# Snow Park Village

# Transportation Analysis

**Prepared for:**
**Deer Valley**

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FEHR PEERS

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# 1. Executive Summary

This study includes the results of Traffic Impact Study for the Snow Park Village project at Deer Valley Resort in Park City, Utah. Snow Park Village is a mixed-use development that will serve as a base area village for Deer Valley, and includes hotel, residential, commercial, and event center uses.

The scope of this study analyzes the traffic operations and impacts under the following scenarios:

- Existing Conditions
- 2020 Background Conditions
- Existing (2020) Plus Project Conditions
- Opening Year (2022) Background Conditions
- Opening Year (2022) Plus Project Conditions
- Future (2040) Background Conditions
- Future (2040) Plus Project Conditions

Traffic operations for these scenarios were analyzed at seven study intersections:

1. Doe Pass Road / Deer Valley Drive East
2. Doe Pass Road / Deer Valley Drive West
3. Deer Valley Drive / Deer Valley Drive East / Deer Valley Drive West
4. Deer Valley Drive / Marsac Avenue
5. Deer Valley Drive / Bonanza Drive
6. Deer Valley Drive / Park Avenue / Empire Avenue
7. Bonanza Drive / Monitor Drive / SR-248

Study intersections 6 and 7 currently operate at Levels of Service (LOS) that do not meet Part City standards. However, these intersections were analyzed as part of this study to identify Deer Valley's contributions to traffic at key intersections within Park City in support of Park City Municipal Corporation's (PCMC) goals of reducing peak-hour traffic volumes by 20% citywide.

The Plus Project analyses include trips generated by the Snow Park Village project. The parking analysis accounts for both physical and behavioral impacts of the identified resort uses, as well as parking pricing. To present conservative results in this report, reductions in trip generation and parking demand stemming from proposed enhancements to local transit service, operated by Park City Transit and/or High Valley Transit, or Deer Valley's existing Transportation Demand Management (TDM) program are not included.

## 1.1.1 Study Results

In Plus project Conditions, five of seven study intersections, with recommended mitigations in place, meet or exceed the Park City LOS standards. Under existing conditions, the intersection of Deer Valley Drive / Park Avenue / Empire Avenue operates at a LOS of F, and vehicle queues from this intersection extend into the adjacent intersection of Deer Valley Drive / Bonanza Drive, leading to deficient operations with a PM peak-hour LOS of F. Given the City's longstanding position on additional mitigations at this intersection, none are recommended. Furthermore, the most impaired intersection under current conditions, the Deer Valley Drive / Deer Valley Drive East / Deer Valley Drive West intersection, which operates today at a LOS below Park City standards, achieves a LOS of C under 2040 Plus Project conditions by reconfiguring the intersection, establishing a new access pattern for most day skiers, and implementation of a traffic signal with transit signal preemption capabilities.

Parking provided as part of the Snow Park Village Proposal will be provided at levels roughly 20% lower than required. This reduced demand will be achieved through the implementation of a paid parking system, continued operation and refinement of Deer Valley's Transportation Demand Management program, by supporting non-single-occupancy vehicle trips while also actively discouraging driving alone, and through time-of-day sharing for different uses.

In alignment with Park City's *Transit First* policy, construction of Snow Park Village will prioritize active transportation and transit as modes for travel to, from, and within the village. To that end, Deer Valley will construct an on-site mobility hub with space for six buses which will be connected to the broader Park City transit network via bus-only lanes. Two new traffic signals are recommended as mitigations which will include transit signal preemption capabilities to expedite transit service. Additionally, off-street multiuse paths will be constructed to connect Snow Park to Park City's existing active transportation network.

## 1.1.2 LOS Summary

**Table 1** reports LOS at the study intersections. For signalized intersections and roundabouts, average vehicular delay and LOS are reported. For unsignalized intersections, the worst movement delay and LOS are reported. Detailed descriptions of the intersection operations can be found in the subsequent chapters. Due to the mixed-use nature of the project, the net total trips generated by the AM peak hour is 162 trips and the PM peak hour is 204 trips.

**Table 1: Snow Park Village Saturday AM and PM Peak Hour Level of Service Summary**

| Intersection | | | Existing Background | Existing + Project Mitigated[2] | 2022 Background | 2022 + Project Mitigated[2] | 2040 Background | 2040 + Project Mitigated[2] |
|---|---|---|---|---|---|---|---|---|
| ID | Location | Period | LOS & Sec/Veh[1] | LOS & Sec/Veh[1] | LOS & Sec/Veh[1] | LOS & Sec/Veh[1] | LOS & Sec/Veh[1] | LOS & Sec/Veh[1] |
| 1 | Doe Pass Rd / Deer Valley Dr East | AM | - | 8 / A | - | 8 / A | - | 12 / B |
| | | PM | - | 4 / A | - | 6 / A | - | 9 / A |
| 2 | Doe Pass Rd / Deer Valley Dr West | AM | - | 6 / A | - | 6 / A | - | 6 / A |
| | | PM | - | 5 / A | - | 6 / A | - | 6 / A |
| 3 | Deer Valley Dr / Deer Valley Dr East / Deer Valley Dr West | AM | 7 / A | 7 / A | 12 / B | 7 / A | 19 / C | 12 / B |
| | | PM | **41 / E** | 10 / B | **49 / E** | 12 / B | **54 /F** | 15 / B |
| 4 | Deer Valley Drive / Marsac Avenue | AM | 11 / B | 12 / B | 12 / B | 14 / B | 16 / C | 21 / C |
| | | PM | 11 / B | 13 / B | 11 / B | 14 / B | 14 / B | 17 / C |
| 5 | Deer Valley Dr / Bonanza Dr | AM | 10 / B | 11 / B | 11 / B | 11 / B | 17 / B | 24 / C |
| | | PM | **165 / F** | **96 / F** | **123 / F** | **86 / F** | **150 / F** | **143 / F** |
| 6 | Deer Valley Dr / Park Ave / Empire Ave | AM | **73 / E** | **76 / E** | **84 / F** | **75 / E** | **76 / E** | **76 / E** |
| | | PM | **89 / F** | **81 / F** | **90 / F** | **88 / F** | **91 / F** | **89 / F** |
| 7 | Bonanza Dr / Monitor Dr / SR-248 | AM | 12 / B | 13 / B | 13 / B | 14 / B | 15 / B | 15 / B |
| | | PM | 18 / B | 20 / C | 22 / C | 24 / C | 40 / D | 39 / D |

Notes:
**Bold text** indicates intersections operating below Park City's acceptable LOS threshold.
1. Intersection average LOS and delay for signalized intersections and roundabouts, worst movement LOS and delay for unsignalized intersections.
2. Deer Valley Drive East / Deer Valley Drive West intersection analyzed as a signal as a mitigation.

Source: Fehr & Peers.

# 2. Introduction

This study documents the potential transportation-related impacts from the proposed Snow Park Village project located at the Deer Valley Resort in Park City, Utah. The project location is shown in **Figure 1**.

The scope of this study analyzes the traffic operations and impacts under the following scenarios:

- Existing Conditions
- 2020 Background Conditions
- Existing (2020) Plus Project Conditions
- Opening Year (2022) Background Conditions
- Opening Year (2022) Plus Project Conditions
- Future (2040) Background Conditions
- Future (2040) Plus Project Conditions

Traffic operations at key intersections, described below in the Scope section, were analyzed under the seven scenarios listed above during Saturday AM and PM peak-hour travel periods. Given the nature of ski areas operating as recreational destinations, Saturdays consistently experience the highest traffic volumes, and focusing on Saturdays for traffic analyses in this report present the most conservative results. The Plus Project analyses include tips generated by the proposed project.

In conclusion, the Deer Valley Drive / Deer Valley Drive East / Deer Valley Drive West intersection operates at an unacceptable LOS in both Saturday AM and PM peak hours during all analysis scenarios. In Plus Project conditions, this intersection is proposed to re-align, causing delays at the northbound approach, which becomes the new side-street stop control. Due to the stop-controlled northbound movement, vehicles experience delay trying to find a gap in the inbound/outbound resort traffic to turn left to exit the resort. A potential mitigation of a traffic signal with capabilities to provide transit priority was analyzed for this study. The Deer Valley Drive East / Deer Valley Drive West intersection operates at LOS A for all scenarios as a signalized intersection. This signal alternative is recommended at this intersection when warrants are met.

## 2.1 Scope

This study analyzes the traffic impacts of the project in conjunction with nearby intersections. Impacts are specifically addressed at the following study intersections:

1. Doe Pass Road / Deer Valley Drive East (side-street stop-controlled)
2. Doe Pass Road / Deer Valley Drive West (side-street stop-controlled)
3. Deer Valley Drive / Deer Valley Drive East / Deer Valley Drive West (side-street stop-controlled)
4. Deer Valley Drive / Marsac Avenue (roundabout)
5. Deer Valley Drive / Bonanza Drive (signalized)
6. Deer Valley Drive / Park Avenue / Empire Avenue (signalized)
7. Bonanza Drive / Monitor Drive / SR-248 (signalized)

For the purposes of consistency, this report refers to two key roadways as Deer Valley Drive East (sometimes called Deer Valley Drive North) and Deer Valley Drive West (sometimes called Deer Valley Drive South). Given that Doe Pass Road carries minimal traffic in its existing configuration, study intersection 1 and 2 are only analyzed under Plus Project scenarios.

Study intersections are shown in **Figure 2**: Study Intersections**.**


Project Location


Figure 2

Study Intersections

# 2.2 Analysis Methodology

"Level of service" (LOS) is a term that describes the operating performance of an intersection or roadway. LOS is measured quantitatively and reported on a scale from A to F, with A representing the best performance and F the worst. **Table 2** provides a brief description of each LOS letter designation and an accompanying average delay per vehicle for both signalized and unsignalized intersections. Traffic operations were modeled in SimTraffic, a microsimulation traffic analysis software. SimTraffic results were evaluated under the Highway Capacity Manual 6th Edition (HCM 2016) methodology in this study to remain consistent with "state of the practice" professional standards. For study intersection 4, Deer Valley Drive / Marsac Avenue, the SIDRA analysis software was used as it is accepted as state-of-the-practice for roundabout operations analysis. For signalized intersections and roundabouts, the LOS is provided for the overall intersection (weighted average of all approach delays).

**Table 2: Level of Service Descriptions**

| LOS | Description | Signalized Intersections | Unsignalized Intersections | Roundabouts |
|---|---|---|---|---|
| | | Avg. Delay (sec/veh)[1] | Avg. Delay (sec/veh)[2] | Avg. Delay (sec/veh)[3] |
| A | *Free Flow / Insignificant Delay*<br>Extremely favorable progression. Individual users are virtually unaffected by others in the traffic stream. | < 10.0 | < 10.0 | < 10.0 |
| B | *Stable Operations / Minimum Delays*<br>Good progression. The presence of other users in the traffic stream becomes noticeable. | > 10.0 to 20.0 | > 10.0 to 15.0 | > 10.0 to 15.0 |
| C | *Stable Operations / Acceptable Delays*<br>Fair progression. The operation of individual users is affected by interactions with others in the traffic stream | > 20.0 to 35.0 | > 15.0 to 25.0 | > 15.0 to 25.0 |
| D | *Approaching Unstable Flows / Tolerable Delays*<br>Marginal progression. Operating conditions are noticeably more constrained. | > 35.0 to 55.0 | > 25.0 to 35.0 | > 25.0 to 35.0 |
| E | *Unstable Operations / Significant Delays Can Occur*<br>Poor progression. Operating conditions are at or near capacity. | > 55.0 to 80.0 | > 35.0 to 50.0 | > 35.0 to 50.0 |
| F | *Forced, Unpredictable Flows / Excessive Delays*<br>Unacceptable progression with forced or breakdown of operating conditions. | > 80.0 | > 50.0 | > 50.0 |

1. Overall intersection LOS and average delay (seconds/vehicle) for all approaches.
2. Worst approach LOS and delay (seconds/vehicle) only.
3. Overall intersection LOS and average delay (seconds/vehicle) for all approaches.

Source: Fehr & Peers descriptions, based on *Highway Capacity Manual, 6th Edition*.

# 3. Existing (2020) Background Conditions

The Existing (2020) Background Conditions analysis examines the study intersections and roadways during the AM and PM peak-hours existing traffic and geometric conditions. Through this analysis, existing traffic operational deficiencies can be identified, and potential mitigation measures recommended.

## 3.1 Roadway System

The primary roadways that will provide access to the project, and their existing configurations, are described below.

- **Deer Valley Drive (SR-224)** is a state-owned facility and is classified as a principal arterial road and has a posted speed limit of 35 mph from Park Avenue to about halfway between Bonanza Drive and Marsac Avenue, and 40 mph to the Marsac Avenue roundabout. SR-224 has a five-lane cross section with two travel lanes in each direction with a two-way left-turn lane north of the Marsac Avenue roundabout.
- **Marsac Avenue (SR-224)** is also a state-owned facility and is classified as a principal arterial road and has a posted speed limit of 25 mph. Marsac Avenue has a two-lane cross section with one travel lane in each direction near the project area.
- **Deer Valley Drive West** is classified as a major collector road and has a posted speed limit of 25 mph. Deer Valley Drive West has a two-lane cross section with one travel lane in each direction near the project area.
- **Deer Valley Drive East** this loop section of Deer Valley Drive is classified as a collector road and has a posted speed limit of 25 mph. Deer Valley Drive East has a two-lane cross section with one travel lane in each direction near the project area.
- **Doe Pass Road** is classified as a collector road and has a posted speed limit of 25 mph. Doe Pass Road has a two-lane cross section with one unstriped travel lane in each direction near the project area.

# 3.2 Traffic Volumes

Intersection turning movement counts were collected at the following study intersections to establish a baseline of existing conditions and operations for this study's original scope of work:

- Deer Valley Drive / Deer Valley Drive East / Deer Valley Drive West
- Deer Valley Drive / Marsac Avenue
- Deer Valley Drive / Bonanza Drive

Intersection turning movement counts were collected at the Deer Valley Drive / Deer Valley Drive East / Deer Valley Drive West intersection on Saturday, February 15, 2020 (President's Day weekend) and Saturday, February 29, 2020 for the Saturday AM peak period (7:45 AM – 9:45 AM) and the Saturday PM peak period (3:30 PM – 5:30 PM). Counts collected on February 29, 2020 showed higher peak-hour traffic volumes, and were therefore used as existing traffic volumes for the analysis presented in this study.

Intersection turning movement counts were collected at the Deer Valley Drive / Marsac Avenue roundabout and the Bonanza Drive / Deer Valley Drive intersection on December 19, 2020 for the Saturday AM and PM peak periods.

Roadway vehicle counts are provided by the Utah Department of Transportation (UDOT) Continuous Count Stations (CCS). Data from the past five years as collected at two CCSs in the vicinity of the project site (one on SR-224 just south of Snyderville and one on SR-248 just west of Quinn's Junction) were reviewed to determine when during the ski season peak traffic volumes occur. It was observed from the data that the month of January experienced the highest Average Daily Traffic (ADT) volumes of any month of the year. This is likely due to increases in traffic caused by events in the area including the Sundance Film Festival. While January is likely the busiest month for traffic on the outskirts of Park City, traffic volumes in February are nearly as high, and Presidents' Day Weekend is the busiest weekend of the year for skier traffic. To account for this, the intersection volumes collected in December were adjusted by a factor of 1.05 (5% higher) to replicate February conditions.

For study intersections 6 and 7, which were not included in this study's original scope, intersection counts were sourced from previous studies with adjustment factors. For the intersection of Deer Valley Drive / Park Avenue / Empire Avenue, counts were sourced from the *Park City Mountain Resort Traffic Impact Study* (August, 2019). Counts for this study were collected on February 18, 2017 and were adjusted by a factor of 1.14 (14% higher). These adjusted counts were used for this study. For the intersection of Bonanza Drive / Monitor Drive / SR-248, no Saturday counts were available. To overcome this challenge, weekday counts

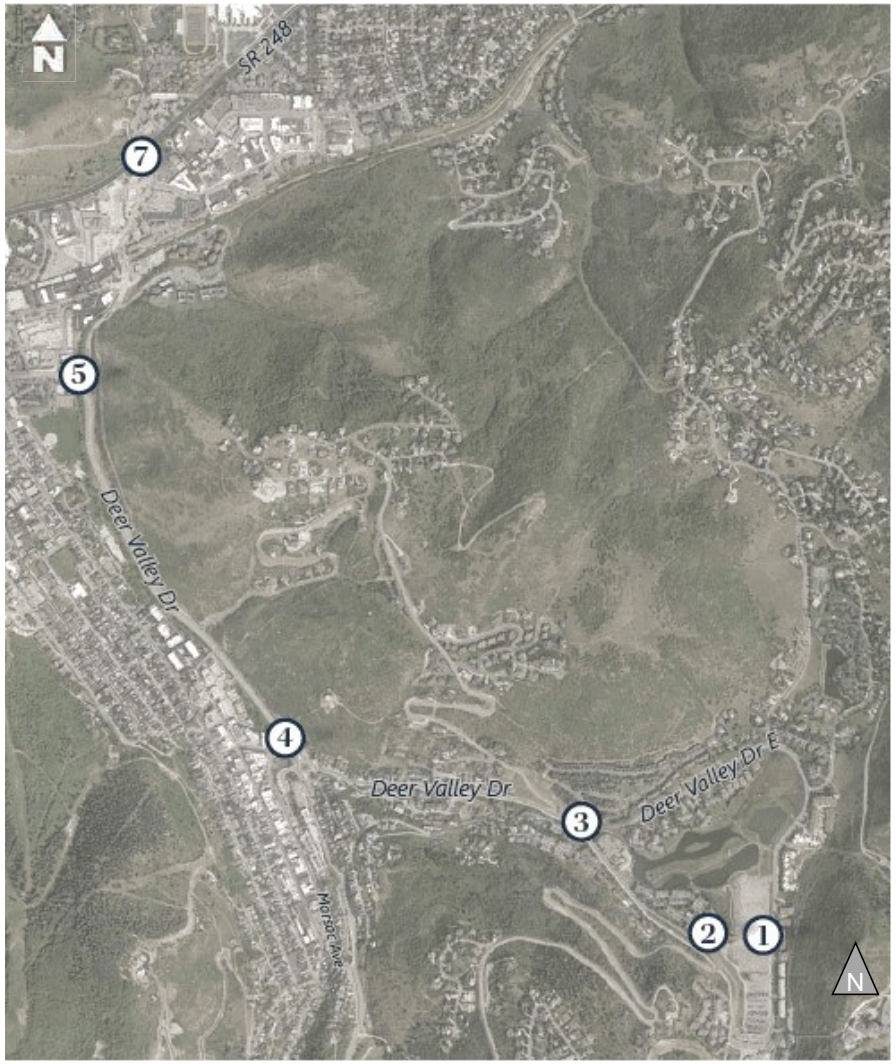
collected on February 6, 2018 as part of the *Park City Arts District Traffic Analysis* (September 2019) were used as a foundation. Through reviewing two years of CCS data, weekday-to-weekend adjustment factors of 0.63 (37% lower) for the AM peakhour, and 0.85 (15% lower) for the PM peak hour were applied for this study.

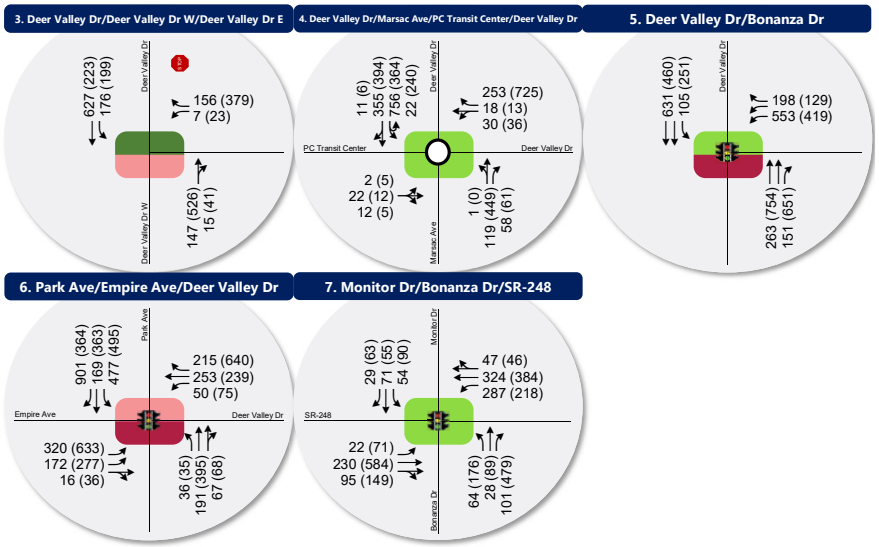
Given that they were not included in the original scope of this study, and the substantial changes proposed along Doe Pass Road, no counts for the intersections of Deer Valley Drive East / Doe Pass Road and Deer Valley Drive West / Doe Pass Road were available, and these intersections were only evaluated in the Plus Project conditions.

The existing 2020 background Saturday AM and PM peak hour volumes are shown in **Figure 2**.

Fehr & Peers also collected Saturday daily roadway counts on February 15, 2020 (President's Day weekend) on the internal Deer Valley Drive roadways at the following locations:

- Deer Valley Drive West – between Royal Street and drop-off/pick-up area
- Deer Valley Drive West – south of the Deer Valley Drive East / Deer Valley Drive West intersection
- Deer Valley Drive East – between Queen Esther Drive and parking lot
- Deer Valley Drive East – east of the Deer Valley Drive East / Deer Valley Drive West intersection




## LEGEND

Stop
Signalize
Lane Configuration
AM (PM)
AM (PM)
Peak Hour Traffic Volume

*Intersection Level of Service (LOS):*

AM PM A B C D E F

Figure 3

Existing 2020 Background Saturday AM & PM Peak Hour Traffic Conditions

# 3.3 Level of Service Analysis

Using SimTraffic simulation software (for signalized and unsignalized intersections) and SIDRA software (for the roundabout) and the HCM 6 delay thresholds provided in the Introduction, the existing background Saturday AM and PM peak hour LOS were computed for each study intersection. The results of this analysis for the Saturday AM and PM peak hours are reported in **Table 3** (see Appendix for the detailed LOS report). These results serve as a base for the analysis of the impacts of the proposed Snow Park Village development.

**Table 3: Existing 2020 Background Conditions Saturday AM & PM Peak Hour Level of Service**

| Intersection | | | | Worst Movement[1] | | | Overall Intersection[2] | |
|---|---|---|---|---|---|---|---|---|
| ID | Location | Period | Control | Movement[3] | Delay Sec/Veh | LOS | Avg. Delay Sec/Veh | LOS |
| 1 | Doe Pass Rd / Deer Valley Dr East | AM | SSSC[4] | - | **-** | **-** | - | - |
| | | PM | | - | **-** | **-** | - | - |
| 2 | Doe Pass Rd / Deer Valley Dr West | AM | SSSC | - | - | - | - | - |
| | | PM | | - | - | - | - | - |
| 3 | Deer Valley Dr / Deer Valley Dr East / Deer Valley Dr West | AM | SSSC | WB Left | 7 | A | - | - |
| | | PM | | WB Left | **41** | **E** | - | - |
| 4 | Deer Valley Drive / Marsac Avenue | AM | Roundabout | - | - | - | 11 | B |
| | | PM | | - | - | - | 11 | B |
| 5 | Deer Valley Dr / Bonanza Dr | AM | Signal | - | - | - | 10 | B |
| | | PM | | - | - | - | **165** | **F** |
| 6 | Deer Valley Dr / Park Ave / Empire Ave | AM | Signal | - | - | - | **73** | **E** |
| | | PM | | - | - | - | **89** | **F** |
| 7 | Bonanza Dr / Monitor Dr / SR-248 | AM | Signal | - | - | - | 12 | B |
| | | PM | | - | - | - | 18 | B |

Notes:
**Bold text** indicates intersections operating below Park City's acceptable LOS threshold.

1. This represents the worst approach LOS and delay (seconds/vehicle) and is only reported for unsignalized intersections.
2. This represents the overall intersection LOS and delay (seconds/vehicle) and is only reported for signalized intersections and roundabouts.
3. NB=Northbound, SB=Southbound, EB=Eastbound, WB=Westbound
4. Side-street stop control.

Source: Fehr & Peers.

As shown in **Table 3**, all study intersections operated within acceptable LOS (LOS C or better), with the exception of the westbound approach at the Deer Valley Drive East / Deer Valley Drive West intersection in the AM peak hour and PM peak hour, which operates at LOS D and LOS E, respectively. This was caused by the high volumes of vehicles exiting the Deer Valley Resort area making a westbound right turn onto Deer Valley Drive West. The westbound right movement is stop-controlled, making it difficult for vehicles to find a gap and turn onto Deer Valley Drive West.

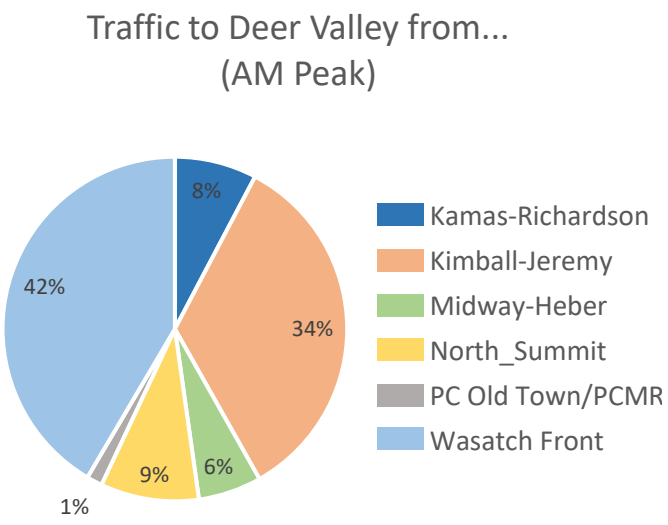
It should be noted that while the Bonanza Drive / Deer Valley Drive intersection operates within acceptable LOS, it is often impacted by vehicle queues spilling back to this intersection from the upstream intersection at Park Avenue / Deer Valley Drive in the PM peak hour.

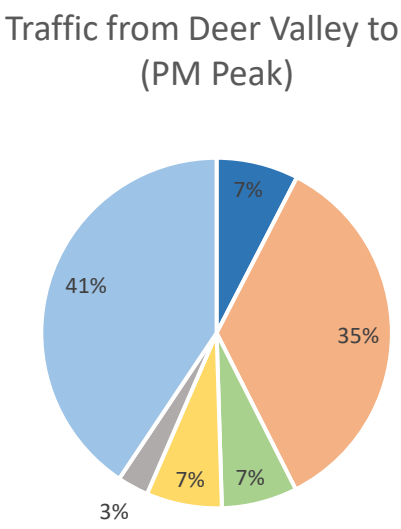
## 3.4 Mitigation Measures

The concept master plan for Snow Park Village shows re-alignment of the Deer Valley Drive / Deer Valley Drive East / Deer Valley Drive West intersection, which will alter the westbound LOS at this intersection. Therefore, Fehr & Peers does not recommend any mitigation measures for existing background conditions.

## 3.5 Origin-Destination Data

To understand the distribution of origins from which travelers access Deer Valley, Fehr & Peers employed origin-destination data provided by StreetLight Data. StreetLight Data collects samples of trips using anonymized mobile phone data (location-based services, or LBS) and aggregates it to provide estimates of travel between origin-destination pairs. In this study, trips to and from surrounding areas (Kamas-Richardson, Kimball-Jeremy, Midway-Heber, North Summit County, Wasatch Front, and Park City Old Town/Mountain Resort) were examined. The data sample used in this study was based on 2019 and 2020 observed travel patterns on weekend days during morning and afternoon peak periods (8:00am-10:00am and 3:00pm-5:00pm, respectively) in January and February (peak ski months). The figure below displays the distributions of origins for visitors of the Deer Valley Resort, as also shown in **Figure 3**.




The Wasatch Front contributes the majority of visitors to and from the Deer Valley Resort with 42% and 41% in the AM peak and PM peak, respectively. The Kimball-Jeremy area contributes the second-greatest proportion of visitors with 34% and 35% in the AM peak and PM peak, respectively. The vehicular traffic to and from the Kimball-Jeremy area are good candidates to encourage shifting to transit or other modes, especially with the proposed improved transit service accessing the Deer Valley Resort.

This data represents existing travel patterns and do not account for potential changes in travel following the construction of Snow Park Village; trip distributon and assignment as shown in section 4.4 of this report primarily focuses on new project trips. Furthermore, StreetLight Data can not ditinguish between single-occupancy vehicles and high-occupancy/transit vehicles, and therefor does not account for current carpooling or transit usage.

# 3.6 Vehicle Occupancy Data

In addition to traffic counts and StreetLight Data, Fehr & Peers collected vehicle occupancy counts for AM peak-period, inbound traffic for the Deer Valley Resort. Vehicle occupancy counts were collected for the following three days:

- Saturday, February 13, 2021
- Tuesday, February 23, 2021
- Saturday, February 27, 2021

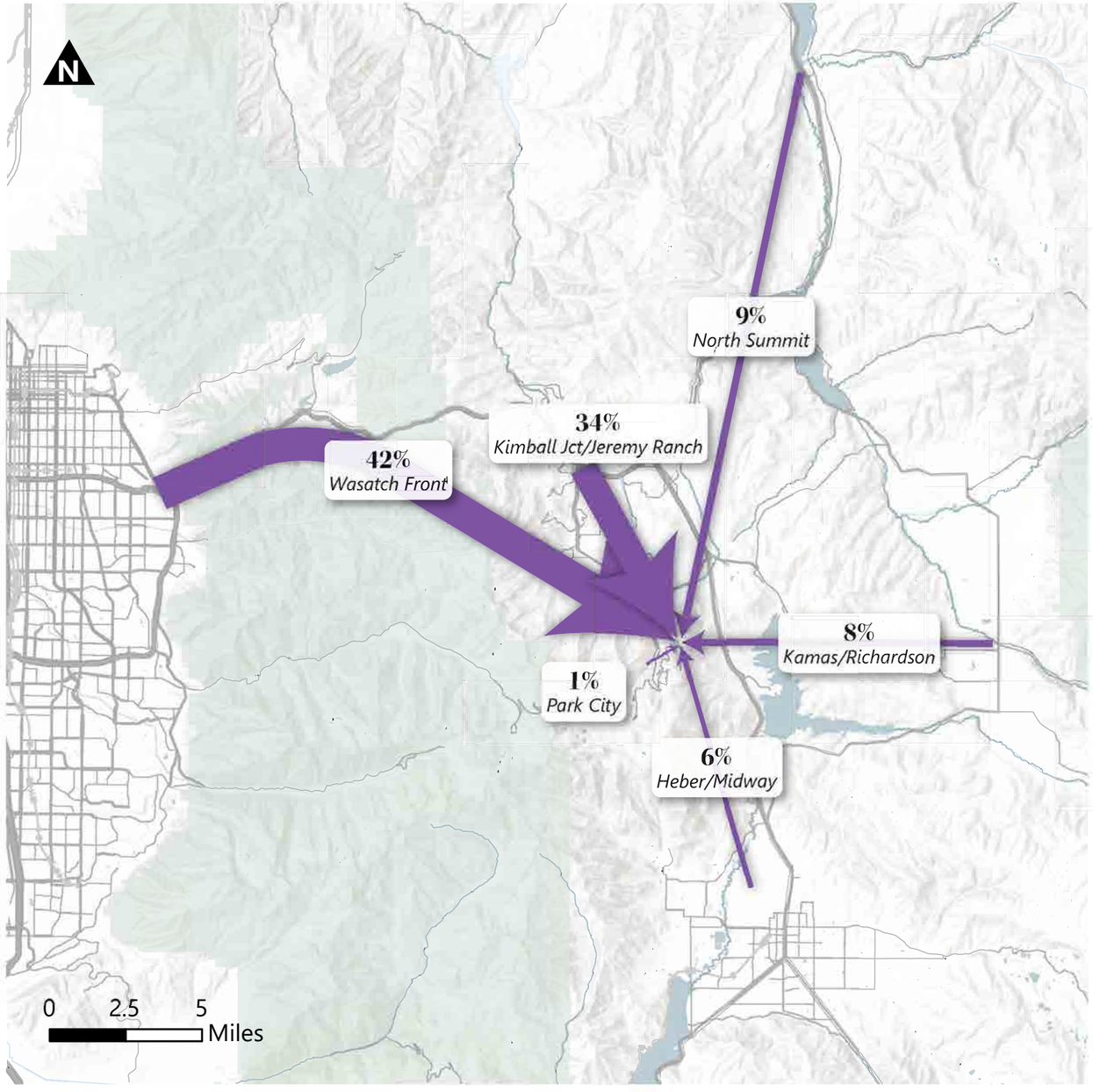
**Table 4** presents a summary of vehicle occupancy data, calculated from data collected during the three days listed above. It should be noted that the vehicle occupancy counts were collected during the global COVID-19 pandemic, and the data shown in **Table 4** could be skewed because people are less likely to carpool with individuals outside of their immediate home due to risks presented by Covid-19.

In summary, the average vehicle occupancy for Snow Park Village was observed to be 2.02 occupants/vehicle on Saturday (weighted average of the two sample Saturdays), and 1.90 occupants/vehicle on a weekday (from a single weekday). Also, the percent of single-occupant vehicles was observed to be about 36% on Saturday (weighted average of the two sample Saturdays), and about 38% on a weekday (from a single weekday). Vehicle occupancy is a useful metric to have available for baseline conditions, as it can be used in evaluating how future implementation of potential transportation demand management (TDM) strategies and broader transit network improvements could impact travel behavior. It should be noted that, owing to the global Covid-19 pandemic, carpooling is likely lower than pre-pandemic levels. However, a return to higher rates of carpooling is expected to be achievable in the near future.

## Table 4: Snow Park Village Vehicle Occupancy Summary

| Time Period | Total Vehicle Count | Average Occupancy | Single Occupant Vehicles | Percent Single Occupant Vehicles |
|---|---|---|---|---|
| **Saturday, February 13, 2021** | | | | |
| **7:45 – 8:00** | 45 | 1.76 | 19 | 42% |
| **8:00 – 8:15** | 58 | 1.84 | 23 | 40% |
| **8:15 – 8:30** | 59 | 2.12 | 17 | 29% |
| **8:30 – 8:45** | 68 | 2.09 | 19 | 28% |
| **8:45 – 9:00** | 74 | 2.04 | 26 | 35% |
| **9:00 – 9:15** | 26 | 2.12 | 12 | 46% |
| **9:15 – 9:30** | 22 | 1.95 | 10 | 45% |
| **9:30 – 9:45** | 20 | 1.95 | 7 | 35% |
| **Sum** | **372** | - | **133** | - |
| **Weighted Average** | - | **1.99** | - | **36%** |
| **Tuesday, February 23, 2021** | | | | |
| **7:45 – 8:00** | 15 | 1.60 | 6 | 40% |
| **8:00 – 8:15** | 32 | 1.50 | 22 | 69% |
| **8:15 – 8:30** | 48 | 1.65 | 24 | 50% |
| **8:30 – 8:45** | 56 | 1.91 | 17 | 30% |
| **8:45 – 9:00** | 63 | 2.00 | 23 | 37% |
| **9:00 – 9:15** | 48 | 1.92 | 16 | 33% |
| **9:15 – 9:30** | 43 | 2.23 | 11 | 26% |
| **9:30 – 9:45** | 24 | 2.17 | 5 | 21% |
| **Sum** | **329** | - | **124** | - |
| **Weighted Average** | - | **1.90** | - | **38%** |
| **Saturday, February 27, 2021** | | | | |
| **7:45 – 8:00** | 41 | 1.66 | 20 | 49% |
| **8:00 – 8:15** | 77 | 2.04 | 24 | 31% |
| **8:15 – 8:30** | 100 | 1.91 | 38 | 38% |
| **8:30 – 8:45** | 93 | 2.11 | 28 | 30% |
| **8:45 – 9:00** | 120 | 2.28 | 40 | 33% |
| **9:00 – 9:15** | 133 | 1.98 | 61 | 46% |
| **9:15 – 9:30** | 129 | 1.97 | 39 | 30% |
| **9:30 – 9:45** | 38 | 2.13 | 10 | 26% |
| **Sum** | **731** | - | **260** | - |
| **Weighted Average** | - | **2.03** | - | **36%** |

Source: Fehr & Peers.



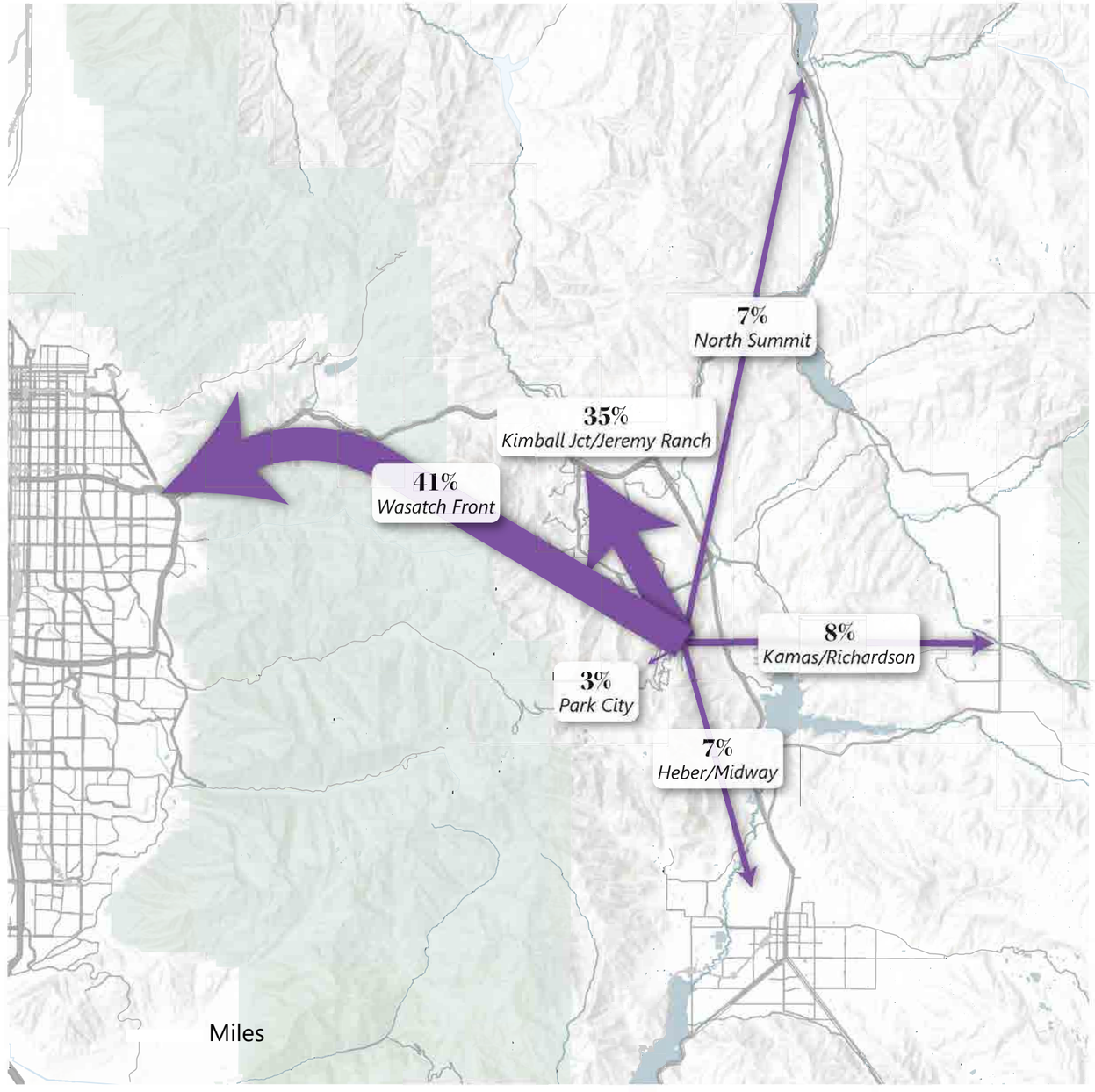




Figure 4

Deer Valley Origin-Destination AM Incoming - PM Outgoing Trends

# 4. Project Conditions

The Project conditions analysis evaluates the type and intensity of proposed development. This provides the basis for trip generation, distribution, and assignment of project trips to the surrounding study intersections defined in the Introduction. Additionally, Snow Park includes many proposed updates to the roadway network immediately adjacent to the site.

## 4.1 Project Description

The first phase of the proposed Snow Park Village development will be located at the and south plot of the Deer Valley Resort. The plots are currently parking lots for the Snow Park Lodge. Deer Valley resort is in a cul-de-sac type of location, and all trips will access the development through the Deer Valley Drive / Deer Valley Drive East/ Deer Valley Drive West intersection.

### 4.1.1 Site Access and Circulation

The Snow Park Village proposal includes a comprehensive reconfiguration of the Deer Valley Drive loop to prioritize non-single-occupancy vehicle modes and expedite transit service, in alignment with Park City's *Transit First* policy. This takes the form of various multimodal improvements on- and off-site.

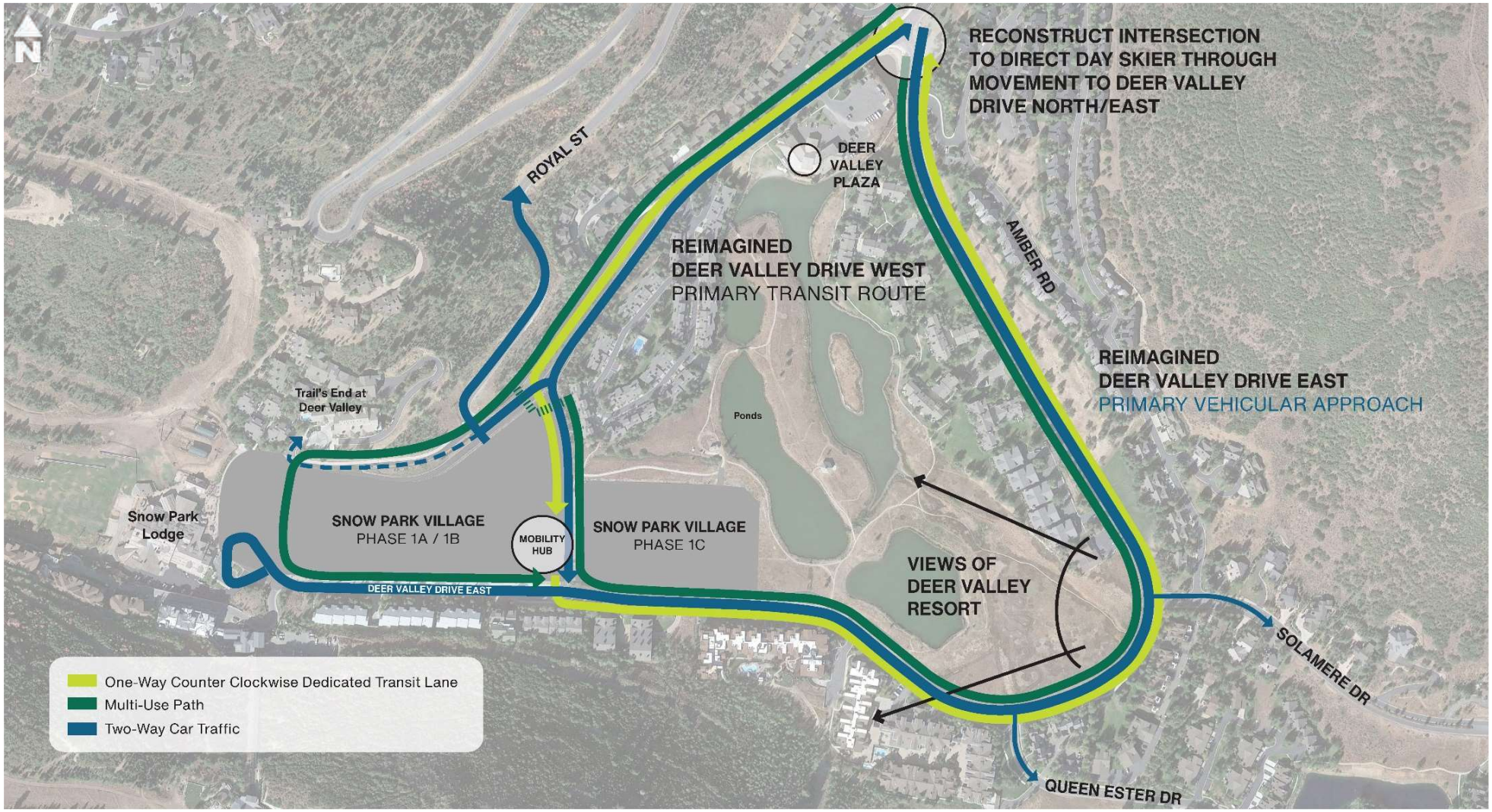
***Deer Valley Drive West*** will be reconfigured to include a southbound bus-only lane, which will improve bus travel times to the proposed mobility hub at the northeast corner of the site, in addition to providing two-way general traffic lanes to allow for the movement of private and public vehicles in each direction. To improve pedestrian and bicycle connections, a continuous multiuse path will be constructed along the west curb to connect Snow Park Village to bicycle multimodal facilities along Deer Valley Drive and the broader Park City active transportation network. Adjacent to the Snow Park Village site, Deer Valley Drive West will be gated to control access to the Trails End development and to discourage use of the southern terminus of Deer Valley Drive West as a skier drop off area.

***Doe Pass Road*** will be reconfigured to provide an eastbound bus-only lane as a continuation of the bus-only lane proposed for Deer Valley Drive West to provide a dedicated transit route directly to the proposed mobility hub. Additionally, Doe Pass Road will include two-way general traffic lanes to allow for the movement of public and private vehicles. A continuous multiuse path will be provided on the north side of Doe Pass Road, which will be connected to the multiuse path along the west curb of Deer Valley Drive West by controlled crossings. Two parking accesses, to levels P1 and P2, will be provided on Doe Pass Road, with

the P2 access only to be used during periods of peak demand, such as events. Both driveways will be controlled with parking management technology, and Deer Valley staff as needed.

***Deer Valley Drive East*** will be reconfigured to provide a northbound bus-only lane north of its intersection with Doe Pass Road to expedite transit service as it departs the proposed mobility hub. Two general traffic lanes will also be provided on Deer Valley Drive East. A continuous multiuse path will be provided along the west curb. Deer Valley Drive East will act as the primary route by which day-skiers access Snow Park Village, which will be supported by the reconfiguration of the Deer Valley Drive / Deer Valley Drive East / Deer Valley Drive West intersection and through intuitive wayfinding. South of its intersection with Doe Pass Road, Deer Valley Drive East will provide access to P2, P3 and P4 parking levels which will primarily serve day skiers. Driveways to these parking levels will be similarly managed through parking technology and Deer Valley staff during periods of peak demand. At its southern terminus, Deer Valley Drive East will be reconfigured into a turnaround drop-off area for day-skier traffic. This drop-off area will be heavily managed, particularly at peak drop-off and pick-up periods with Deer Valley staff directing traffic to ensure smooth operations and safe conditions for users.

A site-access diagram for Snow Park Village is shown in **Figure 5**: Site Access Diagram. A conceptual site plan, showing driveway locations and conceptual roadway configurations is shown in **Figure 6**.




*Source: IBI Group*

Figure 5

Site Access and Circulation Diagram


*Source: IBI Group*

Figure 6

Conceptual Site Plan

# 4.2 Trip Generation

Much research and case studies have been performed to better understand the transportation benefits of mixed-use development and transit-oriented development (TOD) over the past decade. "D" factors affect the way mixed-use developments generate trips. The "D" factors include:

- Density *(dwellings, jobs per acre)*
- Diversity *(mix of housing, jobs, retail)*
- Design *(connectivity, walkability)*
- Destinations *(regional accessibility)*
- Distance to Transit *(rail and bus proximity)*
- Development Scale *(population, jobs)*
- Demographics *(household size, income)*

Because of the "D" factors, mixed-use developments and TOD have a much higher distribution of mode split (split between walk, bike, transit, and vehicle) and generally result in lower single-occupant vehicle trips and parking demand. Research has shown that mixed-use developments and TOD generate one-third to two-thirds fewer trips than typical state-of-the-practice trip generation methodologies.

Trip generation for the proposed Snow Park Village was obtained from the *Institute of Transportation Engineers – 10th Edition Trip Generation Manual* (ITE Manual) and Fehr & Peers' mixed-use development (MXD+) methodology via MainStreet, a Fehr & Peers web application that captures the traffic benefits of developments by looking at interactions among the mixture of land uses and patron usage of alternative modes (i.e. transit, bicycling, and/or walking). MXD+ outputs are included in the appendix of this report.

The MXD+ trip generation methodology more accurately captures the trip-reducing benefits of mixed-use development projects and is used throughout the United States to help developers, agencies, and the public to quantify these trip reductions. The MXD+ trip generation model is promoted by the United States Environmental Protection Agency (EPA) and has been adopted by the American Society of Civil Engineers (ASCE), American Planning Association (APA), and many others as a recommended resource for trip generation of smart-growth developments. The MXD+ model uses ITE trip generation rates and applies additional variables to those trip generation rates. Some of the additional variables include:

- Employment
- (Population + Employment) per square mile
- Land area

- Total jobs / population diversity
- Number of intersections per square mile
- Employment within a mile; within
- Employment within a 30-minute trip by transit
- Average household size
- Vehicles owned per capita

Trip generation for the project was computed using trip generation rates published in the Institute of Transportation Engineers (ITE) Trip Generation, 10th Edition, 2017, with trip reductions based on Fehr & Peers' MXD+ methodology to account for the project's many complementary land uses and availability of transit. These reductions were further informed by inputs from the Summit County Travel Demand Model to better tailor results to local travel behavior. Snow Park Village is proposed to include following land uses (taken from the land use program dated October 2021):

- 30,900 square feet of ballroom/event center space
- 143 multifamily housing units
- 193 hotel rooms
- 25,900 square feet of commercial/retail space

The development is proposed to support the current Deer Valley Resort and other land uses in adjacent to the resort. It should be noted that the land uses supporting the ski resort will not be substantial traffic generators; rather, the ski resort will be the primary generator of traffic, and the support land uses serve as accessories to the resort. The current traffic accessing the ski resort were assumed to cover the trip generation for the ski resort and the support land uses independent of the Snow Park Village proposal. **Table 5** presents the Saturday daily, AM peak-hour, and PM peak-hour trip generation estimates for the proposed Snow Park Village Project.

#### 4.2.1.1 Resort Hotel Trip Generation Rates

Trip Generation estimates for the hotel uses included in the Snow Park Village proposal are based on observed trip generation rates recorded during the development of the 2018 Canyons Village Transportation Master Plan. While there are a handful of key factors that might result in trip generation rates closer to those in the original Snow Park Village Traffic Impact Study, including proximity to the interstate and other complementary land uses, estimates in this memorandum used the local rates recorded at the Canyons.

#### 4.2.1.2 Assumed Mode Shift

To avoid double-counting potential reductions, the trip generation estimates in this memorandum rely solely on mode shift derived from the MXD methodology and underlying assumptions from the regional travel demand model. These reductions, which are shown in the columns titled "% Walk/Bike" and "% Transit," are applied to all proposed land uses. This results in a more conservative and defensible analysis, however, it does not account for the planned changes to transit service in Park City and the world-class transit facility proposed as part of the Snow Park Village project. Potential mode shift to transit for those traveling to and from Deer Valley may be higher following such improvements.

#### 4.2.1.3 Reduction in Vehicle Trips due to Implementation of Paid Parking

Charging for parking is a reliable method by which to influence mode choice, and Deer Valley intends to implement paid parking as part of the Snow Park Village proposal. Reductions in trip generation due to the implementation of paid parking at Deer Valley have been scaled back to present a more conservative estimate of how parking pricing will affect trip generation. While many Deer Valley clientele may be much less sensitive to additional costs associated with a day's skiing than the general population, almost 45% of existing trips to and from Deer Valley start and end at points along the Wasatch Front, residents of which are more likely to alter their behavior based on willingness to pay. Lastly, reductions in trip generation due to the implementation of parking pricing are applied only to the resort hotel-, shopping center-, and event center-generated trips, since proposed residential uses at the site are unlikely to require that residents pay for parking on a daily basis.

#### 4.2.1.4 Trip Internalization Derived from MXD

A fundamental element of the Snow Park Village proposal is to provide amenities, services, and entertainment options that complement each other and the ski resort itself. This means that peak-hour trips that might occur without complementary land uses are either delayed (so that they do not occur during the peak hours) or do not require a vehicle trip due to proximity of different uses. Trip internalization rates, presented in **Table 5** under the column heading "% Internal Capture" are applied only to the residential-, resort hotel-, and recreational community center-generated trips, and present a more conservative rate of internalization than presented in the original Snow Park Village traffic impact study.

#### 4.2.1.5 Trip Internalization Derived from Squaw Valley (Palisades Tahoe)

While the residential, hotel, and community center uses are expected to be destinations unto themselves that will generate a measurable number of peak-hour vehicle trips, the food service and retail uses (shown in **Table 5** as "Shopping enter") are expected to almost exclusively serve guests already at Deer Valley rather than guests traveling to Deer Valley explicitly for those services.

To support this assumption, trip generation estimates for the shopping center uses in this memorandum rely on trip internalization estimates derived from an origin-destination survey conducted at the Squaw Valley, California resort in 2011. Surveys conducted showed that 95-97% of customers at dining and retail uses in a similar context (ski resort base village) were already at the village for other purposes, and did not travel solely for the dining/retail use. Reductions based on the data from Squaw Valley are presented under the column heading "% Resort Int. Capt." And are applied only to the shopping center uses. We assume that employees for these uses will almost exclusively arrive and depart during off-peak periods, resulting in lower reductions for daily trips generated by the shopping center uses.

Trip generation for Snow Park Village is covered in greater detail in **Attachment A**.

## Table 5: Snow Park Village Trip Generation

| Land Use[1] | Number of Units | Unit Type | Rate[2] | Daily Trip Generation[3] | % Entering[4] | % Exiting[4] | % Walk/ Bike[5] | % Transit[5] | % Paid Parking[7] | % Internal Capture[6] | % Resort Int. Capt.[9] | Trips Entering | Trips Exiting | **New Daily Trips** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (220) - Multifamily Housing Low-Rise | 143 | Dwelling Unit | 8.14 | 1,164 | 50% | 50% | 4.6% | 3.0% | - | 1.9% | - | 527 | 527 | **1,054** |
| (330) - Resort Hotel | 193 | Rooms | 6.27 | 1,210 | 50% | 50% | 4.6% | 3.0% | 15.0% | 1.9% | - | 457 | 457 | **914** |
| (820) - Shopping Center | 25.9 | 1,000 Sq. Ft | 46.12 | 1,195 | 50% | 50% | 4.6% | 3.0% | 15.0% | - | 90.0% | 47 | 47 | **94** |
| (495) Recreational Community Center | 30.9 | 1,000 Sq. Ft | 9.10 | 281 | 50% | 50% | 4.6% | 3.0% | 15.0% | 1.9% | - | 107 | 107 | **214** |
| **Net Weekday Trips** | | | | **3,850** | | | | | | | | **1,138** | **1,138** | **2,276** |
| Land Use[1] | Number of Units | Unit Type | Rate[2] | AM Peak Hour Trip Generation[3] | % Entering[4] | % Exiting[4] | % Walk/ Bike[5] | % Transit[5] | % Paid Parking[7] | % Internal Capture[6] | % Resort Int. Capt.[8] | Trips Entering | Trips Exiting | **New AM Peak Hour Trips** |
| (220) - Multifamily Housing Low-Rise | 143 | Dwelling Unit | 0.46 | 66 | 23% | 77% | 5.6% | 1.9% | - | 3.7% | - | 14 | 45 | **59** |
| (330) - Resort Hotel | 193 | Rooms | 0.41 | 79 | 72% | 28% | 5.6% | 1.9% | 15.0% | 3.7% | - | 43 | 17 | **60** |
| (820) - Shopping Center | 25.9 | 1,000 Sq. Ft | 0.94 | 24 | 62% | 38% | 5.6% | 1.9% | 15.0% | - | 96.2% | 1 | 1 | **2** |
| (495) Recreational Community Center | 30.9 | 1,000 Sq. Ft | 1.76 | 54 | 62% | 38% | 5.6% | 1.9% | 15.0% | 3.7% | - | 25 | 16 | **41** |
| **Net Saturday AM Peak Hour Trips** | | | | **224** | | | | | | | | **83** | **79** | **162** |
| Land Use[1] | Number of Units | Unit Type | Rate[2] | PM Peak Hour Trip Generation[3] | % Entering[4] | % Exiting[4] | % Walk/ Bike[5] | % Transit[5] | % Paid Parking[7] | % Internal Capture[6] | % Resort Int. Capt.[8] | Trips Entering | Trips Exiting | **New PM Peak Hour Trips** |
| (220) - Multifamily Housing Low-Rise | 143 | Dwelling Unit | 0.70 | 100 | 60% | 40% | 3.4% | 2.9% | - | 10.6% | - | 50 | 34 | **84** |
| (330) - Resort Hotel | 193 | Rooms | 0.70 | 135 | 43% | 57% | 3.4% | 2.9% | 15.0% | 10.6% | - | 40 | 53 | **93** |
| (820) - Shopping Center | 25.9 | 1,000 Sq. Ft | 4.50 | 117 | 52% | 48% | 3.4% | 2.9% | 15.0% | - | 96.2% | 2 | 2 | **4** |
| (495) Recreational Community Center | 30.9 | 1,000 Sq. Ft | 1.07 | 33 | 52% | 48% | 3.4% | 2.9% | 15.0% | 10.6% | - | 12 | 11 | **23** |
| **Net Saturday PM Peak Hour Trips** | | | | **385** | | | | | | | | **104** | **100** | **204** |

1. (XXX) Indicates ITE Land Use Code. Land Use Code from the Institute of Transportation Engineers - 10th Edition Trip Generation Manual (ITE Manual)

2. ITE Trip Generation Rates. Hotel rates derived from data collected on Saturday, February 17, 2018, for the Canyons Village Management Association Transportation Master Plan.

3. Traffic Generated by the development according to trip generation rates provided in the ITE Manual (custom rates for Hotel).

4. Percentage of trips Entering and Exiting the development according to the ITE Manual.

5. Percentage of trips that shift to active transportation or transit modes based on data collected by U.S. Census Bureau, 2013-2017 American Community Survey 5-Year Estimates.

6. Percentage of trips that are captured internally to the site based on rates published in ITE Manual.

7. Percentage of trips that shift to transit due to parking costs based on Fehr & Peers's Parking Cost Tool. The tool estimates close to 20%; 15% assumed for conservative results.

8. Percentage of trips that are captured internally to the site for retail/restaurant based on Squaw Valley winter overnight visitor survey conducted in 2011, for weekend AM and PM peak hours.

9. Daily retail/restaurant internal capture percentage was assumed to be lower than AM and PM peak hours due to employees, which daily travel patterns are not as affected as much as peak hours.

Source: Fehr & Peers

# 4.3 Trip Distribution and Assignment

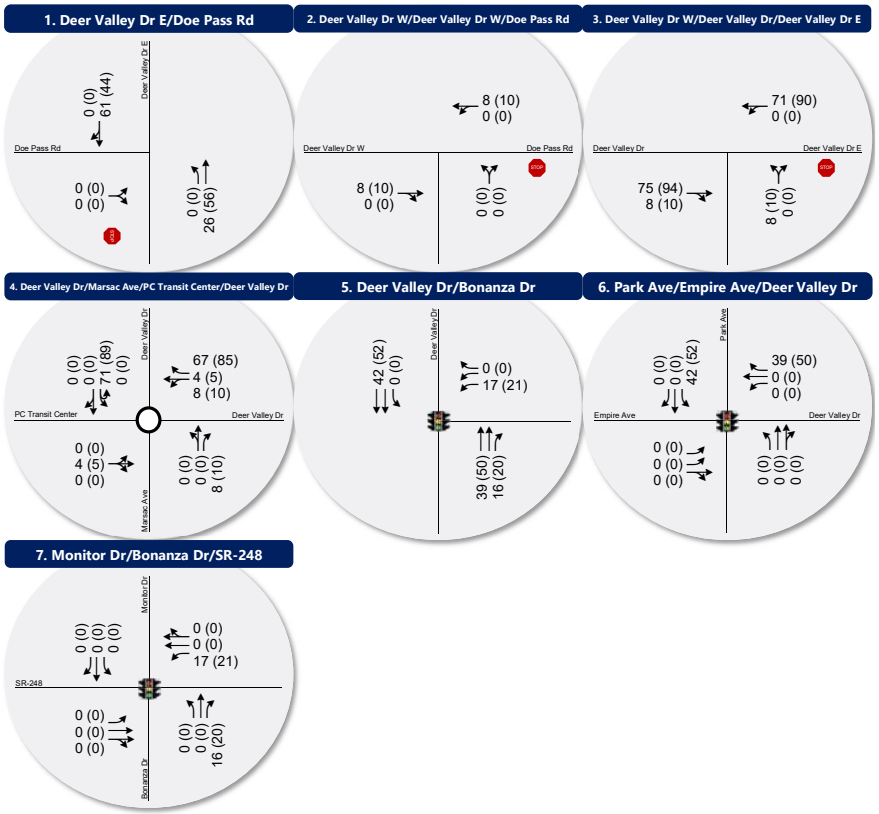
Project traffic was assigned to the roadway network based on the proximity to major streets and freeways, population densities, and local and regional attractions. Existing travel patterns revealed in the Streetlight data, Continuous Count Station (CCS) data collection from UDOT, and observed during data collection also provided helpful guidance to establish these distribution percentages, especially close to the site.

The CCS data from UDOT informed the distribution of trips arriving via SR-224 and SR-248. Closer to the project site, Streetlight data informed the distribution of trips arriving via Marsac Avenue and Deer Valley Drive. Overall, the project-generated trips were distributed to and from these directions in the Existing analysis, in the corresponding percentages:

- 50% North (using SR-224)
- 20% East (using SR-248 via Bonanza Drive)
- 15% West (using any of the accesses along Deer Valley Drive between Bonanza and Marsac)
- 5% West (using the Transit Hub access at the Marsac Roundabout)
- 10% South (using Marsac Avenue)

This trip distribution does not fully align with the origin-destination data presented in **Figure 4** due to the expected differences in trip purpose stemming from the change in land use at Snow Park. The distribution and assignment of new, project-generated trips reflects the assumption that residents and guests of Snow Park Village's hotel and residential uses are more likely to and from Old Town for dining, shopping, or entertainment purposes.

These trip distribution assumptions were used to distribute project-generated traffic to the study area intersections and are shown in **Figure 7**.


## LEGEND

Stop

Signalize

Lane Configuration — AM (PM) / AM (PM) — Peak Hour Traffic Volume

*Intersection Level of Service (LOS):*

AM PM A B C D E F

Figure 7

Saturday AM & PM Peak Hour Trip Generation

# 5. Existing 2020 plus Project Conditions

The Existing (2020) Plus Project conditions analysis evaluates the impact of the proposed development-generated traffic on the surrounding roadway network under existing conditions. In order to analyze this impact, the Saturday peak-hour background traffic volumes were combined with volumes generated by the proposed Project during its Saturday peak hours. Intersection LOS analyses were then performed and compared to the results of the background traffic volumes. This comparison shows the impact of the proposed project.

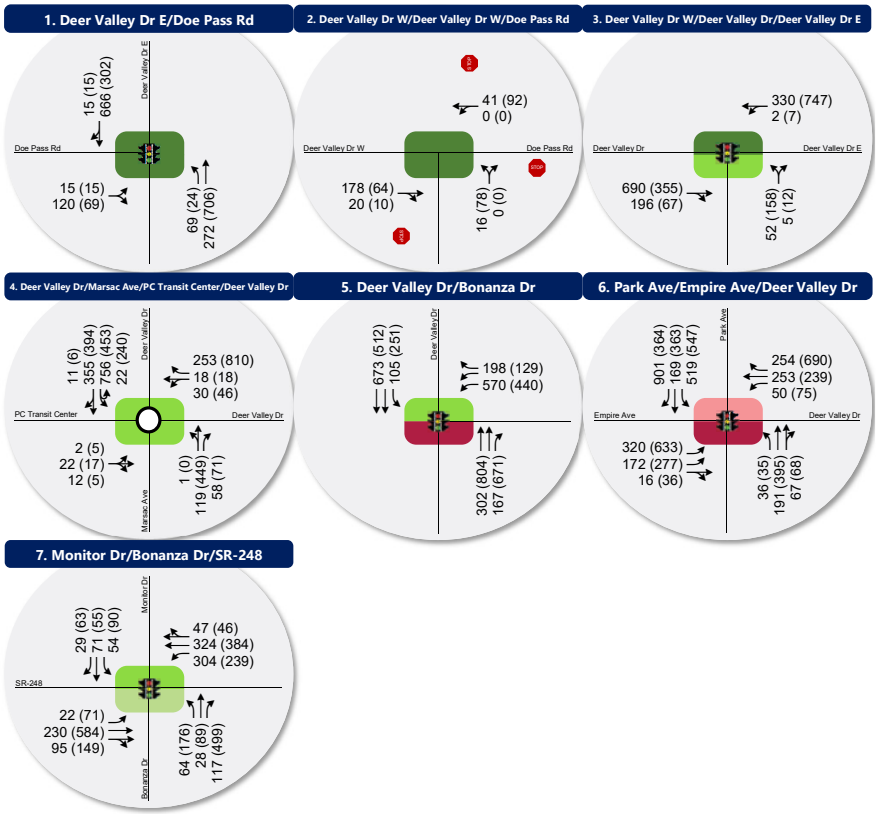
## 5.1 Traffic Volumes

Vehicle trips in and out of the existing Deer Valley resort are assumed to be for the ski resort users and were not subtracted out from the background volumes. Project-generated traffic for the additional land uses and development was added to the background volumes to yield Existing (2020) Plus Project peak-hour volumes. The Saturday AM and PM peak-hour traffic volumes at the study intersections are shown in Figure 7Error! Reference source not found..

The Snow Park Village site plan includes realignment of the Deer Valley Drive / Deer Valley Drive East / Deer Valley Drive West intersection. The intersection is currently a "T"-intersection with free-flow movement north/south along Deer Valley Drive West/ Deer Valley Drive, and a stop-control on the approach of Deer Valley Drive East. The proposed re-alignment allows free-flow movement east/west along Deer Valley Drive East and stop-control on the northbound approach on Deer Valley Drive West (see figure below). Deer Valley Drive West will serve as a primary transit route to access the proposed transit hub on Doe Pass Road, and also serve private vehicles accessing Royal Street and the Trail's End development. Deer Valley Drive East will serve as the primary vehicular route to access the Snow Park drop-off/pick-up area and parking structure accesses.

To account for this shift in primary routes on Deer Valley Drives East and West stemming from intersection realignment, proposed wayfinding, and the placement of site access along Deer Valley Drive East, analyses presented in this report assume that 70% of the total traffic would use Deer Valley Drive East and 30% of the total traffic would use Deer Valley Drive West. This yields conservative results with regards to changes

in travel behavior and will rely on various on- and off-site improvements to be realistically achieved. Background traffic was shifted and modified to account for the proposed shift in circulation.


LEGEND

Stop  Signalize

Lane Configuration  AM (PM) / AM (PM)  Peak Hour Traffic Volume

*Intersection Level of Service (LOS):*

AM / PM  A B C D E F

Figure 8

Existing 2020 Plus Project Saturday AM & PM Peak Hour Traffic Conditions

# 5.2 Level of Service Analysis

Using SimTraffic simulation software (for signalized and unsignalized intersections) and SIDRA software (for the roundabout) and the HCM 6 delay thresholds provided in the Introduction, the existing 2020 plus project Saturday AM and PM peak hour LOS were computed for each study intersection. The results of the analysis are reported in **Table 6** (see Appendix for the detailed LOS report).

**Table 6: Existing 2020 plus Project Conditions Saturday AM & PM Peak Hour Level of Service**

| Intersection | | | | Worst Movement[1] | | | Overall Intersection[2] | |
|---|---|---|---|---|---|---|---|---|
| ID | Location | Period | Control | Movement[3] | Delay Sec/Veh | LOS | Avg. Delay Sec/Veh | LOS |
| 1 | Doe Pass Rd / Deer Valley Dr East | AM | SSSC[4] | EB Left | 14 | B | - | - |
| | | PM | | EB Left | 11 | B | - | - |
| 2 | Doe Pass Rd / Deer Valley Dr West | AM | SSSC | NB Left | 5 | A | - | - |
| | | PM | | NB Left | 5 | A | - | - |
| 3 | Deer Valley Dr / Deer Valley Dr East / Deer Valley Dr West | AM | SSSC | NB Left | 24 | C | - | - |
| | | PM | | NB Left | **28** | **D** | - | - |
| 4 | Deer Valley Drive / Marsac Avenue | AM | Roundabout | - | - | - | 12 | B |
| | | PM | | - | - | - | 13 | B |
| 5 | Deer Valley Dr / Bonanza Dr | AM | Signal | - | - | - | 11 | B |
| | | PM | | - | - | - | **164** | **F** |
| 6 | Deer Valley Dr / Park Ave / Empire Ave | AM | Signal | - | - | - | **74** | **E** |
| | | PM | | - | - | - | **83** | **F** |
| 7 | Bonanza Dr / Monitor Dr / SR-248 | AM | Signal | - | - | - | 12 | B |
| | | PM | | - | - | - | 19 | C |

Notes:
**Bold text** indicates intersections operating below Park City's acceptable LOS threshold.
1. This represents the worst approach LOS and delay (seconds/vehicle) and is only reported for unsignalized intersections.
2. This represents the overall intersection LOS and delay (seconds/vehicle).
3. NB=Northbound, SB=Southbound, EB=Eastbound, WB=Westbound
4. Side-street stop control.

Source: Fehr & Peers.

As shown in **Table 6**, the Deer Valley Drive / Marsac Avenue roundabout operates at acceptable LOS (LOS C or better). However, the Deer Valley Drive / Deer Valley Drive East / Deer Valley Drive West intersection

operates at LOS D in the PM peak hour. This is due to the stop-controlled northbound vehicles experiencing delay trying to find a gap in the inbound/outbound resort traffic to turn left to exit the resort.

## 5.3 Mitigation Measures

As stated previously, the stop-controlled northbound vehicles experience delay trying to find a gap in the inbound/outbound resort traffic to turn left to exit the resort. It should be noted that the delay at this intersection could be of concern, especially since the transit vehicles will likely experience the delay. A proposed mitigation is to construct a new traffic signal which includes transit preemption, allowing transit vehicles to move more efficiently through the intersection. This potential mitigation of a traffic signal was analyzed and recommended for this study. Similarly, to facilitate efficient bus movements through the intersection of Doe Pass Road / Deer Valley Drive East, a traffic with transit preemption is recommended for this intersection. This potential mitigation of a traffic signal was analyzed and recommended for this study. Lastly, to enable safe connections for pedestrians and cyclists, an all-way stop at the intersection of Doe Pass Road / Deer Valley Drive West is recommended. This potential mitigation was analyzed and recommended for this study. The signal analysis results are shown in **Table 7** (see Appendix for the detailed LOS report).

Park City has a longstanding position of not mitigating certain deficient intersections within its boundaries due to the impacts of road widening and other impacts to the community. As a result, potential mitigations at the intersections of Deer Valley Drive / Park Avenue / Empire Avenue, Bonanza Drive / Monitor Drive / SR-248 were not analyzed as part of this study, and are therefore not recommended. Further, deficiencies shown at the intersection of Deer Valley Drive / Bonanza Drive are not a result of project-generated trips or operations of the intersection itself; instead they stem from vehicle queues from the intersection of Deer Valley Drive / Park Avenue / Empire Avenue. As a result, mitigations at the intersection of Deer Valley Drive / Bonanza Drive are not recommended as part of this study.

As shown in **Table 7**, the Deer Valley Drive / Deer Valley Drive East / Deer Valley Drive West intersection operates at LOS A for both Saturday AM and PM peak hours as a signalized intersection.

**Table 7: Existing 2020 plus Project Mitigated Conditions Saturday AM & PM Peak Hour Level of Service**

| Intersection | | | | Worst Movement[1] | | | Overall Intersection[2] | |
|---|---|---|---|---|---|---|---|---|
| ID | Location | Period | Control | Movement[3] | Delay Sec/Veh | LOS | Avg. Delay Sec/Veh | LOS |
| 1 | Doe Pass Rd / Deer Valley Dr East | AM | Signal | - | - | - | 8 | A |
| | | PM | | - | - | - | 4 | A |
| 2 | Doe Pass Rd / Deer Valley Dr West | AM | AWSC | - | - | - | 6 | A |
| | | PM | | - | - | - | 5 | A |
| 3 | Deer Valley Dr / Deer Valley Dr East / Deer Valley Dr West | AM | Signal | - | - | - | 7 | A |
| | | PM | | - | - | - | 10 | B |
| 4 | Deer Valley Drive / Marsac Avenue | AM | Roundabout | - | - | - | 12 | B |
| | | PM | | - | - | - | 13 | B |
| 5 | Deer Valley Dr / Bonanza Dr | AM | Signal | - | - | - | 11 | B |
| | | PM | | - | - | - | **96** | **F** |
| 6 | Deer Valley Dr / Park Ave / Empire Ave | AM | Signal | - | - | - | **76** | **E** |
| | | PM | | - | - | - | **81** | **F** |
| 7 | Bonanza Dr / Monitor Dr / SR-248 | AM | Signal | - | - | - | 13 | B |
| | | PM | | - | - | - | 20 | C |

Notes:
**Bold text** indicates intersections operating below Park City's acceptable LOS threshold.
1. This represents the worst approach LOS and delay (seconds/vehicle) and is only reported for unsignalized intersections.
2. This represents the overall intersection LOS and delay (seconds/vehicle).
3. NB=Northbound, SB=Southbound, EB=Eastbound, WB=Westbound

Source: Fehr & Peers.

# 6. Opening Year (2022) Background Conditions

The purpose of the Opening Year (2022) Background conditions analysis is to evaluate the study intersections during the peak travel periods of the day under projected 2022 traffic volumes, when the development is projected to open. This analysis provides a baseline condition for the year 2022, which can be used to determine future Project impacts.

## 6.1 Traffic Volumes

Traffic volumes for 2022 were estimated using traffic counts and forecasted volumes from the Summit/Wasatch Travel Demand Model (September 2020 version) for 2024. The Summit/Wasatch Travel Demand Model shows a lower growth rate in the future by accounting for a higher mode split of transportation – higher usage of transit, walking, and biking than previous versions of travel demand models. The following growth rates used on the following roadways to project 2022 background weekday volumes as shown in **Figure 6**.

- 0.5% on Deer Valley Drive (SR-224) north of Bonanza Drive
- 0.5% on Deer Valley Drive (SR-224) south of Bonanza Drive
- 0.5% on Deer Valley Drive (SR-224) north of Marsac Avenue
- 0.6% on Deer Valley Drive (SR-224) east of Marsac Avenue
- 0.6% on Deer Valley Drive (SR-224) north of Deer Valley Drive West
- 0.4% on Deer Valley Drive (SR-224) south of Deer Valley Drive West
- 1.7% on Bonanza Drive
- 0.3% on Marsac Avenue

## 6.2 Level of Service Analysis

Using SimTraffic simulation software (for signalized and unsignalized intersections) and SIDRA software (for the roundabout) and the HCM 6 delay thresholds provided in the Introduction, opening year 2022 background weekday peak hour LOS was computed for each study intersection. The results of this analysis for the Saturday AM and PM peak hour are reported in **Table 8** (see Appendix for the detailed LOS report).

**Table 8: Opening Year 2022 Background Conditions Saturday AM & PM Peak Hour Level of Service**

| Intersection | | | | Worst Movement[1] | | | Overall Intersection[2] | |
|---|---|---|---|---|---|---|---|---|
| ID | Location | Period | Control | Movement[3] | Delay Sec/Veh | LOS | Avg. Delay Sec/Veh | LOS |
| 1 | Doe Pass Rd / Deer Valley Dr East | AM | SSSC[4] | - | **-** | **-** | - | - |
| | | PM | | - | **-** | **-** | - | - |
| 2 | Doe Pass Rd / Deer Valley Dr West | AM | SSSC | - | - | - | - | - |
| | | PM | | - | - | - | - | - |
| 3 | Deer Valley Dr / Deer Valley Dr East / Deer Valley Dr West | AM | SSSC | WB Left | 12 | B | - | - |
| | | PM | | WB Left | **49** | **E** | - | - |
| 4 | Deer Valley Drive / Marsac Avenue | AM | Roundabout | - | - | - | 12 | B |
| | | PM | | - | - | - | 11 | B |
| 5 | Deer Valley Dr / Bonanza Dr | AM | Signal | - | - | - | 11 | B |
| | | PM | | - | - | - | **123** | **F** |
| 6 | Deer Valley Dr / Park Ave / Empire Ave | AM | Signal | - | - | - | **84** | **F** |
| | | PM | | - | - | - | **90** | **F** |
| 7 | Bonanza Dr / Monitor Dr / SR-248 | AM | Signal | - | - | - | 13 | B |
| | | PM | | - | - | - | 22 | C |

Notes:
**Bold text** indicates intersections operating below Park City's acceptable LOS threshold.
1. This represents the worst approach LOS and delay (seconds/vehicle) and is only reported for unsignalized intersections.
2. This represents the overall intersection LOS and delay (seconds/vehicle) and is only reported for signalized intersections and roundabouts.
3. NB=Northbound, SB=Southbound, EB=Eastbound, WB=Westbound
4. Side-street stop control.

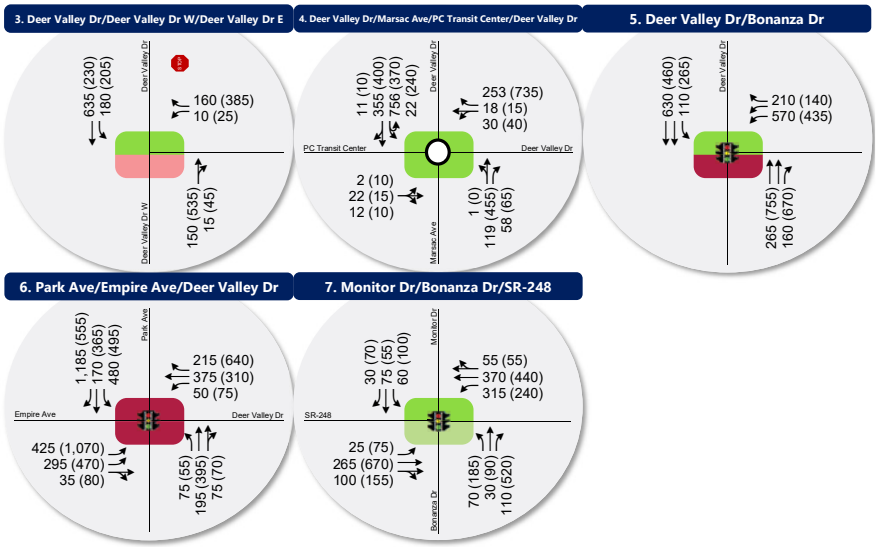
Source: Fehr & Peers.

As shown in **Table 8**, all study intersections operated within acceptable LOS (LOS C or better), with the exception of the westbound approach at the Deer Valley Drive / Deer Valley Drive East / Deer Valley Drive West intersection in the AM peak hour and PM peak hour, which operates at LOS D and LOS E, respectively. This was caused by the high volumes of vehicles exiting the Snow Park area making a westbound right turn onto Deer Valley Drive West. The westbound right movement is stop-controlled, making it difficult for vehicles to find a gap and turn onto Deer Valley Drive West.

It should be noted that while the Bonanza Drive / Deer Valley Drive intersection operates within acceptable LOS, it is often impacted by vehicle queues spilling back to this intersection from the upstream intersection at Park Avenue / Deer Valley Drive in the PM peak hour.

## 6.3 Mitigation Measures

The concept master plan for Snow Park Village shows re-alignment of the Deer Valley Drive East / Deer Valley Drive West intersection, which will alter the westbound LOS at this intersection. Therefore, Fehr & Peers does not recommend any mitigation measures for opening year background conditions.


LEGEND

Stop  Signalize

Lane Configuration  AM (PM) / AM (PM)  Peak Hour Traffic Volume

*Intersection Level of Service (LOS):*

AM PM  A B C D E F

Figure 9

Opening Year Background Saturday AM & PM Peak Hour Traffic Conditions

# 7. Opening Year (2022) Plus Project Conditions

The purpose of the opening year 2022 plus project conditions analysis is to evaluate the impact of the proposed development traffic on the surrounding roadway network in the year 2022, the proposed opening year of the development. In order to analyze this impact, the projected 2022 Saturday AM and PM peak hour background traffic volumes were combined with volumes generated by the development for the Saturday AM and PM peak hours. Intersection LOS analyses were then performed and compared to the results of the background traffic volumes. This comparison shows the impact of the proposed project in opening year 2022.

## 7.1 Traffic Volumes

Project-generated traffic (**Figure 7**) was added to the opening year 2022 background volumes (**Figure 9**) to yield Opening Year (2022) Plus Project Saturday AM and PM peak-hour traffic volumes at the study intersections as shown in **Figure 10**.

The Snow Park Village site plan includes realignment of the Deer Valley Drive / Deer Valley Drive East / Deer Valley Drive West intersection. The intersection is currently a T-intersection with free-flow movement north/south along Deer Valley Drive East / Deer Valley Drive, and stop-control on the approach of Deer Valley Drive East. The proposed re-alignment allows free-flow movement east/west along Deer Valley Drive East and stop-control on the northbound approach on Deer Valley Drive West (see figure below). Deer Valley Drive West will serve as a primary transit route to access the proposed transit hub on Doe Pass Road, and also serve private vehicles accessing Royal Street and the Trail's End development. Deer Valley Drive East will serve as the primary vehicular route to access the Snow Park Lodge drop-off/pick-up area and parking structure accesses.

To account for this shift in primary routes on Deer Valley Drives East and West, stemming from intersection realignment, proposed wayfinding, and the placement of site access along Deer Valley Drive East, analyses presented in this report assume that 70% of the total traffic would use Deer Valley Drive East and 30% of the total traffic would use Deer Valley Drive West). This yields conservative results and will rely on various on- and off-site improvements to be realistically achieve. Background traffic was shifted and modified to account for the proposed shift in circulation.

# 7.2 Level of Service Analysis

Using SimTraffic simulation software (for signalized and unsignalized intersections) and SIDRA software (for the roundabout) and the HCM 6 delay thresholds provided in the Introduction, opening year 2022 plus project Saturday AM and PM peak hour LOS were computed for each study intersection. The results of the analysis are reported in **Table 9** (see Appendix for the detailed LOS report).

**Table 9: Opening Year 2022 plus Project Conditions Saturday AM & PM Peak Hour Level of Service**

| Intersection | | | | Worst Movement[1] | | | Overall Intersection[2] | |
|---|---|---|---|---|---|---|---|---|
| ID | Location | Period | Control | Movement[3] | Delay Sec/Veh | LOS | Avg. Delay Sec/Veh | LOS |
| 1 | Doe Pass Rd / Deer Valley Dr East | AM | SSSC[4] | EB Left | 14 | B | - | - |
| | | PM | | EB Left | 19 | C | - | - |
| 2 | Doe Pass Rd / Deer Valley Dr West | AM | SSSC | NB Left | 5 | A | - | - |
| | | PM | | NB Left | 5 | A | - | - |
| 3 | Deer Valley Dr / Deer Valley Dr East / Deer Valley Dr West | AM | SSSC | NB Left | 25 | C | - | - |
| | | PM | | NB Left | **76** | **F** | - | - |
| 4 | Deer Valley Drive / Marsac Avenue | AM | Roundabout | - | - | - | 14 | B |
| | | PM | | - | - | - | 14 | B |
| 5 | Deer Valley Dr / Bonanza Dr | AM | Signal | - | - | - | 12 | B |
| | | PM | | - | - | - | **87** | **F** |
| 6 | Deer Valley Dr / Park Ave / Empire Ave | AM | Signal | - | - | - | **85** | **F** |
| | | PM | | - | - | - | **88** | **F** |
| 7 | Bonanza Dr / Monitor Dr / SR-248 | AM | Signal | - | - | - | 14 | B |
| | | PM | | - | - | - | 22 | C |

Notes:
**Bold text** indicates intersections operating below Park City's acceptable LOS threshold.
1. This represents the worst approach LOS and delay (seconds/vehicle) and is only reported for unsignalized intersections.
2. This represents the overall intersection LOS and delay (seconds/vehicle).
3. NB=Northbound, SB=Southbound, EB=Eastbound, WB=Westbound
4. Side-street stop control.

Source: Fehr & Peers.

As shown in **Table 9**, the Deer Valley Drive / Marsac Avenue roundabout and Bonanza Drive / Deer Valley Drive signal both operate at acceptable LOS (LOS C or better) for Opening Year Plus Project conditions. However, the Deer Valley Drive East / Deer Valley Drive West operates at LOS E in the Saturday PM peak

hour. This is due to the stop-controlled northbound vehicles experiencing delay trying to find a gap in the inbound/outbound resort traffic to turn left to exit the resort.

It should be noted that the proposed Snow Park Village development introduces various support land uses intended to attract resort users to stay on-site after the ski resort peak hour. This will help distribute the peaking of traffic, reducing delays at the study intersections and roadways. Therefore, the results shown in **Table 9** are likely overstated.

## 7.3 Mitigation Measures

As stated previously, the stop-controlled northbound vehicles experience delay trying to find a gap in the inbound/outbound resort traffic to turn left to exit the resort. It should be noted that the delay at this intersection could be of concern, especially since the transit vehicles will likely experience the delay. A proposed mitigation is to construct a new traffic signal which includes transit preemption, allowing transit vehicles to move more efficiently through the intersection. This potential mitigation of a traffic signal was analyzed and recommended for this study. Similarly, to facilitate efficient bus movements through the intersection of Doe Pass Road / Deer Valley Drive East, a traffic with transit preemption is recommended for this intersection. This potential mitigation of a traffic signal was analyzed and recommended for this study. Lastly, to enable safe connections for pedestrians and cyclists, an all-way stop at the intersection of Doe Pass Road / Deer Valley Drive West is recommended. This potential mitigation was analyzed and recommended for this study. The signal analysis results are shown in **Table 10** (see Appendix for the detailed LOS report).

Park City has a longstanding position of not mitigating certain deficient intersections within its boundaries due to the impacts of road widening and other impacts to the community. As a result, potential mitigations at the intersections of Deer Valley Drive / Park Avenue / Empire Avenue, Bonanza Drive / Monitor Drive / SR-248 were not analyzed as part of this study, and are therefore not recommended. Further, deficiencies shown at the intersection of Deer Valley Drive / Bonanza Drive are not a result of project-generated trips or operations of the intersection itself, instead they stem from vehicle queues from the intersection of Deer Valley Drive / Park Avenue / Empire Avenue impacting this intersection. As a result, mitigations at the intersection of Deer Valley Drive / Bonanza Drive are not recommended as part of this study.

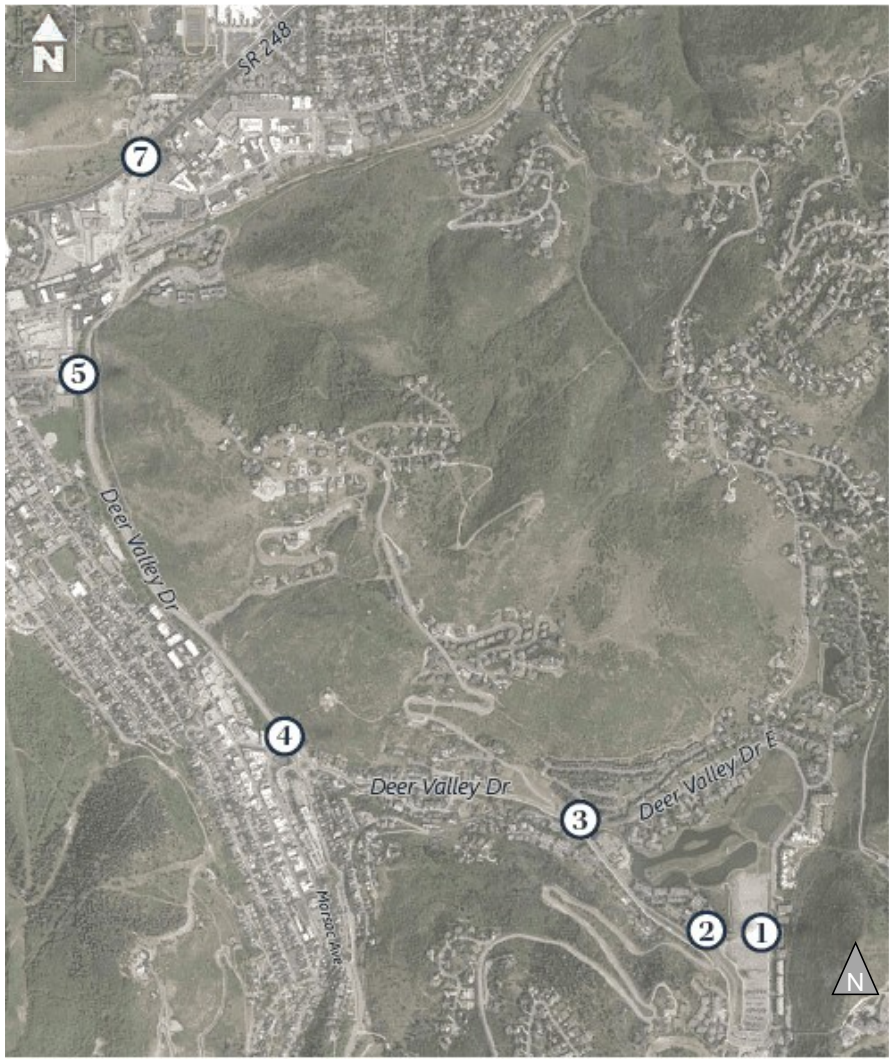
As shown in **Table 10**, the Deer Valley Drive East / Deer Valley Drive West intersection operates at LOS A for both Saturday AM and PM peak hours as a signalized intersection.

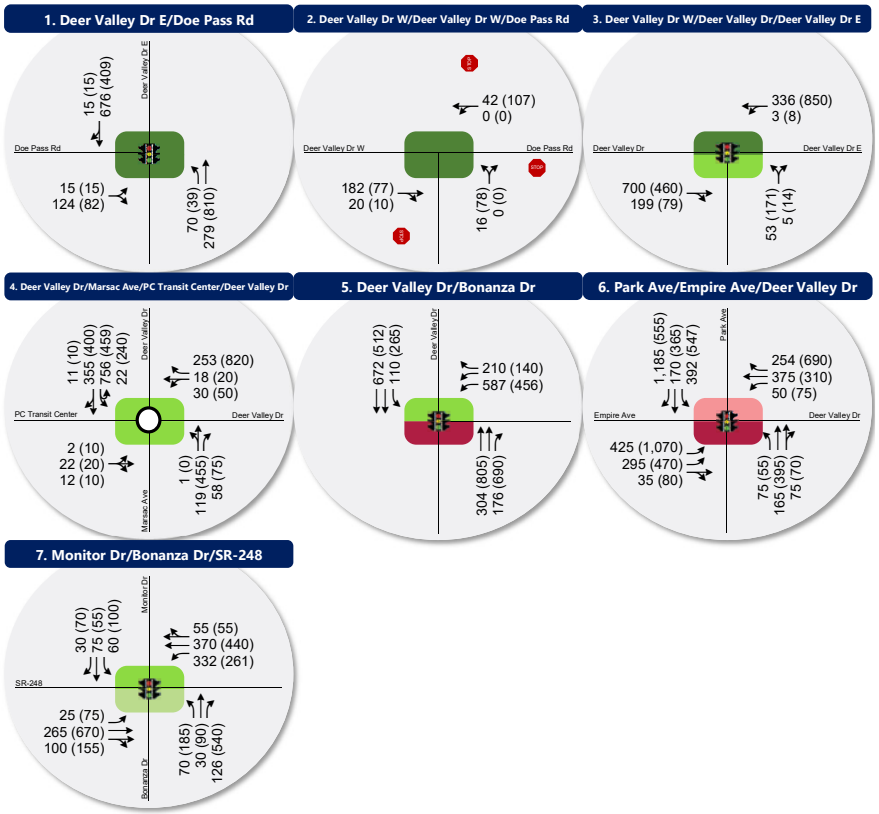
**Table 10: Opening Year 2022 plus Project Mitigated Conditions Saturday AM & PM Peak Hour Level of Service**

| Intersection | | | | Worst Movement[1] | | | Overall Intersection[2] | |
|---|---|---|---|---|---|---|---|---|
| ID | Location | Period | Control | Movement[3] | Delay Sec/Veh | LOS | Avg. Delay Sec/Veh | LOS |
| 1 | Doe Pass Rd / Deer Valley Dr East | AM | Signal | - | - | - | 8 | A |
| | | PM | | - | - | - | 6 | A |
| 2 | Doe Pass Rd / Deer Valley Dr West | AM | AWSC | - | - | - | 6 | A |
| | | PM | | - | - | - | 6 | A |
| 3 | Deer Valley Dr / Deer Valley Dr East / Deer Valley Dr West | AM | Signal | - | - | - | 7 | A |
| | | PM | | - | - | - | 12 | B |
| 4 | Deer Valley Drive / Marsac Avenue | AM | Roundabout | - | - | - | 14 | B |
| | | PM | | - | - | - | 14 | B |
| 5 | Deer Valley Dr / Bonanza Dr | AM | Signal | - | - | - | 11 | B |
| | | PM | | - | - | - | **86** | **F** |
| 6 | Deer Valley Dr / Park Ave / Empire Ave | AM | Signal | - | - | - | **75** | **E** |
| | | PM | | - | - | - | **88** | **F** |
| 7 | Bonanza Dr / Monitor Dr / SR-248 | AM | Signal | - | - | - | 14 | B |
| | | PM | | - | - | - | 24 | C |

Notes:
**Bold text** indicates intersections operating below Park City's acceptable LOS threshold.
1. This represents the worst approach LOS and delay (seconds/vehicle) and is only reported for unsignalized intersections.
2. This represents the overall intersection LOS and delay (seconds/vehicle).
3. NB=Northbound, SB=Southbound, EB=Eastbound, WB=Westbound

Source: Fehr & Peers.




## LEGEND

Stop  Signalize

Lane Configuration — AM (PM) / AM (PM) — Peak Hour Traffic Volume

*Intersection Level of Service (LOS):*

AM / PM  A B C D E F

Figure 10

Opening Year Plus Project Saturday AM & PM Peak Hour Traffic Conditions

# 8. Future 2040 Background Conditions

The purpose of the future 2040 background conditions analysis is to evaluate the study intersections during peak travel periods under projected 2040 traffic volumes. This analysis provides a baseline condition for the year 2040, which can be used to determine future project impacts.

## 8.1 Traffic Volumes

Traffic volumes for 2040 were estimated using traffic counts and forecasted volumes from the Summit/Wasatch Travel Demand Model (September 2020 version) for 2040. The Summit/Wasatch Travel Demand Model shows a lower growth rate in the future by accounting for a higher mode split of transportation – higher usage of transit, walking, and biking than previous versions of travel demand models. The following growth rates used on the following roadways to project 2040 background weekday volumes as shown in **Figure 11**.

- 0.3% on Deer Valley Drive (SR-224) north of Bonanza Drive
- 0.7% on Deer Valley Drive (SR-224) south of Bonanza Drive
- 0.6% on Deer Valley Drive (SR-224) north of Marsac Avenue
- 0.9% on Deer Valley Drive (SR-224) east of Marsac Avenue
- 1.0% on Deer Valley Drive (SR-224) north of Deer Valley Drive West
- 0.8% on Deer Valley Drive (SR-224) south of Deer Valley Drive West
- 1.2% on Bonanza Drive
- 0.4% on Marsac Avenue

## 8.2 Level of Service Analysis

Using SimTraffic simulation software (for signalized and unsignalized intersections) and SIDRA software (for the roundabout) and the HCM 6 delay thresholds provided in the Introduction, future 2040 background weekday peak hour LOS was computed for each study intersection. The results of this analysis for the AM & PM peak hour are reported in **Table 11** (see Appendix for the detailed LOS report).

**Table 11: Future 2040 Background Conditions Saturday AM & PM Peak Hour Level of Service**

| Intersection | | | | Worst Movement[1] | | | Overall Intersection[2] | |
|---|---|---|---|---|---|---|---|---|
| ID | Location | Period | Control | Movement[3] | Delay Sec/Veh | LOS | Avg. Delay Sec/Veh | LOS |
| 1 | Doe Pass Rd / Deer Valley Dr East | AM | SSSC[4] | - | **-** | **-** | - | - |
| | | PM | | - | **-** | **-** | - | - |
| 2 | Doe Pass Rd / Deer Valley Dr West | AM | SSSC | - | - | - | - | - |
| | | PM | | - | - | - | - | - |
| 3 | Deer Valley Dr / Deer Valley Dr East / Deer Valley Dr West | AM | SSSC | WB Left | 19 | C | - | - |
| | | PM | | WB Left | **54** | **F** | - | - |
| 4 | Deer Valley Drive / Marsac Avenue | AM | Roundabout | - | - | - | 16 | C |
| | | PM | | - | - | - | 14 | B |
| 5 | Deer Valley Dr / Bonanza Dr | AM | Signal | - | - | - | 17 | B |
| | | PM | | - | - | - | **150** | **F** |
| 6 | Deer Valley Dr / Park Ave / Empire Ave | AM | Signal | - | - | - | **76** | **E** |
| | | PM | | - | - | - | **91** | **F** |
| 7 | Bonanza Dr / Monitor Dr / SR-248 | AM | Signal | - | - | - | 15 | B |
| | | PM | | - | - | - | 40 | D |

Notes:
**Bold text** indicates intersections operating below Park City's acceptable LOS threshold.
1. This represents the worst approach LOS and delay (seconds/vehicle) and is only reported for unsignalized intersections.
2. This represents the overall intersection LOS and delay (seconds/vehicle) and is only reported for signalized intersections and roundabouts.
3. NB=Northbound, SB=Southbound, EB=Eastbound, WB=Westbound
4. Side-street stop control.

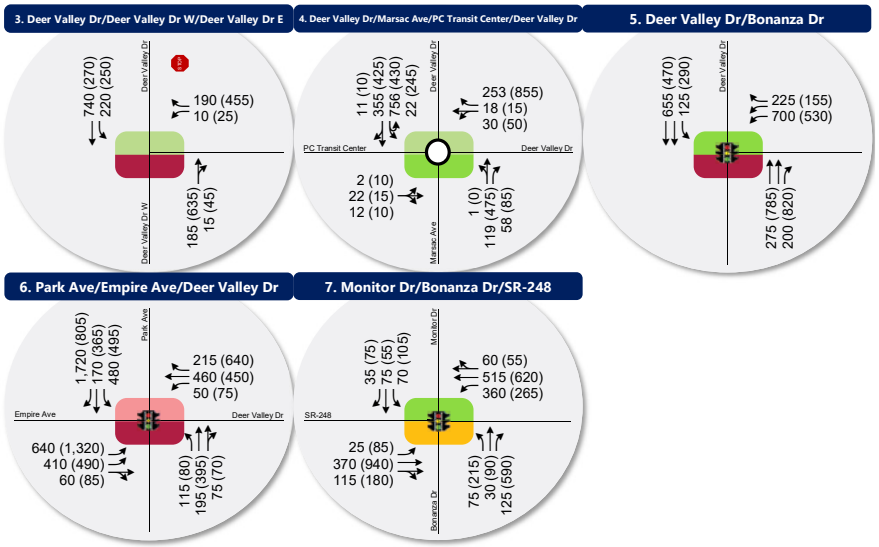
Source: Fehr & Peers.

As shown in **Table 11**, all study intersections operated within acceptable levels of service, with the exception of the westbound approach at the Deer Valley Drive East / Deer Valley Drive West intersection in both AM and PM peak hours, which operates at LOS E and LOS F, respectively. This was caused by the high vehicles of inbound traffic on Deer Valley Drive West making it difficult for vehicles to turn left from Deer Valley Drive East in the AM peak hour, and the high volumes of vehicles exiting the Snow Park area making a westbound right turn onto Deer Valley Drive West in the PM peak hour. The westbound movements are stop-controlled, making it difficult for vehicles to find a gap and turn onto Deer Valley Drive West.

It should be noted that while the Bonanza Drive / Deer Valley Drive intersection operates within acceptable LOS, it is often impacted by vehicle queues spilling back to this intersection from the upstream intersection at Park Avenue / Deer Valley Drive in the PM peak hour.

## 8.3 Mitigation Measures

The site plan for the concept master plan for Snow Park Village shows re-alignment of the Deer Valley Drive East / Deer Valley Drive West intersection, which will alter the westbound LOS at this intersection. Therefore, Fehr & Peers does not recommend any mitigation measures for future 2040 background conditions.


## LEGEND

Stop  Signalize

Lane Configuration  AM (PM) / AM (PM)  Peak Hour Traffic Volume

*Intersection Level of Service (LOS):*

AM / PM  A B C D E F

Figure 11

Future 2040 Background Saturday AM & PM Peak Hour Traffic Conditions

# 9. Future 2040 plus Project Conditions

## 9.1 Purpose

The purpose of the future 2040 plus project conditions analysis is to evaluate the impact of the proposed development traffic on the surrounding roadway network in the year 2040. To analyze this impact, the projected 2040 Saturday AM and PM peak hour background traffic volumes were combined with volumes generated by the conceptual development for the Saturday AM and PM peak hours. Intersection LOS analyses were then performed and compared to the results of the background traffic volumes. This comparison shows the impact of the conceptual project in 2040.

## 9.2 Traffic Volumes

Project-generated traffic (**Figure 4**) was added to the future 2040 background volumes (**Figure 8**) to yield "future 2040 plus project" Saturday AM and PM peak hour traffic volumes at the study intersections as shown in **Figure 9**.

The site plan for the concept master plan for Snow Park Village shows re-alignment of the Deer Valley Drive East / Deer Valley Drive West intersection. The intersection is currently a T-intersection with free-flow movement north/south along Deer Valley Drive West and stop-control on the westbound approach on Deer Valley Drive East. The proposed re-alignment allows free-flow movement east/west along Deer Valley Drive East and stop-control on the northbound approach on Deer Valley Drive West. Deer Valley Drive West on the west end will serve as a primary transit route to access the proposed transit hub on Doe Pass Road, and also serve private vehicles accessing Royal Street. Deer Valley Drive East (connecting to Deer Valley Drive east) will serve as the primary vehicular route to access the Snow Park Lodge drop-off/pick-up area and parking structure accesses. To account for this shift in primary routes internally, it was assumed that 70% of the total traffic would use Deer Valley Drive East (connecting to Deer Valley Drive East) and 30% of the total traffic would use Deer Valley Drive West). Background traffic was shifted and modified to account for the proposed internal circulation.

# 9.3 Level of Service Analysis

Using SimTraffic simulation software (for signalized and unsignalized intersections) and SIDRA software (for the roundabout) and the HCM 6 delay thresholds provided in the Introduction, future 2040 plus project Saturday AM and PM peak hour LOS were computed for each study intersection for the conceptual site development. The results of the analysis are reported in **Table 12** (see Appendix for the detailed LOS report).

**Table 12: Future 2040 plus Project Conditions Saturday AM & PM Peak Hour Level of Service**

| Intersection | | | | Worst Movement[1] | | | Overall Intersection[2] | |
|---|---|---|---|---|---|---|---|---|
| ID | Location | Period | Control | Movement[3] | Delay Sec/Veh | LOS | Avg. Delay Sec/Veh | LOS |
| 1 | Doe Pass Rd / Deer Valley Dr East | AM | SSSC[4] | EB Left | 29 | D | - | - |
| | | PM | | EB Left | 25 | D | - | - |
| 2 | Doe Pass Rd / Deer Valley Dr West | AM | SSSC | NB Left | 5 | A | - | - |
| | | PM | | NB Left | 24 | C | - | - |
| 3 | Deer Valley Dr / Deer Valley Dr East / Deer Valley Dr West | AM | SSSC | NB Left | **45** | **E** | - | - |
| | | PM | | NB Left | **344** | **F** | - | - |
| 4 | Deer Valley Drive / Marsac Avenue | AM | Roundabout | - | - | - | 21 | C |
| | | PM | | - | - | - | 17 | C |
| 5 | Deer Valley Dr / Bonanza Dr | AM | Signal | - | - | - | 38 | D |
| | | PM | | - | - | - | **140** | **F** |
| 6 | Deer Valley Dr / Park Ave / Empire Ave | AM | Signal | - | - | - | **76** | **E** |
| | | PM | | - | - | - | **88** | **F** |
| 7 | Bonanza Dr / Monitor Dr / SR-248 | AM | Signal | - | - | - | 17 | B |
| | | PM | | - | - | - | 33 | C |

Notes:
**Bold text** indicates intersections operating below Park City's acceptable LOS threshold.
1. This represents the worst approach LOS and delay (seconds/vehicle) and is only reported for unsignalized intersections.
2. This represents the overall intersection LOS and delay (seconds/vehicle).
3. NB=Northbound, SB=Southbound, EB=Eastbound, WB=Westbound
4. Side-street stop control.

Source: Fehr & Peers.

As shown in **Table 12**, the Deer Valley Drive / Marsac Avenue roundabout and Bonanza Drive / Deer Valley Drive signal both operate at acceptable LOS for opening year plus project conditions. However, the Deer Valley Drive East / Deer Valley Drive West operates at LOS E in the Saturday AM peak hour and LOS F in the

Saturday PM peak hour. This is due to the stop-controlled northbound vehicles experiencing delay trying to find a gap in the inbound/outbound resort traffic to turn left to exit the resort.

# 9.4 Mitigation Measures

As stated previously, the stop-controlled northbound vehicles experience delay trying to find a gap in the inbound/outbound resort traffic to turn left to exit the resort. It should be noted that the delay at this intersection could be of concern, especially since the transit vehicles will likely experience the delay. A proposed mitigation is to construct a new traffic signal which includes transit preemption, allowing transit vehicles to move more efficiently through the intersection. This potential mitigation of a traffic signal was analyzed and recommended for this study. Similarly, to facilitate efficient bus movements through the intersection of Doe Pass Road / Deer Valley Drive East, a traffic with transit preemption is recommended for this intersection. This potential mitigation of a traffic signal was analyzed and recommended for this study. Lastly, to enable safe connections for pedestrians and cyclists, an all-way stop at the intersection of Doe Pass Road / Deer Valley Drive West is recommended. This potential mitigation was analyzed and recommended for this study. The signal analysis results are shown in **Table 13** (see Appendix for the detailed LOS report).

Park City has a longstanding position of not mitigating certain deficient intersections within its boundaries due to the impacts of road widening and other impacts to the community. As a result, potential mitigations at the intersections of Deer Valley Drive / Park Avenue / Empire Avenue, Bonanza Drive / Monitor Drive / SR-248 were not analyzed as part of this study, and are therefore not recommended. Further, deficiencies shown at the intersection of Deer Valley Drive / Bonanza Drive are not a result of project-generated trips or operations of the intersection itself, instead they stem from vehicle queues from the intersection of Deer Valley Drive / Park Avenue / Empire Avenue impacting this intersection. As a result, mitigations at the intersection of Deer Valley Drive / Bonanza Drive are not recommended as part of this study.

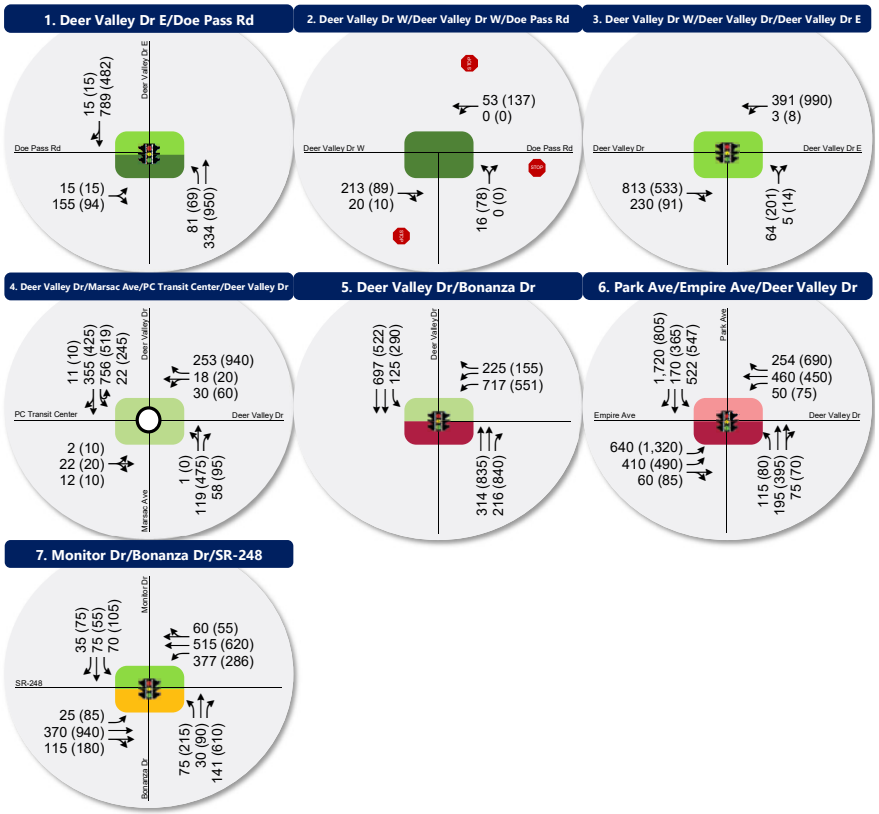
As shown in **Table 13**, the Deer Valley Drive East / Deer Valley Drive West intersection operates at LOS B for both Saturday AM and PM peak hours as a signalized intersection.

**Table 13: Future 2040 plus Project Mitigated Conditions Saturday AM & PM Peak Hour Level of Service**

| Intersection | | | | Worst Movement[1] | | | Overall Intersection[2] | |
|---|---|---|---|---|---|---|---|---|
| ID | Location | Period | Control | Movement[3] | Delay Sec/Veh | LOS | Avg. Delay Sec/Veh | LOS |
| 1 | Doe Pass Rd / Deer Valley Dr East | AM | Signal | - | - | - | 12 | B |
| | | PM | | - | - | - | 9 | A |
| 2 | Doe Pass Rd / Deer Valley Dr West | AM | AWSC | - | - | - | 6 | A |
| | | PM | | - | - | - | 6 | A |
| 3 | Deer Valley Dr / Deer Valley Dr East / Deer Valley Dr West | AM | Signal | - | - | - | 12 | B |
| | | PM | | - | - | - | 15 | B |
| 4 | Deer Valley Drive / Marsac Avenue | AM | Roundabout | - | - | - | 21 | C |
| | | PM | | - | - | - | 17 | C |
| 5 | Deer Valley Dr / Bonanza Dr | AM | Signal | - | - | - | 24 | C |
| | | PM | | - | - | - | **143** | **F** |
| 6 | Deer Valley Dr / Park Ave / Empire Ave | AM | Signal | - | - | - | **76** | **E** |
| | | PM | | - | - | - | **89** | **F** |
| 7 | Bonanza Dr / Monitor Dr / SR-248 | AM | Signal | - | - | - | 15 | B |
| | | PM | | - | - | - | 39 | D |

Notes:
**Bold text** indicates intersections operating below Park City's acceptable LOS threshold.
1. This represents the worst approach LOS and delay (seconds/vehicle) and is only reported for unsignalized intersections.
2. This represents the overall intersection LOS and delay (seconds/vehicle).
3. NB=Northbound, SB=Southbound, EB=Eastbound, WB=Westbound

Source: Fehr & Peers.


## LEGEND

Stop

Signalize

Lane Configuration — AM (PM) / AM (PM) — Peak Hour Traffic Volume

*Intersection Level of Service (LOS):*

AM / PM — A B C D E F

Figure 12

Future 2040 Plus Project Saturday AM & PM Peak Hour Traffic Conditions

# 10. Roadway Analysis

The purpose of the roadway analysis is to document the Saturday peak hour roadway volumes to determine the LOS of the internal project roadways.

## 10.1 Analysis Results

The roadway LOS was calculated based on planning level generalized peak hour two-way volumes for roadway capacities, as shown in **Table 14**. These volumes are published by the Florida Department of Transportation (FDOT) based on planning applications of the HCM and are widely used for planning level evaluation of roadway capacity. **Table 14** shows the peak hour two-way capacity estimates for a 2-lane roadway in areas over 5,000 population not in urbanized areas.

**Table 14: Roadway Level of Service Peak Hour Two-Way Traffic Thresholds**

| Level of Service | Peak Hour Traffic Capacity Estimates |
|---|---|
| | 2 Lanes |
| LOS B or better | ≤ 820 |
| LOS C | 821 – 1,550 |
| LOS D | 1,551 – 2,190 |
| LOS E or worse | > 2,190 |

Source: Fehr & Peers, based on FDOT Generalized Peak Hour Two-Way Volumes for areas over 5,000 not in urbanized areas.

As stated previously, the concept master plan for Snow Park Village shows Deer Valley Drive East (connecting to Deer Valley Drive East) as the primary vehicular route to access the Snow Park Lodge and parking structure access, and Deer Valley Drive West on the west end as the primary transit route to access the proposed transit hub. The same assumption used for previous analyses (70% of total traffic using Deer Valley Drive East and 30% of total traffic using Deer Valley Drive West) were applied for the roadway volumes. **Table 15** shows the peak hour roadway LOS analysis for each scenario. As shown in **Table 15**, all internal roadways are expected to operate at LOS C with the current 2-lane configuration for all scenarios. The 2-lane roadway shows sufficient capacity for the expected traffic at Snow Park Village.

**Table 15: Snow Park Village Roadway LOS Analysis Summary**

| Scenario | Saturday Peak Hour | Deer Valley Dr W (South of Y-Intersection) | | Deer Valley Dr E (East of Y-Intersection) | |
|---|---|---|---|---|---|
| | | Two-Way Volume[1] | LOS | Two-Way Volume[1] | LOS |
| Existing | AM | 650 | A/B | 400 | A/B |
| | PM | 800 | A/B | 620 | A/B |
| Existing plus Project | AM | 260 | A/B | 1,030 | C |
| | PM | 250 | A/B | 1,130 | C |
| Opening Year 2022 plus Project | AM | 260 | A/B | 1,050 | C |
| | PM | 280 | A/B | 1,340 | C |
| Future 2040 plus Project | AM | 310 | A/B | 1,220 | C |
| | PM | 320 | A/B | 1,550 | C |

1. Rounded up to the nearest 10.
Source: Fehr & Peers.

# 11. Parking Analysis

A fundamental aspect of the Snow Park Village proposal is the implementation of a constrained, structured parking supply that will require parkers to pay a daily fee. This strategy is seen as a key disincentive to traveling in Park City by single-occupant vehicle, and aligns with the City's broader mobility goals.

## 11.1 Analysis Method

For the shared parking analysis of the updated land use plan, the development is proposed to include 11 buildings which include the following land uses (taken from the land use program dated October 26, 2021):

- 31,000 square feet of ballroom/event center space
- 72 multifamily housing units
- 193 hotel rooms with 4,500 square feet of hotel support uses.
- 26,500 square feet of commercial/retail space

The development is also proposed to include the Deer Valley Ski resort and other land uses in support of the resort. It should be noted that the land uses supporting the ski resort will not be parking generators; rather, the ski resort will be the parking generator, and the support land uses serve as accessories to the resort.

Fehr & Peers applied the methodology outlined in Urban Land Institute's (ULI) *Shared Parking Manual, 3rd Edition* and its associated spreadsheet tool, to determine the recommended number of parking spaces at Snow Park Village. The methods outlined in *Shared Parking* are considered national state-of-the-practice for right-sizing parking supplies to be shared by multiple land uses. It provides instruction for reducing parking requirements for mixed use developments.

The ULI manual includes baseline parking rates that are informed by parking counts performed across the United States. While these are generally acceptable in many land use contexts, the baseline ULI parking rates are based on nationwide suburban area parking counts and do not consider the unique travel patterns in the study area, nor the atypical land use context (adjacent to a destination ski resort). Therefore, this analysis was performed using parking rates based on the parking requirements outlined in Park City zoning code.

Fehr & Peers estimated the required number of parking spaces at the development using the following factors:

- Proposed land use characteristics as described in the introduction
- Recommended parking rates from IBI Group which are comparable to Park City Zoning Code minima
- Monthly adjustment factors from *Shared Parking*
- Time-of-day adjustment factors from *Shared Parking*
- Noncaptive ratios (internal capture) rates calculated using ULI's *Shared Parking* spreadsheet tool
- Mode adjustment (walking, biking, transit) rates calculated using ULI's *Shared Parking* spreadsheet tool
- Parking counts at the resort collected during ski season from 2015-2016, 2016-2017, 2018-2019, and 2019-2020
    - These counts showed an average February Saturday parking rate of 1,433 stalls at the resort. This was rounded up to assume 1,500 stalls for day skiers and employees

From the proposed land uses that generate parking demand, and the recommended rates from the Park City zoning code, the minimum required parking supply was calculated to be 2,236 stalls. This however does not account for paid parking (which is proposed in future plans for the parking structure) and shared parking among uses. For the shared parking analysis, a reduction of up to 9% reduction was calculated due to the factors listed above, resulting in a parking supply of 2,041 stalls based on shared parking reductions alone.

A reduction of up to 17% in daily parking demand due to paid parking was calculated using methods derived from *The Price Elasticity of Parking: a Meta-Analysis* (Lehner, Peer; 2018), which evaluates price sensitivities to the implementation of paid parking from 50 separate studies. Given that many Deer Valley guests are likely to be less price sensitive than the general public, this study assumes less reduction in demand due to paid parking. It is worth noting, however, that many day skiers visiting from points along the Wasatch Front are more likely to be influenced by the implementation from paid parking.

This results in a potential reduction of up to 26% in recommended parking due to paid parking and shared parking. For this study, to present a more conservative reduction and resulting parking supply, a 20% reduction was assumed to be applicable due to factors such as existing and proposed land uses and expected growth, and was applied to the base required parking. **Table 18** outlines the number of recommended stalls with the reduction due to paid parking and shared parking. Shared parking calculations are attached in the Appendix.

**Table 16: Snow Park Village Parking Analysis Summary**

| Base Recommended Stalls | % Reduction (Paid Parking and Shared Parking) | Stalls Reduced (Paid Parking and Shared Parking) | Net Recommended Stalls |
|---|---|---|---|
| 2,236 | 20% | 447 | **1,789** |

Source: Fehr & Peers

As shown in **Table 18**, with the expected reductions due to paid parking and shared parking, it is recommended that a minimum of 1,810 stalls be provided for the proposed Snow Park Village development. It should be noted that phasing and ongoing refinement of the land use program may adjust the base parking rates and recommendations.

# 11.2 Parking Management

An effective and efficient parking management system is essential to maintain both a high-quality user experience and to minimize traffic impacts on adjacent roadways. An essential element to improve the efficiency of structured parking is to provide real time information regarding parking availability. In addition to implementing payment technology that expedites vehicle ingress at all driveways, Deer Valley will work with relevant partners to ensure more complete information is available to parkers.

The Snow Park Parking Management Plan is included in **Attachment B.**

# 12. Transit Evaluation

This section includes an evaluation of existing transit service and infrastructure, proposed transit improvements, and description of how the Snow Park Village proposal aligns with Park City's *Transit First* policy.

## 12.1.1 Existing Transit Service

In addition to a multitude of private shuttles and buses, there are two public transit operators providing transit service to and from Deer Valley: Park City Transit and High-Valley Transit. High Valley Transit operates one route that services Deer Valley:

- 101 – Spiro / 224 Local that services Deer Valley.

Park City Transit operates six routes the service Deer Valley:

- 1 Red: Prospector Square – Deer Valley
- 2 Green: Park Meadows/Thaynes Canyon – Deer Valley
- 3 Blue: Thaynes Canyon/Park Meadows – Deer Valley
- 5 Yellow: Prospector Square – Deer Valley
- 40 Bronze: Main Street – Royal Street – Silver Lake Lodge
- 50 Teal: Prospector Square – Deer Valley

Park City Transit Park City Transit is undergoing a short-range service plan update, with changes in transit service to and from Deer Valley expected in the coming year.

Local bus stops are provided along both sides of Deer Valley Drive East and Deer Valley Drive West, allowing transit riders to board buses that are Deer Valley- or Old Town-bound. At the southern end of the Deer Valley Drive loop closest to the existing Snow Park base area, there are bidirectional bus stops that can accommodate up to four buses at once. Aside from the existing bidirectional stops at Snow Park, bus stops do not include shelters. Buses providing service to Deer Valley travel in mixed traffic.

# 12.2 Proposed Transit Improvements

To support public transit as an efficient way of traveling to and from Snow Park Village, the project includes a proposal to implement one-way bus-only lanes on Deer Valley Drive West and Deer Valley Drive East. As shown in **Figure 5**, these bus-only lanes will expedite service to and from the proposed Snow Park mobility

hub. The one-way bus-only lanes will allow for vehicle turns across them, to allow for side-street access and right turns at intersections.

A proposed six bus-bay mobility hub at the northeast corner of Snow Park Village will provide a comfortable and appealing transit facility on-site that provides direct access to the project and relocated ski lift bases. The mobility hub will also include accommodations for cyclists and allow for electric bus charging infrastructure. This mobility hub will allow for increased frequency of transit service which will be essential to incentivizing transit service.

To further support transit service as part of the Snow Park Village proposal, two new traffic signals with transit preemption capabilities to improve transit travel times along the Deer Valley Drive loop. In conjunction with the reconfiguration of the Deer Valley Drive / Deer Valley Drive East / Deer Valley Drive West intersection, the proposal includes implementing a traffic signal with transit preemption to ensure that movement of transit vehicles is prioritized through the intersection. Similarly, to prioritize transit movements out of the mobility hub and into the northbound bus-only lane on Deer Valley Drive East, a traffic signal with transit signal preemption is recommended to allow for efficient bus travel exiting the mobility hub. Signal warrants are met under future conditions at both intersections.

## 12.2.1 Changes in Bus Travel Time

To evaluate the expected improvements in travel time for buses in proposed bus-only lanes along Deer Valley Drives East and West, bus travel times for local (making multiple stops along the Deer Valley Drive loop) and express-style (making no stops along the Deer Valley Drive loop) were analyzed using VISSIM microsimulation software.

Comparing local and express service on Deer Valley Drive West between the Deer Valley Drive / Deer Valley Drive East / Deer Valley Drive West intersection and the proposed mobility hub, Snow Park-bound bus travel time is expected to be reduced by 33 seconds per trip in the AM peak hour and 32 seconds per trip in the PM peak hour. Between the proposed mobility hub and the the Deer Valley Drive / Deer Valley Drive East / Deer Valley Drive West intersection, Park City-bound express buses are expected to save 35 seconds per trip in the AM peak hour, 34 seconds per trip in the PM peak hour over local buses.

Improved travel times are essential to increasing the appeal of traveling by transit, and the time savings will be substantial when applied to ongoing service with increased frequency. This enhancement of transit service as part of the Snow Park Village proposal is well-aligned with Park City's *Transit First* policy.

# 13. Transportation Demand Management

Park City, through its ongoing Transportation Master Plan update, has identified the laudable and ambitious goal of reducing vehicle trips by 20% throughout Park City. The City is tackling this challenge through a variety of strategies, including but not limited to the following:

- Updates to the local and regional transit system
- Coordination with partner agencies to implement greater park-and-ride capacity
- Expansion of high-quality active transportation facilities throughout Park City
- Partnerships with private developments to implement and operate comprehensive Transportation Demand Management (TDM) programs

Deer Valley, as part of its Snow Park Village proposal, has agreed to implement dedicated bus-only lanes along the Deer Valley Drive East/West loop, a world-class multimodal mobility hub on-site, and traffic signals with transit signal preemption to improve transit travel times.

Furthering the City's broader trip reduction goal, Deer Valley will continue to operate its TDM program, amnd expand on current offerings, to better align with the adopted PCMC TDM Plan (2016). A high-level summary of the Deer Valley TDM Plan is shown below in Error! Reference source not found.

**Table 17: Deer Valley TDM Measures**

| Measure | Status | Description |
|---|---|---|
| Transit pass subsidy | Existing Program | Subsidized UTA transit passes for Deer Valley employees living in Salt Lake Valley and Utah Valley |
| Bicycle Amenities and Perks | New Program | Bicycle repair tools and dedicated bicycle parking at key locations |
| Education and Promotion | Existing Program | Educational and promotional events to encourage travelers to use by modes other than driving alone. |
| Parking Management | New Program | Efficient, constrained, and priced parking to discourage drive-alone trips |

| | | |
|---|---|---|
| Employee Transit | Existing Program | Operate designated employee transit to facilitate efficient employee commutes through an appealing alternative |
| Real-Time Messaging | New Program | Communicate traffic conditions in real time to travelers |
| Appoint a TDM Coordinator | New Program | Identify a staff member to oversee the TDM program |

Source: Fehr & Peers.

The Deer Valley TDM Plan is presented in full in **Attachment C**.

# 14. Conclusion/Recommendations

With proposed mitigations in place, all study intersections at which mitigations are feasible and supported operate at acceptable levels of service under all Plus Project analysis scenarios. Through dedicated transit infrastructure, improved active transportation connections between the Project and Park City's existing active transportation infrastructure, a fully reworked parking system, and management of ongoingTDM offerings in addition to new measures, the Snow Park Village proposal aligns with the City's *Transit First* policy by encouraging travel by means other than driving alone.

Implementing new traffic signals with transit preemption at the intersections of Deer Valley Drive / Deer Valley Drive East / Deer Valley Drive West and Doe Pass Road / Deer Valley Drive East will improve traffic operations and support transit. Implementing an all-way stop-control at the intersection of Deer Valley Drive West and Doe Pass Road will improve pedestrian and cyclist connectivity adjacent to the project site. Ongoing monitoring of TDM program effectiveness will maintain City-Deer Valley cooperation in pursuit of shared goals.