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TECHNICAL MEMORANDUM

DATE: 4/17/2023

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FROM: Sara Hawley, PE and Sierra Brown, PE, LSC Transportation Consultants, Inc.

SUBJECT: Waldorf Astoria Lake Tahoe – VMT Analysis

This memorandum necessarily reconciles the calculation of Vehicle Miles Traveled (VMT) as originally calculated in the Boulder Bay EIS utilizing "Alternative A" (Existing Biltmore uses at full capacity and optimum operations) as the baseline for measuring impacts versus the "Baseline Biltmore" (the 2008 traffic trip counts adjusted to 2006 economic conditions), the currently applicable baseline as referenced in the TRPA Governing Board hearing for Boulder Bay. Application of the prior baseline demonstrated significant VMT reduction comparing the Tahoe Biltmore uses at full capacity and optimum operations (Alternative A) to the approved "Boulder Bay Alternative C" (Boulder Bay) whereas application of the applicable baseline from the time of the project approval (currently called "Baseline Biltmore") results in a 14% VMT increase in Boulder Bay VMT compared to the Baseline Biltmore.

Replacement of the higher Alternative A baseline (with relatively high trip generation) with the lower Baseline Biltmore (with a lower trip generation similar to Boulder Bay) substantially increases the VMT net impact of Boulder Bay. Moreover, although the Boulder Bay daily trips used in the VMT calculations are almost identical to that of the Baseline Biltmore, Boulder Bay results in increased VMT because it has a longer average trip length. Notably, the proposed Waldorf Astoria Lake Tahoe (WALT) proposed plan revision, utilizing the applicable baseline (Baseline Biltmore), results in a 14% VMT reduction compared to the Baseline Biltmore and a 24% VMT reduction compared to Boulder Bay.

This memorandum documents the findings and conclusions of a trip generation and Vehicle Miles Traveled (VMT) analysis regarding the Waldorf Astoria Lake Tahoe (WALT) development project located at the existing Tahoe Biltmore Lodge and Casino site along State Route (SR) 28 in Crystal Bay, Nevada. The project proposes to redevelop the Biltmore site and remove the previous motel use on the Crystal Bay Motel site. While the project applicant also owns the SR 28 Commercial

Center next to The Nugget on the south side of SR 28, no changes are planned to this facility as part of the current proposal.

OVERALL ASSUMPTIONS

The analysis is based on the following overall assumptions:

- The “Baseline Biltmore” scenario reflects Year 2006 operating conditions at the Biltmore and associated uses.
- The “Boulder Bay” scenario assumes full buildout of the approved Boulder Bay program.
- The “WALT” scenario assumes full buildout of the proposed WALT project.

First, the land use assumptions are summarized. Next, the trip generation of all three program scenarios is evaluated, and the WALT project’s net impact on trip generation is determined, as compared to both Baseline Biltmore and Boulder Bay. Finally, a VMT analysis is performed for each scenario, and the proposed project’s impact on VMT is determined.

LAND USE COMPARISON

The land use quantities for each scenario are summarized in Table 1. As shown, the total number of lodging/residential units under each scenario is as follows:

- 111 units for the Baseline Biltmore use
- 374 units for Boulder Bay
- 191 units for WALT

Also worth noting is that the previous casino was 22,400 square feet, while the Boulder Bay and WALT casino floor area is reduced to 10,000 square feet. Although Boulder Bay and WALT have the same total commercial floor area (18,715 square feet), Boulder Bay has more retail area, and WALT has more restaurant area. Additionally, according to the Boulder Bay approvals, the WALT project proponent will provide a shuttle service as an amenity available to the site’s residents and guests upon request, with service to/from public beaches (excluding Speedboat Beach) in summer and to/from Northstar California Resort in winter. Some level of shuttle service will be provided year-round, with adjustments made for summer and winter peak seasons.

TRIP GENERATION

Trip generation is the process by which engineers estimate the amount of traffic that would be associated with a development proposal. This trip generation analysis is conducted for summer daily and PM peak-hour conditions. First, the trip generation of the Baseline Biltmore is presented. Next, the trip generation of approved Boulder Bay is evaluated. A detailed trip generation analysis is conducted for the proposed WALT. Finally, comparisons are provided between all three program scenarios.

TABLE 1: Waldorf Astoria at Lake Tahoe (WALT) - Land Use Comparison

	Baseline Biltmore		Approved Boulder Bay		WALT	
LODGING/RESIDENTIAL						
Hotel Units	92	Units	301	Units	76	Units
Motel Units	19	Units	-	-	-	-
Hotel Residential ¹	-	-	-	-	58	Keys
Granite Place (≤3 floors)	-	-	18	DU	18	DU
Whole Ownership (>3 floors)	-	-	41	DU	25	DU
Employee Housing	-	-	14	DU	14	DU
Shuttle Vehicle	-	-	1	vehicle	1	vehicle
Meeting Space	Accessory Use		Accessory Use		Accessory Use	
Convenience Dining	Accessory Use		Accessory Use		Accessory Use	
Bar/Lounge	Accessory Use		Accessory Use		Accessory Use	
Service Retail	Accessory Use		Accessory Use		Accessory Use	
Daycare Center	Accessory Use		Accessory Use		Accessory Use	
Spa	Accessory Use		Accessory Use		Accessory Use	
Fitness Center	Accessory Use		Accessory Use		Accessory Use	
<i>Subtotal Lodging/Residential</i>	<i>111</i>	<i>DU</i>	<i>374</i>	<i>Units</i>	<i>191</i>	<i>Units</i>
CASINO	<i>22.383</i>	<i>KSF</i>	<i>10.000</i>	<i>KSF</i>	<i>10.000</i>	<i>KSF</i>
RESTAURANT						
Café/Fast Food	-	-	0.863	KSF	2.235	KSF
Casual Dining	4.5	KSF	2.347	KSF	12.280	KSF
Fine Dining	3.3	KSF	3.333	KSF	-	-
<i>Subtotal Restaurant</i>	<i>7.8</i>	<i>KSF</i>	<i>6.543</i>	<i>KSF</i>	<i>14.515</i>	<i>KSF</i>
RETAIL/COMMERCIAL						
Retail	-	-	12.172	KSF	4.2	KSF
RECREATION						
County Park	-	-	3.07	acres	3.07	acres

DU = Dwelling Units; KSF = 1,000 Square Feet

Note 1: WALT Hotel residential units include 36 main units and 22 lock-offs for a total of 58 keys.

Source: LSC Transportation Consultants, Inc.

Trip Generation of Baseline Biltmore

At the time of this study, the Biltmore operations are completely closed. For purposes of this analysis, the daily trip generation of the Baseline Biltmore use is assumed to be 3,895 daily one-way external trips on the surrounding roadway network. This figure represents actual vehicle trips counted on the Biltmore site driveways in Year 2008, adjusted to reflect Year 2006 (busier) conditions. The estimated daily trip generation of 3,895 was provided by Fehr & Peers as the lead traffic consultant for the Boulder Bay EIS (reference “Project Alternatives Trip Generation Summary”, Fehr & Peers, March 11, 2011, attached herein as Appendix A, and referenced in the TRPA staff summary for the Governing Board hearing for Boulder Bay). Of the 3,895 daily external trips, 320 occur during the PM peak hour.

The 3,895 daily trips do not include “pass-by” trips, which are trips generated on the site driveways by vehicles already present on SR 28 “passing-by” the Biltmore site as part of a longer trip. For example, a driver traveling around Lake Tahoe who stops by a restaurant at the Biltmore site would be making a pass-by trip. In this case, the restaurant land use would have generated one inbound plus one outbound trip on the site driveway but would not have generated new traffic on SR 28. Based on the analysis for the approved Baseline Biltmore use, the number of pass-by trips generated by the previous use is 184 daily pass-by trips, with 15 occurring during the PM peak hour. To estimate the total trips crossing the site driveways, the pass-by trips are added to the external trips. This results in a total of 4,079 daily trips and 335 PM peak-hour trips crossing the site driveways. Detailed calculations are provided in Appendix A.

Trip Generation of Boulder Bay

The daily trip generation approved for Boulder Bay is 3,891 daily vehicle trips. This was the figure presented to the TRPA Governing Board during the hearing when the project was approved. It was provided by Fehr & Peers as the lead traffic consultant for the Boulder Bay EIS (reference “Project Alternatives Trip Generation Summary”, Fehr & Peers, March 11, 2011, attached herein as Appendix B, and referenced in the TRPA staff summary for the Governing Board hearing for Boulder Bay). The 3,891 daily trip number was derived by Fehr & Peers by applying trip generation rates to the Boulder Bay land use quantities and applying reductions for internal trips, non-auto trips, and pass-by trips. Of the 3,891 daily trips, 294 occur during the PM peak hour. The 3,891 daily trips are one-way external trips on the surrounding roadway network. This does not include pass-by trips. The number of pass-by trips generated by Boulder Bay is 574 daily pass-by trips, with 37 occurring during the PM peak hour. To estimate the total trips crossing the site driveways, the pass-by trips are added to the external trips. This results in a total of 4,465 daily trips and 331 PM peak-hour trips crossing the site driveways. Detailed calculations are provided in Appendix B.

Trip Generation of Proposed WALT

The proposed WALT land uses and land use quantities are shown in Table 2. The land use types are based on the categories identified in the ITE *Trip Generation* manual. Standard daily and peak-hour trip generation rates are drawn from the Institute of Transportation Engineers (ITE) *Trip Generation, 11th Edition* manual (ITE, 2021), with the exception of the casino, as discussed below. The trip generation rates are based on the following methodology and assumptions:

- *Lodging/Residential Trip Generation* – The number of available units is increased from 111 previously existing hotel/motel units to 191 proposed lodging and residential units, including 14 employee housing units. In comparison with the approved Boulder Bay project, the number of units has decreased by 157 (from 374 to 191).
- *Hotel Residential Units* – These units will be available for participation in a rental pool operated by the hotel, and they will be served by hotel employees. As such, these units are treated as commercial lodging units, rather than residential condos. In addition, 100 percent of lock-off units are assumed to be locked-off, to remain conservatively high in the analysis of trip generation and VMT impacts. For purposes of this analysis, 36 “base” units plus 22 lock-off units are assumed, for a total of 58 keys.
- *Trip Generation of WALT Shuttle Service* – According to the previous approvals, the project proponent will provide a shuttle service as an amenity available to WALT residents and guests upon request, with service to/from public beaches (excluding Speedboat Beach) in summer and to/from Northstar California Resort in winter. Some level of shuttle service will be provided year-round, with adjustments made for summer and winter peak seasons. During busy summer days, one proposed shuttle vehicle is assumed to make round trips between the WALT and nearby beaches for 12 hours a day, departing the Resort once an hour. The shuttle vehicle trips crossing the WALT site driveways are shown as a separate line item under the lodging/residential category in Table 2.
- *Casino Trip Generation* – With implementation of the proposed project, casino floor area would be reduced from 22,400 to 10,000 square feet (reduced by roughly half), similar to Boulder Bay. As typical hotels do not contain a casino, the casino gaming area is analyzed individually. The trip generation of the casino is estimated based upon the TRPA-approved trip rates of 265.88 daily one-way trips per thousand square feet of gaming floor area and 16.67 PM peak-hour trips per thousand square feet. These trip rates match the casino trip rates in the approved EIS.
- *Restaurant/Bar Trip Generation* – The proposed WALT provides about twice as much restaurant floor area as the Baseline Biltmore and Boulder Bay programs. Convenience dining and bar/lounge uses within the hotel have been integrated into the “Hotel” rate, according to the Institute of Transportation Engineers (ITE) definition of a “Hotel” use. (The ITE definition for a hotel is as follows: “A hotel is a place of lodging that provides sleeping accommodations and supporting facilities such as a full-service restaurant, cocktail lounge, meeting rooms, banquet room, and convention facilities. A hotel typically provides a swimming pool or another recreational facility such as a fitness room.”)

[illegible]

DU-Dwelling Unit. KSF = 1,000 Square Feet

Note 1: Casino trip rates are provided in the ITE Trip Generation, 11th Edition manual (2021), except casino trip rates are based on TRPA-approved rates. At the time of this study, the 11th edition is the most recent trip generation manual to date.

Note 2: Pandemic percentages taken from the ITE Trip Generation Handbook 3rd Edition (2017). At the time of this study, the 3rd edition is the most recent trip generation "handbook" to date, and it is a supporting document to the 11th edition "manual".

Note 3: The 38 keys for "hotel residential" includes 36 "base" units plus 22 lock-off units. 100% of lock-offs are assumed to be locked-off.

Note 4: Although these 18 low-rise units were recently constructed (Granite Place condominiums), they are included in the WALT uses.

Note 5: Although this park was recently constructed, it is included in the WALT uses.

Source: LSC Transportation Consultants, Inc. and Institute of Transportation Engineers Trip Generation (11th Edition)

- *Retail Trip Generation* – The WALT retail commercial floor area is only about one-third of the Boulder Bay retail use, excluding the accessory uses within the hotel. The service retail uses are included in the ITE “Hotel” rate, by definition.
- *Meeting Space Trip Generation* – The trip generation of the WALT meeting space is included in the ITE “Hotel” rate, by definition.

Reductions for Internal Trips

As is typical of a mixed-land use development, some persons generating a trip at the site would visit more than one of the land uses at the site during the same “trip.” Common traffic engineering practice dictates that a reduction in total trip generation can be applied to the project, as some of the persons generating trips at one of the land uses can generate a trip at another of the included land uses without generating an additional vehicle trip at the common site access point(s). As an example, a portion of the trips generated by a property with both retail and restaurant uses would be internal to the property, as some restaurant customers also visit the retail shops, or retail employees frequent the restaurant. Some of the restaurant customers would also be patrons of the hotel or other on-site amenities. The portion of the persons generating a trip at a mixed-use development that would visit two or more uses within the development is based on the types of uses within the development, the size of the individual uses, and the distances between them.

The proportion of trips that remain internal to the site (such as lodging guests visiting the casino) are based upon surveys conducted of the previous Biltmore site lodging guests, casino guests, and employees in 2007, a review of the trip internalization assumptions in the approved EIS, and the guidance provided in the ITE *Trip Generation Handbook* regarding internal capture within a mixed-use development. The 2007 Biltmore surveys (as applied in LSC's 2008 Boulder Bay Resort traffic study) were reviewed, along with other available data (such as the EIS and other similar resort hotel/casino trip generation analyses) to estimate the trip internalization of the WALT¹. Next, the number of trip-ends leaving one use and entering another use on the site were reviewed and “balanced”, to ensure that the internal trip-ends generated by one use actually have another on-site use to go to/from. (If the trip internalization is not balanced, then some internal trip-ends would be made to/from nowhere.) As shown in the middle column of Table 2, about one-third of the trips generated by the lodging uses are expected to be made to/from another on-site use. This assumption is reasonable, based on the standard daily trip generation rate of about 8 one-way trips per day, per hotel room, the expected portion of lodging trips that would be regional access trips, and the propensity for lodging guests to patron the on-site dining options.

About 45 percent of trips made to/from the casino are estimated to be made internally to the site. This is less than the casino internal trip percentage in the approved Boulder Bay analysis, given that the WALT has fewer lodging units and therefore fewer casino patrons staying onsite. Approximately 26 percent of restaurant trips and 55 percent of retail trips would be made internally.² Overall, 35

¹The ITE Trip Gen Handbook provides internal capture rates for some WALT uses, such as hotel/residential, restaurant and retail. The project's internal capture based on these rates was evaluated (along with the NCHRP 684 Internal Trip Capture Estimation Tool) and used as one of the data points in developing the WALT internal capture rates.

² 35% of WALT retail trips are estimated to be made to/from on-site lodging/residential uses, plus 10% to/from on-site restaurants, plus 10% to/from WALT casino, for a total of 55% internal trips to/from WALT retail uses.

percent of WALT trips would be made internally. In comparison, the trip generation analysis for Boulder Bay indicates 33 percent of overall site-generated trips would be internal. The overall internal trip percentage for the WALT is slightly higher than for Boulder Bay, which is consistent with the fact that the WALT has twice as much restaurant area to attract patrons from other uses on the site.

Reductions for Non-Auto Modes

Nearly all data presented in the ITE *Trip Generation* manual volumes have been collected at low-density, single-use, homogeneous, general urban or suburban developments with little or no public transit service and little or no convenient pedestrian access (ITE *Trip Generation Handbook, 3rd Edition*, pg. 6, 2017, which is the current version of the handbook). Additional reductions for non-auto modes are based on the characteristics of the community, and on the quality and quantity of bicycle, pedestrian, and transit facilities. The project site is currently served by Tahoe Truckee Area Regional Transportation (TART) transit service (including TART Connect microtransit), the North Lake Tahoe Express, and employee shuttles.

The proportion of external trips made via non-auto modes (walking, bicycling, transit) is based upon surveys conducted of the previous Biltmore site lodging guests, casino guests, and employees in 2007³. In particular, guests walking between the site uses and other nearby properties (such as the Crystal Bay Club) results in a relatively high proportion of non-auto trips in the North Stateline area. Additionally, data from the TRPA 2018 Summer Travel Surveys conducted at recreational and commercial sites in Crystal Bay (before the TART Connect microtransit service was implemented) suggest that approximately 27 percent of trips made in the area are by non-auto modes.

The approved Boulder Bay analysis assumed 23 percent of external trips made to/from the lodging uses were made via non-auto modes. This figure is increased by 5 percent to reflect the TART Connect microtransit service (as well as the free fares on the TART mainline), which was not in operation at the time of the Biltmore surveys. TART Connect currently provides direct service from the WALT site west to Tahoe Vista (the "Kings Beach/Tahoe Vista" zone), and from the WALT site east to Incline Village (the "Incline Village/Crystal Bay" zone). Based on TART Connect ridership data from 2021 and 2022, the average daily ridership in the summer season increased from 149 to 411 riders per day (or a 276-percent increase) in the Kings Beach/Tahoe Vista zone and from 323 to 489 (151-percent increase) in the Incline Village/Crystal Bay zone. TART Connect ran 7 days a week from 8 AM to Midnight in the past two summers and winters, with evening service in the fall and spring. It is expected to be an attractive option for some guests, residents, customers, and employees traveling to/from the WALT site. Of the 3 zones served by TART Connect microtransit, the Incline Village Zone is the most productive. As the WALT project would increase the number of calls for TART Connect, this would increase the potential for shared rides. As such, the number of vehicle trips would not be expected to increase due to TART Connect microtransit, as this is an existing service, and the project is anticipated to increase the number of groups on the shuttle vehicles.

Additionally, based on the extent of service assumed for the WALT beach shuttle service, it is estimated to reduce vehicular trips to/from the WALT lodging and condominium uses by an additional 6 percent. (This equates to a reduction of 56 one-way vehicle trips made by

³The 2007 Biltmore surveys were used in determining the proportion of external trips made via non-auto modes, as applied in LSC's 2008 Boulder Bay Resort traffic study. This is one of the data points used in estimating the external non-auto trips for the WALT.

lodging/residential groups over the course of the day. Considering the beach shuttle is assumed to make 24 one-way trips over the course of the day, it's assumed to carry approximately 2.3 groups per one-way trip, on average (56 divided by 24). The resulting percent reduction for external trips made to/from the lodging and residential units via non-auto modes is 34 percent. Smaller reductions for non-auto travel (ranging from 9 percent to 12 percent) are applied to the remaining land use types, as shown in the middle column of Table 2. These reductions are well below the non-auto mode split indicated by the TRPA surveys, to remain conservative in this analysis.

Trip Generation at Site Driveways

Applying the trip generation rates to the WALT land use quantities and applying reductions for non-auto travel and internal trips yields a total vehicular trip generation crossing the site driveways of approximately 3,542 daily one-way vehicle-trips, of which 261 (157 entering and 104 exiting) occur during the PM peak hour. The peak-hour trips are relatively low compared to total daily trips, as casino-related traffic typically peaks later in the day, after the peak hour of traffic along SR 28.

Comparing the daily trip generation of the WALT and that of the Baseline Biltmore indicates that the WALT would result in a net reduction of 537 daily vehicle-trips (or a 13-percent reduction) at the site access driveways over the course of a peak summer day. During the key PM peak hour, the WALT would reduce vehicle-trips at the driveways by 74, or 22 percent.

Trip Generation on Roadway Network

Not all trips on the site driveways are new trips on area roadways. A reduction for pass-by activity is appropriate for some commercial land uses, but not for lodging or employment land uses that are the primary purpose of a trip. In addition, as a recreational destination, no pass-by reduction is assumed for the casino land use. Site-specific data on pass-by rates is not available at this time. The *ITE Trip Generation Handbook, 3rd Edition* (ITE, 2017, which is the current version of the handbook) and the *Trip Generation Manual 11th Edition, ITE 2021 Pass-by Rates* spreadsheet presents data collected from many sites regarding the proportion of pass-by trips by land use category, which were applied to the total driveway trip volumes. As shown in the far-right columns of Table 2, this factor reduces the WALT program's overall vehicle-trip generation on adjacent roadways to 2,886 daily one-way vehicle-trips, including 208 during the PM peak hour. Considering the impact on regional roadways such as SR 28 away from the site access driveways (reflecting reductions for pass-by trips), the WALT would result in an overall net reduction in trip generation of 26 percent over the course of a day, and 35 percent over the key PM peak hour, compared to the Baseline Biltmore use.

Note that even if the percent reductions for internal and non-auto trips were reduced by 15 percent (or multiplied by a factor of 0.85) across the board, the WALT total trip generation would still be less than the Baseline Biltmore trip generation.

Trip Generation Comparison Between WALT and Boulder Bay

Comparing the daily external trip generation of the WALT and the approved Boulder Bay project land uses indicates that the WALT would result in a net reduction of 923 daily vehicle-trips (or a 21-percent reduction) at the site access driveways over the course of a peak day. The reduction in PM peak-hour trips in comparison with Boulder Bay would also be 21 percent. The impact on the

regional roadways (after reductions for pass-by trips) equates to a 26-percent reduction in daily trips and a 29-percent reduction in PM peak-hour trips.

VEHICLE MILES TRAVELED

Vehicle Miles Traveled (VMT) is evaluated in accordance with TRPA's *Project Impact Assessment Guidelines* (TRPA, June 2021). VMT analysis is conducted on an annual average daily basis, reflecting that it is a basis for overall greenhouse gas emissions. VMT for each scenario is calculated by multiplying daily trip generation by an annual-to-peak daily factor and multiplying by the average trip length within the Tahoe Basin. First, the VMT of Boulder Bay is compared to that of the Baseline Biltmore use. Next, the VMT of the WALT is compared to that of the Baseline Biltmore use. Finally, the VMT of the WALT is compared to that of Boulder Bay.

Annual Average Daily Trip Factors

It is necessary to convert peak daily trips to annual average daily trips, to coincide with the TRPA's new impact guidelines for the proposed use. Factors are estimated that reflect the ratio of average daily activity (and thus trip generation) to peak daily activity. These factors are defined as follows:

- **Lodging Uses**—The North Lake Tahoe Resort Association (now called North Tahoe Community Alliance) provides monthly occupancy data for North Tahoe lodging sites. The annual average monthly occupancy rate for 2022 is calculated and divided by the peak month occupancy, to estimate the average-to-peak day factor. The same calculation is performed for 2021. The average of the 2021 and 2022 data is applied in this analysis. The resulting average-to-peak day factor is 0.69. In other words, the daily trip generation of the lodging uses on an annual average day is assumed to be 69 percent of that on a peak summer day.
- **Casino** – The Nevada Gaming Control Board website provides monthly gaming wins for the Washoe County North Shore Lake Tahoe Area gaming locations. Based upon a review of the variation in monthly gaming wins for the 12-month period from December 2021-November 2022, the average-to-peak day factor for casino trip generation is estimated to be 0.78.

The average-to-peak day factors for remaining uses are based on the lodging factor.

Average Trip Length

The final data element needed to define VMT is the average vehicle-trip length (in miles). These values for the Baseline Biltmore and Boulder Bay are calculated based on the VMT summary provided in Table 4.8-16 of the approved EIS dated November 2009, attached as Appendix C. Dividing the VMT for each alternative by the daily trips yields the average trip length. The Baseline Biltmore use has an estimated average trip length of 5.94 miles (based on EIS Alternative A), while Boulder Bay has an average trip length of 6.79 miles (based on EIS Alternative C). The average trip length is longer for Boulder Bay than the Baseline Biltmore because Boulder Bay has substantially more visitor trips, which have a longer average trip length in the Basin than residential trips. (The EIS assumed average trip lengths of 7.77 miles for visitors and only 4.42 miles for residents.)

Boulder Bay has more lodging, dining, and retail trips than the Baseline Biltmore. Most trips made to/from these uses are made by visitors.

WALT Average Trip Length

The average vehicle-trip length for trips made to/from the WALT is based on the following data and assumptions:

- Lodging**—These land uses generate two types of trips: regional access trips (to and from Tahoe) and local trips. The proportion of total trips generated by the regional access trip (travel between Tahoe and the visitor's home) is first calculated. The average length of stay during the summer months is assumed to be approximately 2.9 days, based on the average of 2015 data from the Ritz-Carlton Hotel (2.46 days) and North Lake Tahoe Resort Association (now North Tahoe Community Alliance) 2003-2016 hotel/motel/B&B visitor data (3.4 days). This is equivalent to 0.69 access trips per lodging unit per day. For the WALT uses, the portion of the total lodging trips that are regional access trips is calculated to be 20 percent. None of the regional access trips are assumed to be by non-auto modes.

Table 3 presents an analysis of the average trip length for these regional access trips, assuming that the preponderance of such trips come from residents of Nevada and California. As shown in the lower portion of the table, the average trip length within the Tahoe Basin for regional access trips is 7.48 miles. For local trips, the weighted average trip length identified by TRPA (using the TRPA's Project Impact Assessment tool) for the VMT analysis zone encompassing the project site (6.52 miles) is used. The weighted average of the regional access and local trip lengths is calculated to be 6.71 miles. This trip length is applied to the WALT lodging line items.

TABLE 3: WALT - Lodging Average Trip Length			
Description	Percent of External Trips	Average Trip Length within Tahoe Basin (mi)	Proposed WALT
<u>Regional Access Trip Origin/Destination</u>			
Reno/Sparks/RTIA	20%	9	
Sacramento	15%	5	
Bay Area	43%	5	
Central Valley	8%	5	
Los Angeles	10%	17	
Las Vegas	2%	17	
San Diego Region	2%	17	
Percent of Total Lodging Trips: Regional Access Trips			20%
Percent of Total Lodging Trips: Local Trips			80%
Weighted Average Trip Length: Regional Access Trips (mi)			7.48
Average Trip Length: Local Trips (mi)			6.52
Total Lodging Average Trip Length			6.71
<i>Source: LSC Transportation Consultants, Inc.</i>			

- **Shuttle Vehicle**—For the WALT shuttle vehicle, the weighted average trip length is estimated to be 5.42 miles, assuming the shuttle travels to/from a point in Tahoe Vista during the non-summer months and to/from the Village at Northstar during the winter months.
- The TRPA average trip length for the project’s VMT analysis zone (Zone 72) of 6.52 is applied to the remaining WALT uses.

VMT of Baseline Biltmore

The VMT analysis for the Baseline Biltmore use is summarized in Table 4. The peak-summer daily external trip generation for the Baseline Biltmore is 3,895 one-way vehicle trips, as discussed above. It is important to note that this figure represents trip generation during the busiest season of each land use (summer). Only “non-pass-by” trips are considered, as pass-by trips do not result in additional regional VMT. Applying the annual average-to-peak day factor (0.69) to the summer daily trips yields 2,688 average daily external vehicle trips. Multiplying the average daily trips by the average trip length for the Baseline Biltmore yields a total annual average daily VMT of 15,967 within the Tahoe Basin. This is considered the baseline for use in measuring the VMT impacts of the other programs.

Table 4: Baseline Tahoe Biltmore VMT	
Total Daily External Trip Generation after Pass-by Reduction	3,895
Annual Average -to- Peak Day Factor	0.69
Average Daily Vehicle Trips	2,688
Tahoe Basin Average Trip Length (Miles)	5.94
Annual Average Daily Tahoe Basin VMT	15,967
Source: LSC Transportation Consultants, Inc.	

VMT of Boulder Bay

The VMT analysis for Boulder Bay is summarized in Table 5. The peak-summer daily external trip generation for Boulder Bay is 3,891 one-way vehicle trips, as discussed above. Similar to Baseline Biltmore, this figure represents trip generation during the busiest season of each land use (summer). Applying the annual average-to-peak day factor (0.69) to the summer daily trips yields 2,685 average daily external vehicle trips. Multiplying the average daily trips by the average trip length for the Boulder Bay yields a total annual average daily VMT of 18,230 within the Tahoe Basin.

TABLE 5: Boulder Bay VMT

Total Daily External Trip Generation after Pass-by Reduction	3,891
Annual Average -to- Peak Day Factor	0.69
Average Daily Vehicle Trips	2,685
Tahoe Basin Average Trip Length (Miles)	6.79
Annual Average Daily Tahoe Basin VMT	18,230

Source: LSC Transportation Consultants, Inc.

VMT of WALT

The VMT analysis for the WALT is summarized in Table 6. For this multi-use project, each land use is analyzed independently and then summed. As shown in the lower portion of Table 6, the total daily external vehicle trips on an average day is calculated to be 2,109. Multiplying this figure by the average trip length for each use category and summing over all categories yields a total annual average daily VMT generated by the WALT of 13,794 VMT within the Tahoe Basin. Of this total, almost half (48 percent) is generated by the casino, while 28 percent is generated by the restaurant uses. The lodging and residential uses generate 22 percent of the total VMT.

VMT Impacts Comparison

Table 7 presents a comparison across the three program scenarios.

VMT Impacts of Boulder Bay

As indicated, approved Boulder Bay would result in a net increase in annual average Tahoe Basin daily VMT of 2,263 (or a 15-percent increase). The EIS indicated Boulder Bay would result in a reduction in VMT over the approved Biltmore uses (EIS Alternative A). However, Alternative A is not the same as Baseline Biltmore. (Alternative A has a much higher level of trip generation than Baseline Biltmore and Boulder Bay, because Alternative A trips were estimated by applying trip generation rates to the approved Biltmore land use quantities, assuming full capacity and optimum operations. On the other hand, Baseline Biltmore trips are based on actual traffic counts conducted at the site driveways, adjusted to Year 2006 conditions.) The EIS did not calculate the VMT of the Baseline Biltmore (2006 conditions) scenario. A VMT comparison of Boulder Bay and Baseline Biltmore is not provided in the EIS. Furthermore, the EIS did not address impacts on an annual average day, because the annual average standard did not exist at that time.

VMT Impacts of WALT

As shown in Table 7, the proposed WALT would result in a net reduction in annual average Tahoe Basin daily VMT of 2,173 (or a 14-percent reduction) compared to the Baseline Biltmore. In

TABLE 6: WALT - VMT Analysis

TABLE 6: WALT - VMT Analysis										
Description	ITE Use Category	Quantity	Land Use	Daily Non-Passby Trips ¹	Annual Average -to-Peak Day Factor	Average Daily Vehicle Trips	Tahoe VMT Analysis			
							Tahoe Basin Average Trip Length (Miles)	Tahoe Basin Average Daily VMT	% of Total Project Avg Daily VMT	
PROPOSED WALT LODGING/RESIDENTIAL										
Hotel Units	Hotel	76	Units	267	0.69	184	6.71	1,235	9.0%	
Hotel Residential ³	Hotel	58	Keys	204	0.69	141	6.71	946	6.9%	
Granite Place (<3 floors) ²	Multifamily Housing (Low-Rise)	18	DU	53	0.69	37	6.52	241	1.7%	
Exclusive Residential (>3 floors)	Multifamily Housing (Mid-Rise)	25	DU	50	0.69	35	6.52	228	1.7%	
Employee Housing	Multifamily Housing (Low-Rise)	14	DU	49	0.69	34	6.52	222	1.6%	
Shuttle Vehicle	N/A (vehicle-trip analysis)	1	vehicle	24	0.69	17	5.42	92	0.7%	
Meeting Space	Accessory Use									
Convenience Dining	Accessory Use									
Bar/Lounge	Accessory Use									
Service Retail	Accessory Use									
Daycare Center	Accessory Use									
Spa/Fitness Center	Accessory Use									
Subtotal Lodging/Residential								2,964	21.6%	
CASINO	Gaming (Non-Restricted)	10	KSF	1,287	0.78	1,004	6.52	6,546	47.5%	
MEETINGS/EVENTS										
RESTAURANT										
Café/Fast Food	Fast Food, No Drive Through	2.24	KSF	374	0.69	258	6.52	1,682	12.2%	
Casual Dining	High Turnover - Sit Down Restaurant	12.28	KSF	488	0.69	337	6.52	2,197	15.9%	
Subtotal Restaurant		14.52	KSF	862		595		3,879	28.1%	
RETAIL/COMMERCIAL										
Specialty Retail	Strip Retail Plaza (<40k)	4.2	KSF	89	0.69	61	6.52	398	2.9%	
RECREATION										
County Park ³	Public Park	3.07	acres	1	0.69	1	6.52	7	0.1%	
TOTAL PROPOSED WALT				2,886		2,109		13,794		
VMT of Baseline Biltmore								15,967		
PROJECT NET IMPACT ON VMT (WALT minus Baseline Biltmore)								-2,173		
% Change Compared to Baseline Biltmore								-14%		
VMT of Boulder Bay										
PROJECT NET CHANGE BETWEEN BOULDER BAY AND WALT (WALT minus Boulder Bay)								18,230		
% Change Compared to Boulder Bay								-4,436		
								-24%		
DU= Dwelling Unit. KSF = 1,000 Square Feet										
Note 1: Reference Table 2 for trip generation of Waldorf Astoria at Lake Tahoe (WALT).										
Note 2: Although these 18 low-rise units were recently constructed (Granite Place condominiums), they are included in the proposed uses.										
Note 3: Although this park was recently constructed, it is included in the proposed uses.										
Source: LSC Transportation Consultants, Inc.										

TABLE 7: WALT - Trip Generation and VMT Impacts Comparison				
	Trip Generation at Site Driveways	Trip Generation on External Roadways (After Reductions for Pass-by Trips)		Annual Average Daily Tahoe Basin VMT
	Summer Daily	Summer Daily	Average Daily	
Baseline Biltmore Land Uses	4,079	3,895	2,688	15,967
Approved Boulder Bay Land Uses	4,465	3,891	2,685	18,230
Proposed WALT Land Uses	3,542	2,886	2,109	13,794
Net Change from Baseline Biltmore to Boulder Bay	386	-4	-3	2,263
Net Change from Baseline Biltmore to WALT	-537	-1,009	-579	-2,173
Net Change from Boulder Bay to WALT	-923	-1,005	-576	-4,436
% Change from Baseline Biltmore to Boulder Bay	9%	-0.1%	-0.1%	14%
% Change from Baseline Biltmore to WALT	-13%	-26%	-22%	-14%
% Change from Boulder Bay to WALT	-21%	-26%	-21%	-24%
<i>Source: LSC Transportation Consultants, Inc.</i>				

comparison with Boulder Bay, the WALT project would generate 4,436 fewer VMT (or a 24-percent reduction in VMT). The project is therefore considered to be a low-VMT proposal that is not considered significant. Based on current TRPA standards, there is no need to evaluate specific mitigation measures to reduce VMT associated with the WALT, beyond those measures included in the approved Boulder Bay permit.

Attachments: Appendix A – Baseline Biltmore Trips
Appendix B – Boulder Bay Trips
Appendix C – Baseline Biltmore and Boulder Bay Trip Lengths

BASELINE TAHOE BILTMORE TRIP GENERATION

Appendix A: Baseline Tahoe Biltmore Trip Generation

	Daily	PM Peak Hour
Trip Generation from Counts		168
PM Peak Hour/Daily Trip Generation Ratio (6.4%)	2,625	
Tahoe Biltmore Overflow Parking Lot Trip Generation	114	57
Operating Conditions Adjustment (28% decline)	1,068	87
Pass-By Trips ¹	-184	-15
Crystal Bay Motel Trip Generation	186	11
Crystal Bay Office Trip Generation	86	12
Total Trip Generation at Site Driveways (without Pass-by Reduction)	4,079	335
Total Trip Generation on External Roadways (after Pass-by Reduction)	3,895	320
Note 1: Pass-by Trips Updated per Alternative Pass-by Calculation memo by Fehr & Peers (March 11, 2011) Source: Boulder Bay Alternative Baseline Existing Conditions Traffic Volumes (May 17, 2010)		

Appendix A:
Reference for Baseline Biltmore DVTE

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PROJECT ALTERNATIVES TRIP GENERATION SUMMARY				
Alternative	Trip Generation (with Original Pass-By Calculations)		Trip Generation (with New Pass-By Calculations)	
	PM Peak Hour	Daily	PM Peak Hour	Daily
Existing Conditions (Based on 2008 Traffic Counts) ¹	234	2,846	237	2,880
Baseline Existing Conditions ²	315	3,849	320	3,895
Alternative A	373	5,853	381	5,934
Alternative B	504	7,870	513	7,957
Alternative C	274	3,501	294	3,891
Alternative C (Reduced)	260	3,389	281	3,766
Alternative D	302	3,948	330	4,419
Alternative E	554	8,468	566	8,609
Notes: ¹ Includes trip generation estimates of the Tahoe Biltmore overflow parking lot, Crystal Bay Motel, and Crystal Bay office space. ² Includes an adjustment factor to account for the economic conditions at the time the traffic volumes counts were collected. Sources: Fehr & Peers, 2011				

As shown in the table, Alternative C and Alternative C (Reduced) generate fewer daily and PM peak hour trips than Alternative A (TRPA Significance Standard) and the Alternative Baseline Existing Conditions (Appendix AA) (calculations provided in the Final EIS). Therefore, the conclusions in the FEIS are unchanged (i.e. no additional impacts identified).

Appendix A: Reference for Baseline Biltmore Pass-by Trips

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TABLE 8 BASELINE TAHOE BILTMORE DAILY TRIP GENERATION		
	PM Peak Hour	Daily
Trip Generation from Counts	168	
PM Peak Hour/Daily Trip Generation Ratio (6.4%)		2,625
Tahoe Biltmore Overflow Parking Lot Trip Generation	57	114
Operating Conditions Adjustment (28% decline) ¹	87	1,068
Pass-By Trips ²	(-20)	(-230)
Crystal Bay Motel Trip Generation ³	11	186
Crystal Bay Office Trip Generation ³	12	86
Total	315	3,849
Notes: ¹ Adjustment is applied to counted volumes and Tahoe Biltmore overflow parking lot volumes because the Tahoe Biltmore overflow parking lot information provided was specific to the time that the traffic count data was collected and employee levels represent the 2008 operating conditions of the Tahoe Biltmore. ² Pass-by trips only apply to traffic count volumes and the growth applied to the traffic count volumes. ³ The 2008 adjustment was not applied to the Crystal Bay Motel or Crystal Bay office space, as these trips were estimated based on TRPA Trip Table and ITE trip generation rates. Source: Fehr & Peers, 2010		

BASELINE AND PROJECT ALTERNATIVES TRIP GENERATION COMPARISON

Project Alternatives Trip Generation

Tables 9, 10, 11, 12 and 13 show the trip generation estimates for Boulder Bay project alternatives A, B, C, D, and E, respectively. The Crystal Bay Motel and Crystal Bay office will remain part of the project site for Alternatives A, B, and E, and have been included in the trip generation estimates for these alternatives to provide a direct comparison to the existing trip generation of the site. Alternatives C and D will remove the Crystal Bay Motel, therefore this use was not included in the trip generation estimates for these alternatives.

BOULDER BAY TRIP GENERATION

Appendix B: Boulder Bay Trip Generation

Land Use	Density	Unit	Daily	PM Peak Hour
Whole Ownership (Condo)	59	DU	346	31
Employee Housing (Apartment)	14	DU	94	9
Hotel	301	Rooms	2,685	211
Casino	1	KSF	2,659	167
Meeting Space	21.253	KSF	Accessory Use to Hotel	
Spa	19.089	KSF	Accessory Use to Hotel	
Fitness Center	9.86	KSF	Accessory Use to Hotel	
Daycare Center	1.665	KSF	Accessory Use to Hotel	
Convenience Dining	1.25	KSF	Accessory Use to Hotel	
Café/Fast Food	1.25	KSF	895	33
Casual Dining (High Turnover Sit-Down Restaurant)	3.398	KSF	432	38
Fine Dining (Quality Restaurant)	4.825	KSF	434	36
Bar/Lounge	2.25	KSF	Accessory Use to Hotel	
Specialty Retail	9.272	KSF	411	25
Service Retail	3.65	KSF	Accessory Use to Hotel	
County Park	3.07	Acres	7	0
Crystal Bay Office Space	7,772	KSF	86	12
Total "Raw" Trip Generation			8,049	562
Alternative Mode Trips			-959	-69
Internal Capture Trips			-2,625	-162
Pass-By Trips ¹			-574	-37
Total Trip Generation at Site Driveways (without Pass-by Reduction)			4,465	331
Total Trip Generation on External Roadways (after Pass-by Reduction)			3,891	294

DU = Dwelling Units; KSF = 1,000 square feet

Note 1: Pass-by Trips Updated per Alternative Pass-by Calculation memo by Fehr & Peers (March 11, 2011)

Source: Boulder Bay Alternative Baseline Existing Conditions Traffic Volumes (July 6, 2010)

Appendix B:

Boulder Bay (Alternative C) DVTE

PROJECT ALTERNATIVES TRIP GENERATION SUMMARY				
Alternative	Trip Generation (with Original Pass-By Calculations)		Trip Generation (with New Pass-By Calculations)	
	PM Peak Hour	Daily	PM Peak Hour	Daily
Existing Conditions (Based on 2008 Traffic Counts) ¹	234	2,848	237	2,880
Baseline Existing Conditions ²	315	3,849	320	3,895
Alternative A	373	5,853	381	5,934
Alternative B	504	7,870	513	7,957
Alternative C	274	3,501	284	3,891
Alternative C (Reduced)	280	3,389	281	3,768
Alternative D	302	3,948	330	4,419
Alternative E	554	8,468	566	8,609
Notes: ¹ Includes trip generation estimates of the Tahoe Biltmore overflow parking lot, Crystal Bay Motel, and Crystal Bay office space. ² Includes an adjustment factor to account for the economic conditions at the time the traffic volumes counts were collected.				
Sources: Fehr & Peers, 2011				

As shown in the table, Alternative C and Alternative C (Reduced) generate fewer daily and PM peak hour trips than Alternative A (TRPA Significance Standard) and the Alternative Baseline Existing Conditions (Appendix AA) (calculations provided in the Final EIS). Therefore, the conclusions in the FEIS are unchanged (i.e. no additional impacts identified).

Appendix B:
Boulder Bay (Alt. C) Pass-By Trips Source



Alternative C (Proposed Project)

TABLE 11 ALTERNATIVE C - TRIP GENERATION					
Lane Use	Density ¹	Trips			
		Daily	PM	PM In	PM Out
Whole Ownership (Condo)	59 du	346	31	21	10
Employee Housing (Apartment)	14 du	94	9	6	3
Hotel	301 rms	2,685	211	103	107
Casino	10 ksf	2,659	167	75	92
Meeting Space	21.253 ksf	Accessory Use to Hotel			
Spa	19.089 ksf	Accessory Use to Hotel			
Fitness Center	9.86 ksf	Accessory Use to Hotel			
Daycare Center	1.665 ksf	Accessory Use to Hotel			
Convenience Dining	1.25 ksf	Accessory Use to Hotel			
Café/Fast Food	1.25 ksf	895	33	17	16
Casual Dining (High Turnover Sit-Down Restaurant)	3.398 ksf	432	38	22	16
Fine Dining (Quality Restaurant)	4.825 ksf	434	36	24	12
Bar/Lounge	2.25 ksf	Accessory Use to Hotel			
Specialty Retail	9.272 ksf	411	25	11	14
Service Retail	3.65 ksf	Accessory Use to Hotel			
County Park	3.07 acres	7	0	0	0
Total "Raw" Trip Generation		7,983	549	279	270
Alternative Mode Trips		(-959)	(-69)	(-35)	(-34)
Internal Capture Trips		(-2,625)	(-162)	(-88)	(-74)
Pass-By Trips		(-964)	(-57)	(-32)	(-25)
Total External Roadway Trips Created by Tahoe Biltmore Primary Project Site		3,415	262	124	137
Crystal Bay Office Space	7,772 ksf	86	12	2	10
Total Alternative C Trip Generation		3,501	274	126	147
Notes: ¹ du = dwelling units, rms = rooms, ksf = 1,000 square feet Source: Fehr & Peers, 2010					

BASELINE BILTMORE AND BOULDER BAY TRIP LENGTHS

Table 4.8-16

VMT Analysis Comparison

Project Alternative	Daily Trip Generation	Project Alternative VMT	Existing Tahoe Biltmore VMT	Total New Project Alternative VMT	Overall Avg Trip Length (mi)
⇒ A (currently approved uses)	5,581	33,140	(-33,140)	0	⇒ 5.94
⇒ B	7,598	45,675	(-33,140)	12,535	
⇒ C	3,415	23,185	(-33,140)	(-9,955)	⇒ 6.79
D	3,862	23,335	(-33,140)	(-9,805)	
E	8,197	50,891	(-33,140)	17,751	

Source: Fehr & Peers, 2009

Mitigation: **TRANS-1: Traffic and Air Quality Mitigation Program**

Boulder Bay shall pay the appropriate air quality mitigation fee in accordance with Chapter 93 – Traffic and Air Quality Mitigation Program of the TRPA Code of Ordinances.

After

Mitigation: *Less than Significant Impact; Alternatives B and E*

Implementation of mitigation measure TRANS-1 will reduce the impact to a less than significant level.

Analysis: *Less than Significant Impact; Alternatives C and D*

Alternatives C and D will generate less VMT than the existing (Alternative A) site. Alternative C will generate 9,955 less VMT than the existing Tahoe Biltmore (assuming full operational capacity). Alternative D will generate 9,805 less VMT.

Mitigation: No mitigation is required.

IMPACT: TRANS-3: Will the Project result in changes to existing parking facilities, or demand for new parking?Analysis: *No Impact; Alternatives A and B*

Alternative A will not include changes to the existing parking supply or locations.

Alternative B will not include changes to the existing parking supply or locations. A Shared Parking analysis, which accounts for internalization between uses and time of day factors, was performed to determine the minimum number of parking spaces that will be needed to adequately serve the uses included in Alternative B. The results show that a minimum of 227 spaces will be needed.