound direction is projected to improve in the City limits from the project because of the elimination of traffic back-ups queuing into Downtown caused by the bottleneck south of Cabrillo (the bottle neck would no longer exist)[6].

Northbound

In 2020, the mainline delays within the City limits would increase by 807 person-hours (or, 416 vehicle-hours) in the northbound direction during the AM peak hour relative to the No Build conditions. This trend continues in 2040. As mentioned earlier, delays caused by existing bottlenecks (e.g. at Salinas, San Ysidro, Padaro, etc.) will be relieved as a result of the HOV lane. However, the increased northbound flow rate resulting from the HOV project is projected to create delays in the City of Santa Barbara where pre-existing operational deficiencies will worsen and new capacity bottlenecks are formed or made worse. During the 2020 AM and PM northbound peak hours, total person-hour delay would increase by 132% and 99%, respectively, within the City of Santa Barbara under the build condition relative to not building the freeway.

Southbound

Conversely, in the southbound direction, peak period commuters in this section would experience lower delays and increased speeds as a result of the HOV lane – offset by increased delays near Las Positas. In 2020, person hours of delay are estimated to decrease in the southbound direction during the AM peak hour. In the southbound direction, both vehicle and person delay is projected to improve in 2040 relative to the No Build conditions during both peak hours. During the 2020 PM

[6] Results only pertain to the peak hours. If the off-peak hours are included, a total net benefit of 917.8 reduced vehicle hours of delay (bi-directional) and 1,770 reduced vehicle hours of delay (bi-directional) will be experienced within the City limits on Highway 101 in 2020 and 2040 respectively.

hours, total person peak period delay would be reduced by 32% within the City of Santa Barbara under the build condition relative to the no build. The average travel speeds will improve by 8mph and 24 mph in the southbound direction during PM peak in 2020 and 2040, respectively.

In summary, within the City of Santa Barbara, the 101 HOV project is predicted to eliminate peak period traffic back-ups in the southbound PM peak hour direction in Downtown prior to the Cabrillo Interchange. At the same time, the freeway improvement will create new traffic back-ups in the northbound direction from Mission as far back as Salinas in both the AM and PM peak hours. Additionally, the existing PM peak hour southbound traffic back up from Las Positas would be longer and more intense extending back to past Patterson Interchange at the worst times7.

B. Peak Hour Traffic Volumes Added To City Streets

The freeway delay changes described above will directly affect travel onto and off of City streets. This occurs as congestion is eliminated in some locations and increased in others. **Table 4** shows the total volume forecast and changes at each intersection under both No-Build and 2020 and 2040 Build conditions for all freeway-related intersections within the City.[8] The AM and PM peak hour volume increases at ramp intersections are primarily attributed to diverted travel (i.e. to/from local parallel streets) and adjusted commuter travel time (commuters choosing more desirable travel times because of increased freeway capacity) versus induced travel (new trips created by additional freeway capacity). As documented in the SC 101 HOV DEIR, analysis of the modeled no build and build daily traffic volume assignments on the US 101, diverted travel and adjusted commute travel time accounted for over 95% of the peak hour volume increases/decreases. Hence, the higher ramp intersection use levels is attributable to 1) traffic that has diverted off local City streets to instead use the freeway system, 2) traffic that was delayed in upstream bottlenecks that is now able to access the off-ramps quicker as a result of the project, 3) traffic diverted from the freeway onto paralleling city streets as a result of increased freeway congestion, and 4) traffic now delayed taking longer to access off-ramps.

General Description of Changes

The elimination of the southbound back up from the exiting bottleneck south of Cabrillo Interchange will enable traffic that is now diverting from the freeway in the PM peak hour to join or stay on the

[7] Results only pertain to the peak hours. If the off-peak hours are included, a total net benefit of 917.8 reduced vehicle hours of delay (bi-directional) and 1,770 reduced vehicle hours of delay (bi-directional) will be experienced within the City limits on Highway 101 in 2020 and 2040 respectively.

[8] Note that within the vicinity of the Cabrillo Hot-Springs Interchange – volumes are significantly affected by the elimination/introduction of a southbound on-ramp at this interchange. More detailed analysis of the Cabrillo Hot-Springs Interchange is provided in supporting technical documents of the SC 101 HOV DEIR.

freeway. Currently, some motorists frustrated by this congestion get off the freeway or choose to get on the freeway close to, or south of, the bottleneck, using city streets to avoid freeway congestion. Once the bottleneck is eliminated, motorists will stay on the freeway or use the previously congested portion of freeway because their speeds and therefore their travel time will be faster. Some of the City streets that will likely experience less congestion during the PM peak hour in the southbound direction include Old Coast Highway, Coast Village Road, Cabrillo Boulevard, and Castillo.

Table 4. Peak Hour Traffic Volumes at City Intersections

ID	Intersection	2020 No Build		2020 Build				2040 No Build		2040 Build			
				AM Peak		PM Peak				AM Peak		PM Peak	
		AM Peak	PM Peak	Volumes	Change from No Build	Volumes	Change from No Build	AM Peak	PM Peak	Volumes	Change from No Build	Volumes	Change from No Build
39	NB off ramp & Olive Mill Rd	1,195	1,051	1,173	-22	1,098	47	1,341	1,233	1,282	-59	1,359	126
40	SB on ramp & Olive Mill Rd	1,108	1,296	1,054	-54	1,299	3	1,259	1,559	1,116	-143	1,567	8
41	SB off ramp & Olive Mill	431	314	380	0	191	-123	515	555	380	-135	227	-328
43	NB off ramp & Coast Village Rd/Hermosillo Dr	946	1,356	925	-21	1,284	-72	1,044	1,597	987	-57	1,404	-193
44	SB on/off ramp & NB off ramp & Cabrillo Blvd	1,052	1,195	1,151	98	1,218	23	1,076	1,365	1,338	262	1,426	61
45	NB on ramp & Cabrillo Blvd	1,382	1,740	1,390	8	1,760	20	1,444	2,018	1,465	21	2,072	54
46	NB on/off ramp & S. Salinas St	633	560	659	27	582	23	639	698	710	71	758	60
47	NB on/off ramp & Milpas St	3,028	3,419	3,175	147	3,575	156	3,090	3,482	3,482	392	3,897	415
48	SB off ramp & Milpas St	2,202	2,746	2,251	48	2,816	71	2,284	2,828	2,399	115	3,016	188
49	SB on/off ramp & Milpas St	1,932	2,625	2,167	236	2,763	138	1,968	2,625	2,596	628	2,994	369
50	NB on/off ramp & Garden St	2,305	2,826	2,356	51	2,827	0	2,420	3,156	2,556	136	3,157	1
51	NB off ramp & Laguna St	407	301	427	21	313	13	476	435	531	55	469	34
52	SB on/off ramp & Garden St	2,107	2,436	2,162	55	2,483	47	2,318	2,734	2,464	146	2,859	125
54	NB off ramp & Bath St	434	610	441	6	614	5	453	694	470	17	706	12
55	NB on ramp & Castillo St	1,672	2,342	1,669	-3	2,355	13	1,814	2,571	1,806	-8	2,605	34
57	SB on/off ramp & Castillo St	2,368	2,759	2,368	0	2,769	9	2,552	3,092	2,551	-1	3,117	25
58	NB on/off ramp & Carrillo St	3,341	4,121	3,350	9	4,130	9	3,510	4,412	3,534	24	4,435	23
59	SB on/off ramp & Carrillo St	3,528	3,915	3,532	5	3,924	9	3,677	4,141	3,689	12	4,164	23
62	NB on/off ramp & Arrellaga St	864	1,050	872	8	1,055	5	869	1,087	890	21	1,099	12
63	NB on/off ramp & Mission St	2,982	2,886	2,992	9	2,932	47	3,068	3,150	3,093	25	3,274	124
64	SB on/off ramp & Mission St	2,747	2,593	2,755	8	2,627	34	2,817	2,793	2,838	21	2,883	90
67	NB off ramp & Las Positas	817	810	818	1	784	-26	821	887	824	3	817	-70
68	NB on ramp & Calle Real & Las Positas	1,600	1,681	1,625	25	1,685	4	1,663	1,789	1,729	66	1,800	11

70	SB on/off ramp & Las Positas Rd	2,893	3,140	2,920	27	3,153	13	2,955	3,230	3,027	72	3,264	34
72	NB on/off ramp & Calle Real & Hope	1,693	2,101	1,727	35	2,137	36	1,719	2,222	1,811	92	2,318	96
73	SB on/off ramp & La Cumbre Rd	2,136	2,283	2,135	-1	2,282	-2	2,154	2,332	2,152	-2	2,328	-4
75	NB off ramp & State St & Calle Real	2,472	3,048	2,485	12	3,057	9	2,613	3,400	2,646	33	3,424	24
76	NB on ramp & State St	1,409	1,704	1,407	-2	1,692	-12	1,419	1,908	1,414	-5	1,876	-32

Conversely, as congestion increases in the AM and PM peak hour northbound, some traffic may divert from the freeway onto city streets - the Milpas corridor being a likely option. As commuters move north into Santa Barbara on the newly widened freeway, they will experience traffic backups from the Mission Interchange as far back as Salinas Street. Instead of waiting in congestion, some motorists may choose to complete the final portion of their trip via city streets. This will be particularly attractive option for commuters with destinations in the Downtown.

Traffic could also divert from the freeway to avoid southbound PM peak hour traffic congestion backups from Mission Interchange, which are anticipated to extend as far as Patterson. Alternate city routes could include Hollister/Upper State, Modoc, and Cathedral Oaks/Foothill.

C. Intersection Peak Hour Level of Service

The 101 HOV Project's traffic impact to intersections within the City of Santa Barbara was performed and documented in the SC 101 HOV Project DEIR . Impacts to intersections are measured using a level-of-service LOS analysis. LOS analysis is a mathematical calculation, which attempts to estimate the level of congestion experience by the average motorist traveling through an intersection. Intersections are given letter grades (A through F) based on these calculations to describe their performance much like letter grades in school.

The LOS analysis method used in for the Draft Environmental Impact Report was the Highway Capacity Manual (HCM), which measures congestion in average delay (the average seconds of delay a motorist experiences at an intersection). The City of Santa Barbara commonly uses the Intersection Capacity Utilization (ICU), which measures the percentage of an intersection's capacity used. Both methods mathematically calculated the letter grade scale that motorists actually experienced by motorists. **Attachment 2** describes each letter grade as it relates to HCM, ICU, and the motorist experience.

Table 5 and **Table 6** show a summary of the analysis (i.e. impacts) from the 101 HOV Draft EIR of the intersections within the City of Santa Barbara. This analysis was performed for CEQA analysis. Accordingly, the 2020 scenario was used for project-specific traffic impacts (Table 5) and the 2040 scenario was used for the cumulative traffic impact (Table 6). The study shows project-specific impacts to five intersections and cumulative impacts to nine intersections within the limits of City of Santa Barbara during the AM and/or PM peak hours. It should be noted that the project impacts were identified using the criteria of jurisdictions that own and operate the intersection.

Table 5. 2020 Project Level Impacts – City of Santa Barbara

ID	Intersection	Control [1]	Location	Total Entering Traffic Volumes				No Build Results		Build Results		Signal Warrant Met? [5]		Project Impact Threshold Criteria
				Existing	No Build	Build	Delta [2]	Delay (seconds) OR V/C [3]	LOS [4]	Delay (seconds) OR V/C [3]	LOS [4]	No Build	Build	
49	SB on ramp & Milpas St	Signal	Study Area									N/A	N/A	State
	AM Peak			1,910	1,932	2,161	229	29.8	C	35.8	D			
55	NB on ramp & Castillo St	Signal	Study Area									N/A	N/A	State
	PM Peak			2,205	2,342	2,355	13	103.3	F	104	D			
64	SB on/off ramp & Mission St	Signal	Study Area									N/A	N/A	State
	PM Peak			2,473	2,593	2,627	34	33.9	C	36	D			
79	SB on ramp & State St & Rt 154	TWSC	Study Area									---	---	State
	AM Peak			1,941	1,983	1,994	11	72.2	F	75.5	F			
	PM Peak			1,635	1,704	1,722	18	53.3	F	58.7	F			
106	Milpas St & Quinientos St	Signal	Study Area									N/A	N/A	City of SB
	PM Peak			2,518	2,743	2,767	24	0.772	C	0.788	C			

Notes:
1 TWSC - Two Way Stop Control, AWSC - All Way Stop Control
2 As defined by difference between 2040 build and 2040 no build volume sets
3 Delay is based on HCM 2000, Chapter 16 and 17 methodology. V/C based on Transportation Research Board Special Report 209
4 HCM LOS is reported for the worst movement at TWSC intersections and for the overall intersection at AWSC and signalized intersections
5 Based on Peak Hour Warrants (Signal Warrant #3) as described in California Manual on Uniform Traffic Control Devices at unsignalized intersections

Table 6. 2040 Cumulative Level Impacts – City of Santa Barbara

ID	Intersection	Control [1]	Location	Total Entering Traffic Volumes				No Build Results		Build Results		Signal Warrant Met? [5]		Project Impact Threshold Criteria
				Existing	No Build	Build	Delta [2]	Delay (seconds) OR V/C [3]	LOS [4]	Delay (seconds) OR V/C [3]	LOS [4]	No Build	Build	
49	SB on ramp & Milpas St	Signal	Study Area									N/A	N/A	State
	AM Peak			1,910	1,968	2,605	637	30	C	48.4	D			
55	NB on ramp & Castillo St	Signal	Study Area									N/A	N/A	State
	PM Peak			2,205	2,571	2,605	34	129.4	F	131.4	F			
57	SB on/off ramp & Castillo St	Signal	Study Area									N/A	N/A	State
	PM Peak			2,557	3,092	3,117	25	52.6	D	55.7	E			
59	SB on/off ramp & Carrillo St	Signal	Study Area									N/A	N/A	State
	AM Peak			3,435	3,677	3,689	12	56.8	E	62.7	E			
	PM Peak			3,778	4,141	4,164	23	33.6	C	35.6	D			
60	Carrillo St & Castillo St	Signal	Study Area									N/A	N/A	City of SB
	AM Peak			2,742	2,995	3,082	87	0.757	C	0.779	C			
64	SB on/off ramp & Mission St	Signal	Study Area									N/A	N/A	State
	AM Peak			2,705	2,817	2,838	21	34.5	C	35.9	D			
	PM Peak			2,473	2,793	2,883	90	53.1	D	65	E			
65	Mission St & Castillo St	Signal	Study Area									N/A	N/A	City of SB
	PM Peak			2,451	2,887	3,001	114	0.787	C	0.849	D			
79	SB on ramp & State St & Rt 154	TWSC	Study Area									N/A	N/A	State
	AM Peak			1,941	2,054	2,081	27	101.1	F	112.4	F			
	PM Peak			1,635	1,818	1,867	49	96.9	F	119.4	F			
106	Milpas St & Quinientos St	Signal	Study Area									N/A	N/A	City of SB
	PM Peak			2,518	3,118	3,181	63	0.866	D	0.909	E			

Notes:
1 TWSC - Two Way Stop Control, AWSC - All Way Stop Control
2 As defined by difference between 2040 build and 2040 no build volume sets
3 Delay is based on HCM 2000, Chapter 16 and 17 methodology. V/C based on Transportation Research Board Special Report 209
4 HCM LOS is reported for the worst movement at TWSC intersections and for the overall intersection at AWSC and signalized intersections

5 Based on Peak Hour Warrants (Signal Warrant #3) as described in California Manual on Uniform Traffic Control Devices at unsignalized intersections

D. Conclusion

The Highway 101 HOV DEIR documentations shows that the freeway widening project will significantly reduce motorist delay during the AM peak period from the La Conchita to the Cabrillo Interchange. Commuters traveling from cities in Ventura County will spend far less time in traffic during the morning commute to the City of Santa Barbara. Commuters leaving the City of Santa Barbara to cities in Ventura County during the PM peak period will experience time savings as well, particularly if accessing freeway interchanges south of Mission. The freeway widening will eliminate the bottleneck south of the Cabrillo Interchange and the associated traffic back up currently extending into Downtown. The elimination of this southbound PM peak hour traffic back up is also anticipated to displace motorists from city streets who are currently trying to drive around the bottleneck. These peak periods congestion relief benefits also serve to benefit goods movement (economic benefits) as well as safety.

The Highway 101 HOV project is also anticipated to significantly increase its people carrying capacity. Because access to the High Occupancy Vehicle lane requires two or more people per vehicle during commute periods, commuters will be incentivized to carpool or take a bus that gets through the corridor faster. Accordingly, the number of people traveling per vehicle is anticipated to increase. Increase carpooling has other beneficial outcomes such as reduce parking demand, green house gas emissions, and fuel consumption.

Within the City of Santa Barbara, the freeway widening is anticipated to provide AM and PM peak period congestion relief in the southbound direction of travel. However, increase motorist delay for the morning and afternoon peak hours is anticipated to occur in the northbound direction from Mission extending back as far as Salinas. This northbound traffic back up will delay commuters traveling through or from Downtown Santa Barbara toward Upper State Street and the Goleta area. This change may increase traffic on the city grid and Upper State Street as northbound commuters divert to local streets to avoid the backed up freeway. Although the HOV project will reduce southbound delays within the City as a whole, during the PM peak period the increment of diverted traffic who will take advantage of travel time savings will exacerbate the operational challenges that currently exist north of the Mission Interchange (series of closely spaced interchanges). This will intensify traffic back-ups beyond the Patterson Interchange during peak conditions.

Some City of Santa Barbara intersections will experience increased traffic congestion at freeway interchanges. This increase in congestion is primarily due to the increased flow of traffic created by the widening freeway.

Results presented herein only pertain to the peak hours. If the off-peak hours are included, a total net benefit of 917.8 reduced vehicle hours of delay (bi-directional) and 1,770 reduced vehicle hours of delay (bi-directional) will be experienced within the City limits on Highway 101 in 2020 and 2040 respectively. If the entire study area of 27.5 miles is reflected, a total net benefit of 2,812 reduced vehicle hours of delay (bi-directional) and 11,435 reduced vehicle hours of delay (bi-directional) will

be experienced as a result of the 101 HOV project. For the complete analysis results, the reader is referred to the Draft Environmental Impact Report for the Highway 101 Project and its supporting documents.

Attachment 1
Definition of Measure of Effectiveness

Number of People indicates number of total commuters which is equivalent to the number of vehicles multiplied by average number of people in each.

Average Speed indicates average of speed of all vehicles traveling on the roadway.

Travel time indicates the amount of time a vehicle takes, on an average to traverse through a stretch of roadway.

Total Mainline Delay indicates accumulated delays of all vehicles along the roadway. *Delay* represents travel time difference between free flow speeds and observed or predicted speeds. *Vehicle-hours* of delay indicate sum of delays for all vehicles, whereas *passengers-hours* of delay present those aggregated by all passengers in all vehicles.

Attachment 2 Level of Service Criteria

Level of Service Criteria for Signalized Intersections

LOS	Average Delay[1] (secs/veh)	Description
A	≤ 10.00	**Very Low Delay:** This level of service occurs when progression is extremely favorable and most vehicles arrive during a green phase. Most vehicles do not stop at all.
B	10.1-20.0	**Minimal Delays:** This level of service generally occurs with good progression, short cycle lengths, or both. More vehicles stop than at LOS A, causing higher levels of average delay.
C	21.0-35.0	**Acceptable Delay:** Delay increases due to only fair progression, longer cycle lengths, or both. Individual cycle failures (*to service all waiting vehicles*) may begin to appear at this level of service. The number of vehicles stopping is significant, though many still pass through the intersection without stopping.
D	35.1-55.0	**Approaching Unstable/Tolerable Delays:** The influence of congestion becomes more noticeable. Longer delays may result from some combination of unfavorable progression, long cycle lengths, or high v/c ratios. Many vehicles stop, and the proportion of vehicles not stopping declines. Individual cycle failures are noticeable.
E	55.1-80.0	**Unstable Operation/Significant Delays:** This is considered by many agencies the upper limit of acceptable delays. These high delay values generally indicate poor progression, long cycle lengths, and high v/c ratios. Individual cycle failures are frequent occurrences.
F	≥ 80.0	**Excessive Delays:** Describes operations with average delay in excess of 60 seconds per vehicle. This level, considered to be unacceptable to most drivers, often occurs with oversaturation (i.e., when arrival flow rates exceed the capacity of the intersection). It may also occur at high v/c ratios below 1.00 with many individual cycle failures. Poor progression and long cycle lengths may also be major contributing causes to such delay levels.

[1] Weighted average of delay on all approaches.
Source: Highway Capacity Manual, 2000

Level of Service Criteria for Non-signalized Intersections

Level of Service	Average Delay[1] (seconds/veh)
A	0.0 - 10.0
B	10.1 - 15.0
C	15.1 - 25.0
D	25.1 - 35.0
E	35.1 - 50.0
F	>50.0

[1] Weighted average delay
Source: Highway Capacity Manual, 2000

ICU Level of Service Criteria for Signalized Intersections

Level of Service (LOS)	Volume/Capacity Ratio	Description
A	0.000–0.600	**Very Low Delay:** This level of service occurs when progression is extremely favorable and most vehicles arrive during a green phase. Most vehicles do not stop at all.
B	0.601–0.700	**Minimal Delays:** This level of service generally occurs with good progression, short cycle lengths, or both. More vehicles stop than at LOS A, causing higher levels of average delay.
C	0.701–0.800	**Acceptable Delay:** Delay increases due to only fair progression, longer cycle lengths, or both. Individual cycle failures (*to service all waiting vehicles*) may begin to appear at this level of service. The number of vehicles stopping is significant, though many still pass through the intersection without stopping.
D	0.801–0.900	**Approaching Unstable/Tolerable Delays:** The influence of congestion becomes more noticeable. Longer delays may result from some combination of unfavorable progression, long cycle lengths, or high v/c ratios. Many vehicles stop, and the proportion of vehicles not stopping declines. Individual cycle failures are noticeable.
E	0.901–1.000	**Unstable Operation/Significant Delays:** These high delay values generally indicate poor progression, long cycle lengths, and high v/c ratios. Individual cycle failures are frequent occurrences.
F	>1.000	**Excessive Delays:** Describes operations with average delay in excess of 60 seconds per vehicle. This level, considered to be unacceptable to most drivers, often occurs with over-saturation (i.e., when arrival flow rates exceed the capacity of the intersection) and with many individual cycle failures. Poor progression and long cycle lengths may also be major contributing causes to such delay levels.

Source: Santa Barbara County Association of Governments (SBCAG) and *Highway Capacity Manual 2000*, Transportation Research Board, Washington DC

Level of Service Criteria For Basic Freeway Segments

Level of Service	Density pc/mi/ln FFS = 70	Density pc/mi/ln FFS = 65	Density pc/mi/ln FFS = 60	Density pc/mi/ln FFS = 55
A	11	11	11	11
B	18	18	18	18
C	26	26	26	26
D	35	35	35	35
E	45	45	45	45
F	-	-	-	-

Level of Service Criteria For Ramp Merge-Diverge Areas

Level of Service	Density pc/mi/ln
A	≤ 10
B	> 10-20
C	> 20-28
D	> 28-35
E	> 35
F	-

Table 1
2030 Key Impacted Intersections with
Impacts of the Highway 101 HOV Project[1]

		A	B	C	D	E	F	G	H
Intersection	**Peak Hour**	**Plan Santa Barbara FEIR**					**Highway 101 HOV Related**		
		2008 Baseline		**2030 GP Buildout**		**Change in Delay or V/C**	**Change in Delay or V/C**	**With 101 HOV**	
		Delay or V/C	**LOS**	**Delay or V/C**	**LOS**			**Delay or V/C**	**LOS**
Olive Mill & Coast Village Road & Southbound Ramps	AM	13sec	B	230 sec	F	+217sec		***	***
	PM	13sec	B	81 sec	F	+68sec		***	***
Milpas & Quinientos	PM	0.73	C	0.77	C	+0.09	+0.03	.80	C
Garden & Gutierrez	PM	0.81	D	0.89	D	+0.09		N/C	N/C
Garden & Highway 101 NB Ramps	PM	0.75	C	0.78	C	+0.03	+0.01	0.79	C
Garden & Highway 101 SB Ramps	PM	0.75	C	0.80	C	+0.05	+0.03	0.83	D
Castillo & Haley	PM	0.78	C	0.83	D	+0.05		N/C	N/C
Carrillo & Highway 101 Northbound Ramps	AM	0.70	B	0.79	C	+0.09		N/C	N/C
	PM	0.81	D	0.83	D	+0.02		N/C	N/C
Carrillo & Highway 101 Southbound Ramps	PM	0.74	C	0.78	C	+0.04	+0.01	0.79	C
Carrillo & San Andres	PM	0.76	C	0.82	D	+0.6		N/S	N/S
Mission & Highway 101 Northbound Ramps	AM	0.86	D	0.91	E	+0.5		N/C	N/C
	PM	0.81	D	0.96	E	+0.15	+0.03	0.99	E
Mission & Highway 101 Southbound Ramps	AM	0.94	E	0.98	E	+0.04	+0.01	0.99	E
	PM	0.97	E	1.09	F	+0.12	+0.02	1.11	F
Mission & Modoc	AM	27sec	C	34 sec	D	+7 sec	+2 sec	36 sec	D
	PM	29sec	C	34 sec	D	+5sec	+3 sec	37 sec	D
Las Positas & State Street	PM	0.77	C	0.87	D	+0.10		N/S	N/S
Calle Real & Highway 101 NB On-Ramp	AM	0.80	C	0.87	D	+0.03	+0.03	0.90	D
Las Positas & Highway 101 Southbound Ramps	AM	0.81	D	0.90	D	+0.09	+0.01	0.91	E
	PM	0.95	E	0.98	E	+0.03	+0.01	0.99	E
Las Positas & Modoc	PM	0.67	B	0.82	D	+0.15	-0.02	.80	C
Las Positas & Cliff	AM	30sec	D	40 sec	E	+10sec		N/S	N/S
	PM	23sec	C	32 sec	D	+9sec		N/S	N/S
Hitchcock & State	PM	0.67	B	0.77	C	+0.10		N/S	N/S
La Cumbre & State	PM	0.70	B	0.81	D	+0.11		N/S	N/S
Hope & Highway 101 Northbound Ramps	PM	0.77	C	0.87	D	+0.10		N/C	N/C

[1]The intersections presented are limited to the key impacted intersections as determined by the Plan Santa Barbara FEIR. ***The 101 HOV EIR data analyzed this as 3 separate intersections and cannot be used with the General Plan data. N/C – No measurable change in V/C is anticipated. N/S – The KIA study did not included these key city intersections in its intersection analysis.

EXHIBIT B

From: Schneider, Helene
Sent: Wednesday, August 07, 2013 12:59 PM
To: Al Clark (AlClark@ci.carpinteria.ca.us); Alice Patino; Carbajal, Salud; Doreen Farr; Francis Romero; Holly Sierra; Janet Wolf; Jim Richardson; John Linn; Peter Adam; Roger Aceves; Steve Lavagnino
Cc: Jim Kemp
Subject: FYI: Meeting in Sacramento re: left-hand ramps

To SBCAG Board:

For your information, two weeks ago I was invited by Jack Overall and Ron Pulice from the Common Sense 101 Coalition to attend a meeting in Sacramento with Caltrans Director Malcolm Dougherty, BT&H Secretary Brian Kelly, and a representative of Governor Brown to discuss the Highway 101 HOV widening project. My main focus of the meeting had to do with my role as Mayor of the City of Santa Barbara and the City's role in granting a Coastal Development Permit.

Recently, City of Santa Barbara staff completed an analysis of the Caltrans preferred Modified F alternative at the Cabrillo/101 interchange. City staff analysis was confirmed by Caltrans traffic engineer Mr. Paul McClintic. The conclusion is that the preferred alternative, Modified F, will worsen the traffic situation at key City intersections on Cabrillo Blvd, from the current Level of Service (LOS) A/B rating to an LOS D or LOS E at peak times. This information has only recently been passed onto Caltrans District 5 Director Tim Gubbins and Project Manager Scott Eades. Also, at the meeting in Sacramento, it was clear that Mr. Dougherty was unaware of this information.

As you know, City staff and I are very concerned about the additional traffic congestion at the Cabrillo Blvd interchange if the Modified F proposal moves forward. In addition, we are also highly concerned about this proposal as it relates to the narrow Union Pacific Railroad Bridge directly adjacent to this intersection. I appreciate the work currently underway between the City of Santa Barbara, SBCAG and UPRR determining the costs required to replace this 100-year old bridge. Unfortunately, at this meeting, Mr. Dougherty confirmed that Caltrans has no interest in addressing this issue, and said, "We are not touching that bridge" during our meeting.

I made it clear at this meeting that in light of my staff's analysis of Modified F, I do not see how the City of Santa Barbara would approve the issuance of the required Coastal Development Permit for the project as currently proposed as it would make traffic matters worse. I also reiterated the importance of this project and that the City of Santa Barbara, the County of Santa Barbara and SBCAG all passed resolutions stating that widening 101 is our highest priority regional transportation project.

I also reiterated to them that I am solidly behind the HOV component to this project as it pertains to providing traffic congestion relief from the thousands of peak-hour commuters from Ventura County. As I said at the May 16, 2013 SBCAG Board meeting, I believe the placement of the HOV terminus three miles south of Caltrans Modified F proposal will satisfy this intent of the HOV lane, particularly if doing so produces a more cost effective project, less congestion at interchanges, and preservation of the look and feel of the corridor.

EXHIBIT C

By the end of the meeting Secretary Kelly suggested having all parties involved agree on the set of facts as they relate to safety data along the 101 corridor, particularly at the Cabrillo/Hot Springs and Sheffield interchanges. I have directed staff at the City to begin analyzing the data we believe is appropriate.

Accident data is very important. However, individual collisions must be reviewed to determine their cause. The left side ramps have other design flaws (vertical and horizontal sight distance, storage capacity, etc) that may have caused a collision. The collision analysis for the previous widening project from Milpas to Hot Springs found that the collision were primarily due to congestion, not the left-side off-ramps. Furthermore, it is also important to recognize other critical factors including operational feasibility, funding requirements and environmental impacts. As a part of the accident conditions review, we hope Caltrans will come to the meeting having given careful consideration to the safety mitigations–ramp designs contained in the Fact Sheets prepared by the Community Alternative (something that was not studied prior to this meeting) as those may provide a path toward an acceptable project.

Fortunately, at the behest of Secretary Kelly, Director Dougherty agreed to "put everything on the table" and that we need to agree on a set of facts related to safety data. I interpret this statement to mean that retention of the left-hand ramps is "on the table".

We look forward to a follow up meeting, and hopefully a positive outcome. I especially want to thank Jack Overall, Ron Pulice and others with the Common Sense 101 Coalition who have spent significant volunteer time compiling and communicating this data to me and other policy makers.

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