

**ELECTED OFFICIALS
TRANSPORTATION COMMITTEE**

Brush Creek Park & Ride Monitoring and Management Plan

FINAL

OCTOBER 2025



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Executive Summary

The Elected Officials Transportation Committee (EOTC) of Pitkin County initiated the Brush Creek Park & Ride Monitoring and Management Plan to identify strategies to enhance the operation and effectiveness of the Brush Creek Park & Ride.

The park & ride, located along Highway 82 at Brush Creek Road is a critical component of the Roaring Fork Valley’s multimodal transportation network, encouraging travelers and commuters to transfer from personal vehicles to transit, shuttles, carpools, and active transportation modes into and out of the City of Aspen and Town of Snowmass Village. This Plan recommends strategies to help the EOTC improve access to high quality transit, promote multimodal travel, enhance safety, and reduce parking and traffic congestion in nearby communities.

The study included an existing conditions analysis, community engagement in the form of a survey, a peer review of similar park & ride facilities, and a best practices analysis. Based upon this framework, management, operational, and technological strategies are recommended to enhance Brush Creek Park & Ride operations. The recommendations are supplemented with next steps for implementation.

Recommendations

<i>Management & Operations</i>	<i>Technology</i>
Revise Site Management Leadership and Practices	<u>Package 1:</u> Baseline Monitoring and Surveillance
Improve the Special Event Permitting Process	<ul style="list-style-type: none"> ▪ IP-based surveillance ▪ Video Mgmt. System
Address Overnight Parking and Public Safety Concerns	<u>Package 2:</u> Smart Parking Technology
Implement Wayfinding Signage	<ul style="list-style-type: none"> ▪ AI-ALPR Cameras ▪ Smart Parking Mgmt.
Revisit On-Site Infrastructure & Operations	<ul style="list-style-type: none"> ▪ IP-based surveillance (supplemental)
Enhance Access to Transit Services	<ul style="list-style-type: none"> ▪ Dynamic Message Signs (optional)

Next Steps

1. Revise the intergovernmental agreement
2. Host a visioning workshop on short and long-term goals for the park & ride
3. Set up a recurring park & ride stakeholder meeting to advance goals & coordinate with other local law enforcement agencies
4. Identify and pursue funding for strategy implementation
5. Implement recommended strategies and/or technology packages
6. Monitor and evaluate effectiveness of implemented strategies

Management & Operations Recommendations

Revise Site Management Leadership and Practices



Consolidate management responsibilities under a single agency to streamline responsibilities. Pitkin County would best be suited for this role, with management in-house or through a contracted service. EOTC should set policies for park & ride use to ensure consistent enforcement and to manage site use.

Improve the Special Event Permitting Process



Update the existing permitting process for special events to improve efficiency and record-keeping. The special event permit application should be made publicly available through the Pitkin County website and feature expedited applications for recurring or annual events. The event application may also apply to commercial operators that utilize the park & ride for daily parking.

Address Overnight Parking and Public Safety Concerns



Adopt a regulation that prohibits overnight parking every day. Enforcement responsibilities should be transferred from the City of Aspen to the Pitkin County Sherriff's Office or a contracted service managed by the County. The EOTC may also work with local law enforcement agencies and community groups to mitigate the effects of displacement for illegal campers.

Implement Wayfinding Signage



Implement wayfinding signage to the park & ride for all access points. Static signage would promote the park & ride and increase driver awareness. Dynamic signage would be especially useful on special event days, as the signage would be able to provide real-time information to drivers and enhance user access experience.

Revisit On-Site Infrastructure & Operations



Determine the applicability of non-transit related uses of the site. These uses may include: the Aspen Carpool Permit program, hosting RVs/ truckers overnight through a permit, and an airport/ employee shuttle service paired with a long-term parking zone. If these uses are maintained or added, seek to maximize efficiency through new site infrastructure and updated management.

Enhance Access to Transit Services



Implement on-site and off-site improvements to enhance access to transit. On-site improvements include enhanced pick-up/ drop-off areas, real-time bus location information, and bus access and circulation enhancements. Engagement results revealed the public desire for increased transit frequency and new routes.

Technology Recommendations

Package 1: Baseline Monitoring and Surveillance



Package 1 aims to deter unauthorized or overnight parking through viewable surveillance. This package would utilize IP-based surveillance cameras at the parking lot, paired with a remote video management system to view live video and review recordings for any time of day. The IP-surveillance would be beneficial in assessing if any vehicles are parked in the lot overnight without being physically present at the park & ride.



IP-Based Surveillance Cameras



Video Management System (VMS)

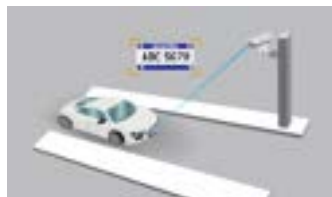


Enforcement and Surveillance Signage

Package 2: Smart Parking Technology



Package 2 is designed for active parking management by using smart technologies to guide, monitor, and enforce parking regulations. This package would utilize AI-powered ALPR to track site utilization and vehicle dwell times, and ultimately determine if a vehicle is parked overnight. This package may be paired with IP-based network cameras for increased surveillance, as well as dynamic message signage to improve visitor access experience.



AI-ALPR Cameras



Smart Parking Management Service



IP-based Surveillance Cameras (Supplemental)



Enforcement and Surveillance Signage (supplemental)



Dynamic Message Signs (optional)

Next Steps

1. Revise the intergovernmental agreement

In addition to purchasing the 27-acre lot that houses the Brush Creek Park & Ride from CDOT, the EOTC should review and update the existing intergovernmental agreement (IGA) to reflect current priorities, roles, and responsibilities of each party involved. This revision should address any outdated provisions and ensure alignment with the EOTC's long-term transportation objectives, while collaborating with the stakeholders in the Upper Roaring Fork Valley.

2. Host a visioning workshop on short and long-term goals for the park & ride

The EOTC should organize a visioning session with key stakeholders, including local government representatives, RFTA, ski resort representatives, and other relevant organizations, to define a shared vision for the park & ride. This workshop would focus on identifying immediate needs, long-term aspirations, and guiding principles for development, operations, and user experience.

3. Set up a recurring park & ride stakeholder meeting to advance goals

Establish a recurring meeting schedule (e.g., quarterly, half-yearly) for a designated stakeholder group to review and coordinate ongoing efforts related to the park & ride. These meetings will provide a platform to track progress, address challenges, advance implementation plans, and maintain accountability across all partners. An enforcement advisory group may need to convene separately and more frequently than the stakeholder group depending on the effects of camping displacement stemming from new overnight parking regulations.

4. Identify and pursue funding for strategy implementation

Develop a prioritized list of funding opportunities at the local, state, and federal levels—including grants, public-private partnerships, and regional transportation funds. Match these opportunities with specific strategies and technology enhancements that align with the EOTC's goals.

5. Implement recommended strategies and/or technology packages

Execute selected projects and enhancements based on stakeholder consensus, funding availability, and technical feasibility. Implementation of projects should follow the established guiding principles and direction from the recurring stakeholder committee to ensure that the strategies are in the best interest of the community's mobility and access needs.

6. Monitor and evaluate the effectiveness of each implemented strategy

Develop and apply metrics and evaluation methods to assess the performance of implemented strategies and technologies. Key indicators might include user satisfaction, ridership levels, environmental impact, cost-effectiveness, and operational efficiency. The evaluation results would inform future decision-making and allow for continuous improvement of the park & ride.

1. Introduction

The Elected Officials Transportation Committee (EOTC) of Pitkin County initiated the Brush Creek Park & Ride Monitoring and Management Plan to identify strategies to enhance the operation and effectiveness of Brush Creek Park & Ride. The park & ride is a critical component of the Roaring Fork Valley’s multimodal transportation network, encouraging travelers and commuters to transfer from personal vehicles to transit, shuttles, carpools, and active transportation modes. The park & ride, situated at the intersection of Brush Creek Road and Colorado State Highway 82 (Highway 82), helps reduce traffic congestion on routes into and out of the City of Aspen and the Town of Snowmass Village and alleviate parking demand at key destinations in both communities.

The Brush Creek Park & Ride Monitoring and Management Plan evaluates the current management and operational practices for the facility and recommends strategies for improvement. This initiative focuses on improving the user experience, optimizing site operations, enhancing access, promoting public safety and security, and encouraging more sustainable transportation options, which all align with the goals outlined in recent regional planning documents.

1.1. Study Area

Brush Creek Park & Ride serves as a transit and multimodal hub within the Roaring Fork Valley. The park & ride is situated just east of the intersection of Brush Creek Road and Highway 82 and is accessible from the existing signalized intersection of these two roadways.

The property surrounding the park & ride is generally undeveloped, with the Roaring Fork River to the east and south, Brush Creek to the west, and vacant parcels to the north. Despite minimal development in the immediate area, the location is ideal for a park & ride, as the facility can serve both commuters and visitors traveling between the valley’s major activity centers.

Brush Creek Park & Ride currently serves transit riders and carpools heading to:

- Aspen to the south via Highway 82
- Snowmass Village to the west, via Brush Creek Road
- Lower Roaring Fork Valley communities to the north including Carbondale and Glenwood Springs, via Highway 82

Figure 1 shows the project location.

Figure 1: Brush Creek Park & Ride Project Location



1.2. Purpose and Objectives

Brush Creek Park & Ride facilitates transfers between personal vehicles and transit, shuttles, and carpools for people traveling to and from Aspen, Snowmass Village, and surrounding areas. The park & ride fulfills an important role in reducing traffic congestion and improving accessibility to key destinations in Aspen and Snowmass Village.

Strategies presented in this report were developed through an analysis of existing conditions, feedback received from the public and through conversations with stakeholders, a best practices review, and peer agency interviews. The strategies aim to help the EOTC improve access to and use of high quality transit, encourage multimodal travel, enhance safety, and reduce parking and traffic congestion in nearby communities.

2. Existing Conditions

Brush Creek Park & Ride is located on 27 acres of public land owned by the Colorado Department of Transportation (CDOT). The land is leased through an intergovernmental agreement between the City of Aspen, the EOTC, and the regional transit provider, the Roaring Fork Transportation Authority (RFTA). Pitkin County is actively in the process of purchasing the deed-restricted land from CDOT for \$10. The Brush Creek Park & Ride features:

- **Bus transfer area:** serves six (6) year-round or seasonal RFTA routes and one (1) seasonal Snowmass Village Shuttle route, with bus drive aisles separated from personal vehicle traffic
- **Center-loading passenger platform:** a 280-foot-long, 30-foot-wide passenger platform complete with a partially enclosed bus shelter, a bicycle parking shelter, public art displays, newspaper kiosks, and a public restroom facility
- **Parking area:** provides approximately 400 paved parking spaces complete with landscaping and lighting throughout
- **Overflow areas:** accommodate additional parking demand during special events

2.1. Existing Operations and Enforcement

The City of Aspen oversees parking operations and enforcement at Brush Creek Park & Ride. These responsibilities include:

- **Site Maintenance:** The City of Aspen contracts maintenance activities for trash pickup on a weekly basis, noxious weed management annually, snow removal as needed, and site cleanup after special events and as needed.
- **Carpool Permits:** The City of Aspen operates a carpool permit program from a kiosk operating at the southern end of the site. The City issues on average 180 carpool permits per day. These permits allow free parking in residential areas of the City for longer than the posted 2-hour limit. The City is interested in digitizing the current manual permit issuance process to improve efficiency and daily tracking.
- **Enforcement and Public Safety:** Vehicles may not park longer than 24 consecutive hours at Brush Creek Park & Ride. Overnight parking is allowed within the 24-hour limit. The City of Aspen has stated that enforcement is conducted every night, Monday through Friday, for approximately 30 minutes to ensure no vehicle is parked for longer than 24 consecutive hours. Enforcement officers issue a warning via flyer in the windshield if a vehicle is identified to be parked for at least 24 hours. If the vehicle is present after an additional 24 hours, the vehicle would receive a citation. After an additional 24-hour period, the vehicle is green-tagged for tow to impound.

- **Special Events:** Brush Creek Park & Ride is often used as a remote lot for special events in the Upper Roaring Fork Valley. Event organizers are required to obtain a special use permit to use Brush Creek Park & Ride for their events. However, this process is not currently detailed on the City’s website. The special use permit requires a site plan, staffing plan, and traffic plan. These plans must detail truck and trailer staging, shuttle use, lighting, additional restroom facilities, security, maintenance, and cleanup. Permit holders must provide a damage deposit of \$5,000 to cover any potential damage during the event. No other fees are applied. There are no agreements or restrictions for businesses or agencies to utilize daily parking at Brush Creek Park & Ride for their operations.
- **Monitoring:** The City of Aspen conducts vehicle counts at Brush Creek Park & Ride between 12:00pm and 1:00pm for approximately two-thirds of the days throughout the year. The early afternoon period sees the highest parking utilization throughout the day.

For more information on existing operations and enforcement, please see Appendix A.

2.2. Public Safety at Brush Creek Park & Ride

Public safety at Brush Creek Park & Ride is a serious and ongoing concern of the Pitkin County Sheriff’s Office, who responded to over 850 calls between 2022 and year-to-date 2025. The Pitkin County Sheriff’s Office estimates up to 35-50 vehicles camped overnight in the summertime, and roughly 15-20 vehicles camped overnight in the winter period in the Brush Creek Park & Ride parking lot. Approximately 3 or 4 of these vehicles are camped in the lot 24 hours a day, 7 days a week, whereas the others leave the site in the daytime. The vehicles camped indefinitely pose the greatest risk of crime at Brush Creek Park & Ride.

While many incidents requiring law enforcement attention occur throughout the day and in different parts of the lot, the Sheriff’s Office views the number of people camping overnight and even living at Brush Creek Park & Ride for extended periods of time as greatly exacerbating the risk of crime and activities that threaten public safety. There is a concern that allowing long-term camping, particularly in the back of the lot, will lead to a “broken windows” scenario wherein the space appears to be unregulated and therefore an invitation to crime and mischief. Officers expressed a strong desire for tighter regulations, specifically that overnight stays and camping should be prohibited and strictly enforced in most situations. Officers have also called for enhanced monitoring of the lot through license plate reader (LPR) technology, gated entry, and other parking lot management technologies.

Brush Creek Park and Ride, and to a lesser extent, the Buttermilk Parking Lot, have seen many incidences of serious crimes, including drug dealing, solicitation of minors, assault and kidnapping as well as lesser violations to public safety and security. The most serious crimes are covered by local media, but there is limited broader public awareness of lesser violations to public safety and security.

The following is a categorization of the most frequent calls, plus the number of each, to the Sheriff's Office between 2022 and 2025:

- Suspicious behavior – 315
- Suspicious people sleeping in vehicles – 126
- Citizens requesting assistance – 73
- Intoxication and liquor violations, outside of vehicles – 39
- Welfare checks – 32
- Disturbances – 26
- Intoxicated driver – 20
- Harassment – 10
- Extra patrol required – 9
- Hit and run accidents – 7
- Assault – 7
- Criminal mischief – 4

The following incidents occurred five or fewer times: weapons violations, illegal fires, unattended or abandoned vehicles, vehicle theft, littering, and domestic conflicts. In addition to formal reported incidents, staff have observed such alarming behavior as vehicles sharing electricity via jumper cables with generators and gasoline cans nearby, makeshift campers with piles of garbage amassed, and people relieving themselves at the edges of the lot.

The peer review conducted for this study, summarized in Chapter 4, revealed that similar mountain/ski resort communities with commuter/ skier parking lots prohibit overnight stays and storage of unauthorized vehicles, conducting nightly sweeps of the lots and ordering any remaining vehicles to be towed. These examples were noted in Teton Village/ Jackson Hole in Wyoming, Steamboat Springs in Colorado, and at Big and Little Cottonwood Canyon lots in Utah.

The Sheriff's Office noted that the new management plan at the Buttermilk lot, which includes charging for parking and robust monitoring and enforcement, is a solid step for enhanced public safety, and a similar effort should be conducted for the Brush Creek Park & Ride. However, under the terms of the agreement with CDOT, which owns Brush Creek Park & Ride, the lot will remain a commuter lot free of charge.

2.3. Relevant Planning Documents

Previous planning documents set the foundation for the Brush Creek Park & Ride Monitoring and Management Plan. These documents help ensure that recommendations are in line with EOTC goals, objectives, and past efforts. Relevant planning documents are summarized below:

EOTC 2020 Strategic Plan

The EOTC 2020 Strategic Plan adopted the Comprehensive Valley Transportation Plan (CVTP) to establish a framework for a new transportation strategy in the Roaring Fork Valley. The framework guides EOTC's decision-making, work planning, and budgeting processes. The



Strategic Plan sets a mission, vision, guiding principles, and key strategies to ensure a convenient, equitable, and efficient transportation system.

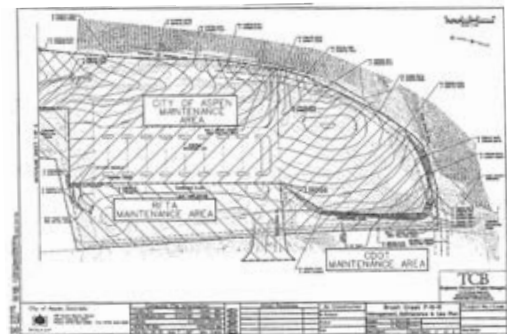
Comprehensive Valley Transportation Plan (2020)

The Comprehensive Transportation Plan (CVTP), adopted in 2020, identified a range of transportation strategies to improve mobility in the valley. The CVTP identified park & ride lot improvements, congestion reduction measures, and technologies and innovation to encourage mode shift as regional priorities. Additional bike and pedestrian connections to the Brush Creek Park & Ride were identified as an Upper Valley-specific priority.



Brush Creek Park-N-Ride Management, Maintenance and Use Plan (2005)

This intergovernmental agreement between the City of Aspen, the Town of Snowmass Village, and the EOTC defines the management and maintenance of the Brush Creek Park & Ride. The agreement generally designates RFTA to maintain the bus bay section of the park & ride, the City of Aspen to maintain the parking lot facility, and CDOT to maintain the southernmost unpaved portion of the parcel. The use plan also designated City of Aspen to manage, repair, and provide enforcement at the park & ride lot. Maintenance includes snow removal, lot sweeping/flushing, trash removal, and maintaining a state of good repair in the parking lot. RFTA is responsible for restroom cleaning.



2.4. Transit Ridership

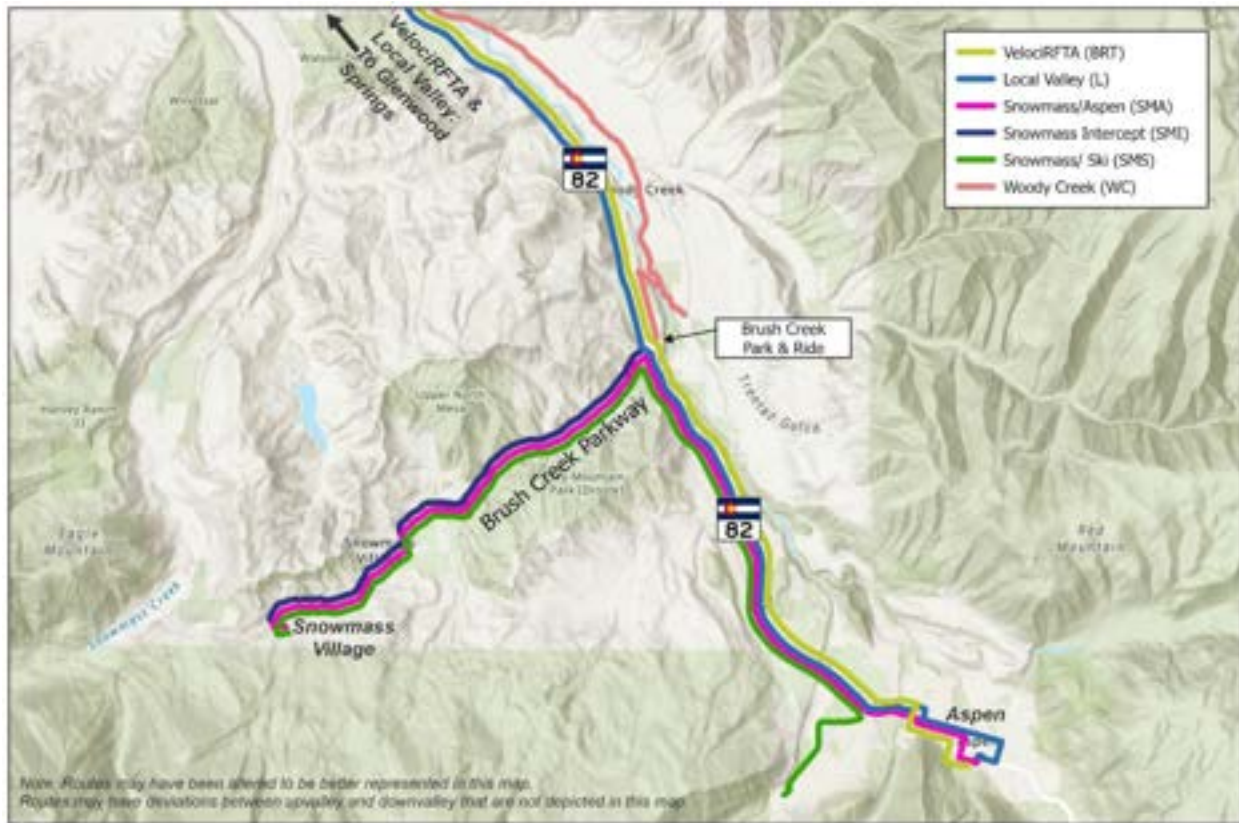
RFTA operates six transit routes at the Brush Creek Park & Ride, offering service from the City of Glenwood Springs to the City of Aspen and the Town of Snowmass Village, and providing regional transit service throughout the Roaring Fork Valley. Routes serving the park & ride include:

- **VelociRFTA (BRT):** daily service between Aspen and Glenwood Springs, operating with 10 to 30-minute headways
- **Local Valley (L):** daily service between Aspen and Glenwood Springs, operating with 30-minute headways
- **Snowmass/Aspen (SMA):** daily winter service and limited summer service between Aspen and Snowmass Village, operating with 15 to 30-minute headways
- **Snowmass Intercept (SMI):** daily service between Brush Creek Park & Ride and Snowmass Mall, contracted out to Snowmass Village Shuttle in the spring and fall off-peak periods

- **Snowmass/Ski (SMS):** winter season service between Aspen Highlands and the Snowmass Mall
- **Woody Creek (WC):** seasonal service between the Phillips neighborhood and the Brush Creek Park & Ride, operating with one-hour headways

Figure 2 depicts transit routes that connect to the Brush Creek Park & Ride.

Figure 2: Transit at Brush Creek Park & Ride



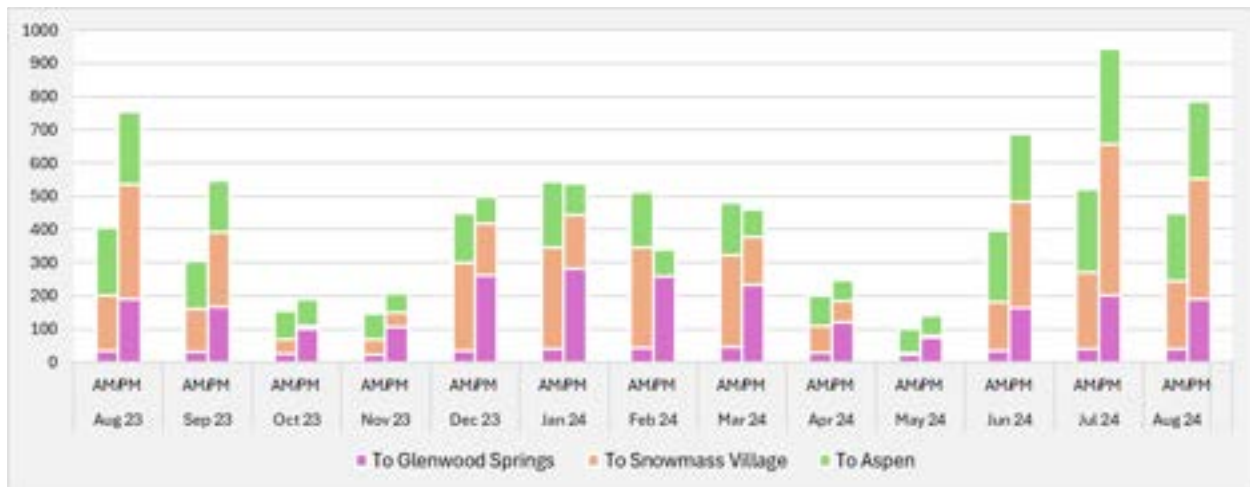
RFTA boarding data for the Brush Creek Park & Ride was collected by route and headway direction in the AM and PM time periods between August 2023 and August 2024. RFTA boardings at the Brush Creek Park & Ride are highest in the summer months, from June to August, at approximately 1,000 to 1,500 passenger boardings per day. Boardings are also high in the winter months from December to March, at approximately 940 to 1,100 boardings per day. Boardings are significantly lower in the shoulder seasons, from October to November, and from April to May. In these months, RFTA routes averaged between 300 to 450 boardings per day.

Table 1 shows the average daily passengers by headway direction in either the AM or PM. Figure 3 shows the average daily passengers by month, by headway direction in either the AM or PM.

Table 1: RFTA Brush Creek Park & Ride Average Daily Boardings by Headway Direction in the AM and PM

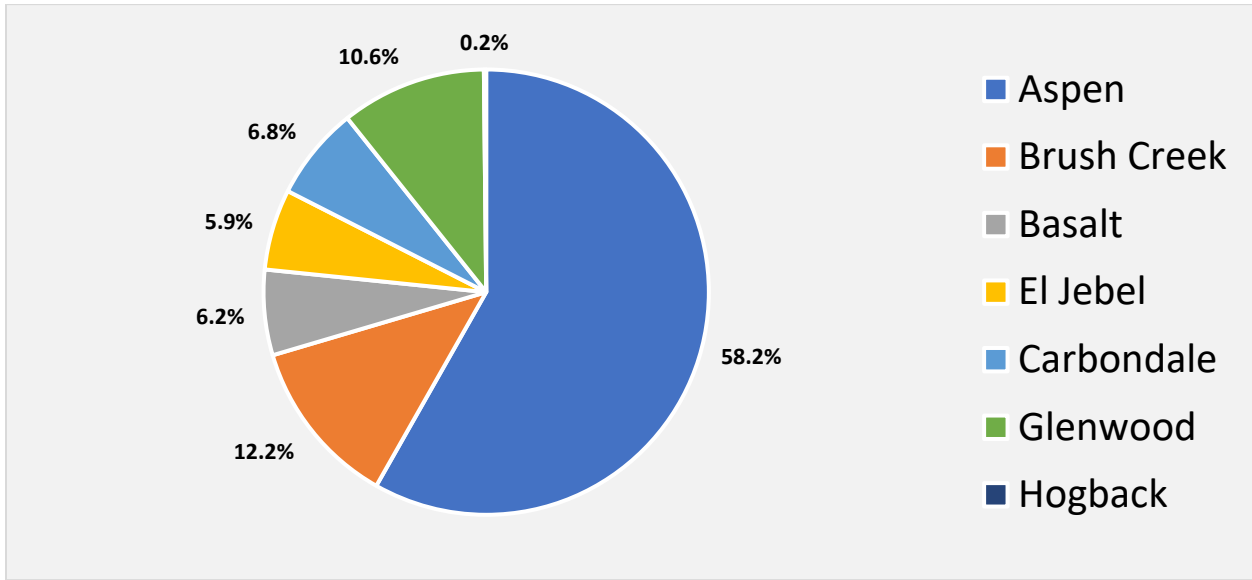
Brush Creek Park & Ride	AM	PM	Daily
To Glenwood Springs	34	181	215
To Snowmass Village	166	187	353
To Aspen	156	131	287
Total	356	499	855

Figure 3: RFTA Brush Creek Park & Ride Daily Boardings per Month by Headway Direction in the AM and PM



From April 2023 to May 2024, Snowmass Village Shuttle recorded the ending destination of approximately 28,900 passengers who alighted at the park & ride through their contracted Snowmass Intercept (SMI) service. The passengers who alighted at the Brush Creek Park & Ride all boarded the route in Snowmass Village. Figure 4 presents the ending destination (beyond the Brush Creek Park & Ride) for those who alighted at the park & ride. Origin-destination data is not available in the up-valley direction.

Figure 4: Ending Destination of Passengers who Alight at Brush Creek Park & Ride

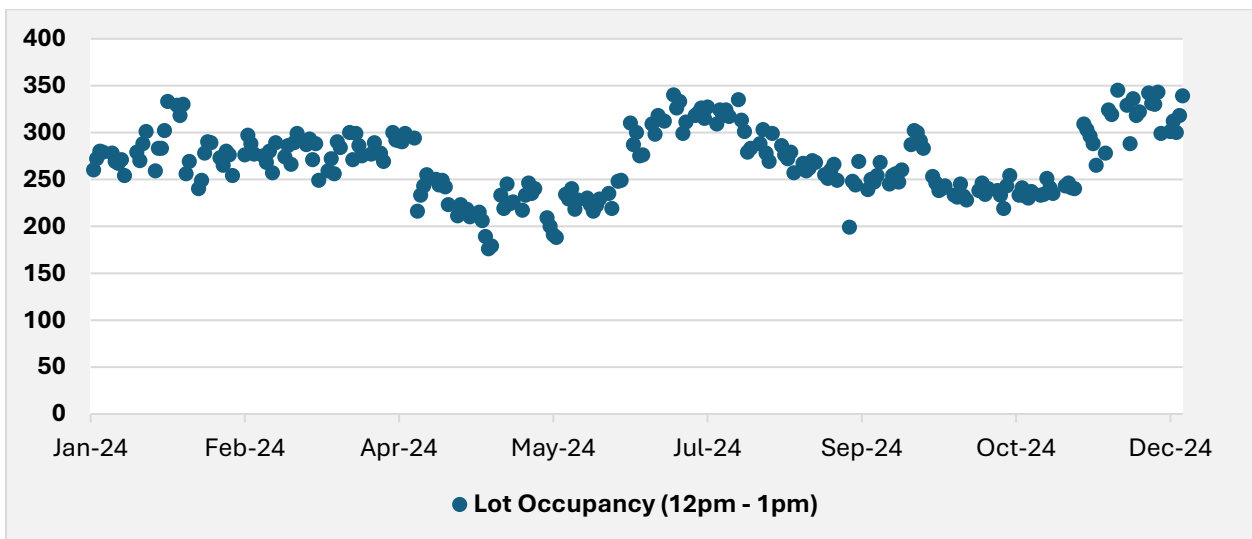


2.5. Parking

Brush Creek Park & Ride contains approximately 400 spaces. During special events, overflow lots to the north and south of the paved parking area are made available, which can increase the parking capacity by approximately 400 additional spaces, providing a total of over 800 spaces.

In 2024, the City of Aspen counted the lot in the mid-afternoon on 245 days of the 366 days of the year (67%). Among count days, the highest utilization was in the winter (Late November-February) and summer (July-August). Figure 5 shows the midday parking occupancy throughout 2024.

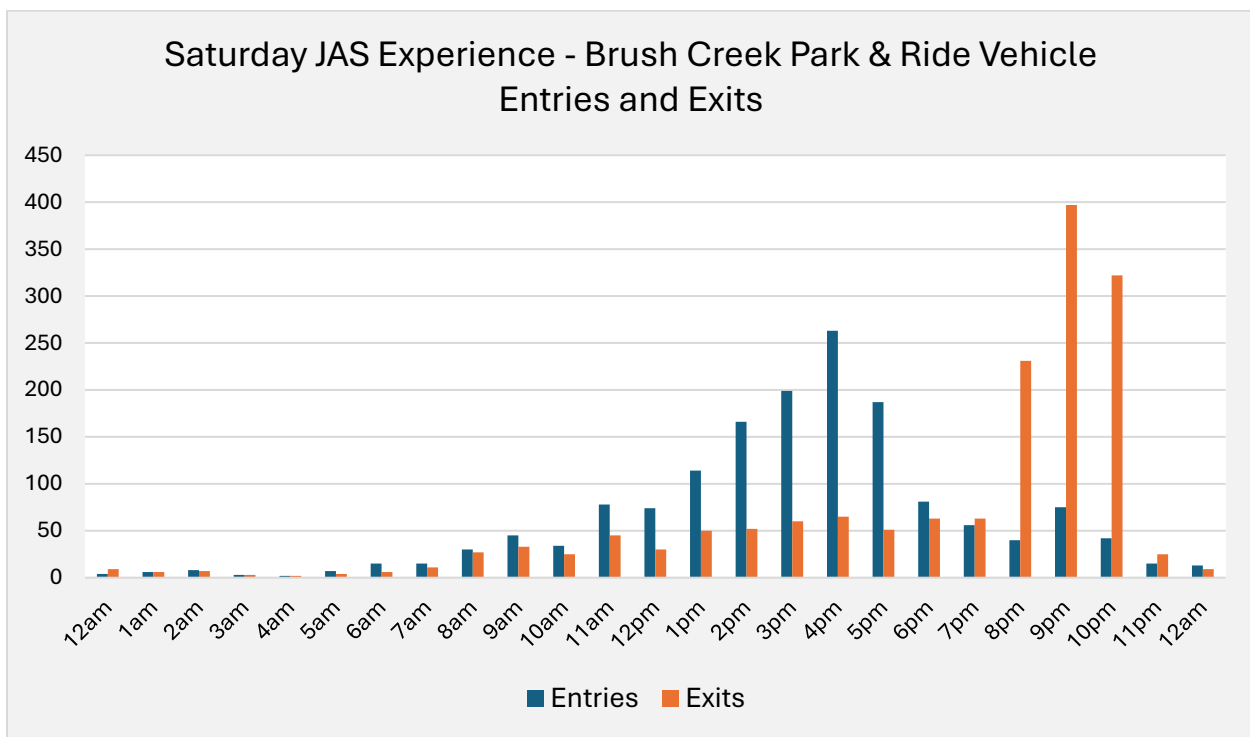
Figure 5: Brush Creek Park & Ride Parking Occupancy in 2024, Midday Counts



Additional parking utilization data was also collected by the consultant team throughout the day on one special event day (JAS Experience, Saturday, August 31, 2024) and one typical weekday. For the JAS Experience special event day, parking utilization reached up to 829 parked vehicles, taking advantage of the two overflow lot areas. The typical weekday reached as high as 145 parked vehicles at 1:00pm (Thursday, September 26, 2024).

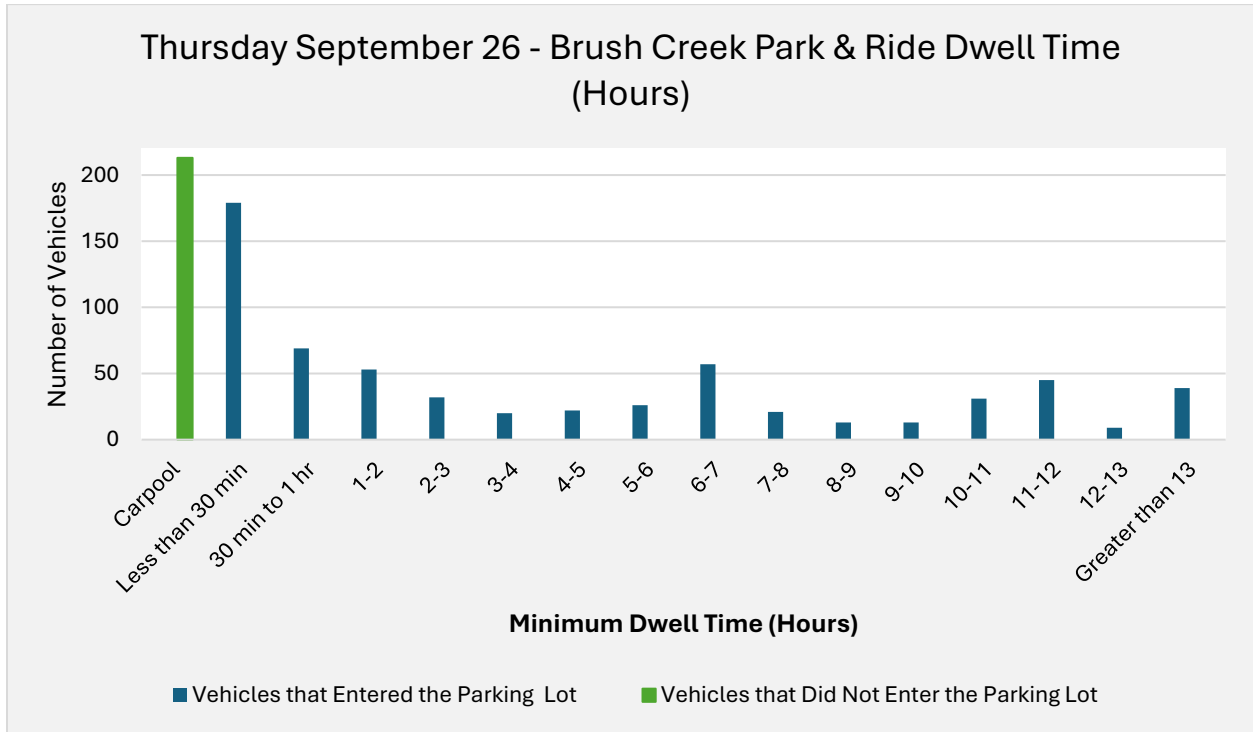
Due to the nature of the JAS Experience, the Brush Creek Park & Ride saw a steady increase in vehicle entries throughout the day, followed by a sharp line of departures after the conclusion of the concert. Figure 6 shows the JAS Experience vehicle entries and exits by time of day at the Brush Creek Park & Ride.

Figure 6: Saturday Aug 31 JAS Experience – Brush Creek Park & Ride Vehicle Entries and Exits



During the typical weekday, vehicle entries most frequently occurred between 6:00am and 9:00am. Most vehicles exited the park & ride between 3:00pm to 6:00pm. A significant number of entry trips in the morning can be attributed to the Aspen carpool program, with approximately 213 vehicles acquiring a carpool permit. On a typical day, most vehicles that did not acquire a carpool permit dwelled at the park & ride for a relatively short period of time, such as less than 1 hour. The significant number of short-term stays highlight the importance of short-term spaces or a loading-only zone. Figure 7 shows the dwell times on the typical weekday at Brush Creek Park & Ride. More information about parking utilization can be found in Appendix A.

Figure 7: Thursday Sep 26 – Brush Creek Park & Ride Dwell Time (Hours)



Please see Appendix A to view the full Existing Conditions Memorandum.

3. Community Engagement

The Brush Creek Park & Ride Improvements Survey was conducted online from April 7, 2025 to April 25, 2025. The survey was administered in both English and in Spanish. A total of 143 respondents completed the survey, with 119 responses in English, and 24 responses in Spanish.

The survey had four general sections:

- Park & ride usage
- Respondent origin/ destination information
- Respondent sentiment on several potential amenities and technologies
- An opportunity for respondents to provide additional comments.

The survey had 14 questions. The average time to complete the survey was just over 6 minutes. The survey was advertised in the Roaring Fork Valley through a variety of sources, including print, radio, digital, social media, direct emails, and newsletters. Advertisements focused on highlighting the survey availability for residents throughout Pitkin County, Glenwood Springs and Garfield County, and west to Rifle. A schedule of all advertisement methods is shown below in Figure 8.

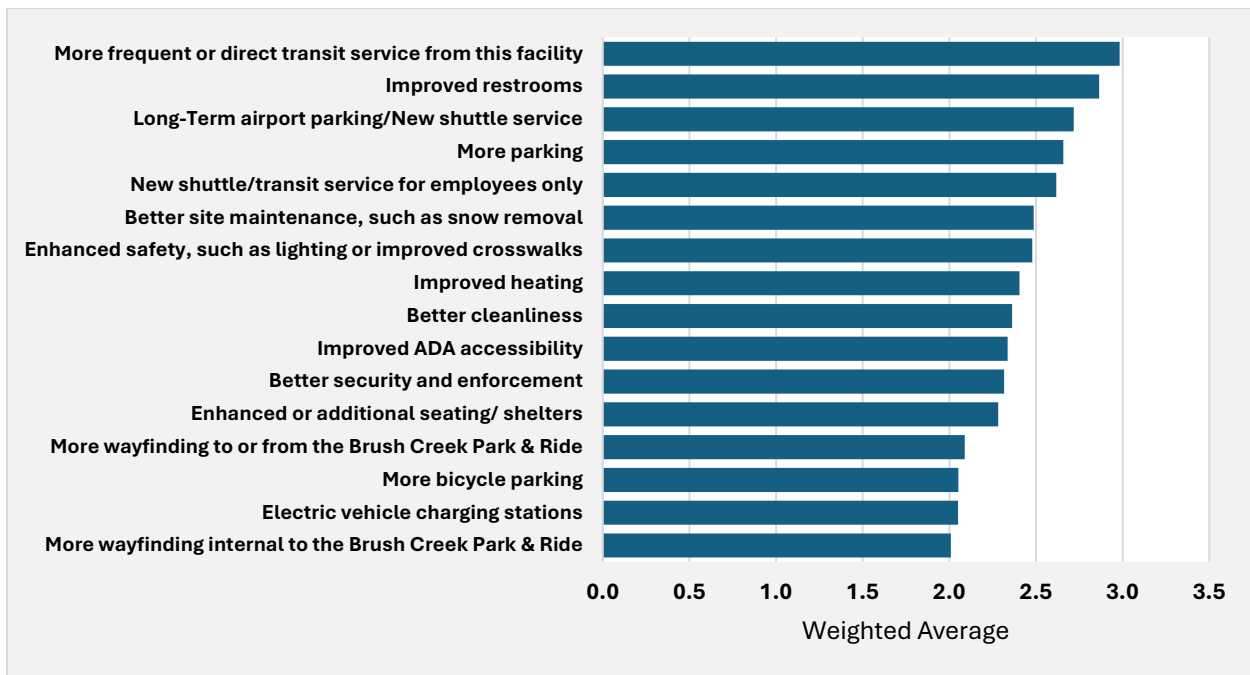
Figure 8: Survey Advertising Strategy

Advertisement	Medium	Published Dates	Language	Collateral Provided
Aspen Daily News	Print	April 12, 15, 20, 24, 25	English (EN) & Spanish (SP)	Quarter-page graphic
	Digital	April 11-25	EN & SP	Graphic
Glenwood Springs Post Independent	Print	April 11, 13, 18, 19, 22, 25	EN & SP	Graphic
La Tricolor	Radio	April 9-31	SP	60-second ad
The Sopris Sun	Print	April 16, 23	EN	Graphic
Sol Del Valle	Print	April 10, 17, 24	SP	Graphic
Aspen Daily News Weekly	Print	April 14, 21	EN & SP	Text
Redstone Facebook	Digital	Multiple	EN	Graphic
Pitkin County Facebook	Digital	Multiple	EN & SP	Graphic
Pitkin County Instagram	Digital	Multiple	EN & SP	Graphic
Instagram (Geotagged Ad)	Digital	Multiple	EN & SP	Graphic
Caucuses	-	Multiple	EN	Blurb
Employee Newsletter	-	April 8	EN	Blurb
Aspen Chamber Resort Association Newsletter	-	April 7	EN	Blurb
Pitkin County Public Service Announcement	-	Multiple	EN & SP	Press Release
Sandwich Board	Sign	Multiple	EN & SP	Sandwich board

3.1. Proposed Amenity Importance

Respondents were asked to rate a series of 16 potential park & ride amenities as most important to them. They could select an amenity’s importance on a four-point scale from not important (1) to very important (4). A weighted average was used to determine which amenities would be most important to respondents. Among all amenities, “More frequent or direct transit service”, “Improved restrooms”, and “Long-term airport parking/ New shuttle service to the airport”, would be the three most important amenities. Alternatively, amenities that scored the lowest included “More wayfinding internal to Brush Creek Park & Ride”, “Electric vehicle charging stations”, and “More bicycle parking”. Figure 9 shows the weighted average of each proposed amenity, with the higher scores being more important. 119 respondents answered this question.

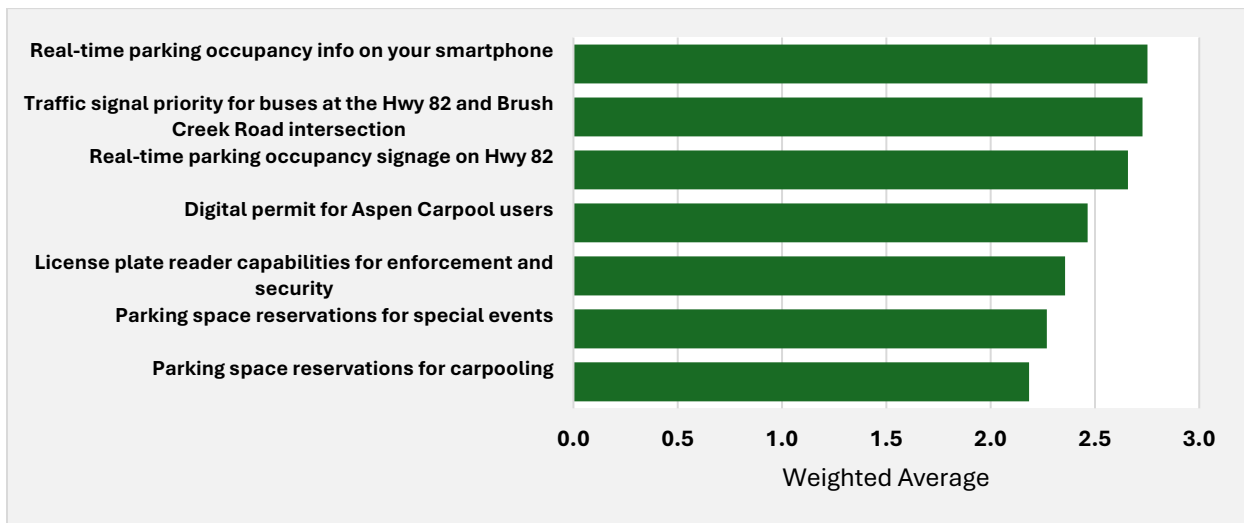
Figure 9: Proposed Amenity Importance to Survey Respondents



3.2. Proposed Technology Usefulness

Respondents were asked to rate seven potential park & ride technologies as most useful to them. They could select a technology’s usefulness on a four-point scale from not useful (1) to very useful (4). A weighted average was used to determine which technologies would be most useful to respondents. Among all technologies, “Real-time parking occupancy info on your smartphone” and “Traffic signal priority for buses at the Hwy 82 and Brush Creek Road intersection” would be the two most useful technologies. Alternatively, technologies that scored the lowest included “Parking space reservations for carpooling” and “Parking space reservations for special events”. Figure 10 shows the weighted average for each proposed technology, with the higher scores being more useful. 117 respondents answered this question.

Figure 10: Proposed Technology Usefulness to Survey Respondents



3.3. Open-Ended Responses

At the end of the survey, respondents had the opportunity to provide open-ended comments on Brush Creek Park & Ride. In total, 49 respondents provided feedback, with 42 responding in English and 7 in Spanish. The general sentiment of the comments are summarized below:

- **New Transit Service/ Frequency/ Overcrowding (33%):** The largest group of respondents requested new transit service or improved frequency, due to indirect connections or overcrowding. They called for the Highland Flyer’s return, and connectivity to trailheads.
- **Expansion of the Park & Ride into a Transit Hub (22%):** Many respondents called for new transit hub amenities at the site, including an enhanced drop-off zone, EV charging, real-time availability, expanded bus stops on the up valley side of Hwy 82, housing, a convenience store, and more parking.
- **Enhanced Public Safety and Security (18%):** Many respondents raised safety concerns about car camping and site maintenance, calling for improved enforcement and new lighting, surveillance cameras, and enhanced pedestrian accessibility.
- **New and Improved Restrooms (16%):** Respondents called for a new restroom facility complete with plumbing, a departure from the existing portable restrooms.
- **Positive Sentiment (14%):** Some respondents gave positive sentiment to the survey or the Brush Creek Park & Ride site or operations.
- **Improved Shelters (12%):** Some respondents would like to see improved shelters, complete with better enclosures, new heaters, and better route signage.
- **Other:** Less frequent comments included allowing more bikes on buses, allowing overnight/ airport parking, improving Hwy 82 bike access, keeping parking free, and reverting the facility name back to the Intercept Lot. See Appendix B for the full survey results summary.

4. Peer Review & Best Practices

The consultant team completed a peer review and best practices analysis to inform the development of strategies to improve management and operations at Brush Creek Park & Ride. The peer review sought to understand peer agency practices related to park & ride management. This peer review uncovered new ideas, methods, strategies and practices that could potentially be implemented at Brush Creek Park & Ride. The best practices analysis highlighted proven strategies and practices implemented by local, regional, and federal sources across the country that could be used to optimize park & ride operations and management practices.

4.1. Peer Review

Three agencies were interviewed as part of the peer review. Each peer location was selected because the park & ride lot's primary purpose is to serve ski traffic for visitors and employees. The three peer locations include:

1. Teton Village Association (TVA) - Stilson Park & Ride near Jackson, Wyoming
2. Steamboat Springs Transit - Stockbridge Transit Center in Steamboat Springs, Colorado
3. Utah Transit Authority (UTA) - Big Cottonwood Canyon Park & Ride in Cottonwood Heights, Utah

These peer facilities were chosen as they are similar to Brush Creek Park & Ride in several ways, including:

- All facilities primarily serve to intercept skiers, employees, commuters, and other visitors to reduce parking congestion at ski resorts and in the surrounding communities
- All facilities are situated along high-volume roadways or state highways
- All facilities are located between four miles to 20 miles away from the nearby communities and ski resort(s) they serve
- All facilities are free to park and do not have a gate or other entry restrictions

TVA, Steamboat Springs Transit, and UTA provided valuable insights into existing management, operations, and enforcement practices at their peer facilities. Key takeaways from the peer reviews include:

- Set clear goals for the intended purpose of the park & ride, and objectives to best address them
- Clearly define management roles, that may include a division of responsibilities during ski season and off-peak season
- Conduct daily parking counts, either manually or via technology, to accurately assess conditions and address needs quickly
- Consider an employee parking program such as a free employee shuttle service to maximize parking at ski areas

- Ensure effective daily enforcement of parking regulations
- Prohibit any overnight parking to address concerns related to camping and long-term stays
- Plan for projected park & ride demand at least a decade from now to avoid parking footprint constraints in the future
- Consider entering into contractual agreements between all stakeholders who benefit from the park & ride, including adjacent municipalities and ski resorts
- Consider hosting monthly meetings between all stakeholders to maintain coordination on transportation matters
- Consider installing cameras to monitor the park & ride remotely

These insights highlight that effective management of a park & ride lot requires clear goals, defined roles, and coordination among stakeholders, especially to address seasonal variations in use. Daily monitoring, consistent enforcement, and long-term planning help ensure the lot meets current and future demand while supporting efficient use through strategies like employee shuttles and remote surveillance. Contractual agreements and regular stakeholder meetings would further strengthen operational coordination and accountability.

4.2. Best Practices

The best practices summary highlighted management and operations, maintenance, and technology solutions that may be applicable at Brush Creek Park & Ride. For management and operations, the analysis reviewed strategies around seasonal pricing, carpool incentives, long-term parking permits, reservation systems, and planning for large-scale events. Maintenance strategies are varied depending on if they are managed in-house versus contracted out. Technology strategies focused on monitoring parking occupancy, using parking guidance systems, and installing surveillance technologies to improve safety.

Implementation of these best practices could lead to an efficient and effective management program. Best practices relevant to Brush Creek Park & Ride include:

- A managed long-term parking program, especially for airport users
- Implementation of a reservation system during large events and peak seasons
- Enhance enforcement to better address overnight stays and camping to improve public safety
- Effective special event plans
- Reconsider in-house vs. contracted maintenance services
- Performing Crime Prevention through Environmental Design (CPTED) assessments of the facility
- Installing parking technology solutions for occupancy monitoring, parking guidance, and safety

Please see Appendix C for the full Peer Review and Best Practices Memorandum.

5. Recommendations

A series of new recommendations are provided to improve operations, management, and enforcement at Brush Creek Park & Ride to promote transit service, optimize parking utilization, mitigate safety concerns, and streamline operations. Recommendations were developed from analysis of existing operational and management conditions, community feedback, conversations with stakeholders, the peer review analysis, and the best practices review. The recommendations include management & operations strategies and technology strategies.

5.1. Management & Operations Recommendations

Revise Site Management Leadership and Practices



Management of the park & ride in the existing condition is governed by several agencies, including the City of Aspen, Pitkin County, and RFTA, all managing separate sections of the site. This type of approach requires significant coordination between multiple agencies. Consolidating management responsibilities under a single agency can help streamline management and make the process more efficient. Should the EOTC be supportive of consolidating management responsibilities, Pitkin County would be best suited for this role given the location of the park & ride. The County public works operations center is just south of the park & ride site, allowing for more efficient observation and maintenance activities (should the County elect to maintain the facility in place of contracting out these responsibilities).

Under a revised management structure, the EOTC member agencies should work together to set clear goals for the intended purpose of the park & ride, ensure consistent enforcement and daily vehicle counts, and plan to accommodate future parking demand. Additional key management activities are discussed below.

Improve the Special Event Permitting Process



Updates to the existing permitting process for special events would improve efficiency and record-keeping. A new special event management permit would include an application with a site plan, event details, event infrastructure, operations, traffic control, and insurance/ liability coverage. The special event permit application would be made publicly available on the Pitkin County website. For annual events, a system could be put in place to allow for expedited applications in future years. The special event application would also be applicable for commercial operators that utilize Brush Creek Park & Ride for daily parking, including rafting companies that instruct their patrons to park in the lot for the day.

Address Overnight Parking and Public Safety Concerns



Currently, vehicle parking for longer than 24 hours is not allowed at Brush Creek Park & Ride. This regulation is difficult to enforce due to the need for consistent monitoring and tracking of vehicles, creating safety concerns as drivers can legally camp overnight. To address this issue, it is recommended to adopt a regulation that prohibits overnight parking, consistent with how the peer agencies interviewed for this project operate their park & ride facilities.

A “No Overnight Parking” regulation is much easier to enforce than a 24-hour limit. With no overnight parking, an enforcement officer can designate a vehicle in violation immediately, whereas a 24-hour limit is more difficult to track and enforce consistently.

Enforcement responsibilities should be transferred from the City of Aspen to the Pitkin County Sherriff’s Office or a contracted service managed by the County. This would require an update of the intergovernmental agreement. The Brush Creek Park & Ride is over 2.5 miles north of the City of Aspen’s jurisdiction, reducing the efficiency of using resources from the Aspen Parking Department. Enforcement through the County could be more efficient given the location of the park & ride and the County facilities.



It should be noted that this recommendation may displace campers to other parking lots or open space areas, rather than resolve the greater issue of illegal camping in the Roaring Fork Valley. Law enforcement agencies in the region should be aware of the impact of new enforcement practices at Brush Creek Park & Ride, which may result in camping elsewhere. To address displacement, an enforcement advisory group, consisting of Pitkin County staff, local law enforcement, human services and other stakeholders should be convened. The enforcement advisory group should meet regularly to guide the implementation of new regulations and help minimize and evaluate displacement.

The EOTC should seek input from other law enforcement agencies on ways to best address camping and limit displacement that may occur stemming from changes in enforcement at Brush Creek Park & Ride. The EOTC should consider first implementing a pilot program with the new regulations to closely monitor the effects of displacement in a trial setting. Before implementation, the EOTC should comprehensively broadcast the change in enforcement practices with a significant runway so that all stakeholders, including the public, are well informed before overnight enforcement goes into effect. After implementation, the EOTC may also consider a grace period with warnings before towing begins for vehicles parked overnight.

Implement Wayfinding Signage



Implement dedicated and prominent wayfinding signage to Brush Creek Park & Ride from all three access points: southbound (uphill) on Hwy 82, northbound (downhill) on Hwy 82, and eastbound (downhill) on Brush Creek Road. Signage may either be static or dynamic.

Dedicated static signage would help promote park & ride prominence and guide residents, visitors, and employees to the park & ride. Static signage should comply with CDOT D4-2 Park-Ride Sign Guidance (2023 Edition) for sign design, placement, and size.

Dynamic signage would be able to provide real-time information to drivers, and is often paired with occupancy monitoring technology. Dynamic signage would enhance the user experience by displaying up-to-date details on parking availability, traffic conditions, parking status, or any other relevant information. For the Brush Creek Park & Ride, dynamic message boards could play an important role on special event days, and if not implemented permanently, could be rented on a situational basis. Permanent or rentable dynamic signs would be placed along Hwy 82 as drivers travel to Brush Creek Park & Ride, such as near Basalt, to provide info on travel time and parking availability.



Revisit On-Site Infrastructure & Operations



Brush Creek Park & Ride is host to various uses beyond the traditional park & ride activity. Through parking utilization dwell time audits, it was determined that a number of visitors stay for 1 hour or less, indicative of a use not related to park & ride or transferring to use transit. The site is also home to the City of Aspen carpool permit kiosk and does host oversized vehicles/ RVs throughout the day as well as truckers overnight. The site is also known to store commercial vehicles overnight, such as for workers who park their company vehicle at Brush Creek before taking transit home for the day. There is also a small subset of one-time overnight parkers (such as for late-night bar patrons), and another subset for consistent overnight parkers (such as overnight workers). In addition, community feedback identified demand for an airport and/or employee shuttle service paired with long-term parking, which may be accommodated through a special overnight permit program.

These non-transit related uses should be studied in greater detail. Accommodating these uses, either with dedicated infrastructure, updated permitting, or otherwise, is beneficial to maximize use of the site. If accommodated, each non-transit use should be implemented with consistent monitoring and enforcement to ensure that these operations are not abused. Accommodating these uses would allow for better monitoring and evaluation of use levels.



Specific areas may be set up throughout the Brush Creek site with dedicated signage, markings, and entryways to clearly delineate separate parking areas for transit-related use, non-transit use, and permitted overnight parking.

Alternatively, the EOTC could elect to prohibit some or all these uses, focusing operations on serving commuter parking only. The EOTC should assess if these service and infrastructure improvements align with the facility's long-term goals.

It should be noted that the City of Aspen has expressed interest in digitizing their carpool permit program, removing the need for a kiosk at the Brush Creek Park & Ride. Because Brush Creek Park & Ride is fee-free, the EOTC may also elect to transition all overnight commercial parking, such as truck parking and the storage of commercial vehicles, to the Buttermilk Lot for a fee. The Buttermilk Lot does however feature significant changes in utilization through the seasons, which may make commercial storage a challenge during peak winter months.

Enhance Access to Transit Services



The engagement survey completed as part of the study effort highlights public interest in services and amenities that would enhance access to transit routes serving the park & ride. On-site improvements including enhanced pick-up and drop-off areas, real-time bus location information, bus access, circulation enhancements, and improved restrooms could encourage increased use of transit services and more use of the park & ride. Other transit-related improvements suggested by the public, including increased frequency for transit services and new routes, are beyond the purview of this study, but the park & ride would play an important role in facilitating access to improved transit services.

5.2. Technology

Technological solutions can significantly enhance efficiency, convenience, monitoring, and overall user experience at a park & ride. Technology options for the Brush Creek Park & Ride include real-time parking occupancy/ duration, off-site surveillance, and mobile application integration for real-time availability data and/or automated overnight parking permits.

There are three packages of technology improvement presented below that the EOTC could evaluate for implementation to improve operations, monitoring, and enforcement at the site.

Package 1: Baseline Monitoring and Surveillance



Package 1 would be used to deter unauthorized or overnight parking through visible surveillance. IP-based network cameras and clear signage would be used to create a psychological barrier that discourages overnight stays and other unwanted behavior. The infrastructure installed for this package includes power and mounting poles. The recorded footage can support remote staff in responding to visitor complaints or resolving past incidents. If applicable, installation of power and mounting poles can lay the groundwork for future upgrades such as automated license plate reader (ALPR) technology.

Package 1: What's Included?



IP-Based Surveillance Cameras



Video Management System (VMS)



Enforcement and Surveillance Signage

IP-Based Surveillance Cameras: Multi-sensor network cameras with minimum 8MP (4x2 MP), 360° night vision, and weatherproof housing (IP66 or higher). Installed at existing light poles to provide coverage of the lot and remote monitoring.

Video Management System (VMS): On-site recording and remote access for personnel.

Enforcement and Surveillance Signage: “Lot Under Video Surveillance” and clearly posted parking time limits indicating no overnight parking.

Package 1: Operational Needs

- **Staff for Monitoring and Incident Response:** Personnel are required to periodically review recorded footage. This can be done through spot checks such as during high-use periods or overnight, or on demand when there are visitor complaints or reports of overnight parking. Since there are no automated alerts, staff involvement would be necessary for identifying any issues or safety concerns.
- **Maintenance and System Management:** Regular inspection of cameras, wiring, power sources, and VMS is beneficial to maintain the useful life of the system. This includes periodically cleaning lenses, checking for vandalism or damage, and ensuring the system records and stores video properly.
- **Data Storage Oversight:** Depending on the system configuration, managing local or cloud-based storage for footage is necessary. Video footage can be retained for a set period, such as 30 to 60 days, so clear data retention policies should be established.
- **Signage Updates and Compliance:** Staff should ensure that postage signage remains visible, accurate, and compliant with local privacy or surveillance laws. Signage should clearly reinforce that overnight towing is in effect and that video monitoring is in place.
- **Vendor Coordination:** If cameras or VMS are provided through a third party, ongoing coordination may be needed for software updates and technical support.

Package 1: Associated Costs

- **Hardware Costs:** IP-based multi-sensor network cameras, mounting equipment, Power over Ethernet (PoE) switches or injectors, and necessary network infrastructure.
- **VMS:** On-site network video recorder (NVR) or secure storage drives, one-time or annual licensing fees depending on the VMS provider, and configuration for remote access and user permissions.
- **Installation fees:** Labor for mounting cameras, running wiring, setting up VMS systems
- **Signage:** Design production, and installation of surveillance notices and posted parking rules
- **Ongoing Operations and Maintenance:** Staff time for periodic review or responding to complaints, repairs and upkeep replacing cameras, maintaining visibility such as snow clearing or obstructions, and updating VMS software.

Package 1 Estimated Costs

The following costs include estimated pricing for IP-based surveillance cameras, software subscriptions, customer service, deployment costs, and additional expenses. The costs presented in this document are preliminary estimates with assumptions provided for planning purposes only. Actual costs may vary based on final design, site conditions, vendor pricing, and scope adjustments. Pricing may be subject to change without notice.

Package 1 Estimated Costs

Annual Recurring Costs	Unit	Low Range	High Range
Software	1	\$2,800	\$3,500
Customer Service	1	\$5,000	\$6,500
Incident Response Management/ Evaluation	TBD	Pitkin County Staff Time	
Total	-	\$7,800	\$10,000

Installation Costs	Unit	Low Range	High Range
Electrical	1	\$45,000	\$65,000
Deployment	1	\$15,000	\$20,000
IP-based Surveillance Cameras	6	\$12,000	\$16,000
Enforcement Signage	4	\$400	\$1,000
Total	-	\$72,400	\$102,000

Grand Total	Low Range	High Range
Total (First Year)	\$80,200	\$112,000

Package 1: Benefits and Limitations

BENEFITS	LIMITATIONS
<ul style="list-style-type: none">• Low upfront cost and easy installation: easy to implement with minimal disruption to lot operations.• Supports enforcement and public safety monitoring: Helps staff respond to complaints and observe patterns of misuse.• Visual deterrent to unauthorized use: signage and cameras discourage long-term or overnight parking.• Provides groundwork for future system expansion: Infrastructure like poles can be reused for future ALPR or smart sensor upgrades.	<ul style="list-style-type: none">• No automated enforcement: system does not track overstays or trigger alerts without manual review.• Does not track vehicle identity, just presence/activity: cannot link vehicles to registered owners or issue citations based on footage alone.• Requires staff time for monitoring and response: effectiveness depends on available personnel to review footage.• Limited real-time operational data: not integrated with parking management systems for live occupancy updates or analytics.

Package 2: Smart Parking Technology



Package 2 is designed for active parking management, integrating smart technologies to monitor, guide, and enforce short-term parking rules without the need for on-site staff or additional staff capacity for monitoring. This package combines AI-powered Automated License Plate Recognition (AI-ALPR) which provides real-time license plate recognition with improved accuracy for various lighting and weather conditions (which traditional license plate readers have difficulties with), supplemental IP-based surveillance cameras for enhanced security, and real-time communication tools like Dynamic Message Signs (DMS) which improves the visitor experience through accurate real-time availability information.

Package 2: What's Included?



AI-ALPR Cameras



Smart Parking Management Service



IP-Based Surveillance Cameras (Supplemental)



Enforcement and Surveillance Signage (supplemental)



Dynamic Message Signs (optional)

AI-ALPR Cameras: Installed at access points to log license plates, track dwell time and occupancy, and identify overnight parking.

Smart Parking Management Service: A cloud-based or on-premises system that manages and stores license plate and parking activity data. The platform could include features such as secure data storage, user access controls, and customizable reporting dashboards. Many services also offer the ability to connect with enforcement staff or vehicles via cellular networks, allowing for real-time updates on parking violations. Additional features may include automated alerts for overstays, data export tools for planning and analysis, and integration with citation systems or mobile enforcement applications.

IP-Based Surveillance Cameras: Multi-sensor network cameras with minimum 8MP (4x2 MP), 360° night vision, and weatherproof housing (IP66 or higher). Installed at existing light poles to provide coverage of the lot and remote monitoring. Surveillance cameras offer a general overview for security and dispute resolution.

Enforcement Signage: Clearly posted signage in the lot informing visitors that their license plates are being recorded paired with overnight parking enforcement information.

Dynamic Message Signs (DMS): Dynamic Message Signs (DMS) can be integrated with an AI ALPR system to provide real-time updates on parking availability. Installed along Highway 82, these signs would inform drivers with key information such as “20 spots available”, “Free parking”, “Transit Lot”, or “Parking Lot Closed/Full Ahead”. The AI-ALPR system tracks vehicle movements and sends occupancy data to a centralized control system, which then updates the DMS accordingly, allowing for accurate and up-to-date parking status information.

Package 2: Operational Needs

Data Management and System Oversight: The use of AI-ALPR technology requires establishment of clear policies regarding data retention standards (e.g., retaining footage for no more than 60 days) to support data security, reduce storage costs, and build community trust. Routine audits of ALPR system accounts (annually, or at defined intervals) are recommended to ensure compliance with privacy policies, transparency, and responsible data handling.

Enforcement Coordination: Staff are responsible for reviewing vehicles flagged by the ALPR system for exceeding time limits or violating posted rules. While AI-enabled platforms can automate much of this process, human oversight is often recommended to validate these alerts. The appropriate enforcement personnel are required to issue citations based on confirmed violations.

Operational Maintenance: If a Platform-as-a-Service (PaaS) model such as this is selected, many operational functions can be handled by the vendor. These may include system installation and integration, software platform management, uptime monitoring, secure data storage, hardware maintenance, and user support. The level of vendor involvement depends on the selected provider and service package and should be clearly defined in any service-level agreement.

Package 2: Associated Costs

- **AI-ALPR:**¹
 - **Hardware expenses:** Includes cameras, lenses, mounting equipment, and processing units required for accurate plate recognition.

¹Security Camera King. (n.d.). *LPR camera cost*. Security Camera King. [https://www.securitycameraking.com/securitynews/lpr-camera-cost/#:~:text=License%20Plate%20Recognition%20\(LPR\)%20technology,surveillance%20needs%20and%20financial%20plans.](https://www.securitycameraking.com/securitynews/lpr-camera-cost/#:~:text=License%20Plate%20Recognition%20(LPR)%20technology,surveillance%20needs%20and%20financial%20plans.)

- **Software licensing:** Covers the cost of ALPR software, including initial licensing, periodic updates, and integration with existing security or parking management systems.
- **Installation fees:** Professional setup costs, including mounting hardware, configuring software, and calibrating cameras for optimal performance.
- **Maintenance costs:** Ongoing expenses for regular servicing, repairs, technical support, and software troubleshooting to ensure system reliability.
- **Data Storage:** The cost of storing video footage and license plate data, either on local servers or cloud-based platforms. Many systems offer cloud storage as part of a subscription service.
- **Subscription fees:** Recurring costs that may cover access to cloud storage, software updates, network connectivity, and additional services such as solar power integration or access to a shared database of plate reads.
- **IP-Based Surveillance Cameras**
 - **Hardware Costs:** IP-based multi-sensor network cameras, mounting equipment, Power over Ethernet (PoE) switches or injectors, and necessary network infrastructure.
 - **VMS:** On-site network video recorder (NVR) or secure storage drives, one-time or annual licensing fees depending on the VMS provider, and configuration for remote access and user permissions.
 - **Installation fees:** Labor for mounting cameras, running wiring, setting up VMS systems
 - **Ongoing Operations and Maintenance:** Staff time for periodic review or responding to complaints, repairs and upkeep replacing cameras, maintaining visibility such as snow clearing or obstructions, and updating VMS software.
- **Signage:** installation and development of signage indicating AI-ALPR and surveillance recording in progress.
- **Advanced Guidance Systems with Dynamic Message Signs (DMS):** involves several types of costs including equipment and installation (signs, poles, foundations), communications infrastructure, and system integration with AI-ALPR for real-time data updates. Ongoing operational costs may include routine maintenance, software licensing, or platform access fees, and data and communication plans. Depending on the vendor, some of these services may be bundled as part of a PaaS agreement.

Package 2 Estimated Costs

The following costs include estimated pricing for AI-ALPR Equipment, software subscriptions, customer service, deployment costs, supplemental IP-based surveillance cameras and additional expenses. The costs presented in this document are preliminary estimates with assumptions provided for planning purposes only. Actual costs may vary based on final design, site conditions, vendor pricing, and scope adjustments. Pricing may be subject to change without notice.

Annual Recurring Costs	Unit	Low Range	High Range
Software	1	\$5,000	\$8,500
Customer Service	1	\$5,000	\$6,500
Incident Response Management/ Evaluation	TBD	Pitkin County Staff Time	
Total	-	\$10,000	\$15,000

Installation Costs	Unit	Low Range	High Range
Electrical	1	\$65,000	\$80,000
Deployment	1	\$20,000	\$25,000
AI-Automated License Plate Readers	3	\$14,000	\$16,000
Total	-	\$99,000	\$121,000

Supplemental Costs	Unit	Low Range	High Range
IP-based Surveillance Cameras	6	\$12,000	\$16,000
Enforcement Signage	4	\$400	\$1,000
Digital Message Boards	2	\$30,000	\$70,000
Total	-	\$42,400	\$87,000

Grand Total	Low Range	High Range
Total (First Year)	\$109,000	\$136,000
Total, including Supplemental (First Year)	\$151,400	\$223,000

Package 2: Benefits and Limitations

BENEFITS	LIMITATIONS
<ul style="list-style-type: none">• Automated enforcement support: identifies overstays without manual observation, reducing staffing burden and streamlining enforcement.• Real-time data and guidance: provides up-to-date parking availability, improving user experience• Scalable: can be integrated with citation platforms and mobile enforcement tools.• Planning and analytics: dashboards and export tools can provide insight into usage patterns for future operations and facility changes• Improved visitor communication: dynamic signs improve wayfinding and encourage the use of the intercept lot.• Improved accountability and transparency: help validate complaints and demonstrating time-limit enforcement	<ul style="list-style-type: none">• Higher upfront and ongoing costs: compared to surveillance-only options, this package involves more expensive hardware, integration, and platform licensing.• Privacy and policy considerations: Requires clear policies on data retention, access, and use to address privacy concerns/complying with legal or community standards.• Enforcement still requires human oversight: while automated alerts assist staff, citations or enforcement actions still require personnel to validate and follow-up.

6. Implementation and Next Steps

1. Revise the intergovernmental agreement

In addition to purchasing the 27-acre lot that houses the Brush Creek Park & Ride from CDOT, the EOTC should review and update the existing intergovernmental agreement (IGA) to reflect current priorities, roles, and responsibilities of each party involved. This revision should address any outdated provisions and ensure alignment with the EOTC's long-term transportation objectives, while collaborating with the stakeholders in the Upper Roaring Fork Valley.

2. Host a visioning workshop on short and long-term goals for the park & ride

The EOTC should organize a visioning session with key stakeholders, including local government representatives, RFTA, ski resort representatives, and other relevant organizations, to define a shared vision for the park & ride. This workshop would focus on identifying immediate needs, long-term aspirations, and guiding principles for development, operations, and user experience.

3. Set up a recurring park & ride stakeholder meeting to advance goals

Establish a recurring meeting schedule (e.g., quarterly, half-yearly) for a designated stakeholder group to review and coordinate ongoing efforts related to the park & ride. These meetings will provide a platform to track progress, address challenges, advance implementation plans, and maintain accountability across all partners. An enforcement advisory group may need to convene separately and more frequently than the stakeholder group depending on the effects of camping displacement stemming from new overnight parking regulations.

4. Identify and pursue funding for strategy implementation

Develop a prioritized list of funding opportunities at the local, state, and federal levels—including grants, public-private partnerships, and regional transportation funds. Match these opportunities with specific strategies and technology enhancements that align with the EOTC's goals.

5. Implement recommended strategies and/or technology packages

Execute selected projects and enhancements based on stakeholder consensus, funding availability, and technical feasibility. Implementation of projects should follow the established guiding principles and direction from the recurring stakeholder committee to ensure that the strategies are in the best interest of the community's mobility and access needs.

6. Monitor and evaluate the effectiveness of each implemented strategy

Develop and apply metrics and evaluation methods to assess the performance of implemented strategies and technologies. Key indicators might include user satisfaction, ridership levels, environmental impact, cost-effectiveness, and operational efficiency. The evaluation results would inform future decision-making and allow for continuous improvement of the park & ride.

Appendix A: Existing Conditions Memo



Brush Creek Park & Ride Monitoring and Management Plan

Task 2: Existing Conditions and Baseline Data Technical Memorandum

DRAFT

December 2024

Prepared By:



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Introduction

The Elected Officials Transportation Committee (EOTC) of Pitkin County has initiated this project to identify strategies to enhance the operation and effectiveness of the Brush Creek Park & Ride facility. The park & ride is a critical component of the Roaring Fork Valley’s multimodal transportation network and it is intended to promote and encourage travelers and commuters to transfer from personal vehicles to transit, shuttles, carpools, and active transportation modes. The park & ride, situated at the intersection of Brush Creek Road and Colorado State Highway 82 (Highway 82), is intended to help reduce traffic congestion on routes into and out of the City of Aspen and the Town of Snowmass Village and to help alleviate parking demand at key destinations in both communities.

The Brush Creek Park & Ride faces operational and management challenges. The EOTC has identified the need for a comprehensive Brush Creek Park & Ride Monitoring and Management Plan to evaluate current practices and recommend strategies for improvement. This initiative will focus on optimizing site operations, enhancing access, and promoting a shift towards more sustainable transportation options, aligning with the goals outlined in recent regional planning documents.

This memo analyzes baseline data and existing conditions within the project study area related to mobility and parking infrastructure. This memo also documents previous planning efforts, existing transit ridership, and existing parking utilization. The memo is intended to serve as the foundation for the development of alternatives to improve management, operations, monitoring, enforcement and maintenance at the Brush Creek Park & Ride.

Study Area

The Brush Creek Park & Ride is located in the heart of Pitkin County and the Roaring Fork Valley and is a central hub within the Roaring Fork Transportation Authority (RFTA) transit service area. The park & ride is situated on the eastern side of the intersection of Brush Creek Road and Highway 82 and is accessible from the existing signalized intersection of these two roadways.

The property surrounding the park & ride is generally underdeveloped, with the Roaring Fork River to the east and south, Brush Creek to the west, and vacant parcels to the north. Despite minimal development in the immediate area, the location is ideal for a park & ride, as the facility can serve both commuters and visitors traveling to and from the valley’s major activity centers.

The Brush Creek Park & Ride currently helps serve transit riders and carpools heading to the:

- City of Aspen to the south via Highway 82
- Town of Snowmass Village to the west, via Brush Creek Road
- Lower Roaring Fork Valley communities to the north including Carbondale and Glenwood Springs, via Highway 82

Figure 1 shows the project location.

Figure 1: Brush Creek Park & Ride Reference Area



Figure 1: Brush Creek Park & Ride Reference Area
Brush Creek Park & Ride Management Plan



Purpose

The Brush Creek Park & Ride is strategically located to facilitate transfers between personal vehicles and various modes of public transportation, including transit, shuttles, and carpools for people traveling to and from Aspen, Snowmass Village, and surrounding areas. The park & ride fills an important role in reducing traffic congestion and improving accessibility to key destinations in Aspen and Snowmass Village.

The geography of the Upper Roaring Fork Valley, with its steep elevation changes and often inclement weather, significantly impacts mobility and access as there are very few roadway connections and routes for traffic to take when accessing Aspen and Snowmass Village. Additionally, ongoing growth and development in the Upper Roaring Fork Valley creates additional traffic and parking demand in an already geographically constrained area. The Brush Creek Park & Ride plays a pivotal role in helping to address these challenges and support regional connectivity.

Facilities

The Brush Creek Park & Ride is designed to accommodate a variety of transportation needs and features the following amenities:

- **Bus Transfer Area:** The facility includes designated bus stops located near the main entrance near Highway 82. These bus stops are designed for easy transfers between personal vehicles and public transit services and between individual bus transit lines. Buses can enter and exit the facility from the eastern leg of the Brush Creek Road and Highway 82 intersection. Northbound buses can also exit the facility directly on Highway 82, bypassing the intersection. The park & ride features dedicated bus drive aisles separated from private vehicle traffic.
- **Bus Platform:** The bus platform is approximately 280 feet long and 30 feet wide. The platform can be accessed via two pedestrian walkways across the eastern bus drive aisle. Visitors board and alight on either side of the bus platform. The platform features a partially enclosed shelter, a bicycle parking shelter, public art displays, newspaper kiosks, and a public restroom facility on the north side of the platform.
- **Parking Area:** The facility offers approximately 400 paved parking spaces. Accessible parking stalls are marked closest to the bus platform. Park & ride users must enter and exit from the Brush Creek Road intersection with Highway 82. Parking spaces and drive aisles are designed to accommodate larger vehicles, such as trucks and RVs. The parking area is complete with landscaping and lighting throughout.
- **Overflow Areas:** The northern and southern portions of the Brush Creek Park & Ride features unpaved overflow lots to accommodate additional parking demand during special events.
- **Bicycle Trails:** The Aspen Mass Trail connects to the Brush Creek Park & Ride from the northern side of the facility. The bike trail continues between the bus drive aisles and the parking lot. The bike trail continues south of the facility via an underpass below Highway 82, then follows Brush Creek westbound to Snowmass Town Park.

Figure 2: Brush Creek Park & Ride Facilities



Figure 2: Brush Creek Park & Ride Facilities
Brush Creek Park & Ride Management Plan



Operations and Monitoring

The Brush Creek Park & Ride is located on 27 acres of public land owned by the Colorado Department of Transportation (CDOT). The land is leased through an intergovernmental agreement with the City of Aspen, the EOTC, and the regional transit provider, RFTA.

Enforcement

The City of Aspen conducts enforcement of the lot at least every night during the week, but not on weekends. The enforcement period is approximately under 30 minutes at night. Enforcement only sometimes occurs in the morning depending on staff availability. When it does occur, morning enforcement typically varies between an hour and an hour and a half. Enforcement does not occur on weekends. Staffing challenges post-COVID have affected the City's ability to maintain consistent enforcement.

City of Aspen enforcement officers monitor the lot to ensure that no vehicles park longer than 24 hours at a time (overnight parking is allowed.) Enforcement officers issue a soft warning via a flyer in the windshield if a vehicle is noted to be parked for at least 24 hours. If the vehicle is still present after an additional 24 hours, the vehicle receives a citation. After an additional 24-hour period, the vehicle is green-tagged for tow to impound. The City of Aspen enforces the lot in collaboration with the Pitkin County Sheriff's Office who visit the site several times a day.

Maintenance

The City of Aspen contracts maintenance activities. One company is responsible for trash pickup on a weekly basis, and another for snow removal as needed during winter months. Noxious weed management occurs once a year. The City may call for one or two extra clean-ups after a special event. In general, the site is low maintenance.

Carpool Permits

The City of Aspen provides carpool permits from the Brush Creek Park & Ride to promote carpooling in the City of Aspen. The permit allows free parking in residential areas in the City of Aspen for longer than the 2-hour limit, that would also otherwise be an \$8 parking fee. The permits are issued manually from a kiosk near the east end of the lot. In 2024, the City of Aspen issued on average 179 permits per day from the kiosk, with the most permits issued on July 3rd (248). The highest rates of issuance were in January and July, seeing over 200 permits a day. The least permits issued in a day (120) was recorded on Wednesday, April 24, 2024. This is a decrease from pre-COVID rates of 300 to 400 daily permits. Staff at the kiosk are generally familiar with individuals who try to abuse the carpool permit system and make note of license plates that cannot receive a permit in the future. The City of Aspen is interested in digitizing the carpool permit issuance process to improve efficiency and daily tracking.

Special Events

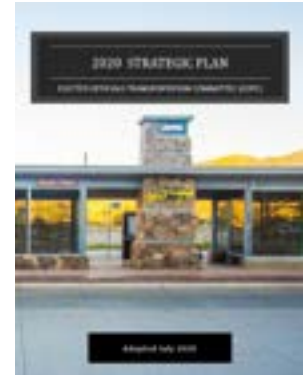
For special events, the City of Aspen requires a site plan, staffing plan, and traffic plan from organizers seeking to obtain a special use permit. The site and staffing plans typically details truck and trailer staging, shuttle plans, lighting, additional restroom facilities, security, maintenance, and cleanup. Permit holders must provide a damage deposit of \$5,000, required to cover any potential damage during the event. No other additional fees are applied, as the lot is public and fee free. The two major recurring events that utilize the lot are X Games and JAS-Experience. There are occasional one-time events that also require a special use permit, such as the Colorado 500. There are no agreements or restrictions for businesses or agencies, such as a rafting company, to utilize parking at Brush Creek Park & Ride for their operations, as long as vehicles are parked for no more than 24 hours.

Relevant Planning Documents

Relevant previous planning documents in the study area are summarized below.

EOTC 2020 Strategic Plan

The EOTC 2020 Strategic Plan adopted the Comprehensive Valley Transportation Plan (CVTP) to establish a framework for a mass transportation strategy in the Roaring Fork Valley. The framework guides EOTC’s decision-making, work planning, and budgeting processes. The Strategic Plan set a mission, vision, guiding principles, and key strategies to ensure a convenient, equitable, and efficient transportation system.



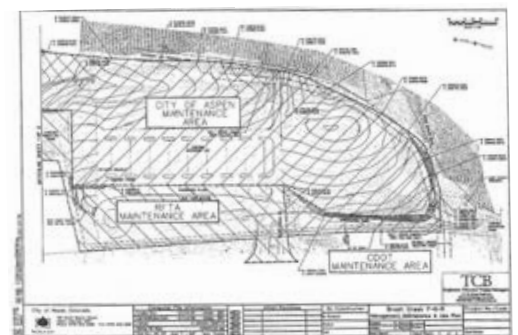
Comprehensive Valley Transportation Plan (2020)

The Comprehensive Transportation Plan (CVTP), adopted in 2020, identified mass transportation strategies by the EOTC. The CVTP identified park & ride lot improvements, congestion reduction measures, and technologies and innovation to encourage mode shift as regional priorities. Additional bike and pedestrian connections to the Brush Creek Park & Ride were identified as an Upper Valley-specific priority.



Brush Creek Park-N-Ride Management, Maintenance and Use Plan (2005)

This intergovernmental agreement between the City of Aspen, the Town of Snowmass Village, and the EOTC defines the management and maintenance of the Brush Creek Park & Ride. The agreement generally designates RFTA to maintain the bus bay section of the park and ride, the City of Aspen to maintain the parking lot facility, and CDOT to maintain the southernmost unpaved portion of the parcel. The use plan also designated City of Aspen to manage, repair, and provide enforcement at the park & ride lot. Maintenance includes snow removal, lot sweeping/flushing, trash removal, and maintaining a state of good repair in the parking lot. RFTA is responsible for restroom cleaning.



Local Transit Ridership


The Roaring Fork Valley has a well-established transit system with significant ridership to and from Aspen and Snowmass Village. The Brush Creek Park & Ride plays a pivotal role within this network and is served by several existing transit routes operated by the Roaring Fork Transportation Authority (RFTA). RFTA does contract the Snowmass Village Shuttle to operate one route at the Brush Creek Park & Ride in the spring and fall seasons. RFTA and the Snowmass Village Shuttle provide essential transit connections linking Aspen, Snowmass Village, and several other communities in the Roaring Fork Valley.

Roaring Fork Transportation Authority



RFTA operates six routes at the Brush Creek Park & Ride, one of which is the VelociRFTA Bus Rapid Transit (BRT) Service. Other routes are Local Valley, Snowmass/Aspen, Snowmass Intercept, Snowmass/Ski, and Woody Creek. The Snowmass/Valley route utilizes the Highway 82 and Brush Creek Road intersection, but does not make a stop at the Brush Creek Park & Ride. Many other RFTA routes extend transportation services from the City of Glenwood Springs to the City of Aspen, providing regional transit service throughout the Roaring Fork Valley.

The RFTA names and descriptions for each line serving the Brush Creek Park & Ride are listed below:

- **VelociRFTA (BRT):** The VelociRFTA BRT is the first rural bus rapid transit system in the nation. Travel between Aspen and Glenwood Springs takes approximately one hour. VelociRFTA operates daily from 5:36am to 9:36pm up valley, and from 5:58am to 10:33pm down valley. Headways during peak times are every 10 minutes. Headways during off-peak times are no less frequent than every 30 minutes. VelociRFTA provides limited daily service north of the 27th Street Station in Glenwood Springs to the West Glenwood Park & Ride.
- 
- **Local Valley (L):** This daily route is a Hwy 82 Corridor Regional service, traveling between Glenwood Springs and Aspen. The Local Valley service parallels the VelociRFTA service with more closely spaced stops. The Local Valley line operates up valley at the Brush Creek Park and Ride from 5:30am to 1:30am, and down valley from 6:30am to 2:30am. The line operates on 30-minute headways and stops at the park & ride at the top of every hour and half hour.
 - **Snowmass/Aspen (SMA):** This daily route operates between Snowmass Village, the Brush Creek Park & Ride, and the City of Aspen. This route is mainly operated during the winter, with limited access during the summer. Bus transfers are required at the park & ride for down valley and Aspen bound routes. Bus service in both directions operates from 6:30am to 2:30am at Brush Creek Park & Ride with 15-minute headways at peak times, and 30-minute headways during off-peak times.
 - **Snowmass Intercept (SMI):** This is a year-round route that travels between the Brush Creek Park & Ride and the Snowmass Mall. The Intercept Lot was the previous name of the Brush Creek Park & Ride. This route is contracted out to the Snowmass Village Shuttle in the spring and fall off-peak periods.
 - **Snowmass/Ski (SMS):** This is a winter season only route that operates between Aspen Highlands, the Brush Creek Park & Ride, and the Snowmass Mall.

- Woody Creek (WC):** This seasonal daily route operates from the Phillips neighborhood, and proceeds through Lower River Road, ultimately connecting to the Brush Creek Park & Ride. Service at the Brush Creek Park & Ride begins at approximately 6:30am to 12:30pm, excluding the midday from after 9:30am to before 5:30pm. Buses operate with one-hour headways.

Snowmass Village Shuttle



The Snowmass Village Shuttle is a local transit service that operates generally within the Town of Snowmass Village and is operated by the town. The shuttle has seven fixed routes and an on-demand service. These routes do not provide service to the Brush Creek Park & Ride.

However, the town is contracted with RFTA to provide Snowmass Intercept (SMI) service during off-peak seasons in the spring and fall between the Brush Creek Park & Ride and the Snowmass Mall. This contracted service is performed with Village Shuttle branded vehicles and is listed as either the Brush Creek-Snowmass Intercept (BC-SMI) route or Snowmass Intercept-Brush Creek (SMI-BC) route, depending on route direction. Figure 3 depicts transit routing for RFTA and Village Shuttle Routes that connect at Brush Creek Park & Ride.

Figure 3: Transit at Brush Creek Park & Ride

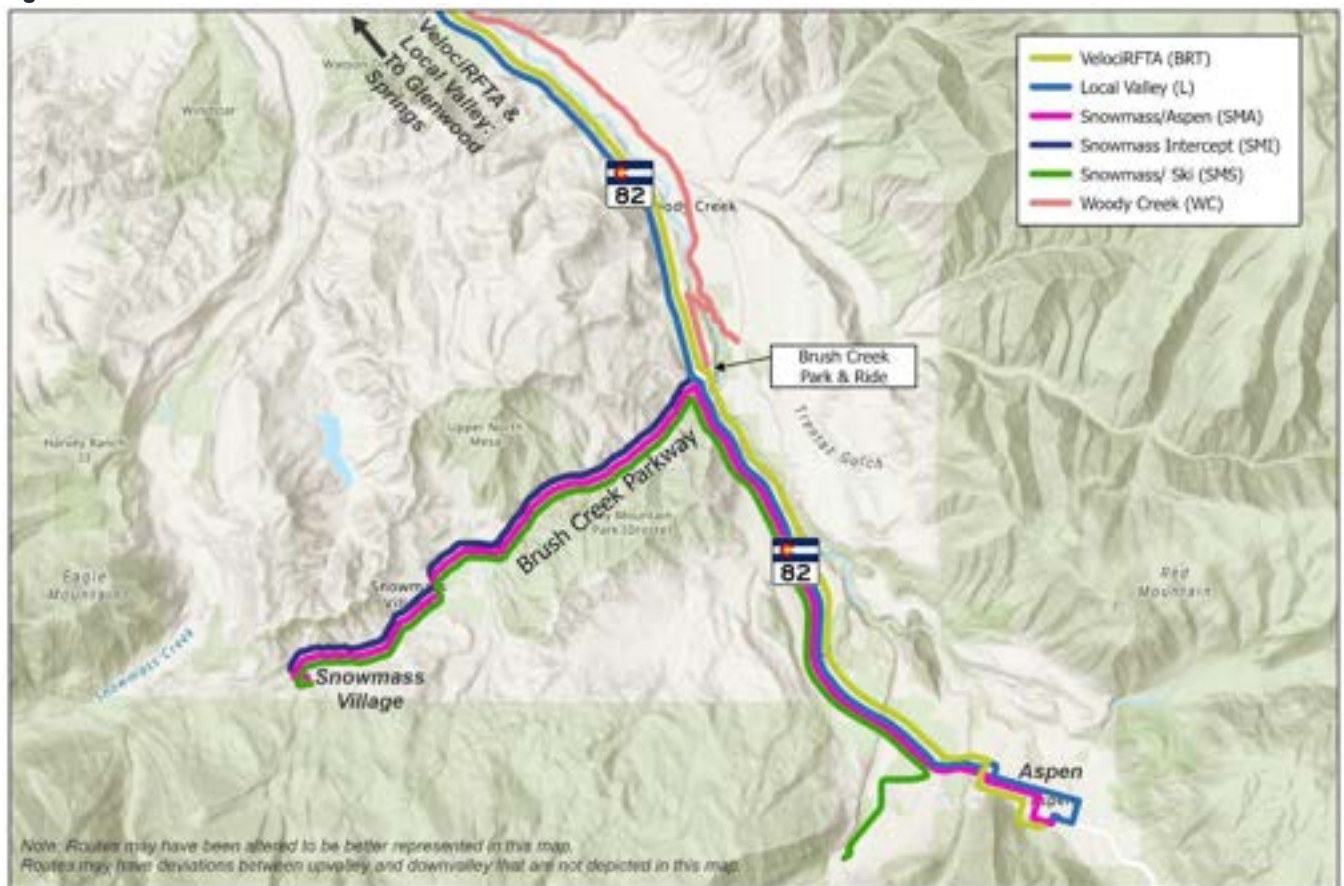


Figure 3: Transit at Brush Creek Park & Ride
Brush Creek Park & Ride Management Plan



RFTA Ridership Data

RFTA boarding data for the Brush Creek Park & Ride was collected by route and headway direction in the AM and PM time periods between August 2023 and August 2024. RFTA boardings at the Brush Creek Park & Ride are greatest in the summer months, from June to August, at approximately 1,000 to 1,500 passenger boardings per day. Boardings are also higher in the winter months from December to March, at approximately 940 to 1,100 boardings per day. Boardings are significantly lower in the off-peak seasons, from October to November, and from April to May. In these months, RFTA routes averaged between 300 to 450 boardings per day.

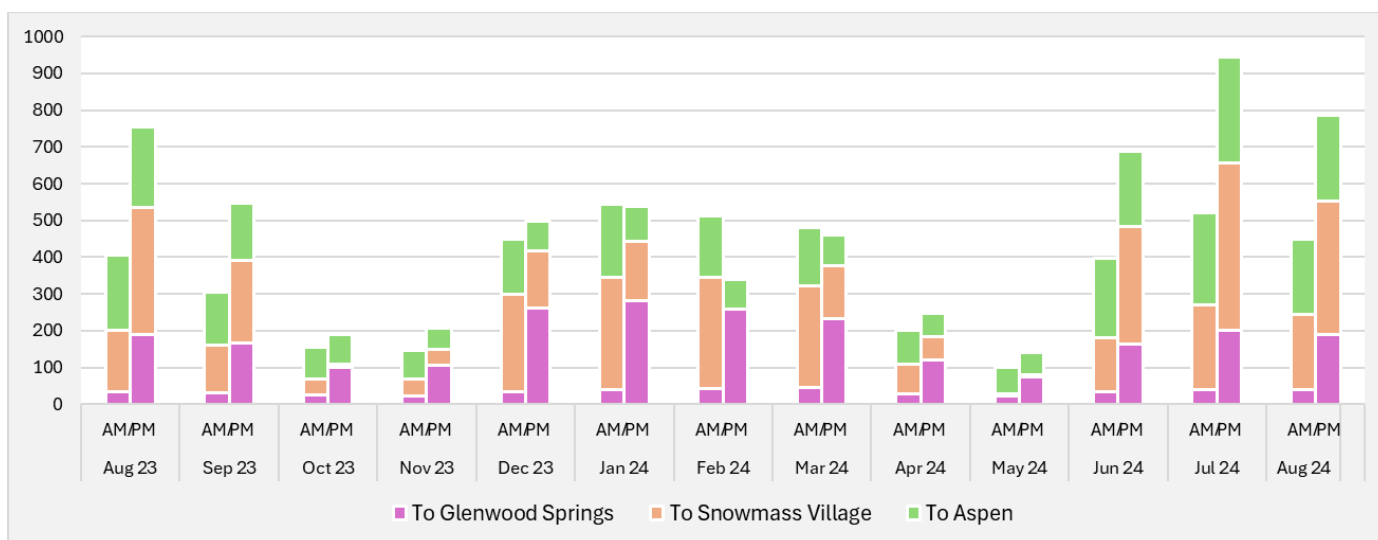
There are typically more PM boardings than AM boardings. For the 13-month study period, there were 499 PM average daily boardings compared to just 356 average daily boardings that occurred in the AM period. This discrepancy is most notable in the summer months and off-peak months. The winter months generally feature the same number of AM and PM boardings.

From the Brush Creek Park and Ride, most passengers who board are heading to Snowmass Village (353 average daily boardings). A lower number of passengers head to Aspen (287 average daily boardings), while 215 daily passengers head in the Glenwood Springs direction. Table 1 shows the average daily passengers from August 2023 to August 2024 by headway direction in either the AM or PM. Figure 4 shows the average daily passengers by month for the same period, by headway direction in either the AM or PM. The Appendix shows similar figures by each of the six routes. RFTA data is not available on boarding passenger destinations or alighting passenger origins to or from the Brush Creek Park & Ride.

Table 1: RFTA Brush Creek Park & Ride Average Daily Boardings by Headway Direction in the AM and PM

Brush Creek Park & Ride	AM	PM	Daily
To Glenwood Springs	34	181	215
To Snowmass Village	166	187	353
To Aspen	156	131	287
Total	356	499	855

Figure 4: RFTA Brush Creek Park & Ride Daily Boardings per Month by Headway Direction in the AM and PM



TOSV Shuttle Ridership Data

Village Shuttle SMI route boarding and alighting data is presented as daily averages by month for years 2023 and 2024 through May 2024. In total, there were 35,700 boardings and 28,900 alightings during this period. Data also shows passengers' ending destination in this period, for all 28,900 passengers who alighted at the Brush Creek Park & Ride. These passengers alighting at the Brush Creek Park & Ride all boarded the route in the Town of Snowmass Village heading to the Brush Creek Park & Ride. Origin-destination data is not available for the Village Shuttle in the up-valley direction.

Figure 5: Snowmass Village Shuttle Contracted SMI Service Boardings and Alightings (2023-May 2024)

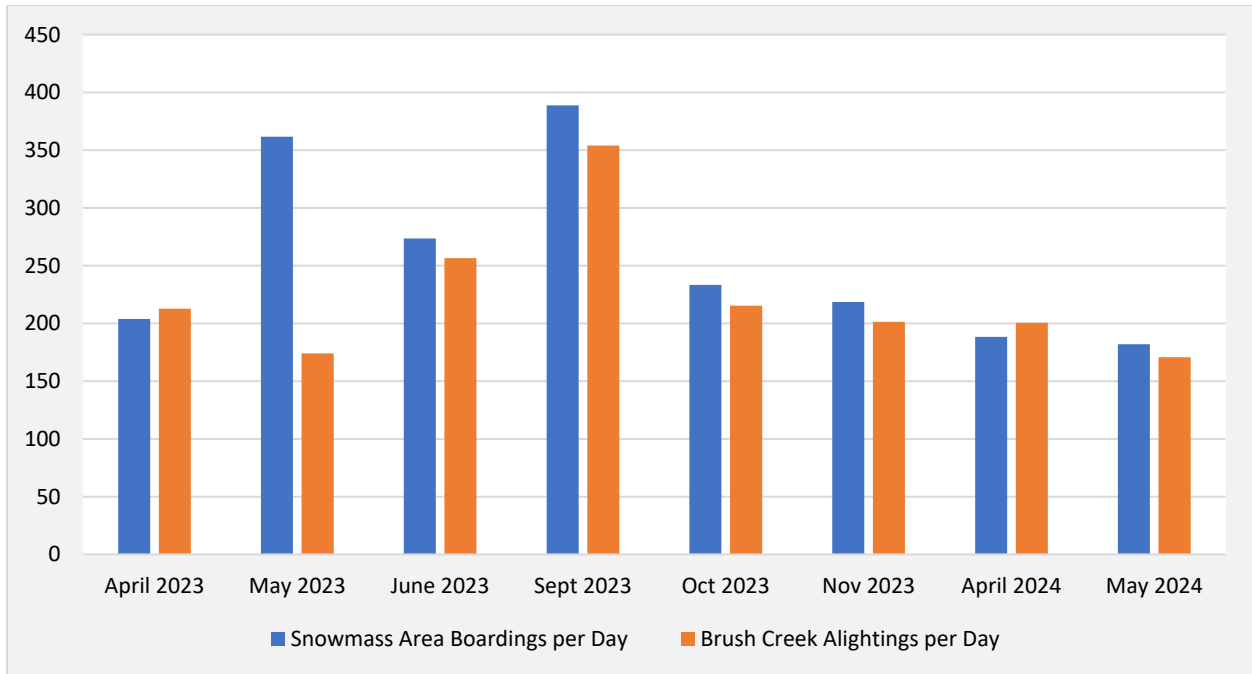
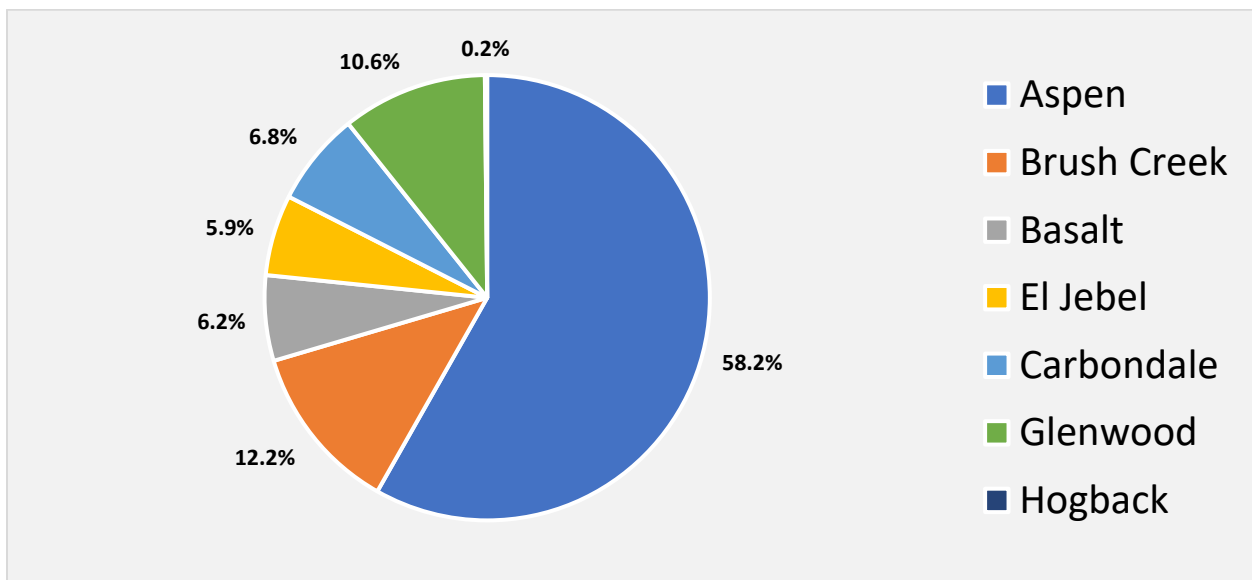


Figure 6: Ending Destination of Passengers who Alight at Brush Creek Park & Ride (2023-2024)



Parking

The Brush Creek Park & Ride contains approximately 400 spaces. The parking spaces are split by a center drive aisle creating two parking areas of approximately 200 spaces each. During special events, overflow lots to the north and south of the paved parking area can be made available, which can increase the parking capacity by approximately 400 additional unpaved spaces, for a total of over 800 spaces. Parking is located directly east of the RFTA bus transfer platform.

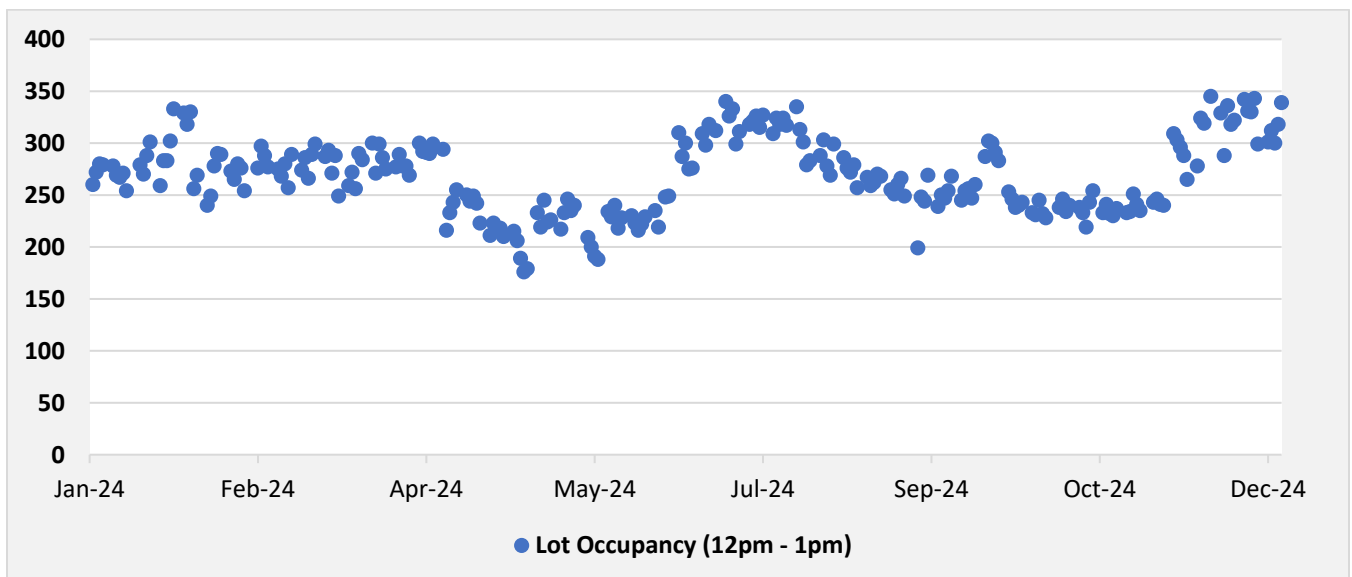
Table 2 below shows parking capacity and a peak occupancy count completed on Saturday, August 31st, 2024 and on September 26th, 2024. The August 31st count was conducted to capture the Brush Creek Park & Ride on special event day (JAS Experience Aspen - Snowmass). The September 26th count was conducted to capture a typical weekday. These two counts provide insight on parking demand and utilization at the Brush Creek Park & Ride on two different operating days.

Table 2: Parking Utilization on August 31 and September 26, 2024

Brush Creek Park & Ride	Count	Peak Time
Parking Capacity (Excluding Overflow)	400	-
Sat, Aug. 31 Utilization at Peak	829	6:30pm
Thu, Sep. 26 Utilization at Peak	145	1:00pm

The City of Aspen conducts vehicle counts at the Brush Creek Park & Ride between 12:00pm and 1:00pm for many of the days throughout the year. In 2024, the City of Aspen counted vehicles at the lot on 245 days among the 366 days of the year (67%). The early afternoon period sees the highest parking utilization throughout the day on typical days, as demonstrated by analysis of the full day utilization count conducted on September 26th, 2024 shown below. Among count days, the lot averaged 268 parked vehicles at midday throughout the year, with highest utilization in the winter (Late November – February) and summer (July – August). The lot saw its highest utilization on November 29th, 2024, the Friday after Thanksgiving. Figure 7 demonstrates midday parking occupancy throughout 2024.

Figure 7: Brush Creek Park & Ride Parking Occupancy in 2024, Midday Counts



Event Day Parking Utilization (Saturday, August 31st – JAS Experience)

On August 31st, parking utilization exceeded 800 vehicles at approximately 6:30pm, just before Sting's set time as part of the Saturday headliner for the JAS Experience. Parking in the paved main lot reached capacity (approximately 400 spaces) at around 3:00pm, and the overflow lots were opened for additional parking. At 6:30pm, there were 495 counted vehicles in the overflow parking. Figure 8 shows parking utilization during this special event day.

Most vehicles arrived between the 3:00pm to 5:00pm hour. There was a significant rate of departure from 8:00pm to 10:00pm at the conclusion of the concert day. Figure 9 shows the entries and exits by time of day on August 31st.

The dwell times for vehicles, or the duration of time vehicles were in the lot, varied greatly on August 31st. A significant number of vehicles were in the lot for less than one (1) hour. An analysis of recurring versus non-recurring vehicle entries showed that there were 97 entries made by 20 recurring vehicles, of which 5 were large or mid-size Hermes buses that were used to shuttle passengers to and from the event. The other recurring vehicles are assumed to be rideshare or a similar service. Though the purpose or intention of drivers staying less than 1 hour was not recorded, it can be speculated that many of these non-recurring vehicles may also have been rideshare (but only made one pickup or drop-off at Brush Creek Park & Ride on Aug 31st) or were drivers that entered the facility, could not find a space, and exited.

Regardless, a significant number of vehicles stayed at minimum 3-4 hours, in-line with the peak entry and exit times of day. There were 35 vehicles parked in the Brush Creek Park & Ride parking facility at the count start and remained in the lot at the end of the count, a period of over 24 hours. Figure 10 shows the Brush Creek Park & Ride dwell times on August 31st.

Figure 11 shows a sample of photos taken by license plate reader cameras from their positions in the lot on August 31st.

Figure 8: Saturday Aug 31 JAS Experience – Brush Creek Park & Ride Parking Demand

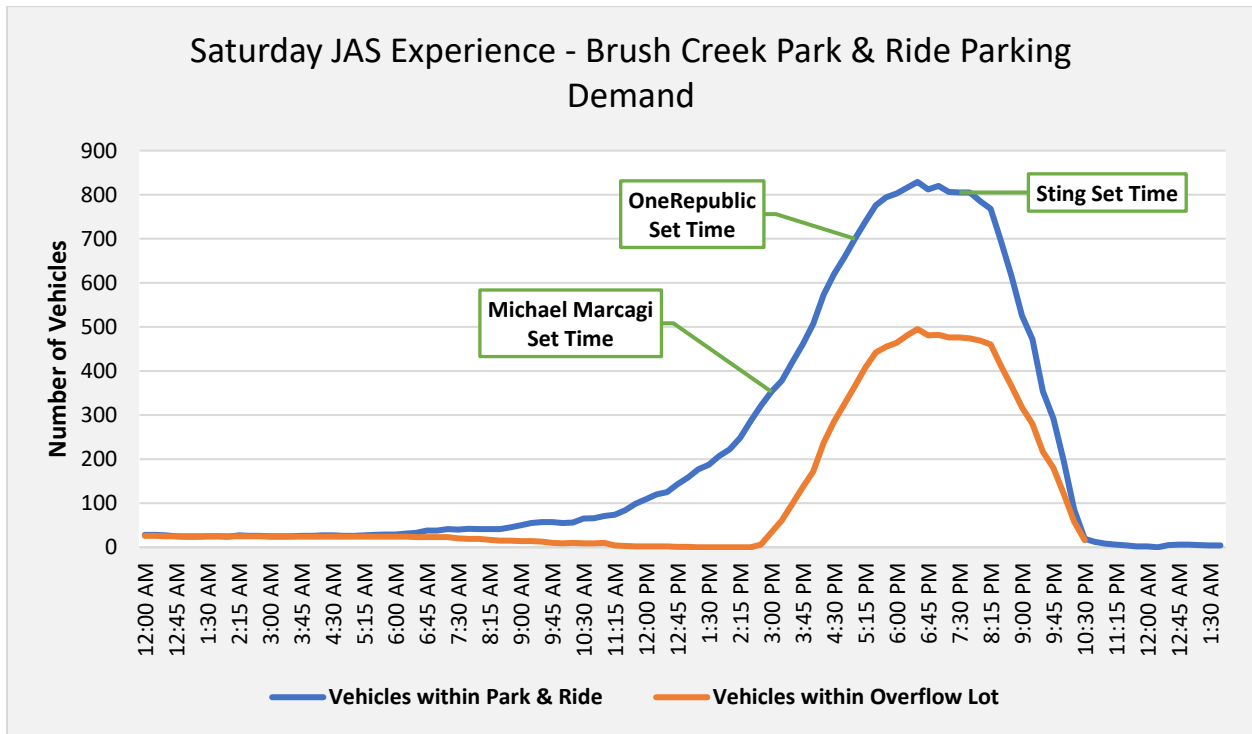


Figure 9: Saturday Aug 31 JAS Experience - Brush Creek Park & Ride Vehicle Entries and Exits

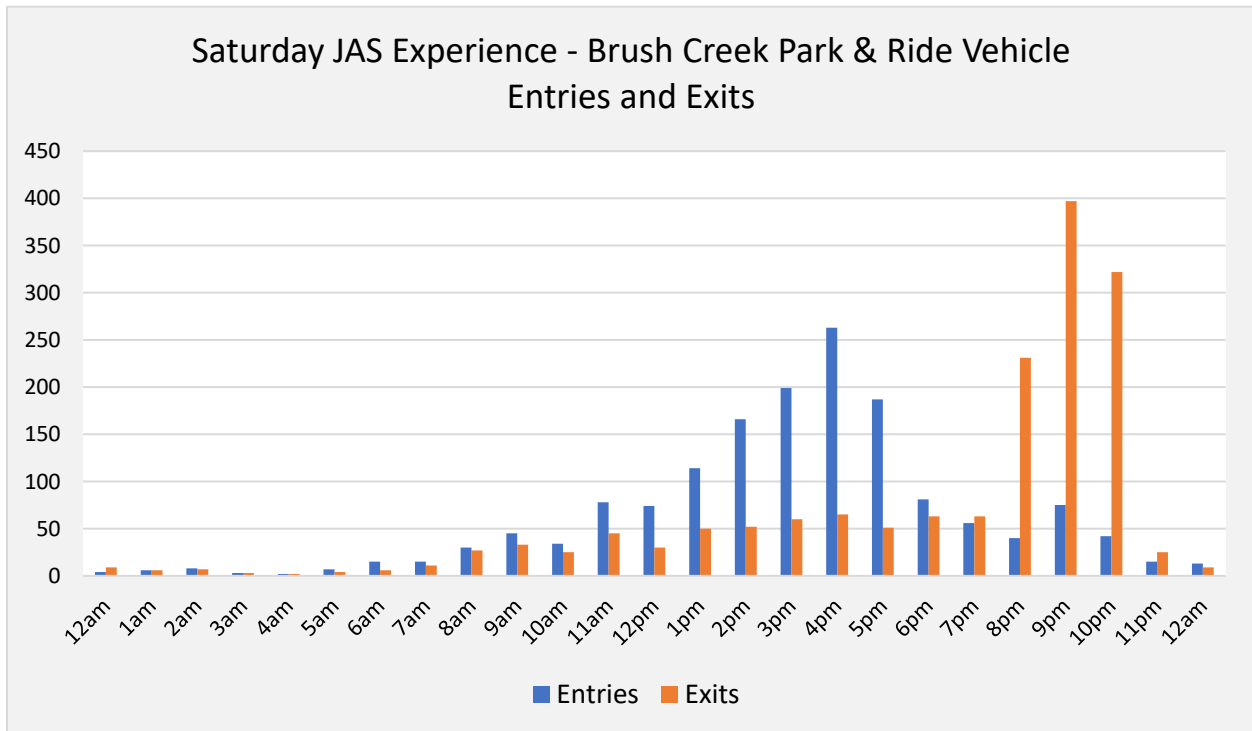


Figure 10: Saturday Aug 31 JAS Experience – Brush Creek Park & Ride Dwell Time (Hours)

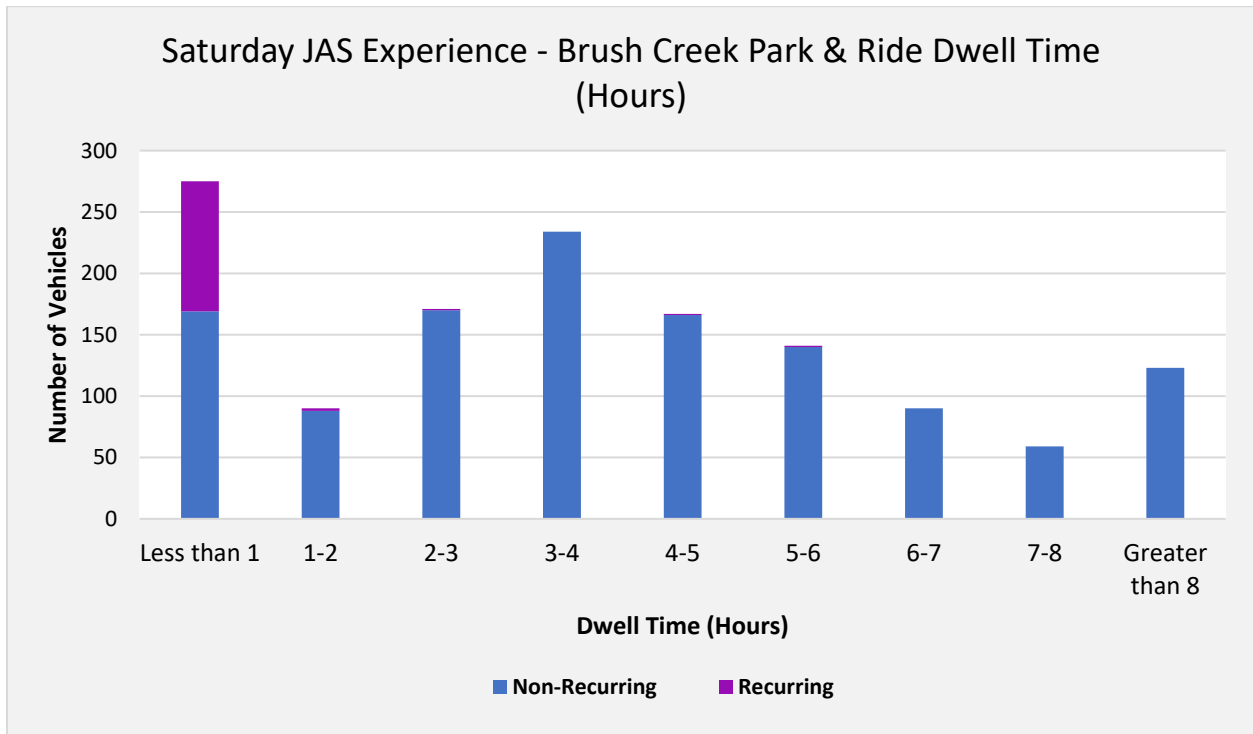


Figure 11: Sample of License Plate Reader Photos on August 31st

Southwest Camera at Noon



Overflow Lot at 5:00pm



Northwest Camera at 6:00pm



Southeast Camera at Noon



Typical Day Parking Utilization (Thursday, September 26th)

Parking counts were completed on September 26th to capture a typical weekday condition at the Brush Creek Park & Ride. On this count day parking utilization peaked at about 150 vehicles at 1:00pm. Vehicles generally entered the lot at around 5:15am and most departed the lot by around 7:00pm. On this day, there were 213 vehicles that did not enter the parking area and instead entered the Aspen Carpool Kiosk area, mostly likely to receive an Aspen Carpool Permit from the parking information kiosk. The carpool permit allows for free all-day parking in designated carpool spaces in Aspen and in the residential parking zones. A majority of these movements (65%) occurred from 6:00am to 7:30am. Figure 12 shows the Brush Creek Park & Ride Parking and Carpool demand on September 26th.

Vehicle entries occurred most frequently between 6:00am and 9:00am. Most vehicles exited the Brush Creek Park & Ride from 3:00pm to 6:00pm. Vehicle turnover appears to be lowest before 6:00am, after 8:00pm, and between 10:00am and 2:00pm. Figure 13 shows the Brush Creek Park & Ride entries and exits by time of day on September 26th.

There were 63 vehicles that were already within the lot when the count began at midnight on September 26th. There were 54 vehicles in the lot when the count concluded at 1:00am early Friday morning, September 27th. Among these vehicles, eight (8) vehicles were in the lot for the entire duration of the count (25 hours).

The dwell times of vehicles overall were shorter on average on this day, mainly attributed to the significant number of carpool kiosk movements in the early morning. However, there was a peak of dwell times between six and seven hours and from 10 to 12 hours. Figure 14 shows the dwell times of vehicles on September 26th. The purpose or intention of drivers staying less than 1 hour was not recorded, and should be studied in greater detail.

Figure 12: Thursday September 26 – Brush Creek Park & Ride Parking and Carpool Demand

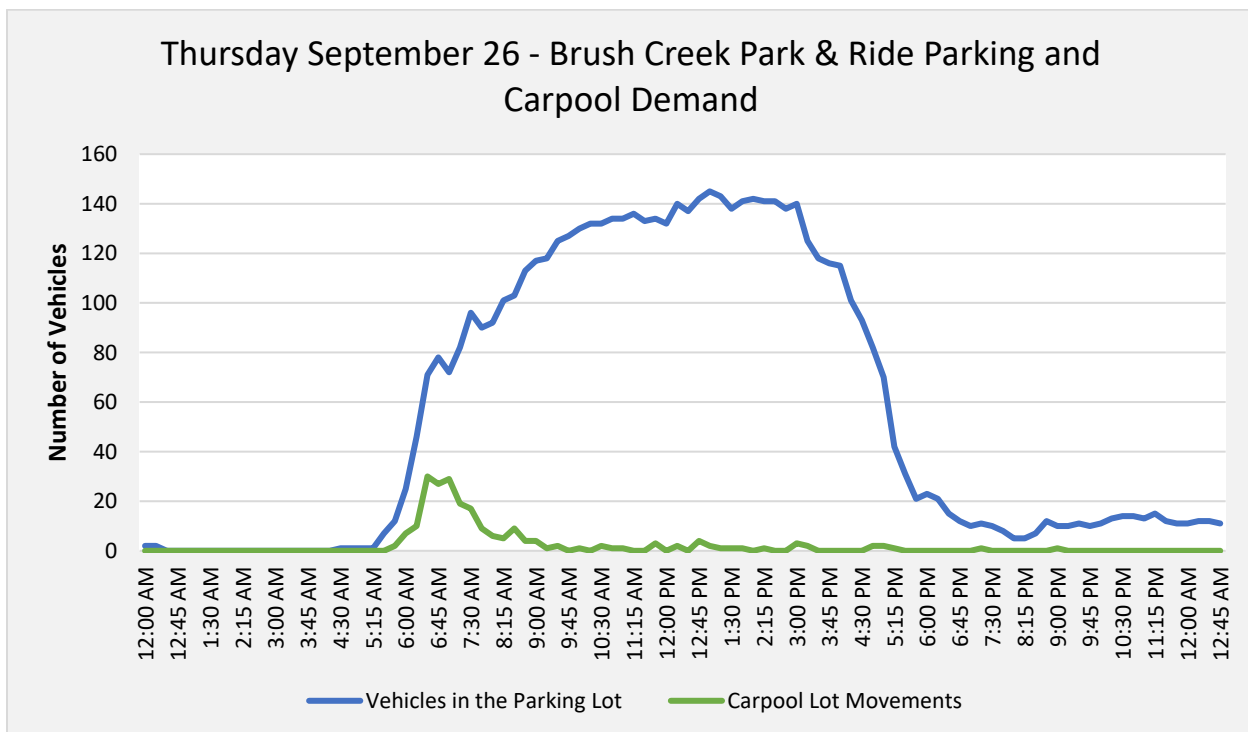


Figure 13: Thursday September 26 – Brush Creek Park & Ride Entries and Exits

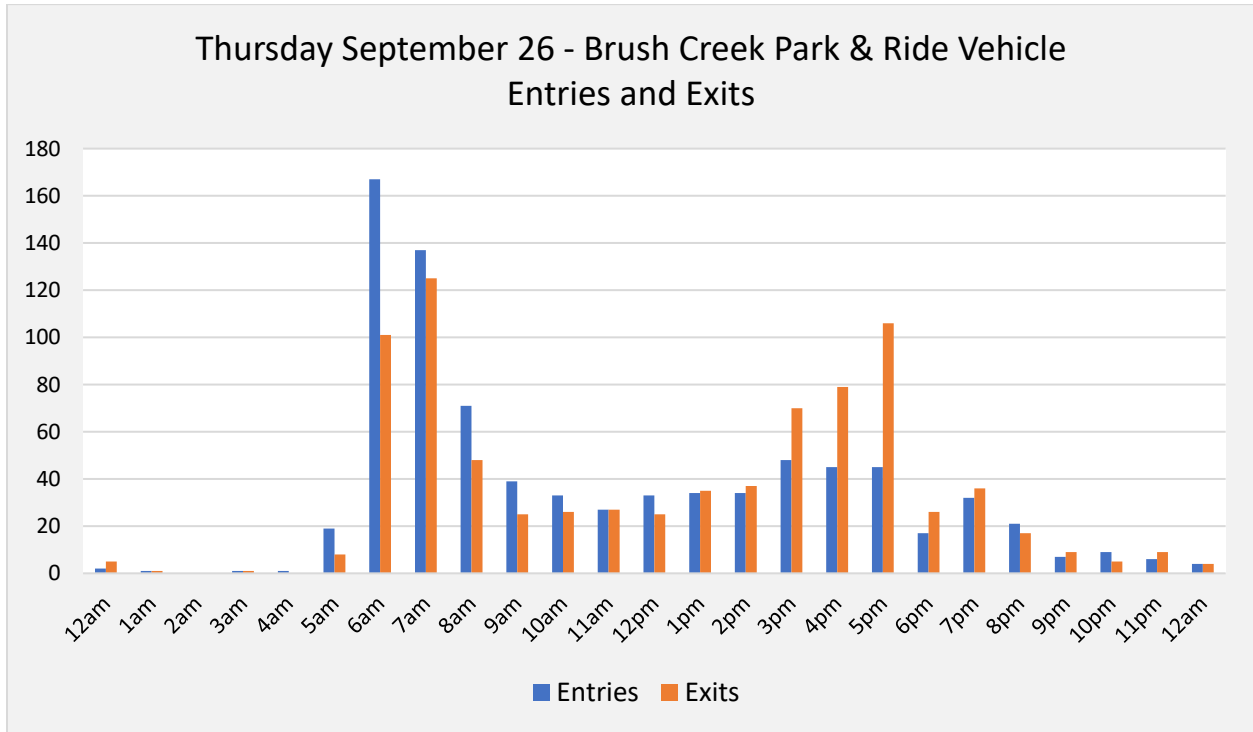
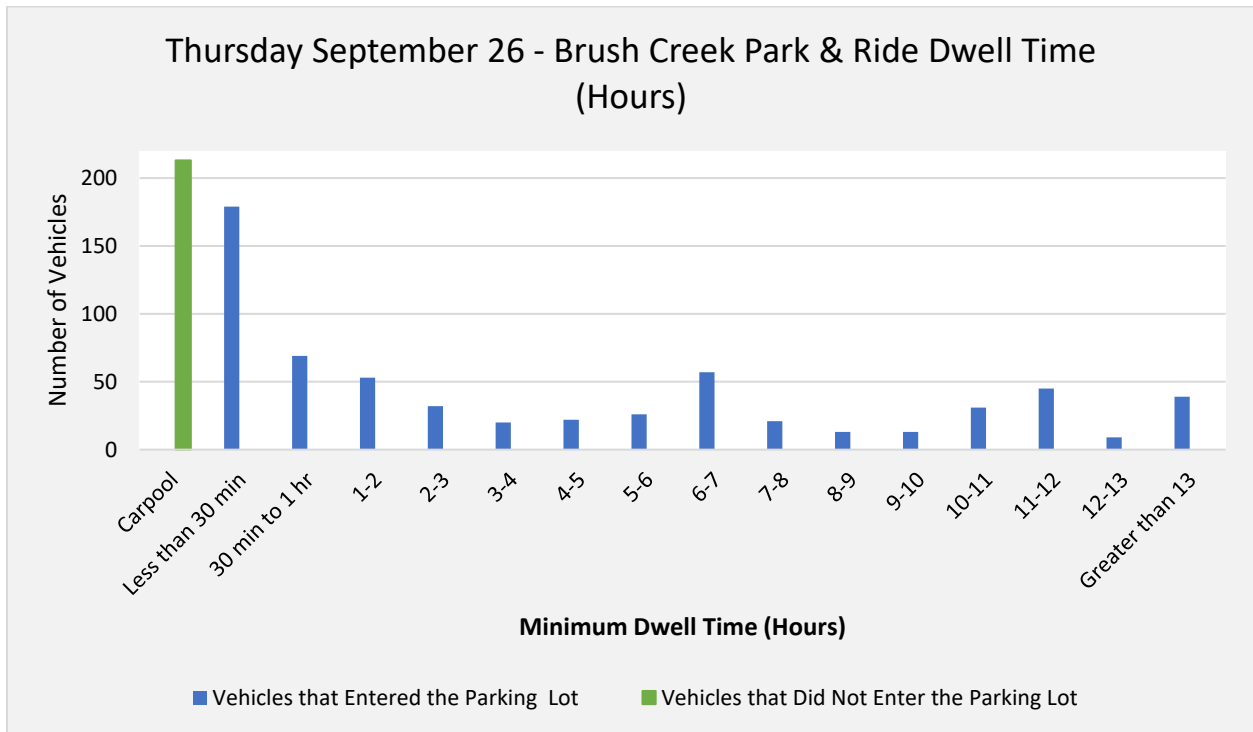


Figure 14: Thursday September 26 – Brush Creek Park & Ride Dwell Time (Hours)



StreetLight Data Analysis

StreetLight, a mobility platform that utilizes aggregated connected vehicles data, was used to better understand the travel patterns of Brush Creek Park & Ride users. The *StreetLight* analysis was conducted to describe:

- where users are coming from when they park their personal vehicle in the Brush Creek Park & Ride (i.e., end their trip in the Park & Ride)
- where users are going after they exit the Brush Creek Park & Ride in their personal vehicle (i.e., start their trip in the Park & Ride)

Daily volume estimates were analyzed for all personal vehicle trips originating or ending at Brush Creek Park & Ride for all hours of the day from January 2023 through March 2023. *StreetLight* defines a personal vehicle trip to start or end for a vehicle that moves less than five meters during a five-minute period. Figure 15 depicts the boundary used to define the Brush Creek Park & Ride in the *StreetLight* analysis.

Figure 15: Brush Creek Park & Ride analysis area polygon



The results are summarized in Table 3 by ZIP Code by day of the week type. The results suggest that the majority (89% to 96%) of Brush Creek Park & Ride users tend to travel in their personal vehicle to or from a location in the Roaring Fork Valley. Regardless of the day of week type, around one-third (31% to 37%) of Brush Creek Park & Ride users tend to start or end their trip in Aspen, while 15% to 19% of users tend to start or end their trip in Snowmass Village. Average estimated daily trip volume was 33% higher for trips to and from the Brush Creek Park & Ride on weekend days compared to weekdays.

Table 3: Estimated Average Daily Trip Volumes in the Brush Creek Park & Ride (StreetLight)

ZIP Code	Major Neighborhood	Percent of Average Estimated Daily Trip Volume ¹					
		All Trips Ending in the Park & Ride	All Trips Starting in the Park & Ride	Weekend Trips Ending in the Park & Ride	Weekend Trips Starting in the Park & Ride	Weekday Trips Ending in the Park & Ride	Weekday Trips Starting in the Park & Ride
Average Daily Trip Volume		261	258	302	300	228	225
81611	Aspen	37%	33%	34%	31%	37%	35%
81615	Snowmass Village	17%	17%	17%	17%	15%	19%
81621	Basalt	13%	13%	12%	14%	15%	16%
81623	Carbondale	10%	13%	14%	11%	8%	12%
81601	Glenwood Springs	10%	13%	14%	14%	8%	12%
81631	Eagle	4%	--	--	--	4%	4%
81654	Snowmass	4%	4%	--	3%	4%	--
81656	Woody Creek	--	--	3%	3%	--	--
Other² ZIP Codes		7%	7%	5%	6%	11%	4%

¹ Total percentages do not equal 100% due to rounding.

² Other ZIP Codes includes 29 other ZIP codes not located in the Roaring Fork Valley. Of these 29 ZIP Codes, 28 were located in Colorado, with the remaining one located in Wyoming.

Conclusions

The review and analysis of existing conditions and data for the Brush Creek Park & Ride sets a foundation to develop strategies to improve operations and management of the facility. The following conclusions were developed from the review of data for this existing conditions analysis.

Physical Environment

- Brush Creek Park & Ride is strategically located on Hwy 82 at Brush Creek Road, a critical intersection and decision point between the City of Aspen and the Town of Snowmass Village.
- The park & ride has capacity for 400 vehicles, with additional overflow parking available during special events.
- The park & ride provides a direct connection to the Aspen Mass Bike Trail.

Operations and Management

- The Brush Creek Park & Ride property is owned by CDOT and leased through an intergovernmental agreement between the City of Aspen, the ETOC, and RFTA.
- RFTA maintains the park & ride passenger plaza and bus bays, while maintenance and enforcement are performed by the City of Aspen for the vehicle parking and overflow areas.
- Vehicles are not permitted to stay at the facility for longer than 24 hours, but existing enforcement of this condition is limited.

Transit

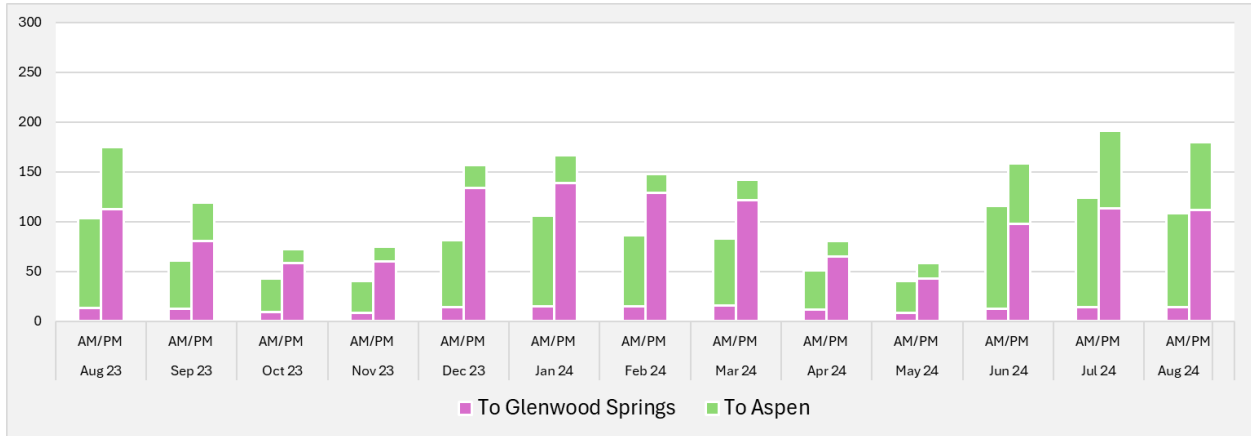
- The park & ride is served by RFTA via six different routes, with one route, the Snowmass Intercept (SMI) route, seasonally contracted to be operated by the Snowmass Village Shuttle.
- There are about 855 average daily boardings on RFTA services at the Brush Creek Park & Ride, with the largest share of boardings heading to Snowmass Village. Most boardings take place in the PM period and include both down valley and up valley travel.
- The contracted Village Shuttle service of the SMI route sees approximately 400 daily boardings and 350 daily alightings at peak (September 2023). Aspen is overwhelmingly the final destination (58%) among all passengers who alight at Brush Creek Park & Ride using the contracted SMI route.

Parking

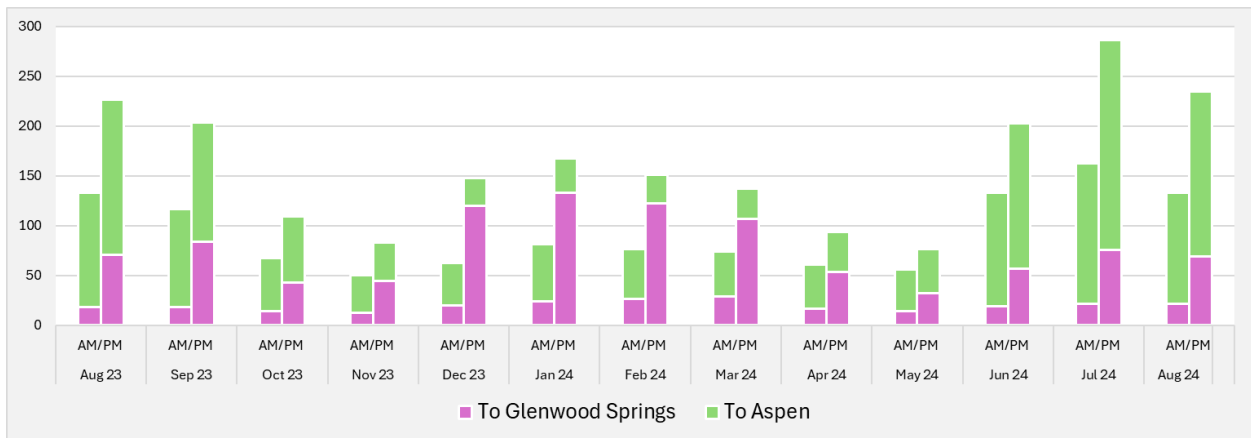
- Brush Creek Park & Ride can accommodate over 800 parked vehicles during special events. There was significant shuttle and rideshare activity during the studied special event. Dwell time for vehicles may vary depending on the type of event.
- On the surveyed weekday, parking utilization was observed to reach nearly 150 vehicles at peak time (early afternoon). There was significant Aspen carpool kiosk activity from 6:00am to 7:30am. There were eight vehicles parked in the park & ride for longer than 24 hours on this date.

Appendix

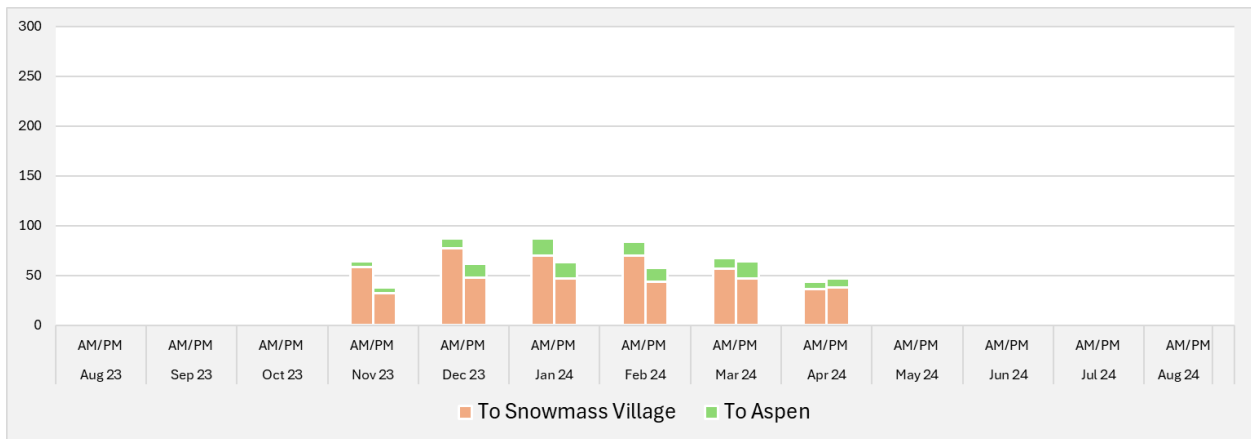
VelociRFTA (BRT) Average Daily Boardings at Brush Creek Park & Ride



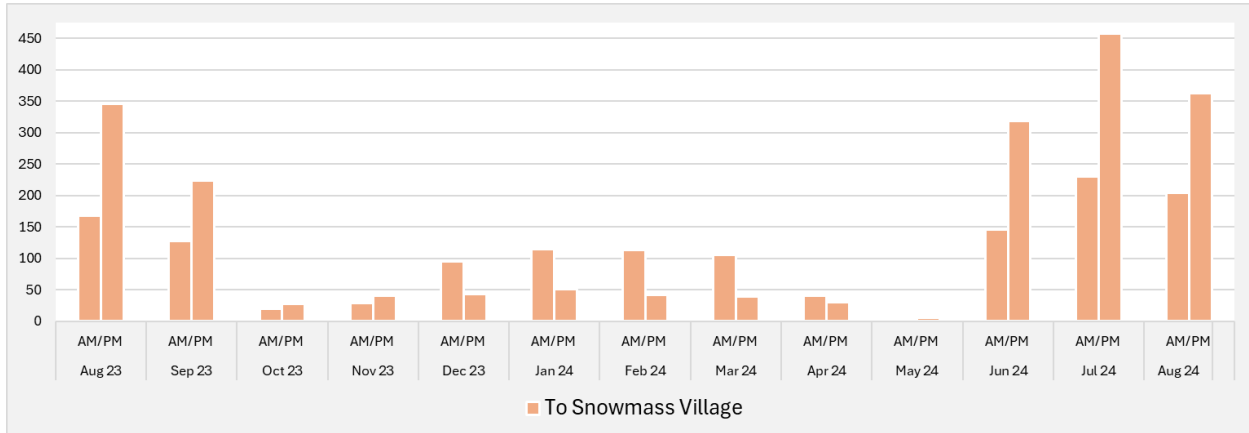
Local Valley (L) Average Daily Boardings at Brush Creek Park & Ride



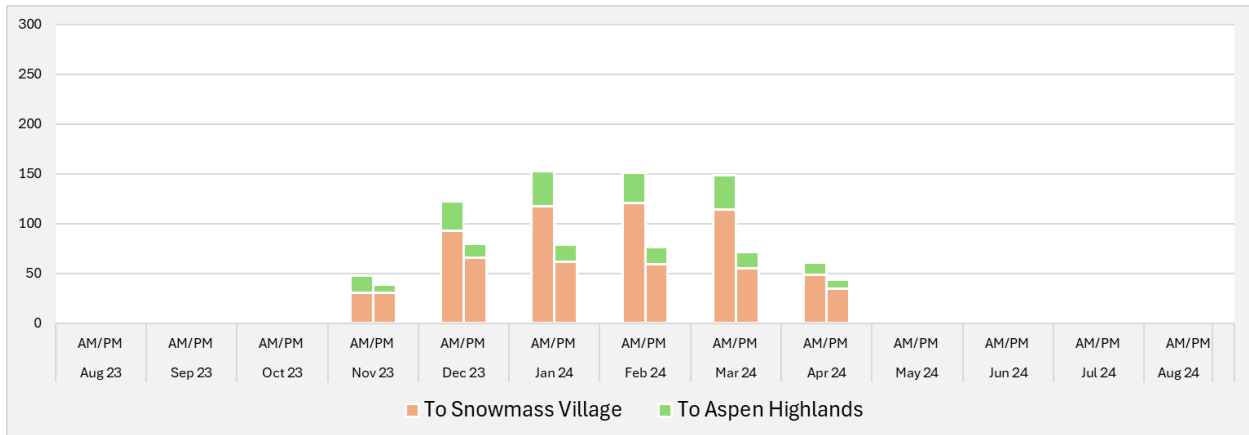
Snowmass/Aspen (SMA) Average Daily Boardings at Brush Creek Park & Ride



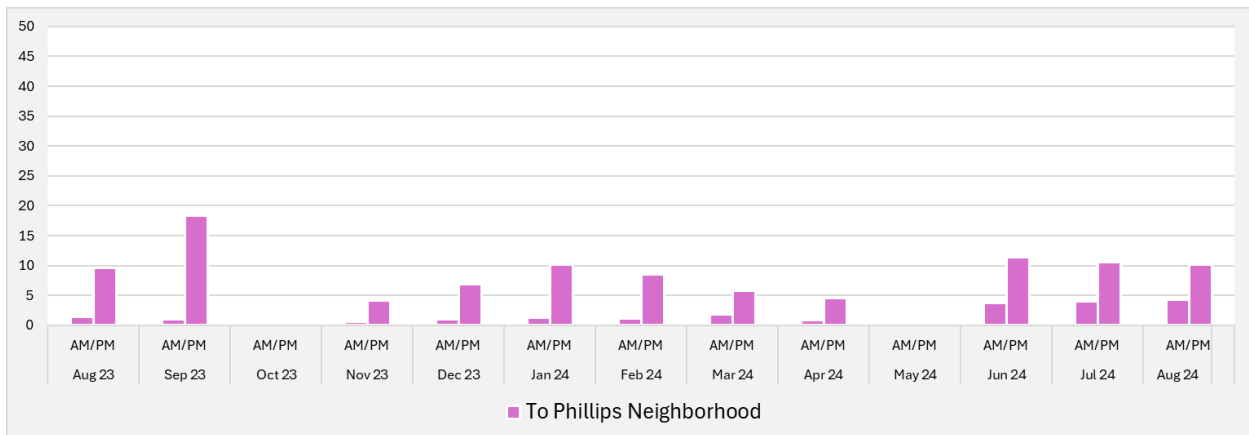
Snowmass Intercept (SMI) Average Daily Boardings at Brush Creek Park & Ride



Snowmass/Ski (SMS) Average Daily Boardings at Brush Creek Park & Ride



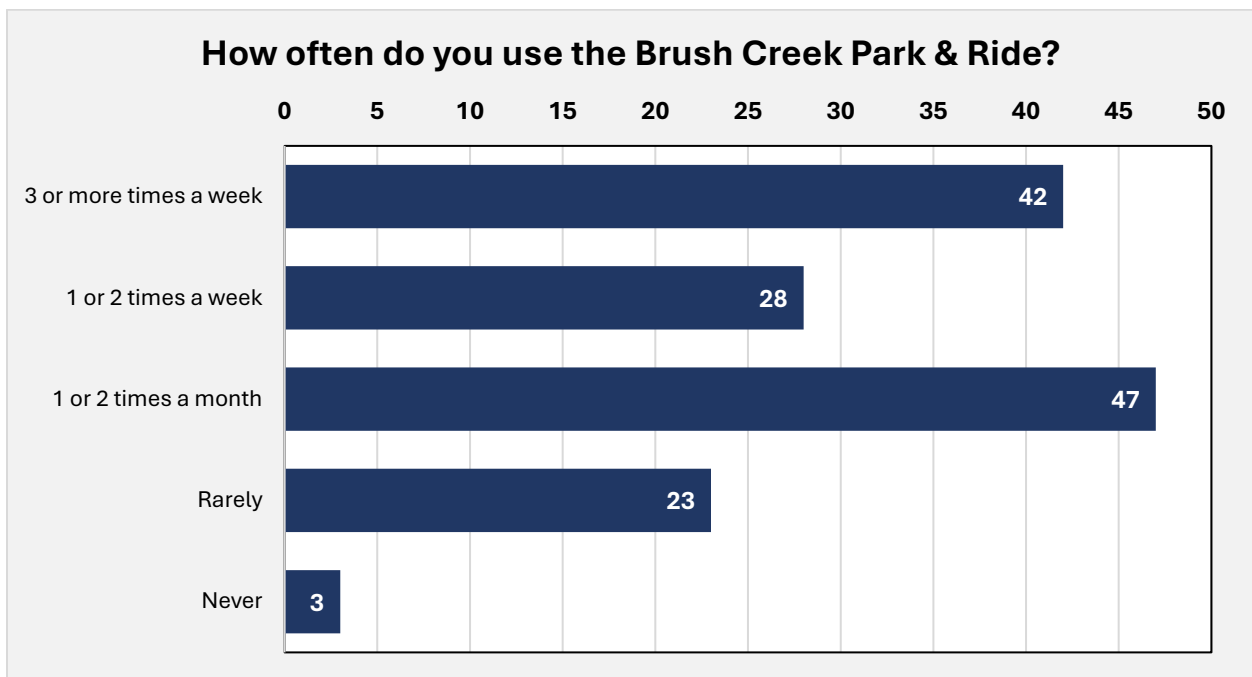
Woody Creek (WC) Average Daily Boardings at Brush Creek Park & Ride



Appendix B: Community Survey Results

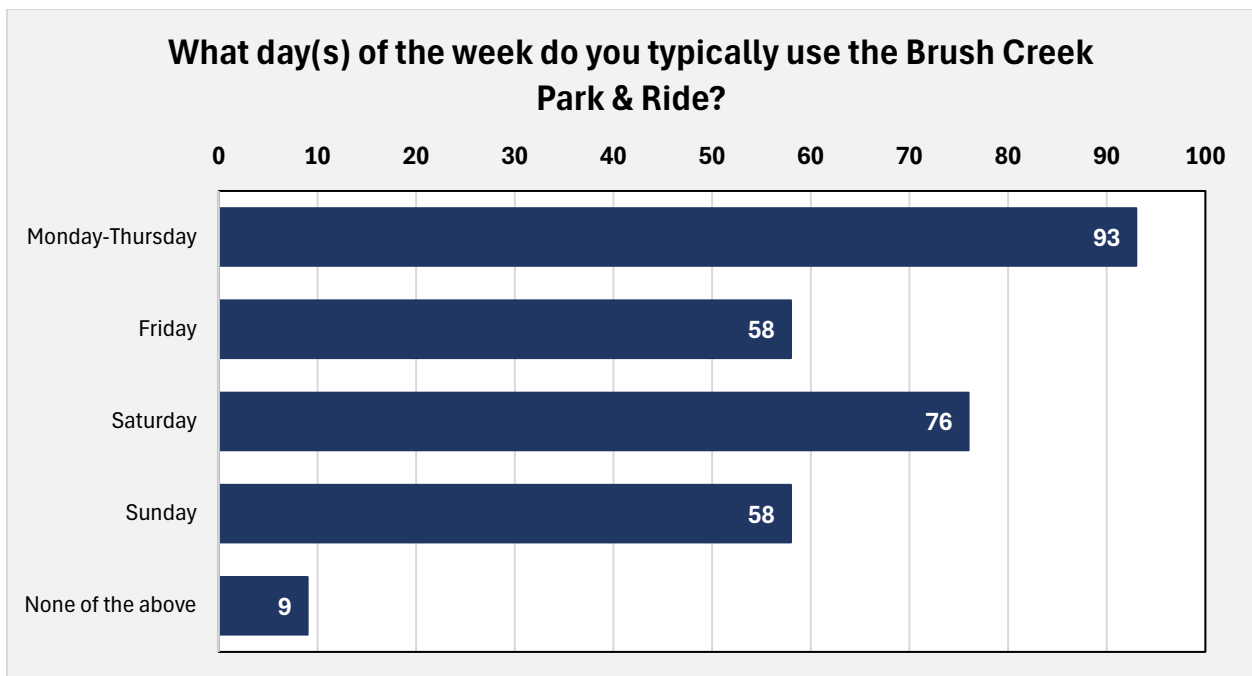
Question 1. How often do you use the Brush Creek Park & Ride?

Answer Choices	English	Spanish	Total
3 or more times a week	31	11	42
1 or 2 times a week	22	6	28
1 or 2 times a month	42	5	47
Rarely	21	2	23
Never	3	0	3
	Answered	119	24
	Skipped	0	0



Question 2. What day(s) of the week do you typically use the Brush Creek Park & Ride?

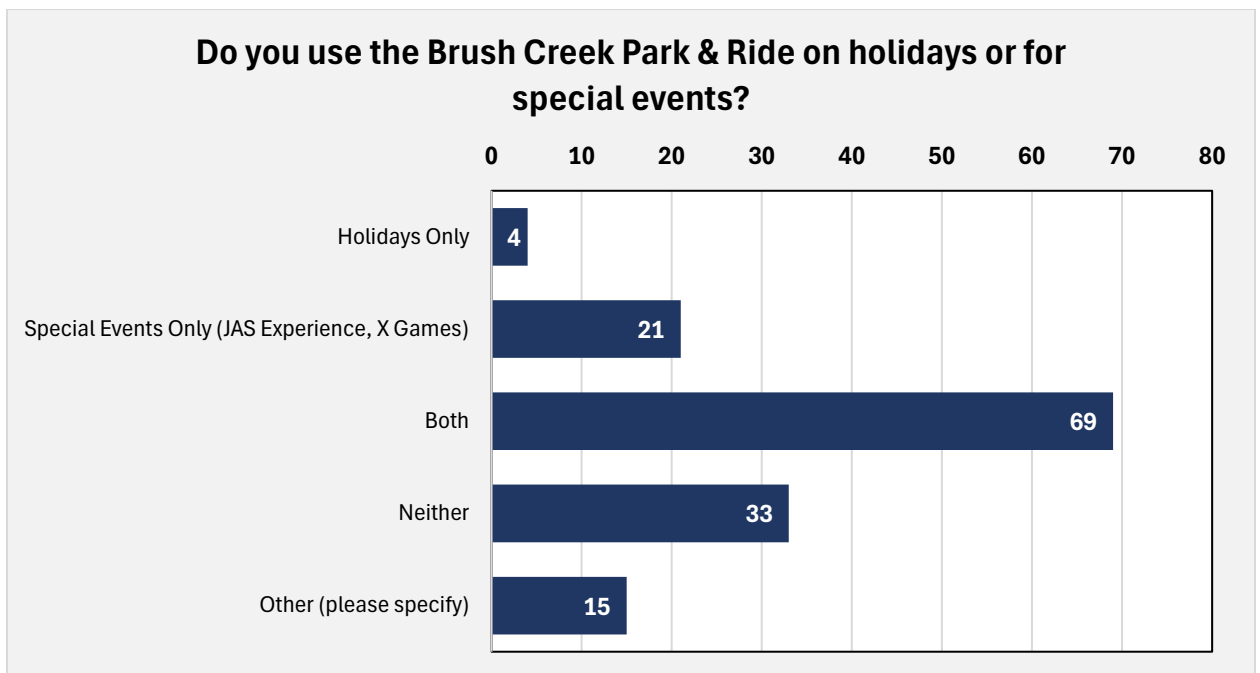
Answer Choices	English	Spanish	Total
Monday-Thursday	72	21	93
Friday	48	10	58
Saturday	57	9	76
Sunday	51	7	58
None of the above	8	1	9
	Answered	117	24
	Skipped	2	0
		2	2



Question 3. Do you use the Brush Creek Park & Ride on holidays or for special events?

Answer Choices	English	Spanish	Total
Holidays Only	1	3	4
Special Events Only (JAS Experience, X Games)	21	0	21
Both	57	12	69
Neither	30	3	33
Other (please specify)	10	5	15
Answered	119	23	142
Skipped	0	1	1

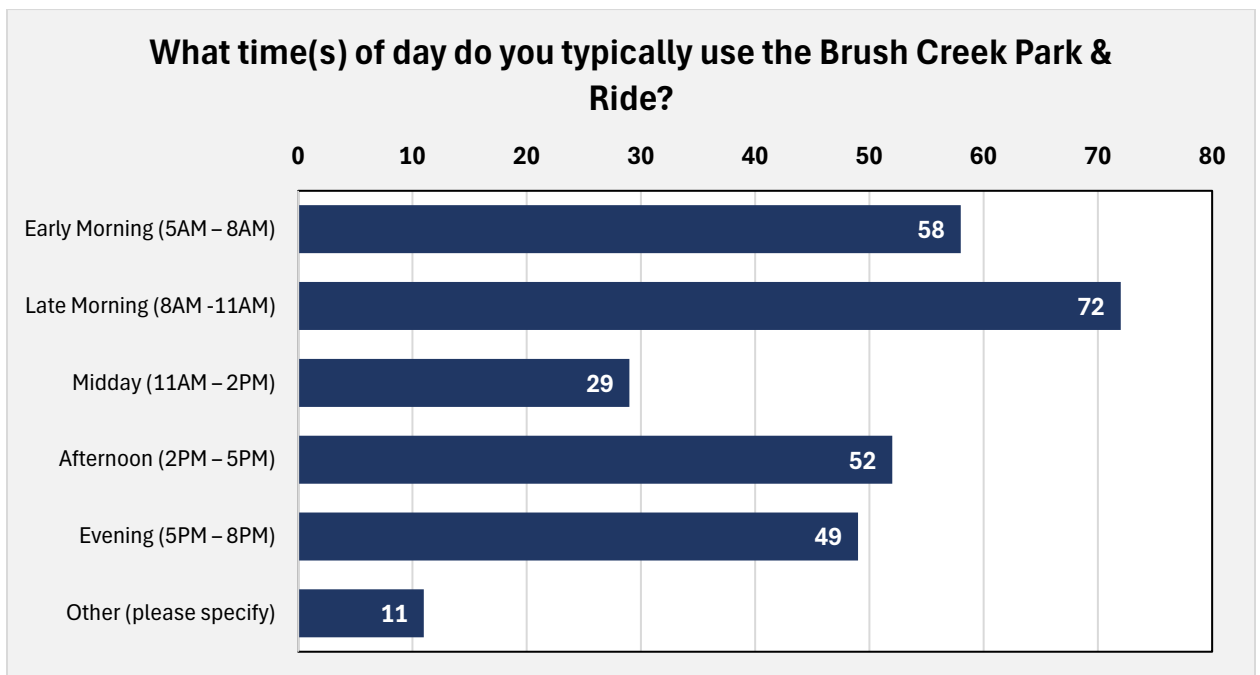
Other Responses
I use BCP&R rarely I sometimes use it for Snowmass routes
Every day
Work
When parking at Buttermilk is not available to get to either Highlands or downtown Aspen
Ski Snowmass
Skiing snowmass,avoid paying for parking in town
Although I prefer RFTA, sometimes I drive to work. This job I work days. Last job I worked nights. Like P&R for skiing, recreation as well.
to ski at Aspen occasionally
staging for bike rides in sky mtn
Sometimes for events or to go skiing at Snowmass
Para ir al trabajo
Trabajo
Work
Trabajo
Siempre para ir al trabajo



Question 4. What time(s) of day do you typically use the Brush Creek Park & Ride?

Answer Choices	English	Spanish	Total
Early Morning (5AM – 8AM)	46	12	58
Late Morning (8AM -11AM)	60	12	72
Midday (11AM – 2PM)	24	5	29
Afternoon (2PM – 5PM)	44	8	52
Evening (5PM – 8PM)	43	6	49
Other (please specify)	9	2	11
Answered	116	24	140
Skipped	3	0	3

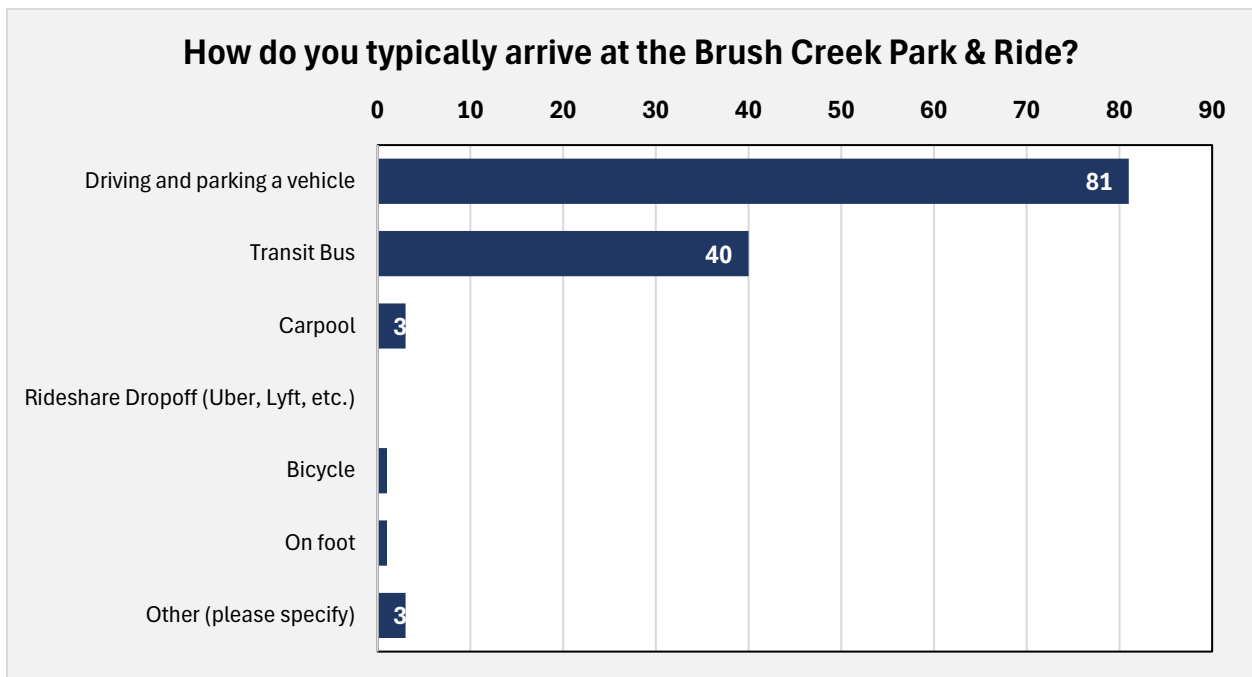
Other Responses
???
Morning and evening, I work in Aspen
Whenever I can, because I'm a visitor
All times
Pretty much whenever I need I do take it at different time
5pm-8am
None
Random
Sometimes evenings for special events. Also as staging area for bike rides. Also for ski resorts.
8AM-5PM
7/1/2 5pm



Question 5. How do you typically arrive at the Brush Creek Park & Ride?

Answer Choices	English	Spanish	Total
Driving and parking a vehicle	67	14	81
Transit Bus	36	4	40
Carpool	3	0	3
Rideshare Dropoff (Uber, Lyft, etc.)	0	0	0
Bicycle	1	0	1
On foot	1	0	1
Other (please specify)	3	0	3
Answered	111	18	129
Skipped	8	6	14

Other Responses
No
Don't use it
I arrive 2 ways. One is driving and parking. The second is dropoff by family member who works in Snowmass.



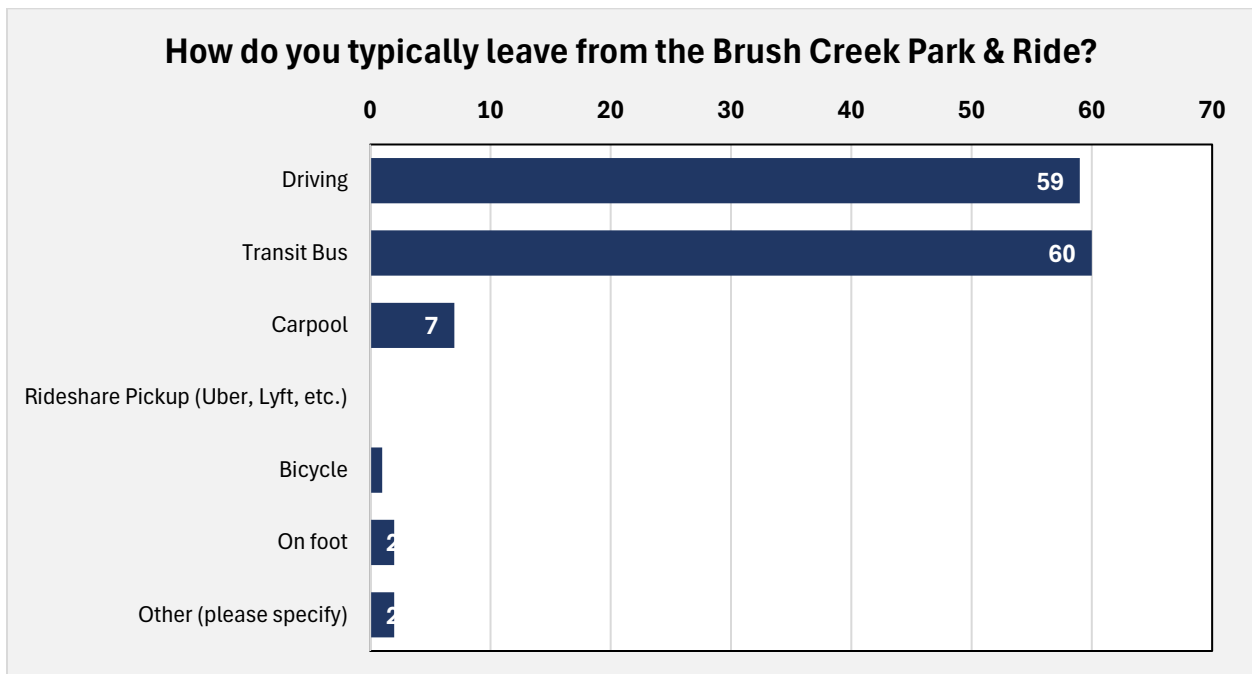
Question 6. How do you typically leave from the Brush Creek Park & Ride?

Answer Choices	English	Spanish	Total
Driving and parking a vehicle	46	13	59
Transit Bus	55	5	60
Carpool	6	1	7
Rideshare Dropoff (Uber, Lyft, etc.)	0	0	0
Bicycle	1	0	1
On foot	2	0	2
Other (please specify)	2	0	2
Answered	112	19	131
Skipped	7	5	12

Other Responses

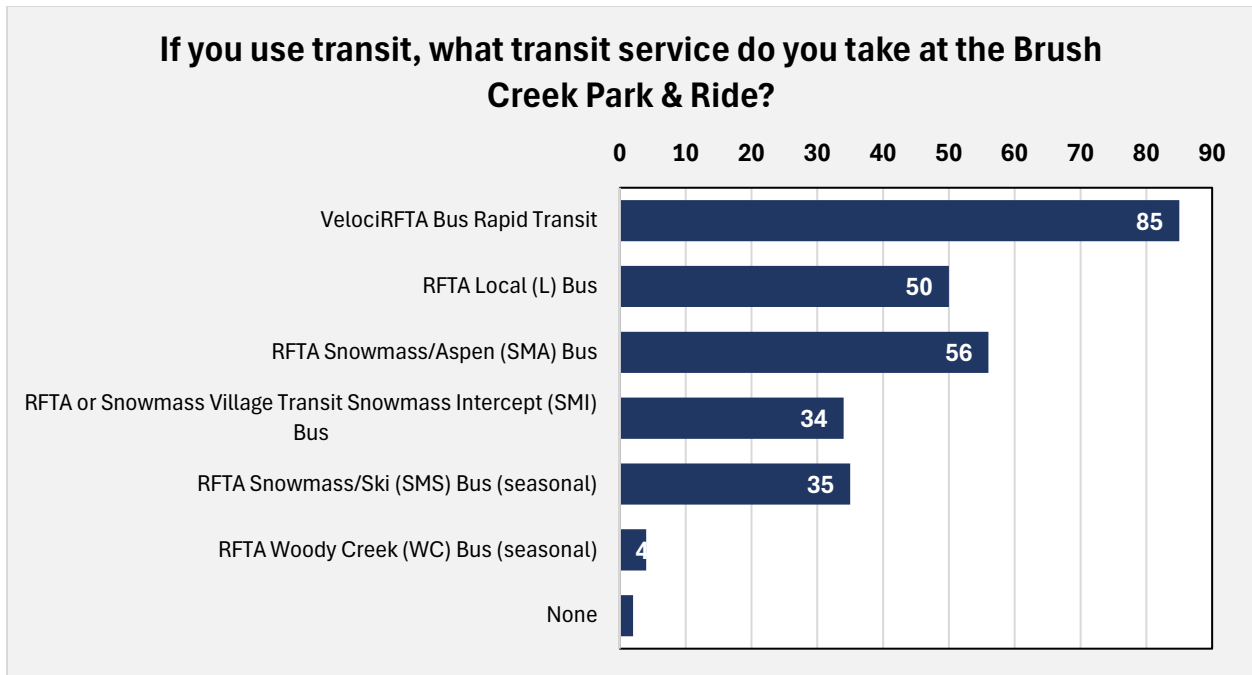
Don't use it

If I drive, I drive. If the family member drops me off, then I bus home Down Valley on RFTA.



Question 7. If you use transit, what transit service do you take at the Brush Creek Park & Ride?

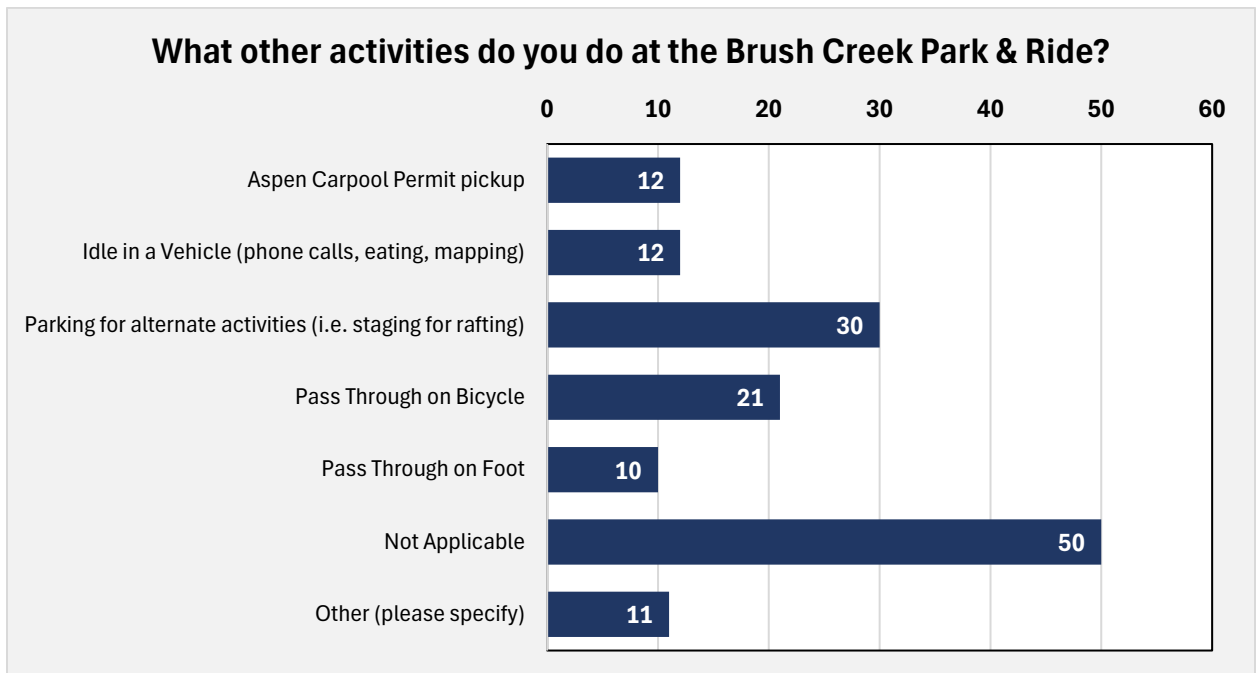
Answer Choices	English	Spanish	Total
VelociRFTA Bus Rapid Transit	74	11	85
RFTA Local (L) Bus	43	7	50
RFTA Snowmass/Aspen (SMA) Bus	47	9	56
RFTA or Snowmass Village Transit Snowmass Intercept (SMI) Bus	30	4	34
RFTA Snowmass/Ski (SMS) Bus (seasonal)	34	1	35
RFTA Woody Creek (WC) Bus (seasonal)	3	1	4
None	2	0	2
Answered	110	19	129
Skipped	9	5	14



Question 8. What other activities do you do at the Brush Creek Park & Ride?

Answer Choices	English	Spanish	Total
Aspen Carpool Permit pickup	4	8	12
Idle in a Vehicle (phone calls, eating, mapping)	9	3	12
Parking for alternate activities (i.e. staging for rafting)	28	2	30
Pass Through on Bicycle	20	1	21
Pass Through on Foot	10	0	10
Not Applicable	42	8	50
Other (please specify)	10	1	11
Answered	97	19	116
Skipped	22	5	27

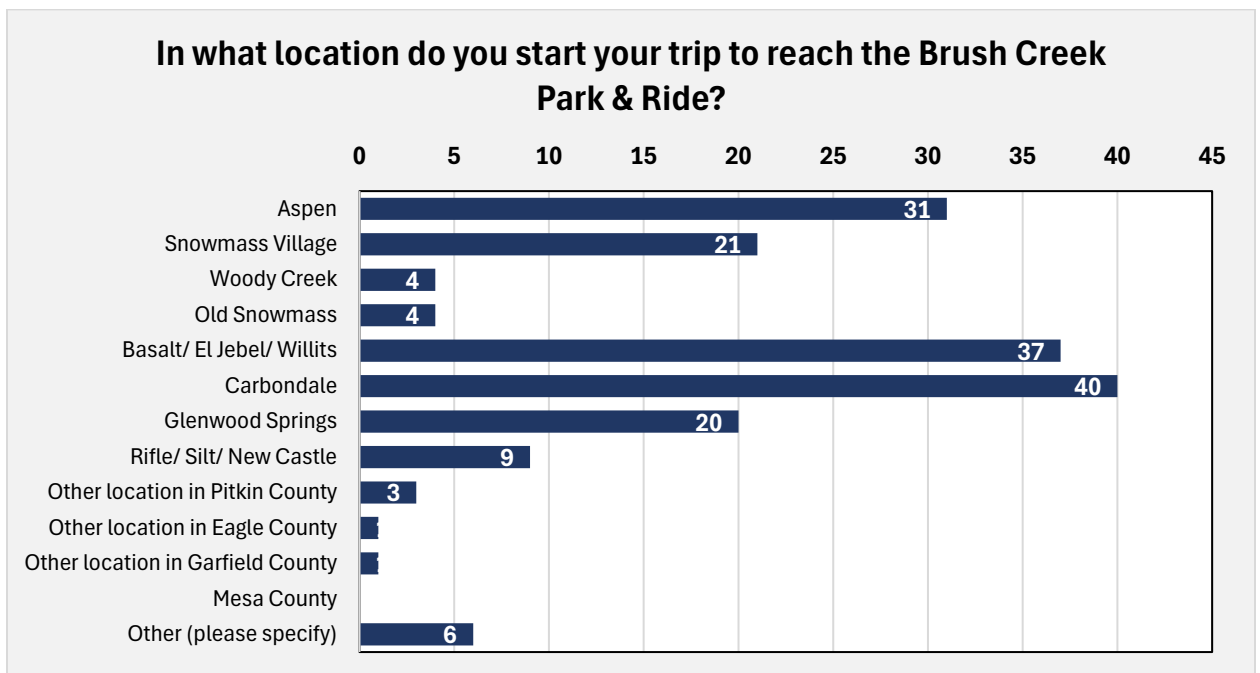
Other Responses
no I use it for bus only
Host nonprofit services every Thursday
Park to get in bus
School Bus drop off and pick up - Aspen Community School; walk dog on Aspen Mass Trail
Sit on benches near heaters
Park to Ride Sky Mountain park on bikes
Park and bike
There used to be a porta-potty, which I used in emergencies only. I saw the taco truck a couple summers ago, and I wish I had tried it.
Use as a spot to meet to carpool
Midpoint for meeting with friends and going in one car to ski or an event. Dropping/picking up dogs from family
Ir a trabajar



Question 9. In what location do you start your trip to reach the Brush Creek Park & Ride?

Answer Choices	English	Spanish	Total
Aspen	28	3	31
Snowmass Village	19	2	21
Woody Creek	4	0	4
Old Snowmass	3	1	4
Basalt/ El Jebel/ Willits	36	1	37
Carbondale	32	8	40
Glenwood Springs	14	6	20
Rifle/ Silt/ New Castle	3	6	9
Other location in Pitkin County	3	0	3
Other location in Eagle County	0	1	1
Other location in Garfield County	1	0	1
Mesa County	0	0	0
Other (please specify)	5	1	6
Answered	110	19	129
Skipped	9	5	14

Other Responses
Brush Creek Village
Brush creek village
Don't use it
Brush Creek Village
AABC
Parachute



Question 10. What is/are your destination(s) when traveling from the Brush Creek Park & Ride?

Answer Choices	English	Spanish	Total
Aspen	84	14	98
Snowmass Village	67	10	77
Woody Creek	3	3	6
Old Snowmass	0	2	2
Basalt/ El Jebel/ Willits	22	2	224
Carbondale	21	2	23
Glenwood Springs	14	3	17
Rifle/ Silt/ New Castle	3	3	6
Other location in Pitkin County	0	1	1
Other location in Eagle County	0	0	0
Other location in Garfield County	0	1	1
Mesa County	0	0	0
Other (please specify)	10	0	10
Answered	111	19	130
Skipped	8	5	13

Other Responses
Aspen village or Watson divide road
Airport
We want the Highlands Flyer back.
Bustang to Denver
Burlingame
Highlands
Aspen Highlands
Don't use it
Those 3 with no variation. But parking has gotten so expensive and complex at Highlands, that I wish there was a better AH-BC connection.
AABC

Question 10. What is/are your destination(s) when traveling from the Brush Creek Park & Ride?



Question 11. On a scale of 1 to 4, with 4 being the most important, rate these potential amenities for the Brush Creek Park & Ride.

Answer Choices	1. Not Important	2. Somewhat Important	3. Important	4. Very Important	Weighted Average
More frequent or direct transit service from this facility	9	28	36	44	3.0
Enhanced or additional seating/shelters	33	38	26	20	2.3
Improved restrooms	17	24	35	42	2.9
Improved heating	37	22	30	27	2.4
More wayfinding internal to the Brush Creek Park & Ride	47	28	24	12	2.0
More wayfinding to or from the Brush Creek Park & Ride	45	27	25	15	2.1
Enhanced safety, such as lighting or improved crosswalks	28	32	30	27	2.5
Electric vehicle charging stations	50	30	22	17	2.1
Better security and enforcement	34	32	31	20	2.3
Better cleanliness	24	45	28	19	2.4
Better site maintenance, such as snow removal	20	42	30	23	2.5
More parking	18	34	31	31	2.7
Long-Term airport parking/New shuttle service to the airport	23	25	31	38	2.7
New shuttle/transit service for employees only	28	22	31	34	2.6
More bicycle parking	42	38	22	13	2.1
Improved ADA accessibility	30	39	25	22	2.3
Other (please specify)					17
Answered					119
Skipped					24

Question 11. On a scale of 1 to 4, with 4 being the most important, rate these potential amenities for the Brush Creek Park & Ride.

Other Responses
Better connection to the Rio Grande Trail
I wish there was a space for a car to drop off passengers. A lot of days my husband and I will carpool from Basalt and he will drop me off at the park and ride to catch the bus into Aspen and he will continue to snowmass. There is no easy and safe place for him to pull in and drop me off. The access to the sidewalks from the parking lot are horrible because of the fence. There is one specific spot where you can cross to the busses.
Better hours for the Carpool permit office. Every time I try to get a permit, it is closed even tho I go when it is supposed to be open.
Signage about school bus as it is located near carpool pass station - would love if those spots could be reserved for parents at drop off and pick up times.
Bus schedule displays and notifications
Consider developing housing at this location. It would likely qualify for TOD grants and is a perfect location for housing folks who work in Aspen or Snowmass.
Pedestrian Access to the Park n Ride from Brush Creek
Remains free = very important
Service to Highlands; increase routes between Snowmass-Highlands and stop at Brush Creek both directions. There needs to be an earlier service where people can get first chair and instructors can move between resorts with adequate time to don equipment upon arrival.
I utilize wecycle often and would love more stations and access connections at Brush Creek!!i hope the bridge to Rio is built for easier use and wayfinding. That steep hill is not fun
LESS LIGHTING; It's too bright.
Improved trail access to Aspen as proposed by OST
The lighting on the platform is horrible, at night. Need more lighting it is not safe at night. Also the homeless camping out there
When I used to work nights, I was pretty concerned about the lack of lighting and lack of security.
RFTA needs a "bike bus"; a bus that accomodate loading more bikes. Only 2 bikes/bus is ridiculous.
Some of my "not important" ones are just because I'm unfamiliar with what's there now
Need direct buses to HIGHLANDS in winter.

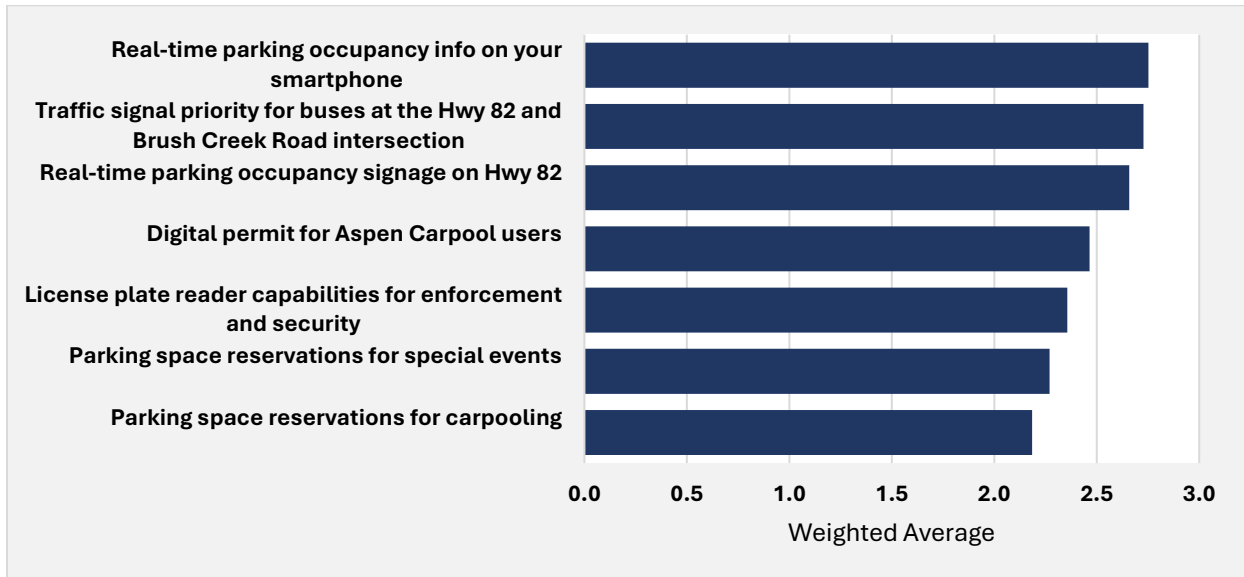


Question 12. On a scale of 1 to 4, with 4 being the most useful, rate these potential technological improvements for the Brush Creek Park & Ride.

Answer Choices	1. Not Useful	2. Somewhat Useful	3. Useful	4. Very Useful	Weighted Average
Real-time parking occupancy signage on Hwy 82	20	31	35	31	2.7
Real-time parking occupancy info on your smartphone	16	31	36	34	2.8
Digital permit for Aspen Carpool users	30	27	31	26	2.5
License plate reader capabilities for enforcement and security	36	27	27	25	2.4
Parking space reservations for carpooling	41	29	26	18	2.2
Parking space reservations for special events	44	20	27	24	2.3
Traffic signal priority for buses at the Hwy 82 and Brush Creek Road intersection	22	23	33	36	2.7
Other (please specify)					4
Answered					117
Skipped					26

Other Responses
Buses being labeled as full on information boards if they are. Frustrating when you have three buses go by all too full for anyone more, and then you get in your car and drive into town, when you could have done it an hour ago and not been late because you kept waiting hoping for a bus with space
I don't know what the parking space reservations are and the trade-offs of that. Maybe that would be most useful for long term airport parking but not generally.
Traffic light for traffic entering parking lot from down valley is very inefficient in the morning
It is so demoralizing when you're trying to go to work, and the bus driver won't pick you up. I swear, I would reserve my bus seat in order to arrive at work on time.

Question 12. On a scale of 1 to 4, with 4 being the most useful, rate these potential technological improvements for the Brush Creek Park & Ride.



Question 13. Please provide any additional comments you may have on the Brush Creek Park and Ride:

#	Responses
1	It's so cold during the winter months , I would like to have more heaters
2	I think better access for pedestrians between the bus area and the parking lot would be great. A drop off area for cars dropping off pedestrians would be helpful. Additionally, a bus to the highlands on ski weekends would be excellent. And increased heating for people waiting for buses in the winter would be incredible.
3	Allow e-bikes in buses!!! Perhaps get bike trailers like we-cycle uses. I would use the bus every day for commuting to work from Carbondale to Aspen if I could bring my ebike on the bus.
4	Off season is significantly more difficult to use the bus system as a full time year round job employee. Also very crowded busses in summer/off season for times in which local employees are using the bus lines.
5	More lighting
6	New parking alignment is not conducive to drop offs for passengers. Have to go down a block and then back to front to drop off. Previous alignment was easier for drop offs
7	Please allow overnight parking with transit to the airport. Perhaps use a separate area of the parking lot. Parking at the airport is becoming more and more unavailable.
8	Please put lots of EV charging back. Many have electric cars now!!
9	Improve the heating systems. Better bathrooms.
10	Why is snow removal so incomplete? It is very dangerous walking to buses over the large banks of snow. Parking spaces are limited because of lack of snow removal.
11	Please have RFTA bring back the Highlands Flyer.
12	It would be nice if the RFTA bus to Highlands connected to Brush Creek
13	Consider building housing at Brush Creek. Also consider building a bus stop on the north side of Highway 82 so that buses heading towards Aspen do not need to pull into Brush Creek. The pedestrian tunnel connecting the north side of the road already exists which is great.
14	It would be wonderful to have better bathrooms at Brush Creek and maybe live feed of parking availability
15	Great job
16	Bicycle safety along Hwy 82 to the ABC- without bridges is still possible if we focus on making it safe- w cdots help
17	It would be awesome to have a bus that went directly from brush creek to snowmass mountain rather than switching at the rodeo lot.
18	Please keep it FREE
19	Please create maximum parking. There is so much room out there to take care of everyone's parking needs.
20	Would live to see Direct bus service to highlands come back
21	I use this parking lot regularly in the ski season for access to Aspen Mountain and find the service to be excellent.
22	Miss it being called the Intercept Lot, which so many of us still call it.
23	If I could be guaranteed a seat at Basalt I would not need to park at Brush Creek. Unfortunately, since the pandemic it has been standing room only at that point, so we are forced to drive our own vehicle.
24	1. Bathroom please!! 2. Shelter similar to Rubey Park with information would be really useful. I often help lost tourists. I also am cold in the winter sometimes or after snowmass concerts in summer waiting for bus transfers. 3. I would support bringing back the S.O.S. 4. Designated overnight parking for camping/carpooling? Brush Creek and Buttermilk need to figure out how to support people parking more than 3 days for doing activities like the 4 Pass Loop and other longer overnight backpack trips. Carpooling and then driving or bussing to trailhead would help with busy trailheads like Snowmass Creek, Capital, etc . 5. Build the bridge to Rio!! Biking from my friend in Woody Creek to Brush Creek is surprisingly complicated.
25	It would be helpful if the Velocirafta and the local buses alternate schedules, so there is more frequency.
26	There needs to be actual restrooms not! Porta potties. And there needs to be handicap accessible restrooms
27	Sure wish the Snowmass Village Town Council would have built that transit center.

#	Responses
28	Need to expand parking and bus service during high season. Buses are full coming from aspen and going up to Snowmass. Standing room only.
29	A mid-day bus to and from woody creek would increase use.
30	EV charging please Better trails from the lot into Aspen
31	No more camping ! Way too many people camp year round at brush creek lot ! No more camping
32	Toilets and sinks with plumbing would be great. Clean, safe bathrooms. But how do you keep people from sleeping in them and defiling them and vandalizing them?
33	My biggest request for the intercept lot is better bathrooms.
34	RFTA needs a "bike bus" or a "trailhead bus"; a bus that accommodates loading more bikes and takes people to our local trailheads. Only 2 bikes/bus is ridiculous. RFTA could cut emissions for our valley by over 30% if a "trailhead bus" service was provided. Breckenridge and other communities bus services' provide this; RFTA should too.
35	Additional buses between Brush Creek and Aspen (like the Brush Creek to Snowmass Village) could be helpful to commuters as buses to and from down-valley are often full. Also, parking and access into and out of town is convenient from Brush Creek.
36	There are too many campers and commercial parking out there taking up space. Also, the north end of the lot has been trashed by skiers parking on the dirt area between the parking lot and emergency egress road. There out to be fencing or boulders there.
37	There should be DIRECT buses to Highlands in Winter so folks don't take up all the parking at Buttermilk to connect to the Highlands buses.
38	Generally a very excellent lot! I use for bike rides at sky mtn, or days when I have to be in TOSV and Aspen on the same day. very convenient. The residential use of the lot by transients / campers is troubling.
39	EV Chargers would be big!
40	Please build the full bathrooms
41	It would be great to have local amenities/little bodega. I think overnight parking should be allowed. Would much rather people make it all the way home on public transportation after drinking etc then have to move their car. same with parking for air travel (maybe with a fee?) or overnight camping for a night or two.
42	I think bathrooms are an absolute must!! Also a better shelter when waiting for the bus in the winter it can get really cold.
43	Ampliación del espacio
44	Muchas personas nos vemos beneficiadas de esta estación, por lo que es importante mantenerla en buenas condiciones y mejorarla
45	Cámaras de vigilancia muy importantes que por ahora no hay lo suficiente
46	Mejoras en los paneles del horario de los camiones, un espacio cerrado para soportar el frío
47	Con las preguntas y respuestas basta
48	Excelente estacionamiento me gusta por q es grande y Gratis
49	Excelente iniciativa

Appendix C: Peer Review & Best Practices Memo



Brush Creek Park & Ride Monitoring and Management Plan

Task 4: Peer Review and Best Practices Memo

DRAFT

March 2025

Prepared By:



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- Study Area 3
- Peer Review 5
- Best Practices 15
- Key Takeaways 25

Introduction

The Elected Officials Transportation Committee (EOTC) of Pitkin County has initiated this project to identify strategies to enhance the operation and effectiveness of the Brush Creek Park & Ride facility. The park & ride is a critical component of the Roaring Fork Valley’s multimodal transportation network and it is intended to promote and encourage travelers and commuters to transfer from personal vehicles to transit, shuttles, carpools, and active transportation modes. The park & ride, situated at the intersection of Brush Creek Road and Colorado State Highway 82 (Highway 82), is intended to help reduce traffic congestion on routes into and out of the City of Aspen and the Town of Snowmass Village and to help alleviate parking demand at key destinations in both communities.

The Brush Creek Park & Ride faces operational and management challenges. The EOTC has identified the need for a comprehensive Brush Creek Park & Ride Monitoring and Management Plan to evaluate current practices and recommend strategies for improvement. This initiative will focus on optimizing site operations, enhancing access, and promoting a shift towards more sustainable transportation options, aligning with the goals outlined in recent regional planning documents.

This memo summarizes a review of peer park & ride facilities as well as local, regional, and national best practices for operating and maintaining a park & ride. The memo builds upon the existing conditions report and will inform the development of strategies to improve management, operations, monitoring, enforcement and maintenance at the Brush Creek Park & Ride.

Study Area

The Brush Creek Park & Ride is located in the heart of Pitkin County and the Roaring Fork Valley and is a central hub within the Roaring Fork Transportation Authority (RFTA) transit service area. The park & ride is situated on the eastern side of the intersection of Brush Creek Road and Highway 82 and is accessible from the existing signalized intersection of these two roadways.

The property surrounding the park & ride is generally undeveloped, with the Roaring Fork River to the east and south, Brush Creek to the west, and vacant parcels to the north. Despite minimal development in the immediate area, the location is ideal for a park & ride, as the facility can serve both commuters and visitors traveling to and from the valley’s major activity centers.

The Brush Creek Park & Ride currently helps serve transit riders and carpools heading to the:

- City of Aspen to the south via Highway 82
- Town of Snowmass Village to the west, via Brush Creek Road
- Lower Roaring Fork Valley communities to the north including Carbondale and Glenwood Springs, via Highway 82

Figure 1 shows the project location.

Figure 1: Brush Creek Park & Ride Reference Area



Figure 1: Brush Creek Park & Ride Reference Area
Brush Creek Park & Ride Management Plan



Peer Review

The Brush Creek Park & Ride peer review assessed the management and operations of similar park & ride facilities. The peer review aimed to gain an understanding from peer agencies with similar facilities on what works well, and what could be improved in terms of management and operation of a park & ride. The peer review uncovered new ideas, methods, strategies, and practices that could potentially be implemented at the Brush Creek Park & Ride. Three agencies were interviewed for the peer review:

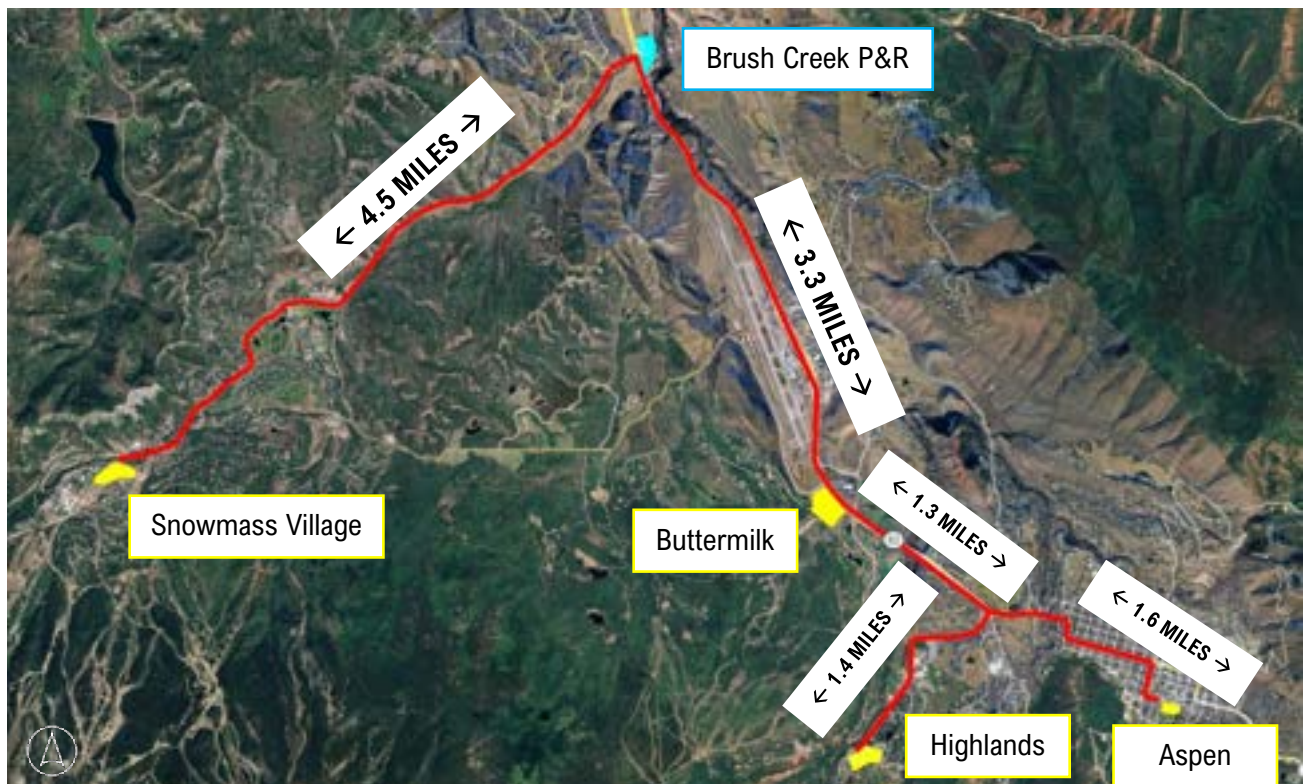
1. Teton Village Association (TVA) for their Stilson Park & Ride near Jackson, Wyoming
2. Steamboat Springs Transit for their Stockbridge Transit Center in Steamboat Springs, CO
3. Utah Transit Authority (UTA) for their Big Cottonwood Canyon Park & Ride in Cottonwood Heights, UT

These peer facilities are similar to the Brush Creek Park & Ride in several ways, including:

- All facilities primarily serve to intercept skiers, employees, and commuters to reduce parking congestion at ski resorts and the surrounding communities
- All facilities are situated along high-volume roadways
- All facilities are between 4 miles to 20 miles away from nearby communities and ski resort(s)
- All facilities are free to park and do not have a gate or any other restriction for entry

The interviewees provided valuable insight into existing management, operations, and enforcement practices at their peer facilities. The peer park & ride locations and pathways to their respective ski resorts can be compared to that of the Brush Creek Park & Ride, shown in Figure 2.

Figure 2: Path from Brush Creek Park & Ride (Blue) to Upper Roaring Fork Resorts (Yellow) on Brush Creek Road and Hwy 82



Stilson Park & Ride near Jackson, Wyoming

The Stilson Park & Ride is located just outside of the Town of Jackson and the community of Wilson, Wyoming. Stilson Park & Ride is located at 1455 Beckley Way, Wilson, WY 83014 at the northwest corner of Wyoming Highway 22 (Teton Pass Highway), and Moose Wilson Road. Stilson Park & Ride has approximately 800 unpaved spaces. The Southern Teton Area Rapid Transit (START) Bus operates from the Stilson Park & Ride Transit Center.



Figure 3: Stilson Park & Ride

The peer review was conducted via a virtual meeting with Matt Larson, Director of Transportation with the Teton Village Association (TVA) on November 19, 2024. The TVA is a local government entity with the goal to enhance the guest experience at Teton Village, home of the Jackson Hole Mountain Resort and approximately 1,000 full-time residents.

Figure 4 presented below highlights the general pathway to Teton Village from the Stilson Park & Ride.

Figure 4: Path from Stilson Park & Ride (Blue) to Teton Village (Yellow) on Moose Wilson Road



TVA Goals

The main transportation goals of the TVA are to reduce personal vehicle travel on Highway 390 (Moose Wilson Road), promote high-occupancy travel wherever possible, and to limit employee parking at Teton Village. The Stilson Park & Ride is a facility that assists in achieving each of the goals.

Management

The Stilson Park & Ride is owned by the Jackson Hole Mountain Resort. The TVA manages the Stilson Park & Ride in the winter, and Teton County Parks & Recreation manages the lot in the summer. The handoff between TVA and Teton County Parks & Recreation is linked to when the Teton Village ski area is opened or closed for the season; TVA manages the lot when the ski area is open.

Winter management typically consists of servicing the restroom building and snow removal. TVA hires a local contractor for snow removal, which occurs after a major snow event. TVA pays for winter maintenance; Teton County pays for summer maintenance. The restroom may be locked during certain times in the off-season.

TVA manually counts entry and exit volumes and parking occupancy at the Teton Village lots daily, typically at peak hours between 11am and 2pm. The counts are summarized at the end of each season and are used to shape future parking policy.

Operations

The START Bus operates from the Stilson Park & Ride. Three lines operate between Stilson Park & Ride and Teton Village, including the Teton Village Express, the Teton Village South, and the Teton Village Local. START Bus is free between Stilson Park & Ride and Teton Village. START Bus provides more frequent service between the Stilson Park & Ride and Teton Village in the winter.

TVA also operates a shuttle service between Stilson Lot and Teton Village, focused on employee use. The Teton Village Master Plan states that employees should not park at Teton Village, except “special and early workers” that do not have typical working hours. This shuttle service is contracted out to Mountain Resort Services. The shuttle runs from Stilson to Teton Village from 6:35am to 9:50am, and from Teton Village to Stilson from 3:00pm to 6:20pm. The shuttle service flyer is advertised online and is shown here:

Figure 5: TVA Stilson Employee Shuttle Schedule



WINTER 2024 - 2025

FREE STILSON EMPLOYEE SHUTTLE

Times are approximate

New Extended peak season with three shuttles running in the morning and two shuttles running in the afternoon.

STILSON TO TETON VILLAGE

6:35 AM	7:50 AM	8:45 AM
7:10 AM	8:10 AM	9:10 AM
7:35 AM	8:35 AM	9:50 AM

Shuttles will also pick up from the Target START Bus stop in Jackson at 6:20 AM and 7:15 AM. Shuttles will drop off at the JWMR Mountain Ops building on request and in front of the Tram. Shuttles will make a stop at the Aspens in the morning going to Teton Village and in the afternoon going to Stilson.

TETON VILLAGE TO STILSON

3:00 PM	5:00 PM
3:40 PM	5:40 PM
4:20 PM	6:20 PM

The 6:20 PM shuttle will also drop passengers off at the Hampton Inn START Bus stop in Jackson.

ADDITIONAL PEAK SEASON SERVICE | 12.21.24 - 1.23.25

STILSON TO TETON VILLAGE	TETON VILLAGE TO STILSON
6:45 AM	3:15 PM
7:25 AM	3:55 PM
8:05 AM	4:35 PM
8:40 AM	5:15 PM
	5:55 PM
	6:20 PM

Shuttle Service Provided By Mountain Resort Services | 307.733.1112

A priority parking lot at Teton Village charges \$35 a day for parking midweek and \$45 a day on weekends. A parking lot further away from the Teton Village entrance is \$18 a day for parking midweek and \$25 a day on weekends. Teton Village also features a carpool lot that is \$5 a day for parking midweek and \$10 a day on weekends for vehicles with three occupants, and free for vehicles with four or more occupants. A staff person is placed at the carpool gate booth to check vehicle occupancy.

Teton Village parking reaches capacity anywhere between 8am and 10am in the morning through 3pm to 5pm in the evening during ski season.

In the summer, the TVA, in association with Friends of Pathways and Yellowstone-Teton Clean Cities, sets up the Wheel House commuter bike hub at the Stilson Lot, that offers secure overnight bike parking and e-bike charging. At the Wheel House, commuters can park, lock, and charge their bikes overnight for free. The program

encourages multimodal transportation by allowing commuters to park their car, hop on their bike, and cycle the rest of their commute from a central location.

The Stilson Park & Ride is advertised on the Jackson Hole Mountain Resort website, newspaper or print ads, social media, and through the Jackson Hole Tourism Board. Lodging partners also encourage their guests to use transit. Static signs and dynamic messaging signs are also present on adjacent roadways to direct visitors to the free park & ride. Messaging signs also show when parking at Teton Village is at capacity, encouraging visitors to use the park & ride.

Enforcement

Overnight parking is not allowed at Stilson Park & Ride. This regulation restricts visitors with recreational vehicles who are seeking a place to set up camp for an extended period. Jackson Hole Mountain Resort Security patrols vehicles that are present overnight and will give them notice. After several days, the vehicle is subject to tow. This regulation is especially important in winter months due to snow removal needs.

Parking Utilization

The parking demand at the Stilson Park & Ride varies greatly by season. The Stilson Park & Ride is most utilized in the winter due to the influx of ski visitors. At no time in the year does the Stilson Lot reach its capacity of approximately 800. On busy winter season days at the lot, there may be over 600 vehicles parked at any one time. Parking at Teton Village is paid parking in winter, which encourages visitors to park at the Stilson Park & Ride. Parking at Teton Village is free in the summer, which results in very limited parking utilization at the Stilson Park & Ride outside of ski season.

Special Events

Most special events that utilize the Stilson Park & Ride occur in the summer when typical parking demand is low. Events in the past have included a marathon and the fire department chicken fry. No fee is collected for events. Even during special events, the lot does not reach capacity.

In June of 2024, Teton Pass experienced a landslide that forced the closure of Highway 22. TVA was able to turn a portion of the Stilson Lot into a temporary employee campground. Permits were issued to employees to allow them to park in the lot overnight to bypass the overnight restriction. TVA kept track of the permits during this period and the permission for overnight stays was lifted when the roadway reopened.

Existing Challenges

An existing challenge may include encouraging more visitors to use the Stilson Park & Ride. One of the ways to encourage use may include increasing transit headways so that park & ride users are not waiting longer than five or ten minutes for a bus or shuttle.

Another challenge includes significant ingress in the morning and egress in the evening to and from the Teton Village parking lot. Some delays are caused by entry and exit gates, which contributes to congestion at lots. TVA is considering gateless entry and exit.

The Jackson Hole Mountain Resorts holds meetings to discuss ways to best address existing challenges and environmental concerns regarding future development of the Stilson Park & Ride. The Stilson Lot is situated within a major wildlife corridor, which may affect possible development. The proposed development adjacent to the Stilson Park & Ride includes employee housing and a sports complex. Wildlife advocates have noted the proposed built environment paired with additional light pollution and human traffic in the area would negatively impact the existing natural state.

TVA also noted that they would like to be more efficient in counting their Teton Village lots daily.

Future Development

Teton County was awarded funding for the Teton Mobility Corridor Improvements BUILD Grant Project, which includes funding for the Stilson Park & Ride Transit Center. The Stilson Park & Ride Transit Center Project consists of the construction of a 2,900 square-foot transit center, an additional 400 spaces for the park & ride, pedestrian and bicycle interconnections, covered bicycle parking, EV charging, a wildlife crossing, and transit signal priority at the intersection of Moose Wilson Road and Highway 22. The new transit center would include a climate-controlled waiting area complete with an information desk, restrooms, and a small coffee bar. The estimated cost of the project is \$14 million. The BUILD Grant Project may also lead to expanded transit service and changes to parking regulations, in which case the Jackson Hole Mountain Resort is responsible for any change in regulations. TVA intends to have Teton County manage the Stilson Park & Ride Transit Center after construction, which is anticipated to be completed in Fall 2026.

Figure 6: Rendering of the Proposed Stilson Park & Ride Transit Center



Stockbridge Transit Center in Steamboat Springs, Colorado

The Stockbridge Transit Center is located at 1505 Lincoln Avenue in Steamboat Springs, Colorado. The transit center has approximately 120 paved spaces. Steamboat Springs Transit operates from the Stockbridge Transit Center.



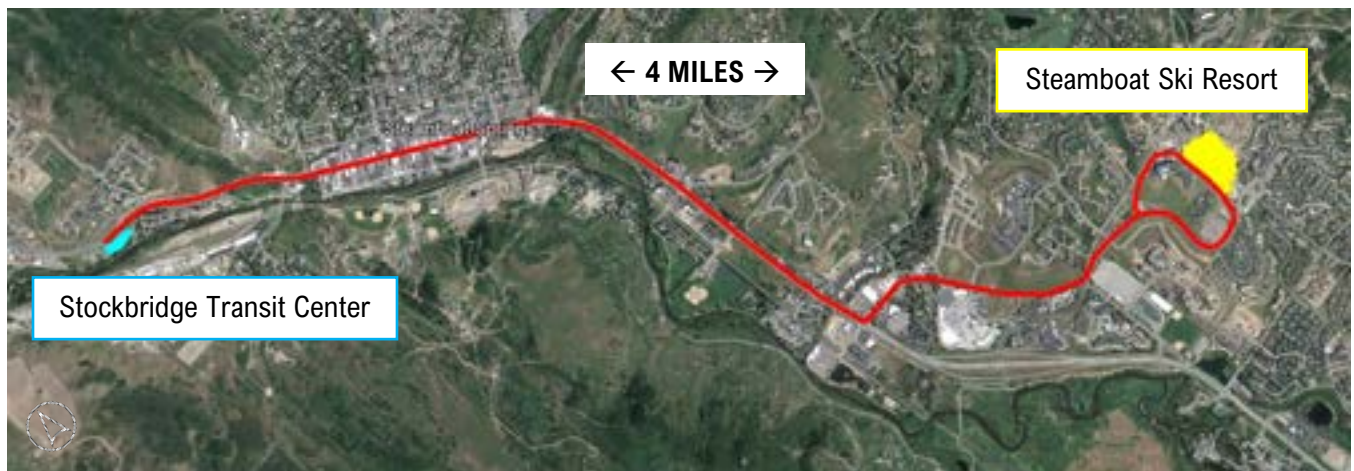
Figure 7: Stockbridge Transit Center

The peer review was conducted via a virtual meeting with Jonathan Flint, Transit Manager for the City of Steamboat Springs, on February 21, 2025. Steamboat Springs Transit operates a free fixed route bus service in

the city as well as a regional bus service between Steamboat Springs and Craig, CO. Steamboat Springs has a population of approximately 14,000, or 20,000 in the winter.

Figure 8 presented below highlights the general pathway to the Steamboat Ski Resort from the Stockbridge Transit Center.

Figure 8: Path from Stockbridge Transit Center (Blue) to Steamboat Ski Resort (Yellow)



Management

The City of Steamboat Springs owns and manages the Stockbridge Transit Center as well as the Regional Transit Center in Craig, CO, about 40 miles west of Steamboat Springs. The city received their land for the Stockbridge Transit Center from CDOT. For the Stockbridge Transit Center, the Steamboat Springs Public Works Department performs maintenance for snow removal, and the Park Department performs groundskeeping. Steamboat Springs receives an in-kind donation from the City of Craig for maintenance for the Regional Transit Center.

Operations

The Stockbridge Transit Center has two main objectives: serve as a transit park & ride as well as a “park & group”. The “park & group” concept allows coworkers, friends, or otherwise, to carpool together from the Transit Center,

reducing the number of parking spaces utilized in Downtown, at the ski resort, or any other destination with limited vehicle parking. “Park & group” is common with construction workers. There also is parking demand for recreational uses, such as hiking, bicycling, and fishing.

The Stockbridge Transit Center closes about an hour after the last bus arrives, approximately 1am. This gives all drivers the ability to get back to their vehicles and leave the site with ample time.

Enforcement

Overnight parking is not allowed at the Stockbridge Transit Center. Steamboat Springs also enforces a one space per one vehicle policy, ensuring that no vehicle, such as a boat trailer, takes up multiple spaces. Steamboat Springs works with their police department to enforce that no vehicles stay overnight or take multiple spaces. These policies came about through observation to maximize the true intent of the park & ride.

To enforce the lot between 1am and 5am, police officers will scan the lot from US 40 during their normal patrol, the major highway directly adjacent to the lot. If they notice a vehicle parked, they will enter the lot, knock on the camper’s window, and tell them to move on. If no one is present, the vehicle is towed. Transit employees are advised not to approach camped vehicles.

Existing Challenges

The Stockbridge Transit Center was built when there was little development to the north and west of the City, limiting the need for an expansive parking area at the time. With new development in these areas, the need for a larger parking area has grown, though there is now little room to expand. The City is seeking ways to either expand the parking footprint or buy new land for park & ride facilities.

The Stockbridge Transit Center reaches capacity in the summertime, especially over the holidays and weekends, as there is an overlap between construction “park & group”, transit usage, and recreational usage. The city acknowledges that single-occupancy vehicles do not have the same luxury as they used to in small mountain towns.

The city has found that the shift to taking transit is more challenging for long-time residents of Steamboat Springs, apart from recent residents moving after COVID or part-time residents who may be coming from transit-oriented cities.

Future Development

The ski area is planning to undergo new development that may impact their existing free and ample parking. Due to the potential displacement in ski area parking in the next 5 to 10 years, the city may turn to paid parking or another control/ technological solution to ensure that the Stockbridge Transit Center’s purpose is met.

Big Cottonwood Canyon Park & Ride in Cottonwood Heights, Utah

The Big Cottonwood Canyon Park & Ride is located at 3865 Big Cottonwood Canyon Road, in Cottonwood Heights, Utah. The transit center has approximately 80 paved spaces. The Utah Transit Authority (UTA) operates from the Big Cottonwood Canyon Park & Ride.

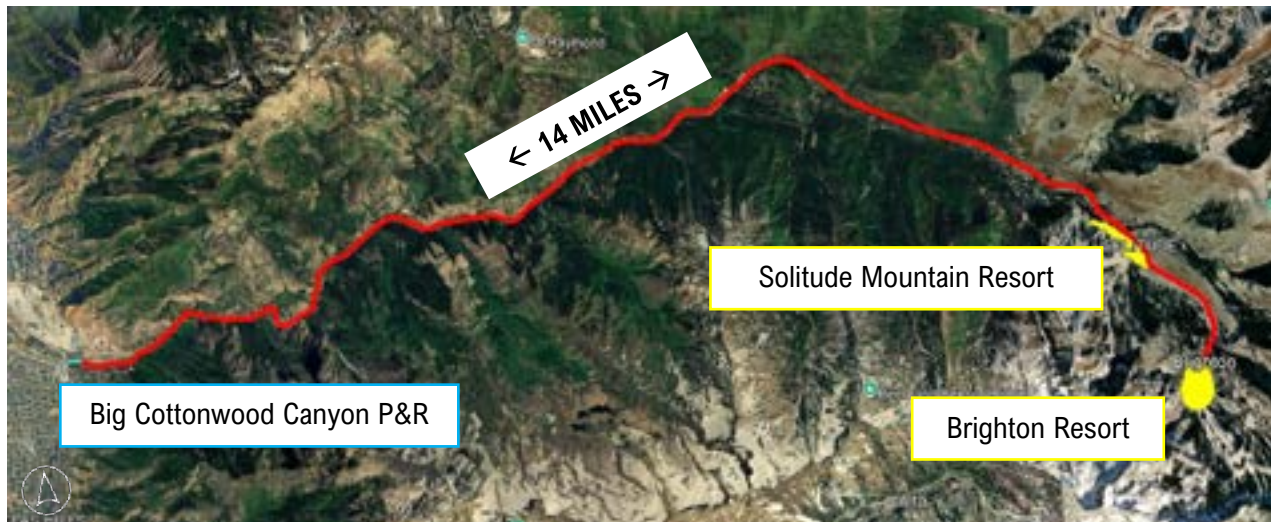


Figure 9: Big Cottonwood Canyon

The peer review was conducted via a virtual meeting with Bill Humphreys, Assistant Manager of Operations for UTA, on February 24, 2025. UTA operates public transportation throughout the Wasatch Front in Utah.

Figure 10 presented below highlights the general pathway to the Solitude and Brighton Resorts from the Big Cottonwood Canyon Park & Ride.

Figure 10: Path from Big Cottonwood Canyon Park & Ride (Blue) to Solitude and Brighton Resorts (Yellow)



Management

UTA manages many various park & ride facilities in the area that all play a role in transit access to Utah ski resorts. Big Cottonwood Canyon Park & Ride is owned by the City of Murray, who has wells underneath the park & ride itself.

UTA has designed contract agreements, so all parties are aware of who is responsible for what action, specifically outlining repair for lighting structures, shelters, and restrooms as well as restriping (annually). The contracts are important to ensure that when an action needs to be taken, the party responsible is obligated to perform the work. When the contracts were signed regarding the park & rides, all stakeholders were assigned to fund a percentage of operations and maintenance, since all stakeholders are benefiting. As an example, the ski resorts are contracted

to put monies in for transportation infrastructure in addition to a percentage of their ski resort taxes going straight to transportation.

The US Forest Service and the ski resorts enter into land swaps based on transportation to expand their resort capacity. When the ski resorts fund or implement alternative transportation projects, the US Forest Service can offer forest land when assured the remaining forest would not be negatively impacted by growth.

UTA holds meetings with all transportation stakeholders monthly through Zoom, including the resorts, UDOT, the municipalities, US Forest Service, and the fire departments. The meetings are to determine what is working or not working with transportation up Big and Little Cottonwood Canyons, and that all stakeholders are on the same page. Avalanche control in Little Cottonwood Canyon is a major topic in these meetings.

Operations

UTA works in collaboration with all four mountain ski resorts regarding parking and access, with Solitude and Brighton in Big Cottonwood Canyon (Solitude and Brighton), and Alta and Snowbird in Little Cottonwood. UTA employs supervisors to oversee operations of their lots from 6am to 10pm.

UTA clears snow from bus shelters and passenger platforms, and UDOT is responsible for plowing the parking lot daily. Each lot has its own individual network of maintenance.

Enforcement

Due to the number of communities in the region, UTA works with five police agencies to conduct enforcement at their park & ride lots, including the Unified Police Department of Greater Salt Lake, Sandy Police, and Alta and Brighton Police Departments. No overnight parking is allowed in any of the park & ride lots, from November to April. In the winter, towing begins at 2am daily, strictly enforced due to plowing needs. Bill recommended installing cameras in lots to be apprised of any suspicious activity and ensure that no vehicles park overnight. In the summer months, a supervisor may notice a car parked in the lot for multiple days and ask the driver to move or report the car to enforcement.

Existing Challenges

The park & ride is on the north side of Big Cottonwood Canyon Road with no traffic control, creating a challenging movement for vehicles entering and exiting the park & ride.

Among all the park & ride lots in the area, Big Cottonwood Canyon may be one of the smallest park & rides as it was built in the 1970s. The regional population at the time was 287,000 compared to 2.4 million today, highlighting the drastic change in demand going into the canyon. There is no room to expand the park & ride or Big Cottonwood Canyon Road. Bill recommends planning with adjacent communities for 10 to 15 years from now to ensure that parking capacity meets future demand. This may include a transportation hub or a bus maintenance facility.

Due to the high volumes of users paired with the perceived low number of bus trips up the mountain, users may not be able to take a bus because they are jam-packed with riders. Private vehicles may attempt to park at the ski resorts but many often find trouble finding parking and must return back down the mountain.

Future Development

UTA is seeking to redevelop the existing gravel pit just north of the Cottonwood Canyon Park & Ride into a major community development, complete with offices, hotels, a transportation hub, and 8,000 additional parking stalls.

Best Practices

This section reviews best practices for park & ride facilities related to management, operations, maintenance, and technology. The best practices summary highlights opportunities that may be used to optimize park & ride services specific to the Brush Creek Park & Ride. The management and operations section explores strategies including seasonal pricing, carpool incentives, long-term parking permits, reservation systems, and planning for large-scale events. The maintenance section discusses which maintenance services are typically managed in-house versus contracted out, and highlights Crime Prevention through Environmental Design (CPTED) best practices. The technology section focuses on occupancy monitoring, effective parking guidance systems, and surveillance technologies used by similar park & rides.

Management and Operations

A major challenge for park & ride facilities is efficiently managing parking space usage, particularly during peak periods and peak seasons. To optimize and encourage efficient use, many facilities implement strategies such as carpool incentives, long-term parking permits, and reservation systems. Additionally, best practices are detailed on long-term parking solutions for non-permitted overnight parking as well as planning for large-scale events. Other strategies for providing parking availability information as a form of parking management (advance variable signage, apps, etc.) are further described in the technology section of the best practices summary.

Long-Term Parking

Existing regulations at the Brush Creek Park & Ride prohibit any vehicle from parking for longer than 24 hours. However, it is common for park & rides located near airports to provide an option for long-term or reserved parking as a solution to better serve airport users. Implementation of long-term parking permits would control parking facility usage ensuring that spaces are available for travelers who need extended parking.¹ A long-term parking permit system structure would be needed to clarify how a user can apply for and receive a permit, how long a permitted vehicle can stay at the park & ride, and how non-permitted or expired permits are enforced. Developing policy guidelines and expectations to manage a long-term parking program would assist in maximizing alternative transportation use in the Upper Roaring Fork Valley.

Reserved Parking Programs and Incentives

Agencies can opt to implement reserved parking programs, such as free reserved spaces dependent on vehicle stay duration (30-minute, daily, long-term) or by vehicle occupancy (carpool lot). Reservations guarantee parking availability for those who reserve spots ahead of time, such as with a reservation app, without altering overall parking demand. At Brush Creek Park & Ride, a reservation parking program may be most applicable during special events or high ski season visitation days. Some benefits of reserved parking include boosting transit ridership, improving customer satisfaction, and reducing road congestion around transit facilities by staggering vehicle arrivals. Additionally, some transit agencies may choose to make unused reserved spaces available to the general public after a certain time. Placing reserved spaces in high-demand locations is one opportunity to make a reserved parking program attractive to users.

¹ Turnbull et al. (2004)

Examples of Park & Ride Parking Management Strategies

Long-term parking, carpool incentives, and reservation systems are implemented at park & rides throughout the nation including in Breckenridge and Atlanta. These case studies are presented below.

Breckenridge Airport Skier Parking

The Breckenridge Airport Skier Parking facility offers free parking during the day. The park & ride facility also offers paid overnight parking at \$5 from Monday to Thursday and \$10 from Friday to Sunday, with a maximum stay of 14 days per vehicle per calendar year. Users can pay for parking using the Passport Parking app by entering their intended duration of stay (hours or days) and their license plate number. To ensure compliance with the 14-day maximum stay limit, the Breckenridge Police Department regularly monitors the lot. The facility is serviced by the resort's free shuttle buses every 20 minutes and every 15 minutes on the Free Ride Yellow Route bus, with convenient drop-offs at the Breckenridge Gondola.²

Figure 11: Breckenridge Reserve 'N' Ski Parking Reservation System Webpage



MARTA College Park

The Metropolitan Atlanta Rapid Transit Authority (MARTA) College Park & Ride is located just 2 miles from Hartsfield-Jackson Atlanta International Airport (ATL), making it a practical option for travelers. This facility allows travelers to park their vehicles and use MARTA rail services to reach the airport terminals, avoiding busy airport parking. MARTA offers a free overflow lot for short-term parking and a covered long-term deck for extended stays. The long-term parking costs \$8 per day for up to 1 month and 13 days, providing a more affordable rate

² Where to Park at Breck | Breckenridge Resort (2024)

compared to airport parking.³ Although reservations are not available for the park & ride, visitors can check parking availability on the MARTA website.

Parking Camping Solutions

Though long-term parking programs at park & rides may benefit certain users, others may take advantage of these programs system to camp. These issues are most common at park & rides that do not have entry gates, are free to park, or are under-enforced. To address camped vehicles, a continual and effective enforcement program is needed to identify, assess, and ultimately tow vehicles in violation. Management agencies have utilized automatic license plate reader technology to immediately flag vehicles that have dwelled for longer than 24 consecutive hours. This allows enforcement officers to quickly and accurately identify vehicles in violation soon after the 24-hour period. Otherwise, enforcement officers may have to assess vehicles for additional days to ensure a vehicle is in violation.

Alternatively, some cities across the United States are implementing safety measures to support people camping in vehicles. The Federal Highway Administration (FHWA) recommends leveraging state department of transportation resources to support affordable housing by designating vacant land for transitional housing or sanctioned encampments.⁴ For example, the Texas Department of Transportation (TxDOT) partnered with the nonprofit The Other Ones Foundation (TOOF) to create the Esperanza Community on TxDOT land, providing transitional housing for individuals previously living along the I-35 corridor and other rights-of-way scheduled for construction. TxDOT leased the land to TOOF, who then developed community plans and operations, incorporating feedback from residents to shape the community's master plan.⁵

While setting aside a section within a park & ride for long-term parking can temporarily support individuals experiencing homelessness, creating designated spaces on separate, unused land- organized and sanctioned for transitional living-provides a more equitable and sustainable solution. This approach offers secure, stable environments for unsheltered individuals without fully displacing them from public facilities.

Planning for Special Events

Managing parking for special events, especially at park & rides, is important to ensure a smooth and efficient experience for attendees. Park & ride lots can serve as convenient hubs where eventgoers can park their vehicles and take public transit to reach event venues. The FHWA handbook, "Managing Travel for Planned Special Events," includes a chapter on best practices for site access and parking plans, which can be applied to park & ride facilities. Table 1 highlights key best practices for facilitating efficient travel for visitors.

³ Parking Availability & Fees (n.d.)

⁴ *Promising Practices to Address Road Safety among People Experiencing Homelessness* (2024)

⁵ *Promising Practices for Transportation Agencies to Address Road Safety among People Experiencing Homelessness Case Studies in Current Practice* (2024)

Table 1: Key Strategies for Managing Special Event Parking⁶

Category	Key Points
Communication and Technology	Use wayfinding signs for parking areas and major routes. Implement advanced parking management systems to disseminate real-time traveler information.
Contraflow Operation	Use one-way traffic on access roads to accommodate more cars coming from a major intersection to the parking area.
Lane Channelization	Organize lanes to reduce unnecessary lane changes near parking entrances.
Multiple Access Points	Provide several entry points to the parking area.
Separate Areas	Designate different areas for different types of vehicles to keep things organized.
Space Turnaround	Ensure there is enough space for vehicles to turn around and wait if needed.
Overflow Handling	Prohibit parking on access roads near pick-up/drop-off areas and use cones to create extra lanes if needed.
Conservative Planning	Plan for maximum occupancy.
Parking Operations	Ensure vehicles are being parked at the same rate as new vehicles arrive.
Lot Full	Make “lot full” decisions before capacity is reached and inform travelers in advance through dynamic signage.

Maintenance

Effective maintenance and upkeep of park & ride facilities are essential for ensuring safety, cleanliness, and functionality. To establish an effective maintenance plan, it is important to evaluate which services can be handled in-house, and which are better suited for contracting. Additionally, incorporating CPTED principles can help assess and enhance maintenance practices for improved safety.

In-House vs Contracted Services

Transit agencies commonly adopt a combination of in-house and contracted services to manage park & ride operations. The Transit Cooperative Research Program (TCRP) Research Report 192, *Decision-Making Toolbox to Plan and Manage Park and ride Facilities for Public Transportation*, highlights case studies from various transit agencies, outlining common practices for in-house versus contracted services in park & ride operations.

⁶ Latoski et al. (2003)

Table 2: In-House vs Contracted Park & Ride Services⁷

In-House Services	Contracted Services	
<ul style="list-style-type: none"> ✓ Customer Support ✓ Site Inspections ✓ Parking Fee Collection ✓ Passenger Facility Maintenance ✓ Security 	<ul style="list-style-type: none"> ✓ Snow/ Ice Removal ✓ Trash Removal ✓ Cleaning ✓ Landscaping & Maintenance ✓ Pavement Maintenance 	<ul style="list-style-type: none"> ✓ Security Camera Maintenance ✓ Parking Fee Collection ✓ Reserved Parking Programs ✓ Parking Enforcement ✓ Site Inspections

Crime Prevention through Environmental Design (CPTED)

CPTED involves strategies to reduce crime by designing the physical environment to enhance safety and security. Key elements include proper lighting, natural surveillance, and visible walkways. For instance, Dallas Area Rapid Transit (DART) conducts CPTED assessments for its park & ride facilities every three years to identify necessary improvements.⁸ The American Public Transportation Association (APTA) has published guidelines for implementing CPTED in transit facilities, including the following key elements⁹:

1. *Natural Surveillance*: Maximizes visibility by placing physical features, activities, and people strategically.
2. *Natural Access Control*: Directs people through designated paths using entrances, exits, fencing, landscaping, and lighting to deter unauthorized access.
3. *Territoriality*: Defines boundaries to create a psychological deterrent by signaling that the area is monitored and intended for specific activities.
4. *Activity Support*: Encourages legitimate activities in public spaces to increase safety and discourage criminal acts.
5. *Maintenance*: Regular upkeep signals ownership and control, preventing disorder and maintaining the intended use of the space.

Transit-specific CPTED training is available from the Transportation Safety Institute (TSI) from the US Department of Transportation, and a CPTED Design Considerations checklist helps evaluate applicable principles in conjunction with local zoning laws.

Technology

Implementing proper technology is essential for effective parking management, improved efficiency, accurate occupancy monitoring, effective parking guidance systems, and enhanced safety. Technologies play an important role in contributing to a seamless operation of park & ride facilities.

⁷ Cherrington et al. (2017)

⁸ Ibid

⁹ Ryan et al. (2010)

Occupancy Monitoring

Accurate occupancy monitoring is an important component of highly utilized park & ride facilities, enabling real-time tracking of available spaces and ensuring efficient use of the lot. For outdoor park & ride facilities, it is important to choose technology that works for variable environmental conditions and review possible pricing constraints.

Occupancy monitoring technology such as sensors (inductive loop detectors, magnetometer sensors, microwave radar, etc.) can detect vehicle presence and occupancy using physical or electromagnetic changes, while advanced technologies (Machine Vision Cameras with AI Integration, Neural Networks, etc.) can analyze and interpret data to provide advanced insights and management. Sensors may be more ideal for smaller lots with minimal traffic complexity, where the goal is basic vehicle counting and space detection, while advanced technologies may be suitable for larger, high-traffic park & rides that need real-time updates, predictive analytics, and multi-platform integration.

Commonly used outdoor occupancy tracking smart parking sensors and advanced technologies are presented in Tables 3 and 4, providing advantages and limitations of each.

Table 3: Smart Parking Sensor for Occupancy Monitoring^{10 11}

Technology	Description	Advantages	Limitations
Inductive Loop Detectors	Embedded sensors in pavement that detect vehicles by sensing changes in inductance	<ul style="list-style-type: none"> ✓ Reliable Vehicle Detection ✓ High accuracy ✓ Lower entry-level costs 	<ul style="list-style-type: none"> ✗ High Maintenance Costs ✗ May be susceptible to weather damage ✗ Disruptive Repairs
Magnetometer Sensors	Detects vehicles using changes in electromagnetic fields and can be installed above and below ground	<ul style="list-style-type: none"> ✓ Easy Installation ✓ Low power consumption ✓ Weather Resilient ✓ High accuracy real-time data 	<ul style="list-style-type: none"> ✗ High installation cost for individual space sensors ✗ High maintenance costs
Microwave Radar	Uses radar beams to detect moving and stationary vehicles	<ul style="list-style-type: none"> ✓ Works in any weather ✓ Works in open and closed lots ✓ Effective for both moving and parked cars 	<ul style="list-style-type: none"> ✗ Expensive for large-scale installation ✗ Requires equipment in every space for individual spaces

Table 4: Smart Parking Advanced Technologies for Occupancy Monitoring^{12 13}

Technology	Description	Advantages	Limitations
Machine Vision Cameras with AI Integration	Uses cameras integrated with AI to improve image analysis for tasks like LPR and parking space detection	<ul style="list-style-type: none"> ✓ Covers multiple spaces with few camera units needed ✓ Cost effective for large lots 	<ul style="list-style-type: none"> ✗ Lighting and occlusion issues but can be mitigated with 3D scene information ✗ Bandwidth-intensive ✗ Requires regular camera maintenance
Neural Networks	Type of artificial intelligence that processes camera images to recognize patterns and make predictions to analyze occupancy, detect vehicles, LPR, and handle complex scenarios like obstructed views or predicting space availability	<ul style="list-style-type: none"> ✓ High accuracy in LPR and parking space detection (handles blurred or skewed license plates and adapts to poor lighting) ✓ Enhances automation in parking systems ✓ Can predict future occupancy trends 	<ul style="list-style-type: none"> ✗ Requires large datasets for accurate performance ✗ High computational requirements ✗ Costly implementation

¹⁰ Mouskos et al. (2007)

¹¹ Fahim et al. (2021)

¹² Paidi et al. (2018)

¹³ Fahim et al. (2021)

Parking Guidance Systems

Parking guidance systems display available parking spaces at lot entrances using vehicle counters like inductive loops or cameras. These systems, however, do not direct drivers to specific spaces. Examples of this include dynamic signage available showing available spaces or integration with mobile apps showing available spaces.

Advance Parking Guidance Signs

Advance parking guidance signs, found on highways or major roads, display real-time information about parking availability before reaching the parking facility. Knowing about available parking in advance can increase the likelihood that commuters will choose to use park & ride facilities.

Mobile Applications

Mobile applications offer an effective solution for remote parking monitoring, providing visitors with real-time updates by connecting to existing parking sensors. For example, Solitude Ski Resort in Big Cottonwood Canyon, Utah, developed the Solitude Carpool App, to enhance the visitor experience. The app has a dedicated parking information tab with a visual meter displaying real time availability in the Moonbeam and Village parking lots, along with directions to these locations. It also provides details on parking fees, reservation requirements, opening and closing times, and enables users to book parking directly. Additional features include a car finder tool to help visitors locate their parked vehicles and 24/7 live webcam feeds of parking lots and ski lifts, ensuring users can plan their ski day easily.

Figure 12: Solitude Carpool App



Safety Technology

Safety at park & ride facilities is essential in fostering public trust and encouraging regular transit use. Low-risk locations may only need occasional security visits in response to complaints or service requests. For additional security, a range of remote monitoring technologies can be employed, such as closed-circuit television (CCTV), license plate recognition (LPR), and advanced surveillance systems, to enhance oversight without requiring constant on-site presence.

Closed-Circuit Television (CCTV)

Closed-Circuit Television (CCTV) provides remote security for park & ride facilities at a lower initial cost compared to Advanced Surveillance systems, while also offering the ability for remote real-time monitoring. For example, in early 2023, Regional Transportation District (RTD) in Denver installed security cameras in addition to the existing license plate reader technology at the Table Mesa Park & Ride after a series of catalytic converter thefts. Signs were also placed around the garage to deter potential thieves by alerting them to video surveillance. The footage is monitored in a control room, and since the deployment of the CCTV cameras, catalytic converter thefts have

decreased.¹⁴ However, despite CCTV's lower upfront costs, ongoing operational expenses may be higher due to the need for adequate staffing for real-time monitoring.¹⁵

License Plate Recognition (LPR)

License plate recognition (LPR) technology is utilized in parking management to enforce regulations and ensure vehicles park in designated areas for no greater than the maximum duration. This helps prevent overstays and keeps parking spaces available for compliant drivers.

For example, the RTD employs mobile license plate reader technology to manage its reserved space program. Customers register their vehicles and pay monthly fees for reserved spaces. The RTD's program relies on vehicle license plate numbers, which customers enter when paying the parking fee. The parking management vendor uses mobile cameras mounted on vehicles to scan license plates quickly, covering a 1,500-space facility in about 30 minutes. The technology identifies 80-82% of the plates it scans, with some missing due to issues like missing plates, out-of-state vehicles, or dirt/snow. License plate numbers are instantly checked against a database to ensure compliance with parking fee rules for out-of-district customers.¹⁶ Figure 8 shows an example of a license plate reader, similar to those placed in RTD facilities.¹⁷

Figure 13: Example License Plate Readers



Transit agencies like Bay Area Rapid Transit (BART) use LPR technology to enhance security in parking lots by deterring vehicle burglaries and streamline parking payments and ticketing. BART's goal is to eventually enable commuters to pay for parking directly through the BART app by entering their license plate numbers. BART implemented a 30-day data retention policy and established accountability rules as best practices to safeguard privacy.¹⁸

Some LPR technology may be more integrated with existing payment applications and surveillance systems. For example, RISEKTEO Global, an LPR technology, uses AI software to improve parking operations. This includes ensuring compliance with payment systems that use license plate numbers, managing gated access, whitelisting

¹⁴ Kovaleski & Vaccarelli (2023)

¹⁵ Cherrington et al. (2017)

¹⁶ Cherrington et al. (2017)

¹⁷ Factor (2024)

¹⁸ *Surveillance Use Policy BART Automated License Plate Recognition (ALPR)* (2019)

employees/visitors/pre-paid parkers, identifying repeat violations and unauthorized vehicles, monitoring parking area occupancy and space availability, and providing timely alerts of violations to enforcement staff and management.¹⁹

Advanced Surveillance Systems

AI-powered cameras can detect unusual activity in real-time, alerting authorities or system operators to incidents like suspicious behavior, theft, or vandalism.

The City of Hyattsville, Maryland, has implemented advanced surveillance systems to reduce illegal parking. These new motion-sensor cameras, installed in free parking garages, monitor spaces on Gallatin Street near Vigilante Coffee and the post office. The solar-powered SafetySticks, manufactured by Municipal Parking Services, use motion sensors similar to red-light cameras to capture photos when a car enters and exits a parking space. If the time between photos exceeds 15 minutes, the vehicle owner receives a \$35 fine in the mail.²⁰ Advanced surveillance systems like these, offer significant potential for managing parking lots, ensuring vehicles do not overstay their time without requiring on-site personnel. shows an existing installation of SafetySticks in Hyattsville.²¹

Figure 9: SafetySticks Installation in Hyattsville, Maryland



¹⁹ *How License Plate Recognition (LPR) Technology Improves Parking Management - RISETEK Global (2022)*

²⁰ Beckwith (2024)

²¹ City of Hyattsville (2024)

Key Takeaways

Peer Review

The Stilson Park & Ride, the Stockbridge Transit Center, and the Big Cottonwood Canyon Park & Ride are three examples of a peer park & ride facilities to the Brush Creek Park & Ride, due to their intended purpose to reduce single-occupancy personal vehicle trips and parking in high-demand ski resort areas. In general, management and operations of the peer facilities appear to be effective.

Several lessons can be applied to the Brush Creek Park & Ride from the peer review, including:

- Set clear goals for the intended purpose of the Park & Ride, and objectives to best address them
- Clearly define management roles, that may include a division of responsibilities during ski and off-peak seasons
- Conduct daily counts, either manually or via technology, to accurately assess conditions and address needs
- Consider an employee program such as a free employee shuttle service to maximize parking at ski areas
- Ensure effective daily enforcement
- Plan for projected park & ride demand at least a decade from now to avoid parking footprint constraints in the future
- Consider entering into contractual agreements between all stakeholders who benefit from the park & ride, including adjacent municipalities and ski resorts
- Consider hosting monthly meetings between all stakeholders to maintain coordination on transportation matters
- Consider installing cameras to monitor the park & ride lot remotely
- Consider transitioning the park & ride to a transportation hub

Best Practices

The best practices summary highlighted management and operations, maintenance, and technology solutions that may be applicable at the Brush Creek Park & Ride. Implementation of these strategies would lead to an efficient and effective management program. Best practices included:

- Consider a managed long-term parking program, especially for airport users
- Consider implementation a reservation system during large events and peak seasons
- Set up enforcement to better address overnight stays and camping
- Set up effective special event plans
- Reconsider in-house vs. contracted maintenance services
- Consider performing CPTED assessments
- Consider installing parking technology related to occupancy monitoring, parking guidance, and safety

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