

Sun Communities Inc. Hovey's Island Traffic Study

SNOWSHOE ROAD, TOWN OF HENDERSON, NEW YORK

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1.0 Introduction

Sun Communities Inc. Association Island, located in the Town of Henderson, New York, has plans for expanding its current 300 site campground with 117 new seasonal cabin sites on the adjacent Hoveys Island. Bergmann was retained to assess the existing traffic conditions along Snowshoe Road. Our sub consultant, Pittsford Traffic and Radar, conducted radar traffic data collection from August 25, 2022 through August 28, 2022. The radar unit was calibrated on site and verified to be accurate. The data collected includes traffic counts, classification studies, and speed studies on Snowshoe Road, which is the road used to access Association Island and Hoveys Island. Additional traffic data was collected from September 1, 2023 through September 4, 2023 by our sub consultant, The Traffic Group. This data includes traffic counts and classification studies on Snowshoe Road at the entrance to Hoveys Island and at the southern end of the roadway near CR 178.

Snowshoe Road begins at Jefferson County CR 178 (Military Road) and runs approximately 3 miles northeast to Association Island with a speed limit of 30 mph which begins 0.5 miles northeast of CR 178. The pavement width varies from 20 feet to 18 feet with 2-foot gravel shoulders and is unstriped with numerous curves throughout the length. Snowshoe Road is primarily residential and serves waterfront properties on Lake Ontario and Henderson Harbor.

2.0 Snowshoe Road Existing Data

Based on the data received from Pittsford Traffic and Radar for August 2022, the Average Daily Traffic (ADT) for Snowshoe Road during the count period was 452 vehicles per day and the percentage of large vehicles was 18%. The count data collected in September 2023 showed that the ADT was 901 vehicles per day and the percentage of large vehicles was 16%. The traffic volume was presumably higher than the previous count period because it was collected during a peak season holiday around Labor Day weekend, as well as in the southern section of Snowshoe Road before any access to residential or recreational destinations.

Along with vehicle speeds, the vehicle counts and vehicle classifications were also analyzed. Vehicles were classified using the Federal Highway Administration Classification Scheme F Report and categorized the data into four groups based on these classifications. This data was compiled into two categories: "cars" and "larger vehicles". "Cars" refer to motorcycles and other vehicles that are less than 30' in length. "Larger vehicles" include vehicles greater than 30' in length such as trucks and RVs. Figures 1a and 1b show the general daily totals counted throughout the study periods in August 2022 and September 2023, respectively, showing the difference between car travel and larger vehicle travel. This graph shows that car travel peaked on Saturday (Aug. 27th and Sept. 2nd) which is also the day that total vehicle volumes were highest. The volume of larger vehicles was higher on Thursday and Sunday in the typical summer weekend (Aug. 25th and 28th), and on Friday and Monday of the holiday Labor Day weekend (Sept. 1st and 4th).

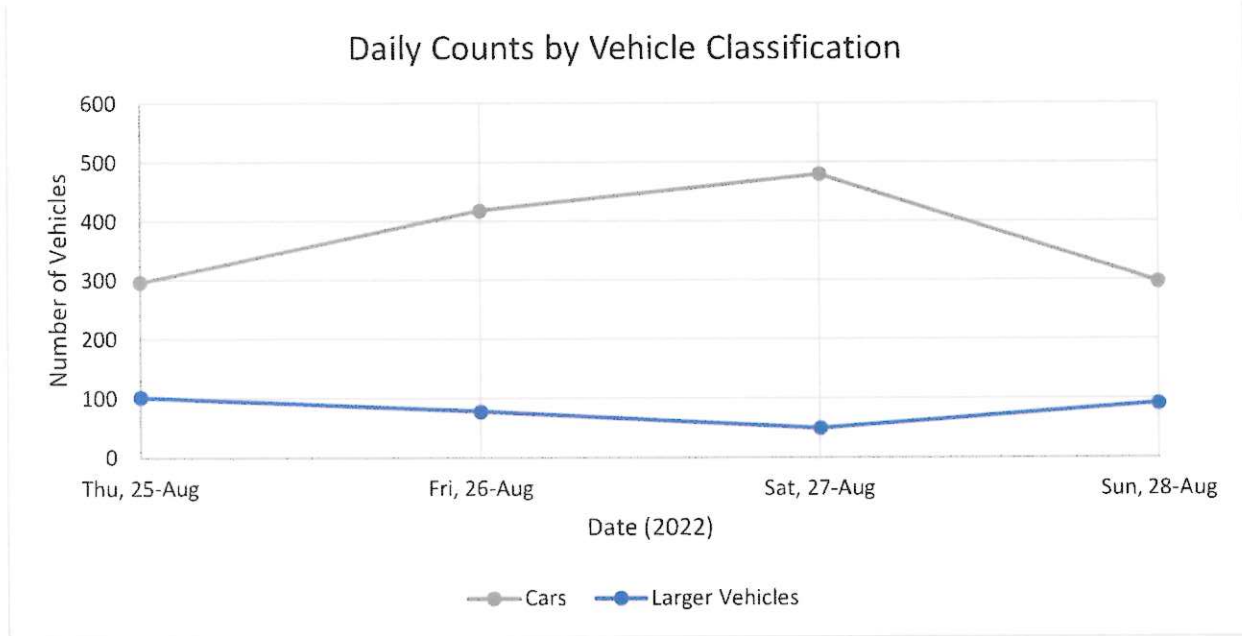


Figure 1a: Daily Traffic Counts by Vehicle Classification on Snowshoe Road from 8/25/22-8/28/22

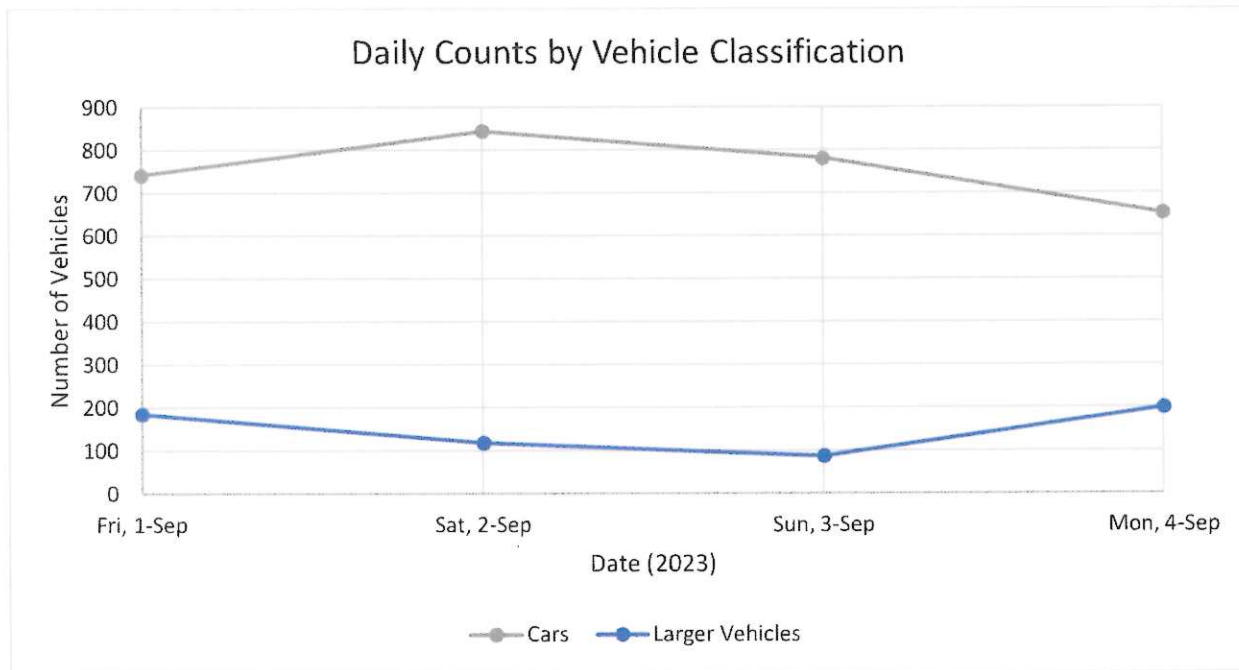


Figure 1b: Daily Traffic Counts by Vehicle Classification on Snowshoe Road from 9/1/23-9/4/23

Figure 2a below shows the average hourly traffic counts by vehicle classification for the August 2022 study period. This graph generally shows that the overall peak traffic for all vehicle types is spread throughout the middle of the day, but the peak hour for cars occurred between 12:00 pm and 1:00 pm. The average peak hour for all vehicles occurred from 10:30 am to 11:30 am, and this is also the peak hour for larger vehicles. Larger vehicle volumes were lower during the car peak but spread out mostly between 9:00 am to 12:00 pm and 2:00 pm to 4:00 pm.





Figure 2b below shows the average hourly traffic counts by vehicle classification for the September 2023 study period around the Labor Day holiday weekend. Similar to the August 2022 study period, this graph generally shows that the overall peak traffic for all vehicle types is spread throughout the middle of the day and the peak hour for cars occurred between 12:00 pm and 1:00 pm. The average peak hour for all vehicles occurred from 12:00 pm to 1:00 pm, and the peak hour for larger vehicles was between 10:00 am and 11:00 am. Larger vehicle volumes were spread out mostly between 9:00 am to 5:00 pm.

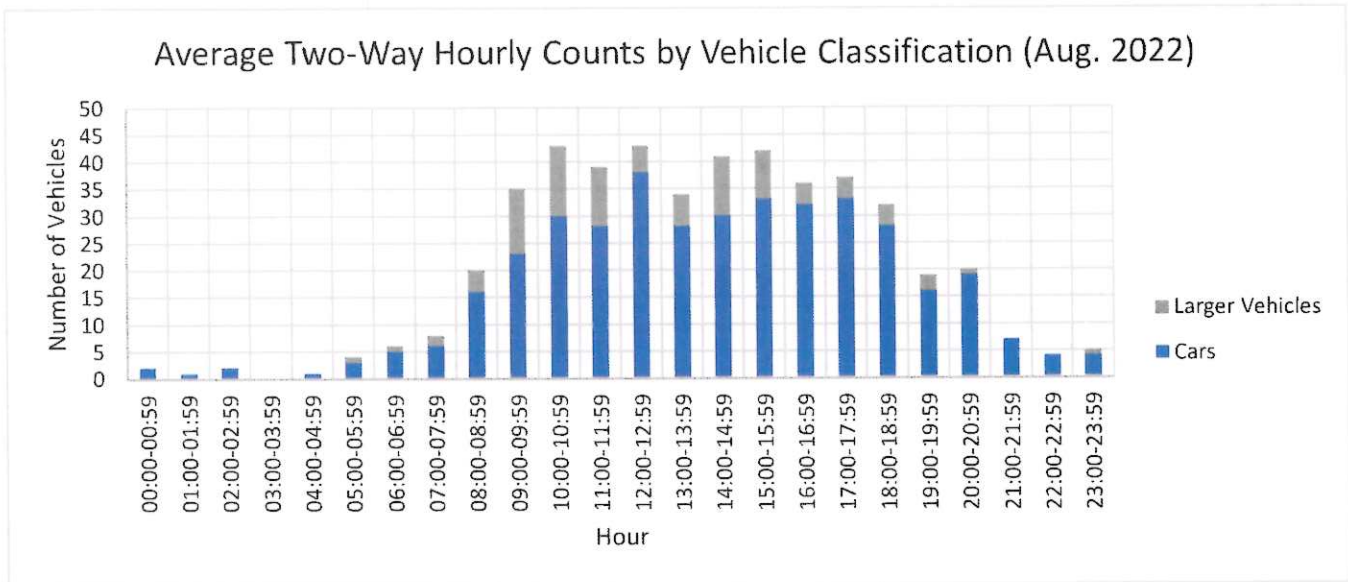


Figure 2a: Average Hourly Counts by Vehicle Classification on Snowshoe Road from 8/25/22-8/28/22

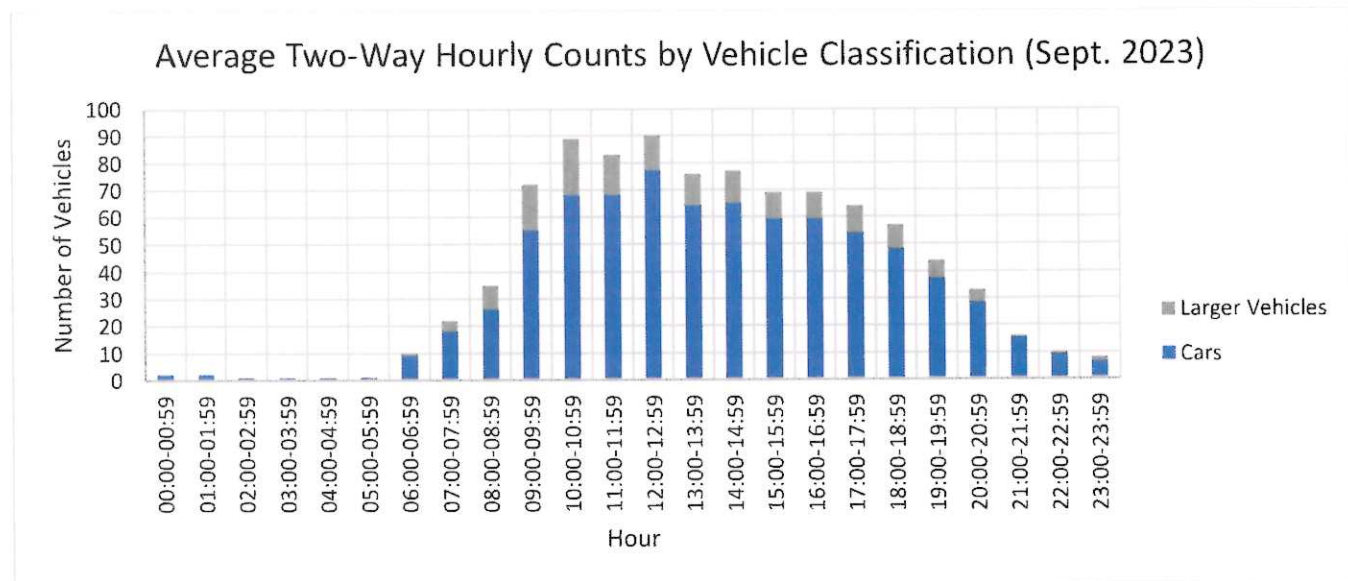


Figure 2b: Average Hourly Counts by Vehicle Classification on Snowshoe Road from 9/1/23-9/4/23

Along with vehicle counts and classifications, vehicle speed data was also collected during the August 2022 study period. Based on the data received, the overall daily average speed on Snowshoe Road is 27.4 miles per hour while



the average daily 85th percentile speed (i.e., the speed that 85% of the vehicles measured were travelling at or below) is 30.3 miles per hour. Figure 3 shows the average hourly speeds for each hour of the day. There are periods when traffic speeds are higher but there was a small number of vehicles that were above the speed limit. In addition, the average and 85th percentile speeds are close to or below the posted speed limit throughout most of the day.

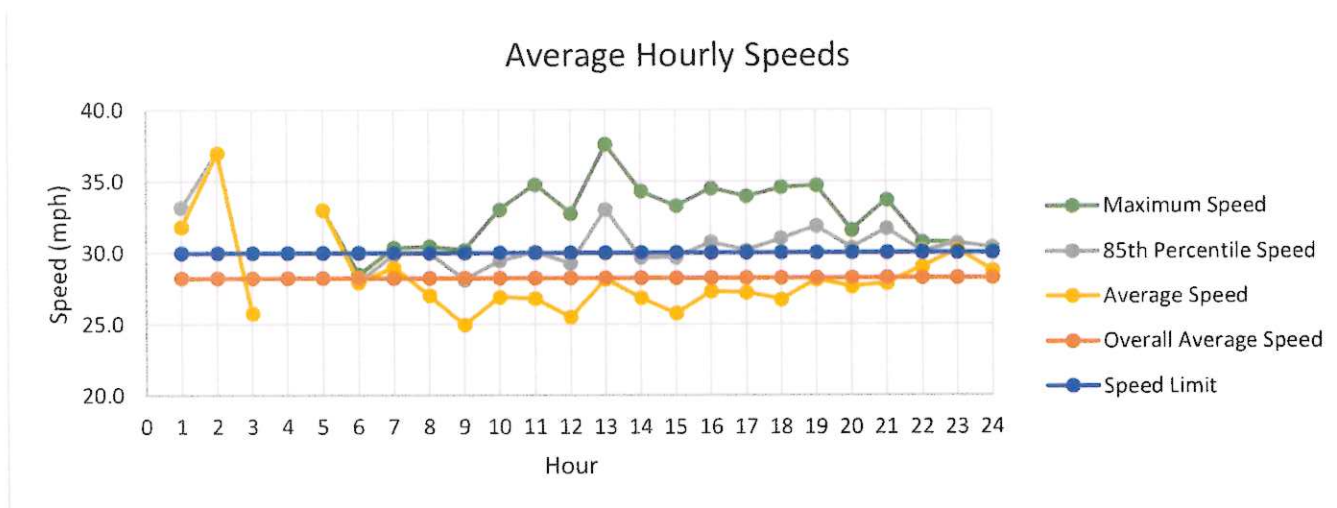


Figure 3: Average Hourly Speeds on Snowshoe Road from 8/25/22-8/28/22

To determine what proportion of the existing traffic on Snowshoe Road is traveling to and from the current 300 site campground on Association Island, traffic volume data was collected at the northern end of Snowshoe Road during the September 1st through September 4th, 2023 study period. The Average Daily Traffic (ADT) was 419 vehicles per day at the entrance to Hoveys Island and Association Island, which was 47% of the total ADT on Snowshoe Road (901 vehicles per day). Larger vehicles accounted for 26% of the ADT at this count location, and 73% of the larger vehicles on Snowshoe Road traveled to or from Hoveys Island and Association Island.

Figure 4 below shows the average hourly traffic counts by vehicle classification for the September 2023 study period at the entrance to Hoveys Island. Similar to the August 2022 and September 2023 study period counts located further south on Snowshoe Road, this graph generally shows that the overall peak traffic for all vehicle types is spread throughout the middle of the day. However, the volumes were lower around 12:00 pm and 1:00 pm, which was during the peak hour for other locations on Snowshoe Road. The average peak hour for all vehicles occurred from 10:00 am to 11:00 am, and this is also the peak hour for larger vehicles. Car volumes were spread out mostly between 9:00 am and 8:00 pm, with an average peak hour of 2:00 pm to 3:00 pm.



Average Two-Way Hourly Counts by Vehicle Classification (Sept. 2023) at Entrance to Hoveys Island

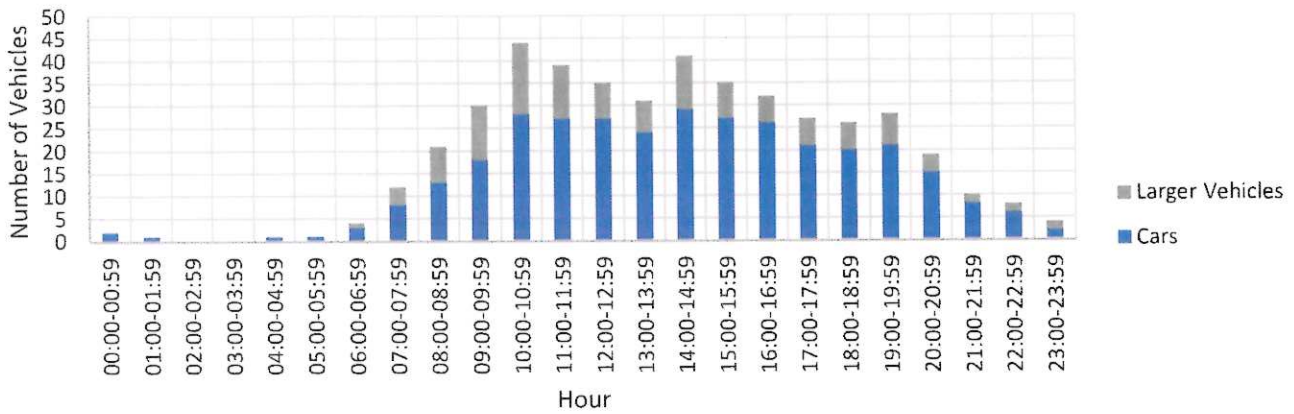


Figure 4: Average Hourly Counts by Vehicle Classification on Snowshoe Road at Hoveys Island from 9/1/23-9/4/23

For the study period from September 1st – 4th, 2023, the average count volumes at the entrance to Hoveys Island and Association Island were compared to the total counts on Snowshoe Road collected near CR 178 (Military Road). Vehicles traveling to and from Hoveys Island and Association Island accounted for 47% of the average daily traffic (47% southbound, 46% northbound). Figure 5 below shows the average hourly counts at Hoveys Island and the remaining volume that had an origin or destination at other locations along Snowshoe Road. The graph generally shows that about half of the traffic was traveling to Hoveys Island and Association Island throughout most of the day, with larger proportions of the total traffic in the morning (8:00 am to 9:00 am) and evening (7:00 pm to 11:00 pm). During the average Snowshoe Road peak hour from 12:00 pm to 1:00 pm, 61% of the vehicles traveled to or from another destination along Snowshoe Road.

Average Two-Way Hourly Counts by Origin/Destination

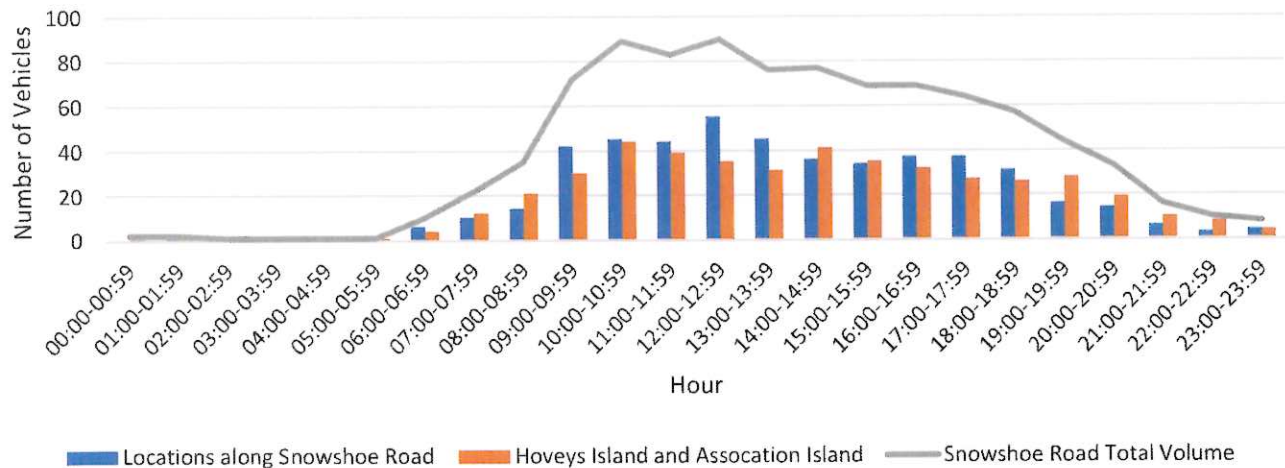


Figure 5: Average Hourly Counts by Origin/Destination from 9/1/23-9/4/23



3.0 Future Traffic Projections

Based on the data collected from the study period, as well as information provided by Sun Communities, the existing average, existing peak, and future peak traffic volumes were approximated for Snowshoe Road. The 11th edition of the ITE Trip Generation Manual (latest edition – 2021) was used to determine the trip generation entering and exiting trips estimate for the proposed seasonal use cabins on Hoveys Island (ITE Land Use Code 260 – Recreational Homes). Based on the trip generation rates, there is expected to be an average of 80 additional vehicles traveling on Snowshoe Road during the weekend mid-day peak hours, which is a 76% increase from the existing peak hour volume of 105 vehicles during the peak holiday weekend. A summary of trip generation for the site is shown in Table 1.

Table 1: Trip Generation

TRIPS GENERATED DURING THE:		WEEKDAY PM PEAK HOUR	SATURDAY MID-DAY PEAK HOUR	SUNDAY MID-DAY PEAK HOUR
LAND USE	SIZE	TOTAL VEHICLE TRIPS		
Recreational Homes (ITE Land Use Code 260)	117 Units	39 (453 weekday daily trips)	72 (550 Saturday daily trips)	88 (434 Sunday daily trips)

Data received from Sun Communities Inc. for the study period during August 2022 showed that occupancy at the existing Association Island RV park was 48.37% (about 145 sites) with 24 sites being long term occupancy and about 121 being daily or weekly sites. This was assumed to be representative of a typical summer weekend based on average weekend occupancy between June and September. The traffic count data collected around the Labor Day holiday weekend in September 2023 was assumed to represent peak season volumes on Snowshoe Road. The estimated trip generation that would result from the Hoveys Island cabins was added to the average and peak season traffic, as shown in Figure 6 below.

The calculation results show that during the weekend, there would be an average of approximately 492 more vehicles per day traveling on Snowshoe Road, which is about 1,247 total vehicles per day on the peak weekends of the season such as Labor Day. When the expected trips generated are added to the average typical weekend volumes, there would be approximately 827 vehicles per day which is 72 more vehicles per day than the existing peak holiday weekend ADT of 755 vehicles per day.

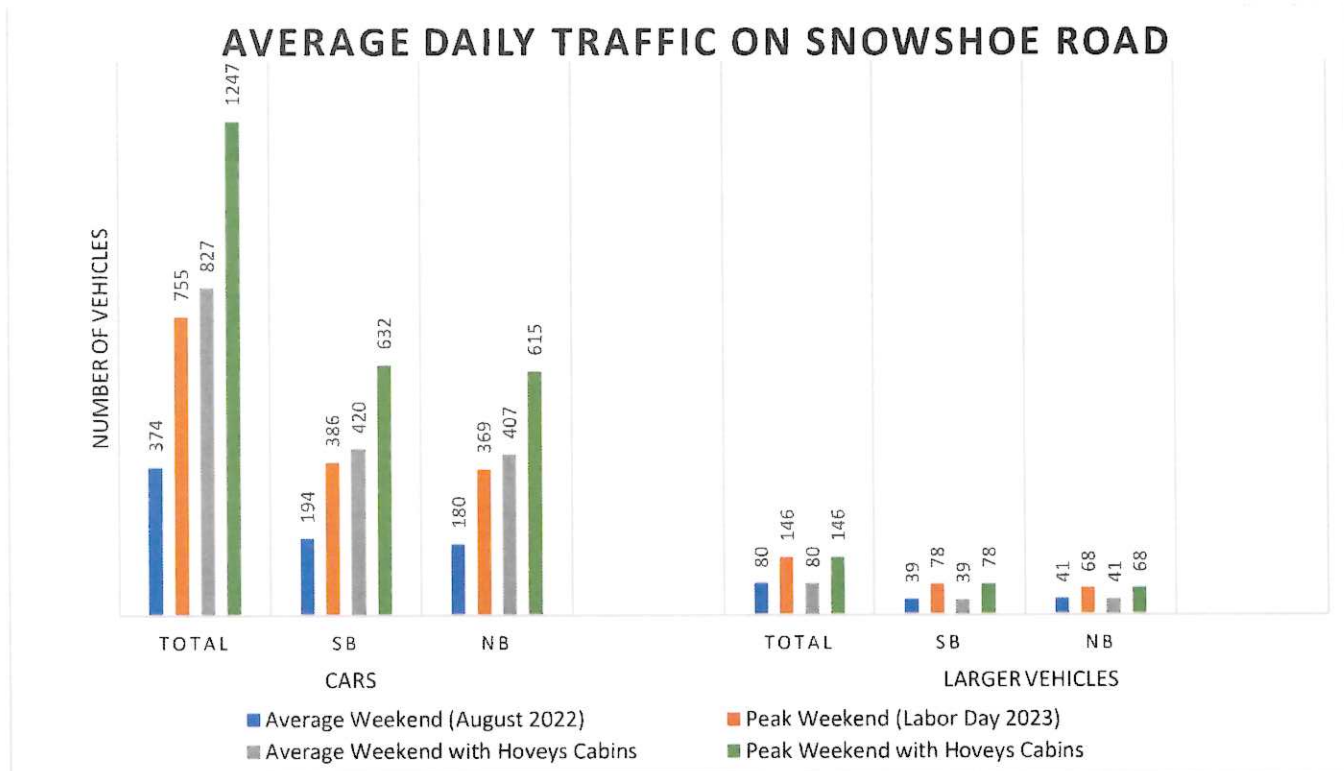


Figure 6: Average Two-Way Daily Traffic on Snowshoe Road

4.0 Recommendations

The increased traffic on Snowshoe Road generated by the Hoveys Island cabin development does not exceed the standard threshold for capacity. Based on guidelines in the Highway Capacity Manual (HCM) and NCHRP Report 825, Planning and Preliminary Engineering Applications Guide to the Highway Capacity Manual, the daily capacity for a two-lane roadway is approximately 24,900 vehicles per day and 7,100 vehicles per day for a Level of Service of C or better. The peak weekend average daily traffic on Snowshoe Road with the future traffic from the Hoveys Island cabins is approximately 1,247 vehicles per day in both directions, which is about 5% of the standard roadway capacity. These capacity thresholds assume ideal roadway conditions; however, Snowshoe Road is narrow with 18-20 feet pavement width and 2-foot shoulders and no striping. If Snowshoe Road is conservatively assumed to have half the capacity of rural two-lane road with ideal conditions, the anticipated future peak volumes based on our data is still well under the capacity threshold.

During our review of the area, we noted and would recommend the following improvements to Snowshoe Road.

1. There are two speed limit signs per direction on the entirety of Snowshoe Road. Per the New York State Supplement to the Manual on Uniform Traffic Control Devices (MUTCD), the first intermediate speed limit sign should be placed a maximum of 1100 feet from the initial speed limit sign. The spacing between subsequent intermediate signs should not exceed the distance produced by multiplying the speed limit



(in miles per hour) by 100, which would be 3000 feet in this case. The current spacing between the signs does not meet these standards.

2. To address the issue of vehicle speed and pedestrians along Snowshoe Road, we recommend increasing the number of speed limit signs to be in accordance with the NYS Supplement to the MUTCD. Figure 5 below shows the recommended location of speed limit signs.
3. Also, it is recommended that additional Pedestrian warning signs be added along Snowshoe Road to bring awareness to motorists of pedestrians along the road.



Figure 5: Recommended Speed Limit Signs on Snowshoe Road