

# **Appendix E**

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**Mountain Adventure Camp Trip  
Generation Memo**



## TRANSPORTATION PLANNING AND TRAFFIC ENGINEERING CONSULTANTS

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### MEMORANDUM

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To: Chevis Hosea, Squaw Valley

From: Gordon Shaw, PE, AICP, LSC Transportation Consultants, Inc.

Date: 8/19/2015

RE: Mountain Adventure Center Trip Generation

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Per your request, this memo documents an evaluation of trip generation associated with the proposed Mountain Adventure Center, planned as a part of the Village at Squaw Valley. This facility is currently planned to consist of a total of 90,000 square feet of floor area, and will effectively consist of an indoor water park and recreation facility.

Standard traffic engineering source documents, such as the Institute of Transportation Engineer's *Trip Generation* do not provide sufficient data regarding this land use type to provide a valid basis for the trip generation analysis. Moreover, the location within the Squaw Valley mountain resort area indicates the need for assessment based upon specific local factors.

The trip generation analysis was conducted for both the peak winter month and peak summer month conditions in the following steps, as shown in Table A:

1. The monthly average daily attendance was drawn from estimates presented in the *Market Feasibility Study and Financial Analysis Report for the Proposed Indoor Waterpark and Adventure Center, Squaw Valley Far East Road Olympic Valley, Placer County, California* as released by Hotel and Leisure Advisors, July 23, 2012. This study was conducted for a 120,000 square foot facility. As the current plan is for a 90,000 square foot facility, the attendance figures were reduced by one-quarter. This results in an average daily attendance for the peak winter month (February) of 1,394 guests and an average daily attendance for the peak summer month (July) of 1,067 guests.
2. The trip generation depends upon the proportion of guests that fall into the following three categories: those that are part of a Squaw Valley hotel package, those that are visitors staying in other lodging around the region, and those that are residents. The *Market Feasibility Study* identifies the proportions of 64 percent, 26 percent, and 10 percent, respectively. As discussed in the *Market Feasibility Study*, the financial success of a water park depends on a high proportion of guests that are attending as part of a

hotel package. Since the release of the study, however, the size of the facility and associated number of guests has been reduced by a quarter. As the facility will be managed to first provide capacity to the hotel package guests, the number of hotel package guests were held constant and the reduction in total guests taken from the two other categories (proportionate to the 26 percent and 10 percent factors). This yields resulting proportions for the small (currently proposed) facility of 86 percent for hotel package guests, 10 percent for other regional visitors, and 4 percent for regional residents<sup>1</sup>. Multiplying by these factors yields the visitation by guest type shown in Table A.

3. Average vehicle occupancy figures are needed to convert guest trips to guest vehicle-trips. While there is not specific information available regarding vehicle occupancy for indoor water parks, the *Market Study* does indicate that 47 percent of water park visitors at existing facilities across the nation are age 17 or younger, indicating a high number of groups with multiple children and vehicle occupancies of 3, 4 or more. In addition, the Tahoe Regional Planning Agency's TransCAD traffic model indicates the following observed average vehicle occupancies by trip type.
  - Visitor Recreation Trips – 3.5 persons per vehicle, on average
  - Resident Recreation Trips – 2.4 persons per vehicle, on average

In light of the available information, these vehicle occupancy rates appear reasonable.

4. It is also necessary to identify the non-auto vs. auto travel mode split. For those guests staying at adjacent hotels as part of package stays, this can be assumed to be 100 percent. For guests not part of the package stays, Squaw Valley survey and a review of transit ridership indicates a non-auto travel proportion (for transit, walking, and cycling) of 18 percent in winter and 8 percent in summer.
5. Dividing the daily guests by the average vehicle occupancy, factoring by the proportion arriving by auto and multiplying by 2 (to convert round-trips to one-way trips), and then summing over the three guest types results in a guest daily trip generation of 103 vehicle-trips in winter and 89 in summer.
6. The number of employees reporting to the MAC over the course of a day is estimated by the project proponent to be 44, in both winter and summer. Surveys of existing Squaw Valley employees indicate an average commute vehicle occupancy of 1.74, and a non-auto travel mode split of 14 percent (including transit riders, bicycling from employee housing areas outside of Squaw Valley, and bicycling/walking from employee housing areas within Squaw Valley). Dividing the number of employees by the vehicle occupancy, factoring for non-auto commuting and multiplying by two (to convert to one-

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<sup>1</sup> It bears noting that the original study also was based upon a lower number of hotel units in Squaw Valley than is currently planned. Specifically, the study assumed only 933 hotel rooms in the Squaw Valley hotel package pool (Village at Squaw Valley, Resort at Squaw Creek, Plump Jack Squaw Valley Inn, and 325 rooms associated with new condominium hotels adjacent to the site). If the VSV project is realized, there will be 1,255 new rooms rather than 325. This would tend to increase the proportion of hotel package guests above the 86 percent figure. To be conservative, however, this additional factor was ignored.

way trips) yields an estimate of 43 employee daily vehicle-trips over both a winter and a summer day.

7. Adding guest and employee trips, and including an estimated 3 daily round-trips for utility purposes (supplies, maintenance, etc.), the total daily one-way vehicle-trips generated by the MAC is estimated to be 153 in the peak winter month and 138 in the peak summer month.
8. The Institute of Transportation Engineers *Trip Generation Manual* (9<sup>th</sup> Edition) provides limited data on the proportion of trips for a “water slide park” (ITE Land Use Code 414) that can be used to estimate the proportion of the daily trip generation by hour and by direction. In the absence of other pertinent data, these proportions were applied to the summer daily trip generation to estimate the peak-hour directional trip generation shown in the bottom portion of Table A. However, for the winter peak-hour, it is reasonable to assume that a substantial proportion of drivers will plan their visit to the MAC to avoid the well-known delays at the beginning and end of the ski day<sup>2</sup>. Conservatively, one-third of trips that would otherwise occur in the winter peak hours is assumed to shift to other non-peak hours, yielding the peak-hour volumes shown in Table A.

This trip generation analysis is very much dependent upon the proportion of guests that will be part of package hotel stays. It is important to note that the *Market Study* indicates that needs for priority for these guests, even absent consideration of traffic impacts, for a larger MAC facility, and for a smaller number of nearby lodging rooms. As an example, the *Market Study* report includes the following recommendation:

*“Based upon our research, capacity controls may be an issue during the peak winter season. We recommend priority be given to resort lodging guests before day pass retail tickets are sold. A consistent strategy needs to be developed to ensure the guest experience at the facility meets expectations, and is not overcrowded. An accurate and up-to-date or “live” hours of operation web page should be made a part of the capacity control strategy to inform day pass users of availability.”* (p A-7)

In conclusion, attendance at the MAC will need to be tightly controlled on busy summer and winter days, for purposes of the user experience while within the facility. These limitations on access by outside guests will also greatly reduce traffic generation.

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<sup>2</sup> The *Market Study* indicates that the average guest length of stay at a water park is 5.4 hours. This indicates a large degree of flexibility in a travel groups hours that they choose to arrive and depart.

**TABLE A: Analysis of Mountain Activity Center Trip Generation**

		Average Day in Peak Month		Source
		Winter (Feb)	Summer (Jul)	
Average Daily Visitation in Month		1394	1067	H&LA Market Feasibility Study, 2012 adjusted for reduction in size of MAC
<u>Daily Visitation by Guest Type</u>		<u>Percent</u>		
SV Hotel Package	86%	1199	918	H&LA Market Feasibility Study, 2012, adjusted for greater lodging capacity of VSV
Other Regional Visitor	10%	139	107	
Resident	4%	56	43	
<u>Average Vehicle Occupancy</u>				TRPA Trip Model
SV Hotel Package	3.5	3.5	3.5	
Other Regional Visitor	3.5	3.5	3.5	
Resident	2.4	2.4	2.4	
<u>Non-Auto Travel Mode Split</u>				
SV Hotel Package		100%	100%	Guest surveys and evaluation of transit ridership
Other Regional Visitor		18%	8%	
Resident		18%	8%	
<u>Total Daily Guest 1-Way Vehicle-Trips</u>				
SV Hotel Package		0	0	
Other Regional Visitor		65	56	
Resident		38	33	
Total		103	89	
<u>Employees</u>				
Average Vehicle Occupancy		1.74	1.74	Employee surveys
Non-Auto Travel Mode Split		0.14	0.14	Employee surveys
Total Daily 1-Way Vehicle-Trips		43	43	
TOTAL 1-WAY DAILY VEHICLE-TRIPS		153	138	
<u>Peak-Hour Trip Generation</u>		<u>% of Daily</u>		
AM Inbound	2.7%	3	4	ITE Trip Generation Manual, 9th Edition, for Land Use 414: Water Slide Park. Winter volumes reduced by one-third to reflect groups avoiding travel in peak skier traffic periods.
AM Outbound	1.1%	1	2	
AM Total	3.8%	4	5	
PM Inbound	1.7%	2	2	
PM Outbound	11.7%	12	16	
PM Total	13.4%	14	19	