

Big Cottonwood Canyon

Final Mobility Action Plan

Prepared for:



Prepared for: Central Wasatch Commission

Prepared by: AECOM, with support from SWCA Environmental Consultants

Contents

Executive Summary	4
1. Introduction	12
1.1 Study Background & Purpose	13
1.2 Vision, Goals & Guiding Values	15
1.3 Previous Plans	17
1.4 Concurrent Plans	21
2. Mobility Conditions	22
2.1 Study Area	23
2.2 Big Cottonwood Canyon Context	24
2.3 Mobility Conditions	26
2.4 Problem Summary	31
3. Stakeholder & Public Outreach	32
3.1 Agency & Partner Engagement	33
3.2 Public Outreach	35
4. Proposed Recommendations	46
4.1 Proposed Recommendation Descriptions	47
4.2 Potential Implementation Packages	66
5. Implementation Considerations	69
5.1 Funding	69
5.2 Environmental Review / NEPA	77
5.3 Additional USFS Considerations	79
5.4 SLCDPU Considerations	79
5.5 Electric Vehicles & Energy Resilience	80
5.6 Little Cottonwood Canyon EIS	82
5.7 Carrying Capacity	82
References	84

Executive Summary

Study Background & Purpose

The Draft Big Cottonwood Canyon Mobility Action Plan (BCC MAP) has been developed in response to the Central Wasatch Commission (CWC) Transportation Committee's desire to develop a strategy that addresses immediate and long-term mobility needs in Big Cottonwood Canyon. An overarching goal of the BCC MAP is to set the stage for receiving funding for transit improvements, and develop a flexible and scalable parking management program, partnerships, and projects that will increase safe multimodal and active transportation trips, directly supporting improved community health outcomes, reduced vehicle miles traveled, and progress toward local, regional, and state climate goals.

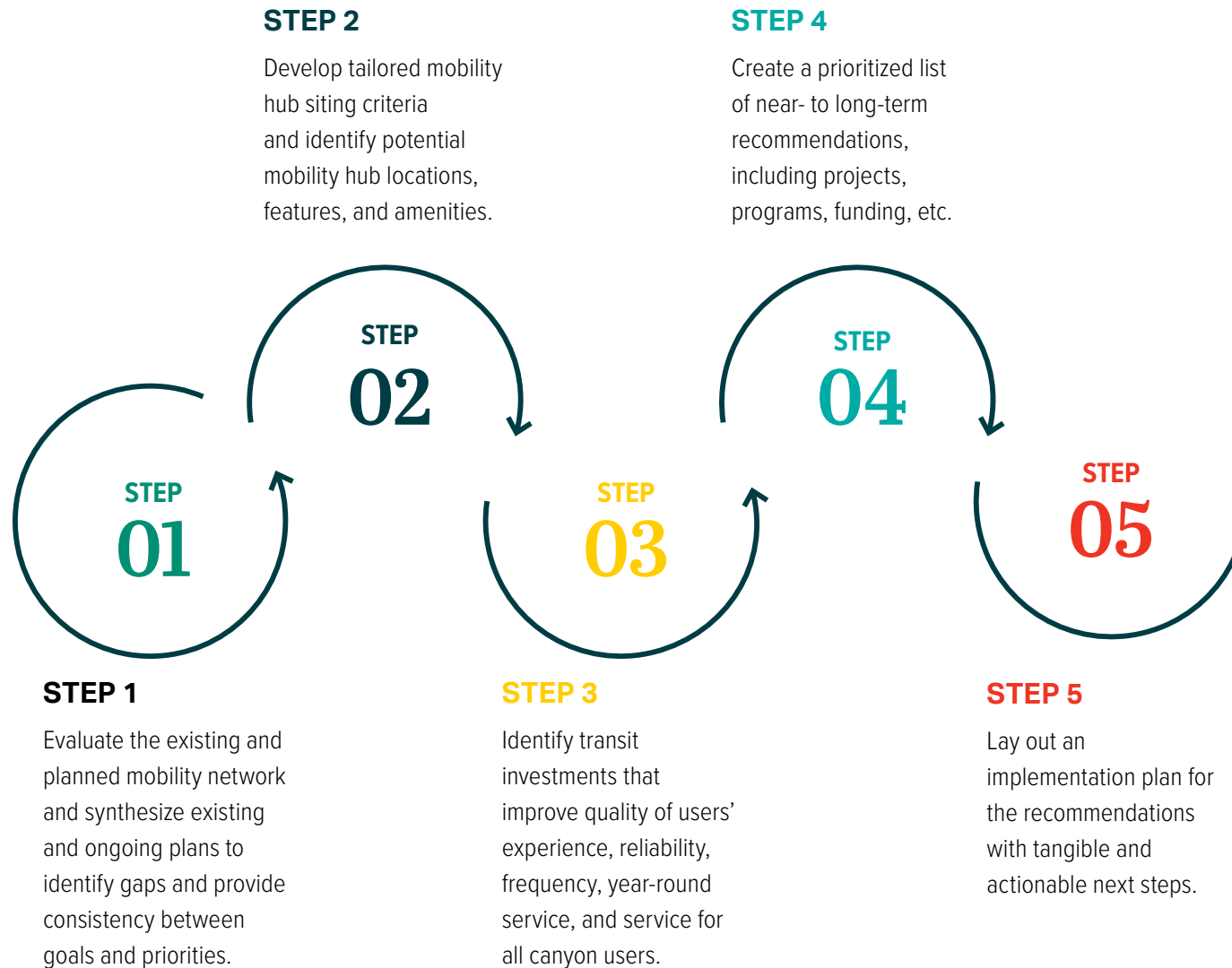
The BCC MAP is funded by a consortium of partners including the CWC, Town of Brighton, Cottonwood Heights, Brighton Resort, and Solitude Mountain Resort. Participating partners with jurisdictional oversight include the U.S. Forest Service (USFS), Salt Lake City Department of Public Utilities (SLCDPU), Utah Transit Authority (UTA), and the Utah Department of Transportation (UDOT).

The BCC MAP builds upon existing foundational documents and leverages public and stakeholder input to identify near- and long-term projects, policies, funding, and corresponding next steps to support further investment—by the CWC, its member jurisdictions, and other jurisdictional partners—in a year-round mobility system serving all users of Big Cottonwood Canyon. Ultimately, the BCC MAP will serve as a crucial next step that builds upon the ongoing and previous planning efforts conducted for more than a decade, and results in a framework of actionable steps.

The BCC MAP efforts got underway in late fall 2022, following the process illustrated in Figure ES-1.

The BCC MAP will leave the CWC and its partners well-positioned with a catalogue of prioritized mobility projects to leverage to pursue funding opportunities and progress toward implementation to make the mobility system more sustainable and meet the needs of today while dynamic enough to meet future challenges and needs.

Figure ES-1: BCC MAP Process



What comes after the BCC MAP?

The BCC MAP is one step in the long-term process of implementing mobility solutions in Big Cottonwood Canyon that not only meet the need of canyon users, but protect critical resources.

The BCC MAP identifies and memorializes potential solutions and their corresponding next steps toward implementation. Progression and implementation of any recommendation provided in this report are contingent upon funding; approval by appropriate jurisdictional entities (and any further coordination, design, or analysis necessary to obtain that approval); and meeting any long-range transportation/transit planning, environmental analysis, and/or other federal or local requirements.

Goals

The goals of the BCC MAP development process, and implementation of its recommendations, include the following:

- Expand sustainable, year-round, multimodal transportation choices in Big Cottonwood Canyon.
- Facilitate the integration of new and emerging technologies, transportation demand management strategies, and enhanced transit options (including tailored mobility hubs) that improve quality of users' experience, reliability, frequency, serves all canyon users, and protects critical resources.
- Define a prioritized list of near-, mid-, and long-term recommendations — including projects, programs, and policy reform/development — accompanied by tangible and actionable strategies with potential funding sources, determination of the level of National Environmental Policy Act (NEPA) analysis, equity considerations, and immediate next steps that will leave regional partners well-positioned to pursue funding opportunities and move toward implementation.
- Ensure consistency with the Big Cottonwood Canyon—relevant components laid out in the CWC Mountain Transportation System (MTS) process, UDOT's Big Cottonwood Canyon Corridor Study, and UDOT's Little Cottonwood Canyon Final Environmental Impact Statement (LCC FEIS).

Problem Summary

Through review of previous and concurrent related plans, consideration of mobility conditions in Big Cottonwood Canyon (including existing/planned transit service, traffic volumes, parking, visitor use, etc.), and ongoing coordination with the public, agencies, and CWC partners and stakeholders, the following problems have been prioritized for recommendations in the BCC MAP:

- Lack of convenient, frequent, reliable transit connecting to and serving Big Cottonwood Canyon.
- Peak-period traffic congestion and lack of exclusive bus lanes restrict mobility and hamper the frequency and reliability of bus service.
- Limited parking to access ski buses near the base of the canyon.
- Limited bus capacity, given existing frequency, to accommodate riders at the base of the canyon at peak periods.
- Vehicles parking in the shoulder create safety issues for pedestrians walking to trailheads or ski resorts, and potential conflicts with passing traffic and cyclists.

Proposed Recommendations

Section 4 of the BCC MAP lays out proposed recommendations consistent with the issues, goals, and priorities highlighted below. They are presented as a range of potential near-, mid- and long-term options that could be implemented independently or combined based on readiness and funding. Implementation timing is assumed to be 0 to 2 years for near-term, 2 to 5 years for mid-term, and 5+ years for long-term.

The implementation considerations (e.g., cost, jurisdictional actions, timeline) presented in this section assume the recommendation is implemented on its own. All recommendations are presented with the overarching, and ongoing, goal to protect the watershed and the natural resources within the canyon.

Unless explicitly stated, the inclusion of any recommendations in this report does not imply they have already been approved or agreed-upon by all pertinent entities. They are presented as proposed recommendations that may not yet be included in relevant fiscally constrained planning documents, agency budgets, operating plans, etc. Ongoing coordination has occurred with the CWC, its partners, and the Town of Brighton, City of Cottonwood Heights, Brighton Resort, Solitude Mountain Resort, USFS, SLCDPU, UTA, and UDOT. Continuing this coordination will be key in moving any recommendations forward toward implementation.

Address seasonal peak-period and year-round mobility issues in Big Cottonwood Canyon, with a focus on shifting car trips to transit and reducing single-occupancy vehicles



Support mode shift from cars to transit by increasing transit service that serves and connects to Big Cottonwood Canyon



Decrease single-occupancy vehicles through incentivizing transit and disincentivizing single-occupancy use



Improve transit reliability and convenience within and accessing the canyon



Decrease seasonal peak-period vehicle volumes in the canyon and at the Wasatch Boulevard/ Fort Union intersection



Effectively manage parking within the canyon, while providing greater parking opportunities connecting to transit in the valley

All proposed recommendations in this BCC MAP have been defined such that they could move forward independently, depending on prioritization, funding, and identifying a project sponsor/champion to take the next steps to move the project forward. A comprehensive list of recommendations is provided in Section 4 of the BCC MAP. The recommendations laid out in Table ES-1, below, are those that are likely the most straightforward—requiring the least (or no) additional environmental analysis/NEPA approval, minimal to no capital investment, etc.—and could be carried forward in the most immediate near term.

In addition, there may be advantages to "bundling" multiple recommendations into packages to progress together. These advantages primarily consist of opening the door to additional funding mechanisms or consolidating NEPA or jurisdictional actions. Table ES-2 provides a list of potential packages of bundled

improvements; the packages presented are not exhaustive of all potential pairings. They are listed in the table in order of progressive implementation that would ultimately lead to a mobility system that meets the goals and needs noted in this document. Packages 2 and 3 are the most critical components for the BCC mobility challenges. Specifically, incorporating the dedicated transit lane(s) to allow for bus reliability, and implementing the resort mobility hubs to safely and comfortably accommodate the frequent bus service are important components to the success of the enhanced bus route. In addition, the ideal scenario from a mobility perspective is implementing Package 2 and 3 in tandem, or portions of the two together to disincentivize personal vehicle use while also providing a transit system that is a desirable, convenient option over driving a personal vehicle.

Table ES-1: Summary of Potentially Straightforward Options to Progress in the Near-term

Potential Near-Term Item	Cost	Environmental / Permitting	Immediate Next Steps
Restripe BCC Park & Ride	\$30K	N/A (if restriping only)	Identify funding and move forward with implementation.
Supplementary Shuttle	~\$560K (single winter season)*	Dependent on service provider and locations of drop-off; for near-term recommendation, assume drop-off to ski resorts only	Identify best practices, successes, and challenges from Visit Salt Lake's Cottonwood Connector service for winter 2022/23; confirm desire for similar option winter 2023/24, move forward with identifying funding and partnerships.
Increase 972 Service	Already accounted for in UTA's current budget	N/A	Identified in UTA 5-Year Service Plan, but is contingent upon resource availability; confirm likely availability of adequate operators if service to be provided by UTA.

*See recommendation description in Section 4.1. \$560K is based on Visit Salt Lake Cottonwood Connect Ski Shuttle service for winter 2022/23.

Table ES-2: Opportunities to Package Multiple Potential Options for Implementation

Package No.	Package Description	Timing / Cost*	Package Reasoning
1	Wasatch Boulevard / Fort Union Intersection Improvements + Merge Lane	Mid \$7.548M	Sets the stage for operational improvements in this area where peak-period congestion hampers bus movements along with general traffic. As UDOT has done initial conceptual work and identified next steps, these components — whether implemented together or separately — are posed for next steps independent of (and supporting) longer term transit improvements.
2	Enhanced Bus + Exclusive Lane + Resort Mobility Hubs**	Mid to Long Roughly \$100M (highly variable due to conceptual design assumptions and broad range of unknowns for exclusive transit lane(s))	Combining all three components into a single package would deliver a more comprehensive enhanced bus project at a single time. Enhanced bus has been identified as a portion of the \$150M appropriated for Cottonwood Canyons enhanced bus, tolling, and mobility hub improvements. Thus, next steps for implementing the Big Cottonwood Canyon enhanced bus system are well positioned to continue into additional operational analysis and planning. As a combined package, this is more likely to be eligible (and competitive) for Federal Transit Administration (FTA) Capital Investment Grants (CIG) funding. TTIF funds should also be explored as a state funding opportunity. Most effective if implemented with components of Package 3.
3	Tolling, Restricting On-street Parking, Incentivizing Bus Options	Mid to Long Variable cost (at least \$6M depending on options)	These items related to incentivizing transit and disincentivizing personal vehicle use are included as a standalone package directly following implementation of the enhanced bus system. However, to see the greatest benefit for both Package 2 and Package 3, they should come into place together to best complement each other and create the greatest collective benefit to mobility in and accessing Big Cottonwood Canyon. The tolling portion of this package has been identified as a portion of the \$150M appropriated for Cottonwood Canyons enhanced bus, tolling, and mobility hub improvements.
4	Midvale Core Route + 6200 South Core Route + Valley Transit Centers	Long \$9.18M (Core Routes) + TBD for Transit Centers	These long-term high-frequency routes, paired with the proposed valley transit centers, would play an effective role in providing additional options throughout the valley to access the canyon via transit without driving to the base of the canyon. This recommendation pairs two proposed 15-minute Core Routes noted in the WFRC Draft 2023 Regional Transportation Plan (RTP) with supporting yet-to-be-identified transit-to-canyon stations strategically located in the Salt Lake Valley.
5	Year-round Bus Service + Trailhead Stops	Long \$18M + \$200K to \$1M per trailhead stop	Trailhead stops are assumed to best complement the long-term implementation of a year-round service, serving more locations throughout the canyon. The enhanced/express bus option focuses on limiting the number of stops and serving the resorts directly. Trailhead stop improvements could move forward independent of implementation of the year-round service itself.

*See cost estimates provided for each independent recommendation. Note that cost estimates are a high-level estimate based on preliminary assumptions and minimal detailed design; all of which would need to be further refined as any project progresses.

**As the gravel pit is part of the ongoing considerations in the LCC Environmental Impact Statement (EIS) process, that is assumed to be independent of the recommendations noted here.

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1. Introduction



1.1 Study Background & Purpose

The Big Cottonwood Canyon Mobility Action Plan (BCC MAP) has been developed in response to the Central Wasatch Commission (CWC) Transportation Committee's desire to develop a strategy that addresses immediate and long-term mobility needs in Big Cottonwood Canyon. An overarching goal of the BCC MAP is to set the stage for receiving funding for transit improvements, and develop a flexible and scalable parking management program, partnerships, and projects that will increase safe multimodal and active transportation trips, directly supporting improved community health outcomes, reduced vehicle miles traveled, and progress toward local, regional, and state climate goals.

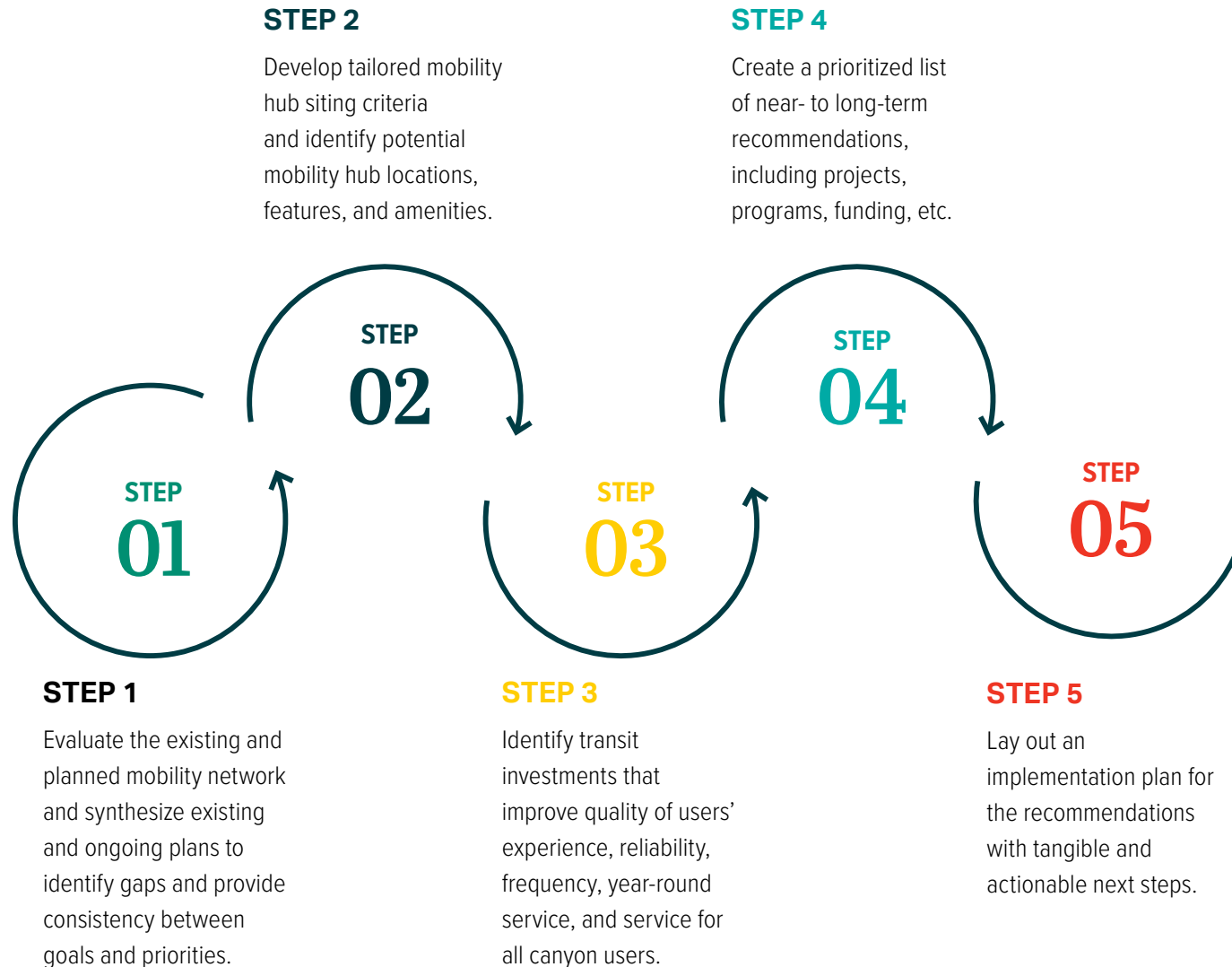
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Figure 1: BCC MAP Process



What comes after the BCC MAP?

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The BCC MAP identifies and memorializes potential solutions and their corresponding next steps toward implementation. Progression and implementation of any recommendation provided in this report are contingent upon funding; approval by appropriate jurisdictional entities (and any further coordination, design, or analysis necessary to obtain that approval); and meeting any long-range transportation/transit planning, environmental analysis, and/or other federal or local requirements.

1.2 Vision, Goals & Guiding Values

The following vision statement, goals, and guiding values were compiled based on existing foundational documents and input from CWC partners. They serve as a guide upon which the BCC MAP will be developed, and its recommendations carried forward and implemented.

1.2.1 Vision Statement

The BCC MAP will develop a strategy to guide local transportation investments over time by leveraging technology, foundational documents, and enhanced transit options to expand sustainable transportation choices and develop a robust mobility system that supports positive environmental, social, and economic outcomes for the region. The BCC MAP will identify key projects, policies, and process improvements to catalyze the vision for a regional, multimodal, year-round mobility system serving all users of Big Cottonwood Canyon and facilitate the integration of new and emerging technologies, transportation demand management strategies, and enhanced transit options for Big Cottonwood Canyon.

1.2.2 Guiding Values

In general, guiding values pertinent to the BCC MAP have already been laid out through years of collective study, planning, and coordination regarding mobility within, to, and between the Cottonwood Canyons. Ultimately, the BCC MAP will serve as a bridge that connects the previous planning efforts conducted over multiple years with actionable next steps to lead toward implementation specifically related to Big Cottonwood Canyon.

The following guiding values capture the previously identified inter-related components, desires, and bounds within which the BCC MAP recommendations and their implementation will need to fall:

- Adhere to and further the principles laid out by Mountain Accord, including but not limited to the following critical goals:
 - Protect the environment and natural resources,
 - Ensure high-quality recreational experiences,
 - Enhance regional transportation, and
 - Strengthen the regional economy.
- Acknowledge, adhere to, and further the following principles as described in the Pillars for Transportation Solutions in the Central Wasatch Mountains:
 - Visitor use capacity
 - Watershed protection
 - Traffic demand management, parking and bus (or other transit) strategies
 - Integration into the broader regional transportation network
 - Year-round transit service
 - Long-term protection of critical areas through federal legislation
- Further CWC-recommended priorities and principles identified through the Mountain Transportation System (MTS) process, including but not limited to building a regional mountain transportation system that is efficient, safe, and reliable while reducing traffic congestion, incentivizing transit use, and protecting the watershed, wilderness, and viewshed. In addition, build a system that serves diverse needs, improves equitable access, and reduces vehicle miles traveled and emissions.

1.2.3 Goals

The goals of the BCC MAP development process, and implementation of its recommendations, include the following:

- Expand sustainable, year-round, multimodal transportation choices in Big Cottonwood Canyon.
- Facilitate the integration of new and emerging technologies, transportation demand management strategies, and enhanced transit options (including tailored mobility hubs) that improve quality of users' experience, reliability, frequency, serves all canyon users, and protects critical resources.
- Define a prioritized list of near-, mid-, and long-term recommendations — including projects, programs, and policy reform/development — accompanied by tangible and actionable strategies with potential funding sources, determination of the level of National Environmental Policy Act (NEPA) analysis, equity considerations, and immediate next steps that will leave regional partners well-positioned to pursue funding opportunities and move toward implementation.
- Ensure consistency with the Big Cottonwood Canyon—relevant components laid out in the CWC Mountain Transportation System process, UDOT's Big Cottonwood Canyon Corridor Study, and UDOT's Little Cottonwood Canyon Final Environmental Impact Statement (LCC FEIS).



1.3 Previous Plans

Various studies and planning initiatives have analyzed transportation, recreation, economic, and environmental challenges in the Central Wasatch, including Big Cottonwood Canyon, for more than a decade. Two foundational planning efforts — Mountain Accord and the Pillars for Transportation Solutions in the Central Wasatch Mountains — stand as the guiding documents for the CWC and an overall framework upon which the BCC MAP is being developed.

The BCC MAP is building upon these previous efforts, focusing on those previously identified components that are most relevant to mobility, and through a lens of identifying next steps for implementation. The following briefly summarizes the most relevant previous plans and their relationship to the BCC MAP process, whether related to overarching goals, existing conditions or technical data, or potential solutions that may be brought forward in the BCC MAP recommendations.

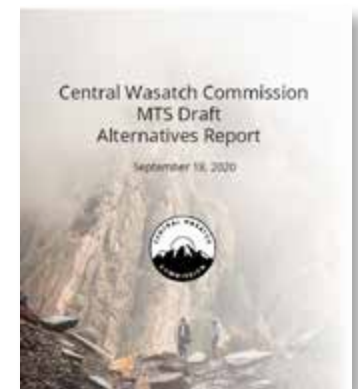
The documents summarized here and in Section 1.4, as well as others, were reviewed to establish consistency across previous and ongoing processes within the Cottonwood Canyons. The following is not an all-inclusive list of all relevant studies, past efforts, or concurrent processes, and is meant to serve as a snapshot tailored to the goals of the BCC MAP.

Wasatch-Cache Revised Forest Plan (2003)

The Wasatch-Cache National Forest Revised Forest Plan (2003) provides jurisdictional context as it relates to the USFS and its jurisdiction over the Wasatch-Cache National Forest and actions related to or impacting those lands. The plan guides resource management activities, provides management direction for the National Forest and its resources, and specifies related future conditions and management guidelines and requirements. The plan provides specific requirements and guidelines pertaining to trailhead parking, mass transit, and Riparian Habitat Conservation Areas (RHCAs) — all of which are relevant to the context of Big Cottonwood Canyon and the BCC MAP process.

The plan states, “In the Tri-canyon area (Big and Little Cottonwood Canyons and Mill Creek) parking capacities of canyon parking lots (ski areas, summer use homes, developed and dispersed recreation sites) will be not exceed 2000 levels unless modification is needed for watershed protection or to facilitate mass transit. Mass transit will be commonly used during winter, reducing crowding and increasing safety for users of the canyons. The Forest Service will work actively with other parties to explore options for reducing private vehicular use within these Canyons.” (USFS 2003).

Regarding mass transit, the plan further indicates a preferred future condition of “visitors...making increasing



Guiding Documents

The Mountain Accord and Mountain Transportation System Initiative laid the foundation upon which the BCC MAP is being developed, as well as a baseline of existing conditions and potential recommendations referenced and carried forward herein.

use of mass transit to reduce congestion on the highways, and mass transit opportunities will expand to include year-round operations” (USFS 2003).

The plan defines RHCAs and includes guidelines on restricting new actions to outside the RHCAs. The RHCA for Big Cottonwood Creek is 300 feet on either side of the channel. Any potential action within that buffer would need to be coordinated with USFS to confirm appropriate approval and processes.

Also of note is Forest Management Plan Prescription 3.1W, which includes Forest Plan Standard S3.1W that prohibits timber harvest, road construction, and new recreation facility development. Proposed actions that are inconsistent with Forest Plan Standards typically require a Forest Plan Amendment. This prescription applies to most of the National Forest System lands near the base of Big Cottonwood Canyon, and thus, is another specific item that should be coordinated with USFS for any aforementioned actions in these areas.

Cottonwood Canyons Scenic Byways Corridor Management Plan (2008)

Big Cottonwood Canyon (S.R. 190) was designated a State Scenic Byway in 1990. The Cottonwood Canyons Scenic Byways Corridor Management Plan (2008) addresses both Big and Little Cottonwood Canyons in a single document. The plan outlines how to define and enhance the byway’s intrinsic qualities and character, and addresses such topics as travel conditions, watershed and natural resource protection, and visitor services.

The plan describes recommendations for improving travel conditions in Big Cottonwood Canyon, including:

- Use transportation demand management strategies to reduce congestion
- Create a year-round transit system
- Create a Parking Management Plan

Various site-specific recommendations are provided in the plan (Figure 2), some of which have since been completed, while others continue to remain pertinent to overall mobility in Big Cottonwood Canyon and the BCC MAP process.

Wasatch Canyons Tomorrow (2010)

Wasatch Canyons Tomorrow (2010) presented goals and recommendations for land use, recreation, and transportation. Transportation-specific recommendations were based on an overarching perspective to reduce congestion, improve air quality, facilitate access and public safety, maintain high-quality recreation experiences, and protect natural resources. Recommendations that remain relevant to the BCC MAP process today include:

- Study feasibility of parking passes to Big and Little Cottonwood Canyons
- Expand transit from winter only to year-round
- Study feasibility of transit hub along canyons
- Implement recommendations from the Cottonwood Canyons Scenic Byways Corridor Management Plan

Mountain Transportation Study (2012)

The Mountain Transportation Study focused on transportation-related issues, potential solutions, and recommendations for Big and Little Cottonwood Canyons. The study further refined the concepts

presented in Wasatch Canyons Tomorrow and presented a list of recommended short-term improvements, including real-time bus information, parking study recommendations, transit signal priority along Wasatch Boulevard, and providing improved transit amenities. The study also recommended an Environmental Impact Statement (EIS) be initiated for transportation improvements to and within the Cottonwood Canyons.

Mountain Accord (2016)

The Mountain Accord process focused on four systems pertaining to the Central Wasatch: transportation, recreation, environment, and economy. The process laid the groundwork for the creation of the CWC, and culminated in a final report in 2016 that identified the values and vision through which the BCC MAP is being developed. The final report focused on existing conditions, goals, and recommended future conditions for the four systems. Specific to transportation in Big Cottonwood Canyon, the report recommended expanding transit service, decreasing single-occupancy vehicle use, and improving biking and walking accommodations.

Big Cottonwood Canyon 3T Improvement Project: Managing Traffic, Trails, and Toilets (2017)

This study presents recommendations and a phased approach to improve traffic congestion and address public safety through eliminating parking on the side of the road, restriping existing lots, increasing public transit services within the canyon, incorporating signs displaying live counts of available parking, and introducing a variable tolling system.

Figure 2: Cottonwood Canyons Scenic Byways Corridor Management Plan - Big Cottonwood Canyon Major Site Recommendations*



Source: Cottonwood Canyons Scenic Byways Corridor Management Plan, 2008

*This map provides a snapshot of prioritized locations from 2008. Coordination with USFS will need to occur to confirm newly prioritized locations based on improvements that have occurred since 2008, up-to-date user information, etc. Such considerations may include removing Oakridge, including Dogwood, accounting for Spruces's major winter use, S-turn needs in both winter and summer, etc.

Wasatch Canyons General Plan Update (2020)

The Wasatch Canyons General Plan Update is an update to the 1989 Wasatch Canyons Master Plan. It is part of an ongoing Salt Lake County planning effort for Parleys Canyon, Millcreek Canyon, Big and Little Cottonwood Canyons, and the Foothills. This plan supports enhanced year-round transit; adequate roadway facilities to enhance safety and integrate active transportation, efficiency, and mode choice; and formalizing parking areas and eliminating roadside parking (on a case-by-case basis). The plan also specifies transportation-related recommendations for Big Cottonwood Canyon such as improving pedestrian safety at locations such as the S-curves, lower canyon picnic areas, and the Cardiff parking area.

Mountain Transportation System Initiative (2021)

The MTS Draft Alternatives document (September 2020) further refined the transportation principles in the Mountain Accord. It discusses a proposed comprehensive year-round transportation system that includes the Salt Lake Valley, Big and Little Cottonwood Canyons, Parleys Canyon and connections to the Wasatch Back. This document provides data and key recommendations to be incorporated into the BCC MAP, including opportunities to reduce congestion, increase and incentivize transit, disincentivize personal vehicle use through tolling, and provide year-round access and efficient movement to desired locations.

The MTS Pillars (June 2021) document provides guiding values that direct the overall vision of the BCC MAP process. The recommendations provided in this document speak to implementing traffic solutions from a more broad and holistic approach and to assess management strategies for traffic. This could include improved bus systems, tolling, limited access for single riders, carpool programs, and reduction of on-road parking.

UDOT Big Cottonwood Canyon Corridor Study (2022)

The UDOT Big Cottonwood Canyon Corridor Study (January 2022) evaluates and identifies future transportation improvements along S.R. 190 in Big Cottonwood Canyon, primarily addressing location-specific roadway “hot spots” along the Big Cottonwood Canyon corridor. In 2019, UDOT initiated a study called the Transportation Action Plan to study both Big and Little Cottonwood Canyons. With the LCC EIS process addressing concerns specific to Little Cottonwood Canyon, this study was a result of UDOT refocusing efforts to address Big Cottonwood Canyon only. The study provides location-specific roadway improvement concepts that address transportation- and safety-related goals at the Fort Union intersection, Torpedo Hill, S-turns, Cardiff Fork, and the Guardsman Pass Road intersection.

UTA 2023 – 2027 5-Year Service Plan (2023)

UTA’s 2023 – 2027 Five-Year Service Plan, released in March 2023, is a dynamic guide for UTA’s near-term future. The information contained in the plan reflects changes to service, not a full picture of UTA’s entire transit system or network. It serves as a snapshot in time that reflects UTA’s intended service based on the best information available. The plan is updated every two years and considers other regional and local transportation plans in its development. The 2023 – 2027 service plan notes a potential increase to service on ski routes 972, 953, and 994 for December 2023, contingent upon resources and need.



Wasatch Canyons General Plan Update

Example of just one of multiple previous plans highlighting the need for enhancing year-round transit, integrating active transportation through pedestrian safety improvements, and addressing parking constraints and demand.

1.4 Concurrent Plans

In addition to previously completed studies, the BCC MAP process is considering and incorporating, where relevant and possible, findings and recommendations from multiple related processes progressing concurrent to the BCC MAP. The final outcomes of these processes are on different timelines. As such, the BCC MAP is incorporating any relevant outcomes that are available during the BCC MAP development process. For those processes that will not have known outcomes in that time frame, the BCC MAP will note key areas that should be confirmed for consistency or further coordinated between the processes and their implementation moving forward.

UDOT Little Cottonwood Canyon Environmental Impact Statement

UDOT began an EIS in the spring of 2018 for Little Cottonwood Canyon and Wasatch Boulevard in partnership with UTA and USFS to provide an integrated transportation system that improves the reliability, mobility and safety for residents, visitors, and commuters who use S.R. 210. UDOT released the FEIS in August 2022 and identified Gondola Alternative B as the preferred alternative. UDOT proposed a phased implementation plan starting with components of enhanced bus service. The proposed phasing would include increased and improved bus service, tolling or restrictions on single-occupancy vehicles, and the construction of mobility hubs. The FEIS acknowledges that the nature of these phased improvements should be further considered for Big Cottonwood Canyon. A Record of Decision indicating a final selected alternative is anticipated in summer 2023.

Any actions within Big Cottonwood Canyon are not part of the federal action being analyzed or approved in UDOT's LCC EIS process. However, ongoing coordination will need to occur for enhanced bus, tolling, single-occupancy vehicle restrictions, and mobility hub recommendations for either canyon.

CWC Visitor Use Study

The CWC is conducting a multi-phased Visitor Use Study for the CWC to comprehensively analyze and determine the current conditions and ideal visitor capacity in the Central Wasatch. This project is evaluating the current temporal and spatial distributions of use, while generating the necessary inputs for transportation modeling, including pedestrian modeling. This information is necessary to ensure that infrastructure and management alterations in Big and Little Cottonwood Canyons are legally defensible, sensitive to constituent needs, and incorporate future visitor use projections while preserving desirable and high-quality conditions.

Notably pertinent to the BCC MAP process is the draft information provided in the *Outdoor recreation use and indicators of the ecological, physical, and social characteristics of recreation settings in the Central Wasatch: Phase 2 trail use report* released in January 2023 (Utah State University 2023). Trail use information is summarized in Section 2 of this document.

SLCDPU Watershed Master Plan Update

The Salt Lake City Watershed Management Plan (1999) is currently being revised and is expected to be complete in the summer 2023. The goal of this document is to provide diverse opportunities of the Wasatch Canyons within the constraints of a limited geographic setting and the capacities of the natural environment to accommodate uses without significantly diminishing the quality of the Big Cottonwood Canyon resources and experience. Until additional information is available or the master plan update is complete, BCC MAP considerations are accounting for the information provided in the 1999 plan.

2. Mobility Conditions

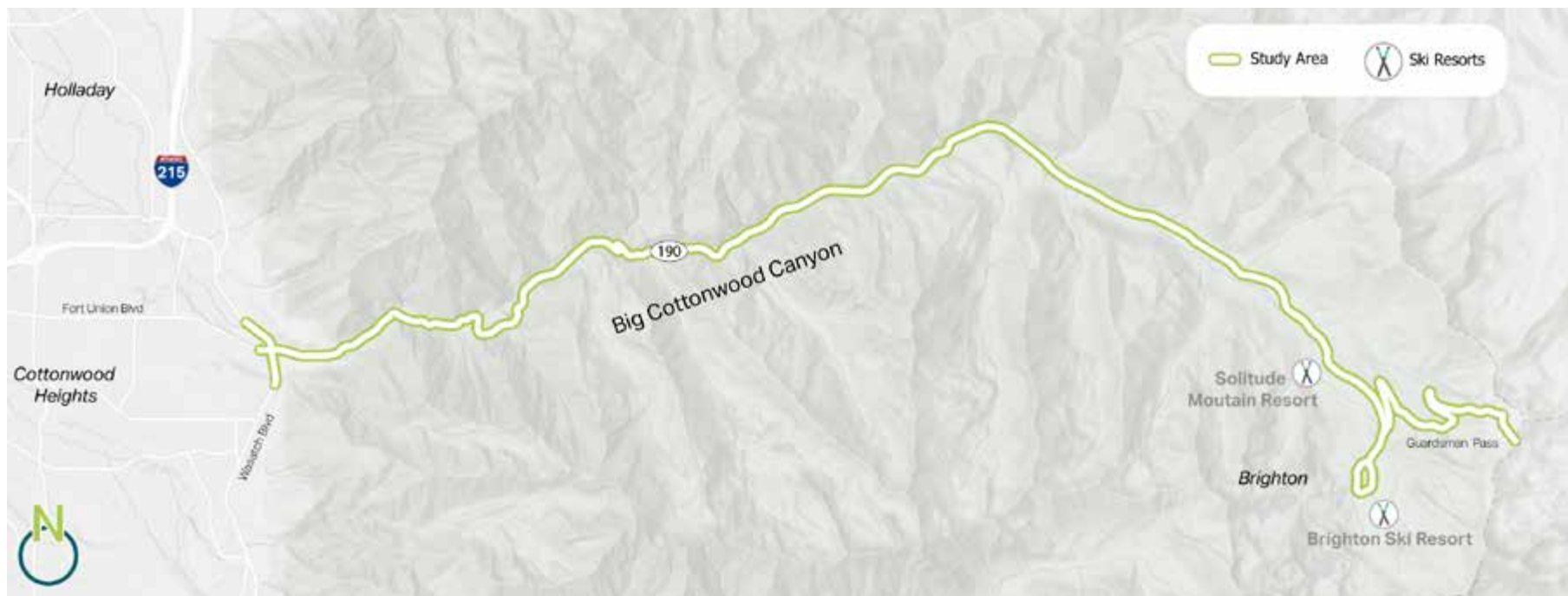


2.1 Study Area

The study area for the BCC MAP process is the existing Big Cottonwood Canyon corridor (S.R. 190), extending approximately 15 miles up the canyon to the town of Brighton (Figure 3). The study area also includes the intersection at the mouth of the canyon where S.R. 190 intersects with S.R. 210 (also referenced as the Wasatch Boulevard/Fort Union intersection throughout this document), and Guardsman Pass. Guardsman Pass is formally closed during winter, and provides summer access to Park City and Midway.

From the perspective of regional access and transit connections to Big Cottonwood Canyon, a broader area has been considered in the BCC MAP recommendations. However, the BCC MAP does not include a detailed analysis from this perspective, and thus has not included a broader study area accounting for that regional component.

Figure 3: Study Area



2.2 Big Cottonwood Canyon Context

2.2.1 General Setting

Big Cottonwood Canyon boasts a unique setting as a sensitive canyon environment and watershed with notable natural resources, which also sees significant annual visitors comparable to heavily visited National Parks.

The land within Big Cottonwood Canyon is a mixture of private, municipal, and USFS land. USFS land makes up the majority of the land within the canyon, and thus is tied to the management prescribed in the Wasatch-Cache Forest Plan. The road is virtually a dead-end, as Guardsman Pass Road is closed during winter. S.R. 190 provides access to the town of Brighton, Solitude Mountain Resort, Brighton Resort, multiple USFS recreation sites, and private residences and businesses.

The roadway itself, S.R. 190, was designated a State Scenic Byway in 1990. It is primarily a two-lane road (one travel lane in each direction) with intermittent passing/climbing lanes; and is characterized by steep grades and sharp bends in some areas. UDOT is responsible for managing operations and maintenance of the roadway. SLCDPU maintains jurisdiction over water quality and watershed management in the canyon.

2.2.2 Recreational Use

Given the wide range of year-round recreational opportunities within the canyon, use is high throughout the year. These activities include skiing, snowboarding, snowshoeing, hiking, road cycling, mountain biking, camping, picnicking, rock climbing, wildlife viewing, hunting and fishing, and sightseeing.

Skiing and snowboarding drive the heavy use of the canyon during the winter. Solitude and Brighton resorts see the highest visitation during the winter. However, additional backcountry skiing and snowboarding opportunities are available, especially in the middle and upper canyon, as well as cross-country skiing and snowshoeing (Solitude Nordic Center offers trails for skate and cross-country skiing).

S.R. 190 is a popular road cycling location, even hosting cycling events such as a stage for the Tour of Utah. Cyclists typically ride in the shoulder to the extent possible on the uphill, then often share the downhill lane with general traffic as they travel at similar speeds to vehicles on the downhill. Multiple trails in the canyon allow mountain biking, and Solitude offers lift-served mountain biking.



The canyon does not have officially designated rock climbing areas, but still experiences substantial use by rock climbers. (USFS does not designate climbing areas—as such, there are no "official" climbing areas on any Forest land.) Some of the more popular locations draw many climbers at a single time, who often park on the road shoulders as they are typically areas without formal parking.

Additionally, the USFS maintains multiple day-use facilities (Dogwood, Ledgemere, Birches, and Storm Mountain) and camping sites (Spruces, Redman, and Jordan Pines).

2.2.3 Trail Use

As described for the CWC Visitor Use Study effort, “Inherent in the interaction of transportation and recreation is the concept of visitor capacity, which is the maximum amount and type of recreation use that can be accommodated without unacceptable impacts to social, ecological, and environmental conditions.” (Utah State University 2023). As the visitor use study is underway along a concurrent process, the BCC MAP does not include an independent analysis of visitor use.

The January 2023 visitor use trail study provides a comprehensive assessment of trail use across the entirety of the Central Wasatch. The study team has

characterized trail use across the Central Wasatch from January 2019 to April 2022 through the use of data from infrared trail counters and mobile devices.

Overarching findings noted to date for the Central Wasatch include (Utah State University 2023):

- There is an exceptional amount of variation in summer trail use, with many trails seeing relatively little use.
- Trails that terminate at a high-elevation lake tend to receive the highest levels of use.
- Trails that are adjacent to residential areas in the Salt Lake Valley also see heavy use.
- Many trails receive a substantial amount of use but are not among the Central Wasatch’s most-popular trails; these trails tend to be those that terminate at peaks as well as those that are not used to access a high-elevation lake
- Summer use (June to August) exceeds all other seasons
- Weekend trail use more than doubles that of weekday trail use throughout the Central Wasatch.
- Use peaks toward the middle of the day; 49% of all trail use in the Central Wasatch occurs between 10AM and 3PM.

BCC Trail Use

The Brighton Lakes trail sees the most trips of all Central Wasatch trails, at approximately 3,700 trips per day in the summer months. Lake Blanche and Donut Falls receive slightly fewer trips, but are still among the most heavily trafficked trails in the summer months, at 1,286 and 1,101 trips, respectively (Utah State University 2023).

Estimated pedestrian counts for additional Big Cottonwood Canyon trails include:

- | | |
|---------------------|---------------------|
| – Mill D North: 812 | – Broads Fork: 170 |
| – Cardiff Fork: 640 | – Mill B North: 168 |
| – Butler Fork: 419 | – Silver Fork: 126 |

Source: Utah State University 2023

2.3 Mobility Conditions

2.3.1 Transit

UTA's Route 972 provides seasonal ski bus service to Solitude and Brighton ski resorts from Midvale Fort Union Station (Figure 4). Route 972 typically functions at a 15-minute frequency, and round-trip fare costs \$10. Due to operator shortages, the service frequency was decreased to 30 minutes for the winter 2022/23 season. UTA's Five-Year Service Plan indicates the desire to increase frequency on Route 972 for winter 2023/24, but this would be contingent upon available resources.

Travel by personal vehicle is the dominant travel mode, even during seasons when Route 972 is functioning at its standard frequency. Only approximately 6% of ski trips in Big Cottonwood Canyon are via public transit (Mountain Accord 2014). The ski buses operate at full capacity during peak periods, but this represents a small percentage of overall trips. General disincentives for people to take the bus include: limited Park & Ride locations and capacity, buses filled to capacity at peak

Figure 4: UTA Route 972 (Existing)



periods (some riders accessing the bus at the mouth of the canyon find the bus full and have to wait for another); and lack of transit priority results in long travel times during peak periods.

No transit service is available in the summer. The lack of service and limited stop opportunities account for virtually zero transit mode share for the rest of the year (Mountain Accord 2014).

In free-flow traffic conditions, private vehicles can travel the full length of the canyon in approximately 25 minutes. The same trip by bus can be twice as long. It should be noted, however, that in seasonal peak periods, it can take upwards of one to two hours to traverse the full canyon, whether by personal vehicle or bus, given the lack of transit priority or exclusive lanes.

Without changes to service, Park & Rides, transit prioritization, etc., current transit ridership is not expected to change from its current state. UTA and UDOT are currently coordinating to further analyze current and potential future bus operations, ridership, stop locations, and transit service provider options for Big Cottonwood Canyon; analysis results are anticipated later in 2023, and will help determine next steps in addressing transit needs in the canyon.



Brighton Resort Parking Lot, Winter 2022/23

2.3.2 Parking

Salt Lake County completed a parking study in 2012, identifying approximately 4,500 parking spaces in Big Cottonwood Canyon (counting both formal parking lots and roadway pullouts/shoulders). Formally designated parking is provided at parking lots for both Solitude and Brighton resorts, at trailheads, and at the BCC Park & Ride at the mouth of the canyon.

USFS regulates parking in the canyon. The 2003 Forest Plan constrains the amount of parking in the canyon to the year 2000 levels. Parking along the side of the road is generally legal, aside from limited locations marked otherwise. Many areas along the roadway have limited shoulder width to accommodate safe parking. This results in cars potentially jutting out into the parking lane. This can be an issue in both winter and summer seasons.

Beyond formal parking areas, visitors utilize roadway shoulders and pullouts throughout the canyon. Parking areas reach capacity or experience notable congestion on peak-period days in both the winter and year-round. In the winter, 87% of parking is at the resorts and the remaining 13% is dispersed along shoulders and pullouts near the ski resorts or accessing other trailheads or backcountry locations (UDOT 2022). In addition, the Town of Brighton has recently begun disallowing shoulder parking near both resorts.

During the summer, 41% of the parking is at larger lots and 59% is dispersed (UDOT 2022). Trailhead parking is limited, and fills quickly on busy weekends or holidays, forcing visitors to park on the side of the road and walk to the trailhead.

Both Solitude and Brighton resorts currently subsidize UTA Ski Bus fares for those with season or Ikon passes. Both resorts have also been implementing various strategies to help address the challenges from limited parking. For the 2022/23 season, Brighton has maintained a reservation system wherein people can pay \$30/day to reserve a parking space until 12PM.

For the 2022/23 season, Solitude has charged tiered parking rates based on vehicle occupancy between the hours of 12AM and 2PM during the full winter season. Parking payment is accepted via TAP N SKI mobile app or utilizing payment kiosks located throughout the parking lots to avoid delays in entering the lot.

For the 2022/23 season, the daily cost per vehicle ranges from free in all instances for vehicles with 4+ occupants, to free for all vehicles after 2PM, to \$10 to \$25 for single-occupancy vehicles depending on non-peak vs peak days. Solitude also offers mid-week or full season parking passes for purchase, free parking for lodging guests, and provided alternative parking options for resort employees to park in the valley and use a shuttle to get to the resort.

2.3.3 Roadway Characteristics

As previously noted, UDOT manages S.R. 190. Currently, UDOT does not have a perfected easement for the entirety of S.R. 190 over National Forest System lands in Big Cottonwood Canyon. USFS has granted UDOT authority for the operation and maintenance of the highway between the top of cut slopes to the bottom of fill slopes for sections of S.R. 190 where it crosses National Forest System lands. UDOT proposals pertaining to S.R. 190 outside of typical operation and maintenance activities are subject to USFS NEPA (see Section 5).

The road is classified as a rural minor arterial and is generally one lane in each direction, with intermittent left-turn pockets, shoulders of varying widths and qualities, and intermittent passing/climbing lanes. Guardrails exist in areas of particular concern based on adjacent steep slopes, sharp curves, etc. Additional locations (such as the S-turns) have been identified as potential locations to add barrier in the future to improve safety.

There are no sidewalks or parallel, off-street facilities to serve bicycle or pedestrian traffic. As previously described, cyclists typically use the shoulder in areas where it exists or they use the travel lane with general traffic. Pedestrians are seen walking along the shoulder or crossing the roadway typically when accessing trailheads or



other locations from informal parking along the road. Pedestrian crosswalks exist at the Wasatch Boulevard/Fort Union intersection, Cardiff Fork, and near the Brighton store and Silver Lake on the Brighton Loop.

While Big Cottonwood Canyon does not see the same avalanche risk or frequency Little Cottonwood Canyon does, there are six avalanche paths reaching S.R. 190. UDOT manages the avalanche risk and primarily conducts avalanche control through military artillery and helicopter bombing while the road is closed. Independent of peak-period traffic volumes, travel delays occur due to weather and crashes, given the lack of an alternate route. These factors and congestion can impact emergency vehicle access and response times as well.

2.3.4 Vehicle Occupancy

Vehicle occupancy is defined as the number of people occupying a vehicle during a trip. Average vehicle occupancy estimates range based on time of year or peak periods, but typically fall within the range of 2 to 2.6 persons/vehicle. The portion of the traffic that falls within different ranges of occupancy continues to be fairly evenly distributed, at approximately 32% of vehicles with single occupants, 35% with two occupants, and 33% with three or more occupants (UDOT 2022).

2.3.5 Traffic Conditions

In general, traffic conditions within Big Cottonwood Canyon are dependent on seasonal factors and weather. Recreational destinations — primarily ski resorts and trailheads — experience the highest use during the winter season (approximately December through March) and summer season (June through September), respectively. Traffic congestion is not a consistent issue in the canyon; rather, traffic congestion is typically a problem on peak days or at peak time periods. During these periods, traffic volumes exceed the roadway capacity at times during ski season, and can take hours to clear. Weather-related road closure or crashes (often in the form of slide-offs) can also cause significant congestion during non-peak days or time frames.

Traffic congestion is not typically an issue outside of the winter months. Traffic is more dispersed

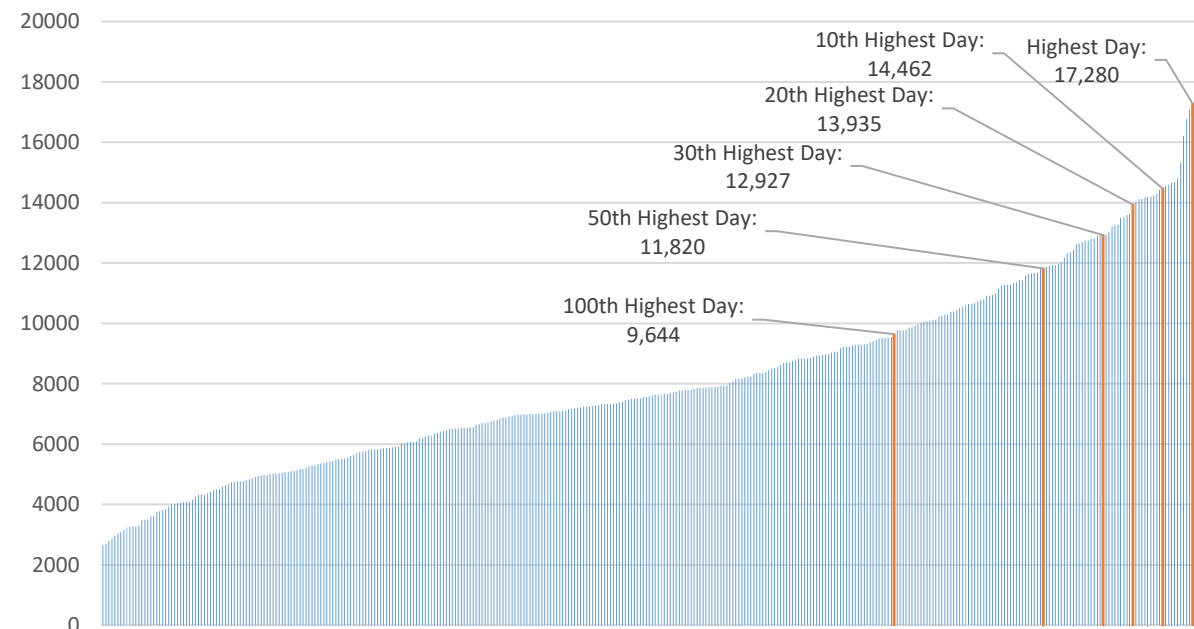
throughout the day, and travel speeds and times are more consistent with free-flow conditions.

An analysis of traffic operations and volumes for S.R. 190 and the Wasatch Boulevard/Fort Union intersection was conducted to support the UDOT Big Cottonwood Canyon Corridor Study effort (2022). Findings from those recent updates are summarized below (see Figure 5, Table 1, and Table 2). This analysis occurred in 2021 as an update to 2017 traffic volume analyses. As shown in Figure 5, the highest day of the year peaked at 17,280, which was a notable spike over the

other highest ranking days. For comparison, the 50th and 30th highest days remained closer to the range of nearly 12,000 to nearly 13,000 (Fehr & Peers 2021).

Information from Table 1 is consistent with the understanding of traffic volumes from years of analysis — that the highest traffic volumes in a single day are typically not during the winter, as shown to the right. Rather, the highest traffic volumes in a given hour or peak-period hours are typically seen during ski season.

Figure 5: S.R. 190 Daily Two-Way Traffic Volumes, 2020



Source: UDOT, Fehr & Peers 2021

Table 2 provides an estimated percent change in volumes between 2017 and 2020, for a set of ranked days selected for the traffic volume analysis. Because this table is presented based on the selected set of ranked days, it should be noted that this does not necessarily indicate a clear increase of 29% from 2017 to 2020, as one might infer. A year-over-year increase comparison was conducted for traffic volumes from December 2019 to January 2020 with traffic volumes from December 2020 to January 2021. This comparison indicated an increase of approximately 11% in a single year, which indicates an increase near 30% for a three-year period is not unreasonable.

In addition to general traffic volumes in the canyon, the Wasatch Boulevard/Fort Union intersection experiences high peak-hour traffic congestion that impacts not only travel time for personal vehicles, but the reliability of buses that are also delayed in this area. The single turn lane vehicle queue will often extend well north of the intersection (at times nearing the I-215 interchange), and overflow into the thru travel lane and into the center median.

Table 1: S.R. 190 Daily Two-Way Traffic Volumes, Ranked Highest Days of 2020

Rank	2-Way Volume	Date	Day of Week	Season
Highest	17,280	9/20/2020	Sunday	Fall
10th	14,462	6/14/2020	Sunday	Summer
20th	13,935	7/3/2020	Saturday	Summer
30th	12,927	1/4/2020	Sunday	Winter
50th	11,820	10/18/2020	Sunday	Fall
100th	9,644	7/9/2020	Thursday	Summer
85th Percentile	11,625	6/23/2020	Tuesday	Summer

Source: UDOT, Fehr & Peers 2021

Table 2: Percent Change in S.R. 190 Two-Way Daily Traffic Volumes by Ranked Day

Rank	2017 Two-Way Volume	2020 Two-Way Volume	Percent Increase
Highest	13,680	17,280	26%
10th	11,253	14,462	29%
20th	10,891	13,935	28%
30th	10,331	12,927	25%
50th	9,109	11,820	30%
100th	6,656	9,644	45%
85th Percentile	9,003	11,625	29%

Source: UDOT, Fehr & Peers 2021

2.4 Problem Summary

The aforementioned mobility conditions, supported by the plan review noted in Sections 1.3 and 1.4, results in the following problems that have been prioritized for recommendations in the BCC MAP:

- Lack of convenient, frequent, reliable transit connecting to and serving Big Cottonwood Canyon
- Peak-period traffic congestion and lack of exclusive bus lanes restrict mobility and hamper the frequency and reliability of bus service
- Limited parking to access ski buses near the base of the canyon
- Limited bus capacity, given existing frequency, to accommodate riders at the base of the canyon at peak periods
- Vehicles parking in the shoulder create safety issues for pedestrians walking to trailheads or ski resorts, and potential conflicts with passing traffic and cyclists

Address seasonal peak-period and year-round mobility issues in Big Cottonwood Canyon, with a focus on shifting car trips to transit and reducing single-occupancy vehicles



Support mode shift from cars to transit by increasing transit service that serves and connects to Big Cottonwood Canyon



Decrease single-occupancy vehicles through incentivizing transit and disincentivizing single-occupancy use



Improve transit reliability and convenience within and accessing the canyon



Decrease seasonal peak-period vehicle volumes in the canyon and at the Wasatch Boulevard/Fort Union intersection



Effectively manage parking within the canyon, while providing greater parking opportunities connecting to transit in the valley

3. Stakeholder & Public Outreach



3.1 Agency & Partner Engagement

A cornerstone of the BCC MAP development process was engagement with CWC partners, stakeholders, and jurisdictional agencies. This ongoing coordination will be a crucial component of moving forward with next steps after completion of the Final BCC MAP. The following summarizes the coordination that has occurred to date with the various CWC committees and partners, and representatives from the jurisdictional agencies.

3.1.1 CWC Coordination

CWC Transportation Committee Updates

- November 22, 2022: Project status update; public outreach plan; BCC MAP draft vision, goals and guiding values
- February 16, 2023: Public survey results high-level summary; mobility hub development process, draft amenities and potential locations
- March 22, 2023: Draft BCC MAP recommendations preview
- April 25, 2023: Presentation of Final BCC MAP

CWC Board Updates

- December 5, 2022: Project status update; public outreach plan; BCC MAP draft vision, goals and guiding values
- January 9, 2023: Project status update; summary of plan review and mobility conditions progress
- March 6, 2023: Public survey results summary report, takeaways from February 27 Stakeholders Council update
- May 1, 2023: Presentation of Final BCC MAP

Stakeholders Council

- February 27, 2023: Public survey results summary; mobility hub development process, draft amenities and potential locations; breakout discussions regarding mobility hubs presentation and mobility improvement strategies

The Stakeholders Council meeting on February 27, 2023, included small-group virtual breakout discussions. The following briefly summarizes some of the common themes shared by members to date (and should be noted that these do not necessarily reflect the opinions shared by all Stakeholders Council members, and do not reflect all opinions and comments shared to date):

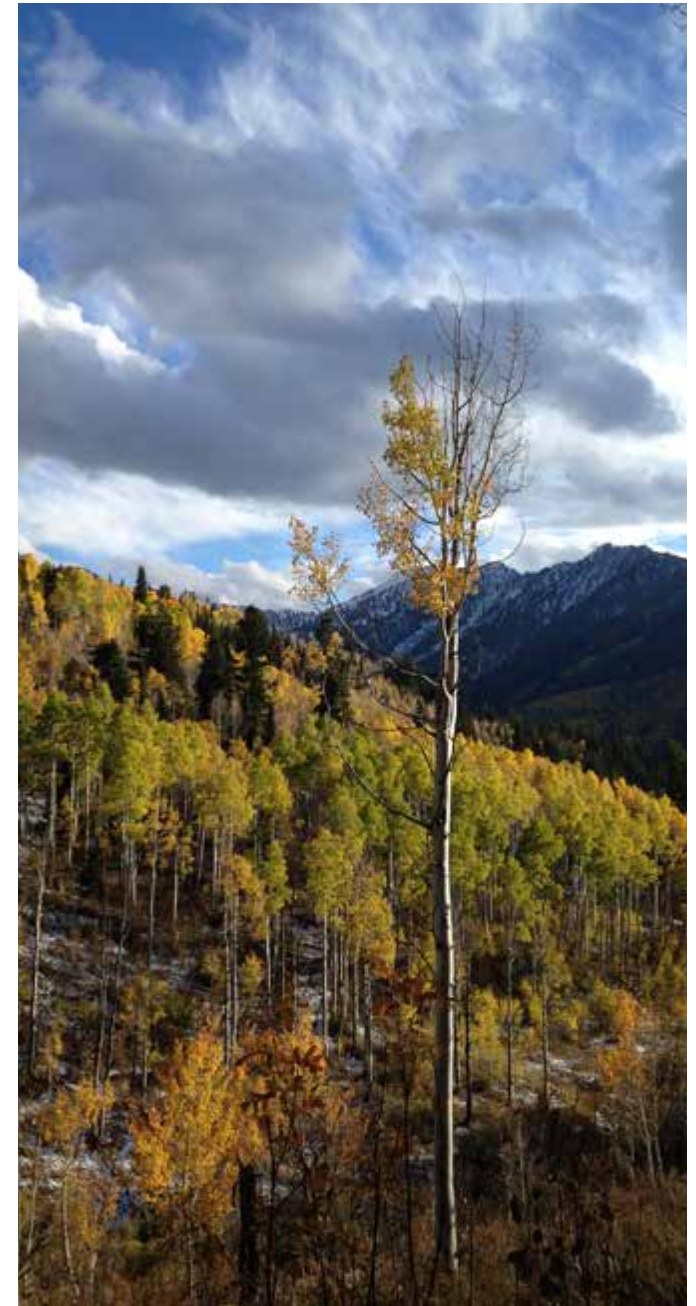
- Importance of regional transit perspective and solutions to reduce the number of vehicles in the canyon
 - Disperse transit access throughout the valley
 - Incentivize accessing transit elsewhere in the valley to access canyons, including focus on valley stops/hubs that are convenient, comfortable, accessible
- Concerns regarding mobility hub considerations
 - Concern over focus on mobility hubs in general – that discussion regarding potential solutions and concepts at this point should focus more on robust transit system, management, incentives
 - Concern over the focus on a mobility hub or other vehicle-centric solutions at the mouth of the canyon due to concerns of continued traffic congestion and inability to accommodate current and increased traffic in that area
- Concern over focus on parking and/or any additions of parking
- Support for gravel pit mobility hub, Solitude and Brighton mobility hubs; committed bus routes from gravel pit hub to resorts

- Capacity constraints in terms of watershed, natural resources, fire, etc.; need for carrying capacity limit and environmental monitoring
- Variations of reservation systems should be considered, whether for the resorts, transit, parking, or some combination thereof
- Dynamic tolling, financial incentives to use transit and disincentives to drive (especially single-occupancy vehicles), combination of management options

3.1.2 Jurisdictional and Technical Input

The BCC MAP development process has included ongoing discussions with CWC staff, UDOT, UTA, SLCDPU, USFS, Wasatch Front Regional Council (WFRC), and Salt Lake County to understand existing and ongoing plans; roadway design options and assumptions; transit service considerations; and the implementation practices and jurisdictional requirements needed for each entity. As outlined below, this coordination has ranged from one-on-one meetings, to group meetings with representatives from multiple agencies, and will continue through the development of the Final BCC MAP:

- November – December 2022: One-on-one meetings to initiate coordination and introduce the project with SLCDPU, USFS, UDOT, UTA, Brighton Resort, Solitude Mountain Resort
- November 8, 2022: Limited site tour due to winter weather conditions, entailing general project discussion; open invitation to various representatives from SLCDPU, USFS, UDOT, UTA, Cottonwood Heights, Town of Brighton, Brighton Resort, Solitude Mountain Resort
- December 14, 2022: Collective workshop regarding mobility network conditions, and preliminary mobility hub development and evaluation process
- February 6, 2023: Collective workshop regarding mobility hub development, evaluation, potential amenities and locations
- March – April 2023: Additional one-on-one meetings to discuss potential recommendations, implementation considerations, and overall preferences, opinions, and comments or concerns



3.2 Public Outreach

3.2.1 Public Updates

Public engagement activities for the BCC MAP process utilized existing communication channels and distribution methods in place through the CWC and its partners, including the following:

- CWC Website: Project introduction posted in December 2022, with public survey and general updates posted over the course of the process
- CWC Virtual Newsletter and Email Distribution List: Dissemination of project information at key milestones throughout the process, including project introduction in December 2022, public survey notices and reminders between January and February 2023, and distribution and notice of the public comment period for the Draft BCC MAP in March 2023
- E-kits/media Packets to Partner Jurisdictions and Agencies: Distribution of project information package at key milestones to disseminate through website,

social media, or other means

- Social Media Updates: Dissemination of project information at key milestones throughout the process, including project introduction in December 2022, public survey notices and reminders between January and February 2023
- Opportunity to join CWC Transportation Committee, Board, and Stakeholders Council meetings with BCC MAP updates, as noted in Section 3.1.1

3.2.2 Public Survey

The purpose of the survey was to provide the public an opportunity to comment on a range of topics related to improved mobility, with detailed questions about some of the potential types of solutions under consideration. The survey was not inclusive of all potential solutions or recommendations, as that process has been ongoing. Potential solutions were not omitted from the BCC MAP solely because they were not addressed in the survey.



The survey consisted of 35 questions in the topic areas noted to the right. The questions were a range of Yes/No/Maybe multiple choice, short answer, ranking, and long-form responses. Most questions included the option for the respondent to include alternative, short-form responses in the place of the set multiple-choice options. Those write-in responses are typically illustrated as the “Other” responses in the following summary. In general, these “Other” responses capture a mix of yes, no, or “it depends” for each relevant question. The final question on the survey was an open-ended option to provide additional comments.

Survey Distribution

The survey was available on the CWC website (www.cwc.utah.gov) from January 10, 2023, to February 10, 2023. Notices regarding the availability of the survey were provided through various online methods, including the CWC website, email newsletter, and social media. These notices were sent from the CWC through the email newsletter and social media upon the opening of the survey on January 10, with additional reminders over the course of the survey period.

Information about and links to the survey were shared with CWC partners and stakeholders to distribute through their standard communication channels as well. This included links to the survey that were shared online and distributed from such partners as UTA and WFRC.

Hard copy flyers and posters with the survey link and a QR code for accessing the survey were distributed at various locations in Big Cottonwood Canyon and the Salt Lake Valley to capture a broad range of input and different users. Notices were displayed at such locations as municipal buildings and libraries, various recreation-focused businesses, and the Big Cottonwood Canyon ski resorts.

Survey Results

In total, 963 responses were received. As a response was not mandatory for every question, each question had a varying number of responses. Of the respondents who provided their location, which was approximately 740 total, more than 90% indicated they were from Utah. A summary of the results follows, with additional detail available in the BCC MAP Public Survey Summary Memo (March 2023).



Public Survey

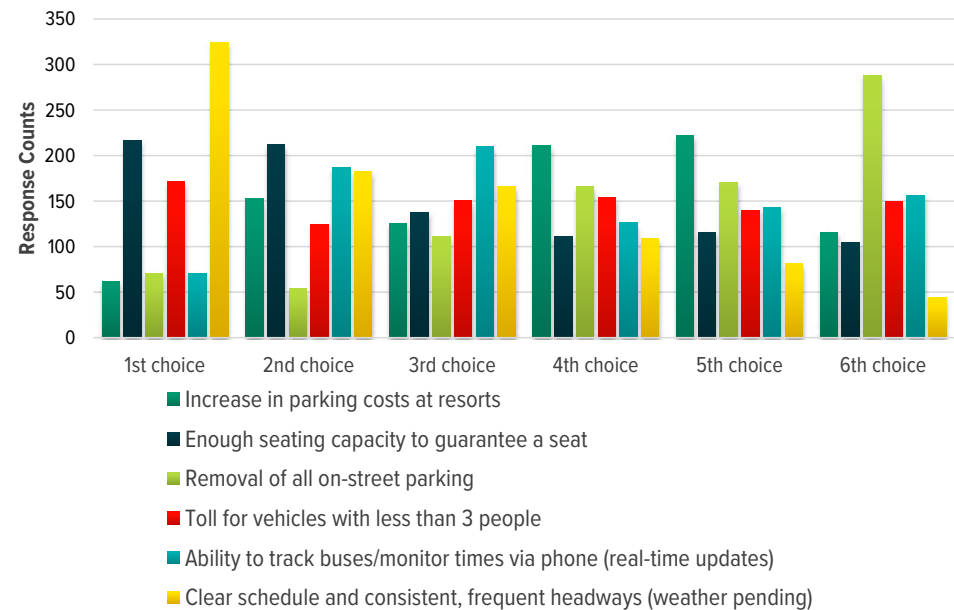
The public survey focused on questions from various categories. More than 960 responses were received.

Improved Winter Season Bus Service

Multiple questions asked respondents about their willingness to utilize winter season express bus, their appetite for wait times and fares, and different circumstances that would affect their interest in utilizing the service.

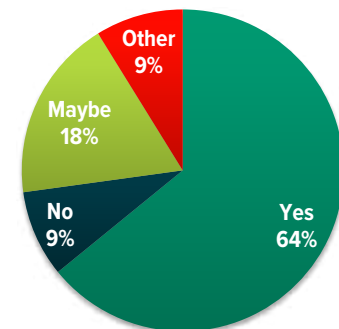
- In general, a majority of respondents would use a seasonal express bus serving the resorts (see pie chart to the right). Of the write-in comments provided, the most common themes included:
 - The need for frequency and seating capacity, incentivizing bus use (e.g., tolling or fees for single-occupancy vehicles, free fare), potential bus bypass lanes or means to pass traffic, etc.
 - Desire for stops that would service backcountry trailheads
 - Canyon residents noted that either they would not need the service, or that bus access/stops for residents should be considered
 - Direct access to each resort
- In general users would not wait longer than 30 minutes for a seasonal express bus and most would not wait more than 15 to 20.
- The top-ranked concerns regarding utilizing a seasonal express bus include waiting for the bus, followed by the bus being stuck in canyon traffic and limited service hours.
- The top-ranked features that would encourage use of a seasonal express bus include a clear schedule and consistent, frequent headways; tolling for vehicles with less than three people; and the ability to monitor buses real-time via phone.

Rank the items that would encourage you to utilize a seasonal express bus:



15min

Most common response regarding number of minutes they would be willing to wait to board a bus directly to resorts



Would you use a seasonal express bus serving the resorts?

Of the 942 responses to this question, a majority would utilize this service. Notable themes that would impact people's decision-making are noted to the left.

Year-round Transit Serving Trailheads

Multiple questions asked respondents about their willingness to utilize transit service beyond the winter ski season, their appetite for wait times and fares, and different circumstances that would affect their interest in utilizing the service.

- Approximately half of respondents noted they would utilize the service (pie chart below). Various factors would impact their desire to do, including the following common themes provided as write-in comments:
 - The need for frequency, incentivizing bus use (e.g., tolling or fees for single-occupant vehicles, low fare), parking space available at Park & Rides, restricted parking in canyon, etc.



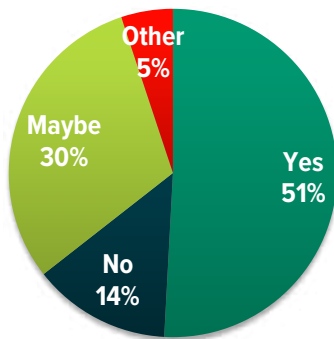
15min

Most common response regarding number of minutes willing to wait to board non-winter bus



\$0-5

Amount majority of respondents would be willing to pay for round-trip year-round bus service

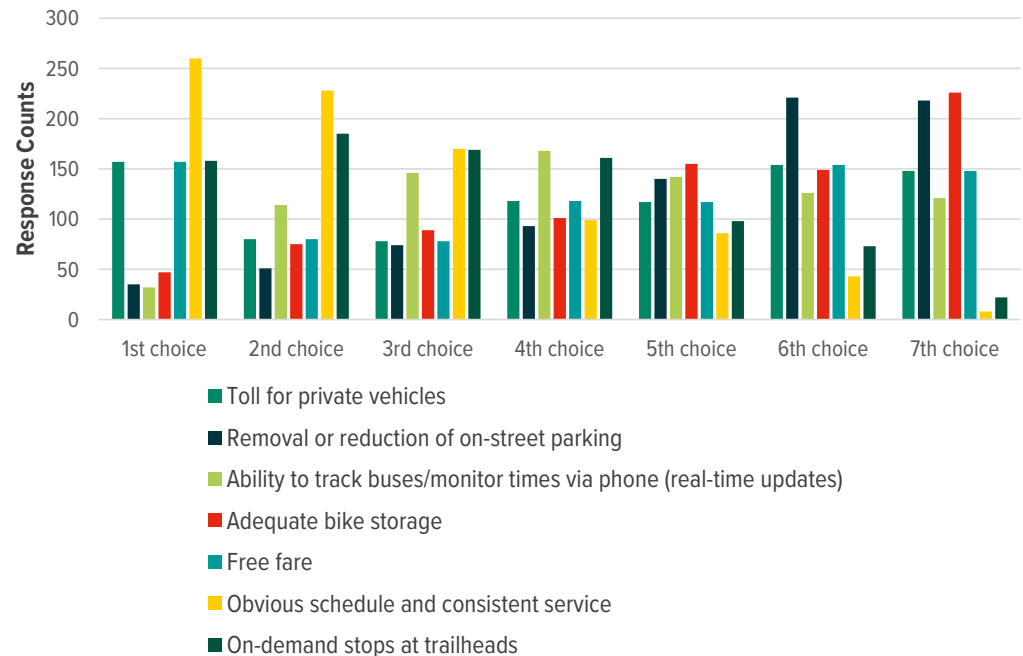


If transit were provided during non-winter months to trailheads and the resorts, would you utilize the service?

Half of respondents indicated interest in using this service; for approximately one-third of respondents it would depend on various factors (common themes are noted above).

- Canyon residents noted that either they would not need the service, or that they would use it if bus stops were located for residential access
- Depends on which trailheads serve as stop locations, space for bicycles
- Canyon uses requiring more gear, such as camping, would make using a bus or shuttle too difficult
- The top-ranked feature that would encourage use of this service was an obvious schedule and consistent service, followed by on-demand stops at trailheads.
- In general, users would not be willing to pay more than \$10 round-trip, and most would support the fare ranging from free to \$5. Write-in comments posed support for options such as a seasonal transit pass, group/family rates, or a scaled fare with lower prices for students, senior citizens, children, etc.

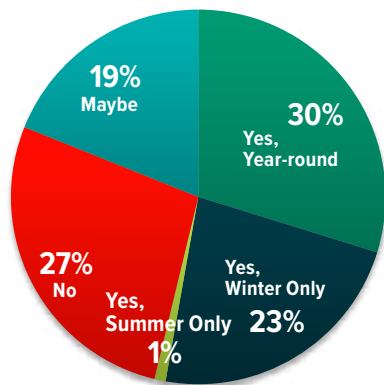
Rank the items that would encourage you to utilize year-round bus:



Parking

Three parking-related questions asked respondents about their support of removing on-street parking, and which alternate options they would utilize in the absence of on-road parking as an option in both winter and summer.

- As shown below, there is generally support for some form of on-street parking removal; this was also a common theme from commenters in the open-ended comment portion of the survey.
- In the absence of on-street parking, a solid 59% to approximately 70% would utilize transit if that were a viable option. Depending on the season, other alternate options that received approximately 20% of the responses were to pay to park or return at another time.
- Multiple write-in comments pointed out the differing parking needs for backcountry skiing, and the desire to keep on-street parking for that particular activity.



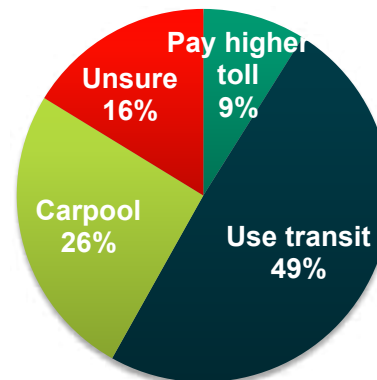
Would you support the removal of on-street parking?

Respondents' support for the removal of on-street parking is fairly consistently distributed between year-round removal, winter-only removal, no removal, and "it depends."

Tolling, Fees & Fares

This section of the survey asked about respondents' preferences when it came to varying payment mechanisms to access the canyon, whether tolling, user fees, bus fares, or various combinations thereof depending on the season.

- The general response distribution shown in the graph below was common across questions that asked a similar question but replaced the "toll" portion of the question with options ranging from user fees to scaled tolls based on vehicle occupancy. Typically, a minority would outright pay the higher toll or notable fees, with a large percentage of users being willing to take transit or carpool instead. Common themes provided as write-in comments included:
 - Concern over equity and the impact to individuals in varying economic positions
 - Preference for a monthly, annual, or season pass over a by-use fee – both of which over dynamic tolling
 - Exemption for canyon residents
 - Desire for dynamic tolling or fee to be based on number of vehicle occupants
 - Need for quality, frequent transit service instead
- In general, users are most willing to pay a user fee that ranges between free and \$10, with the most common preference for a \$5 fee. This preference is the same no matter the season.



If dynamic tolling were implemented, would you be willing to pay the higher toll during winter months, carpool, or utilize transit during morning peak traffic?

Of the 929 responses, a minority would outright pay the higher toll, with a large percentage of users being willing to take transit or carpool instead. This general breakdown of responses was similar for different variations of this question that replaced the "toll" portion of the question with options ranging from user fees to scaled tolls based on vehicle occupancy.

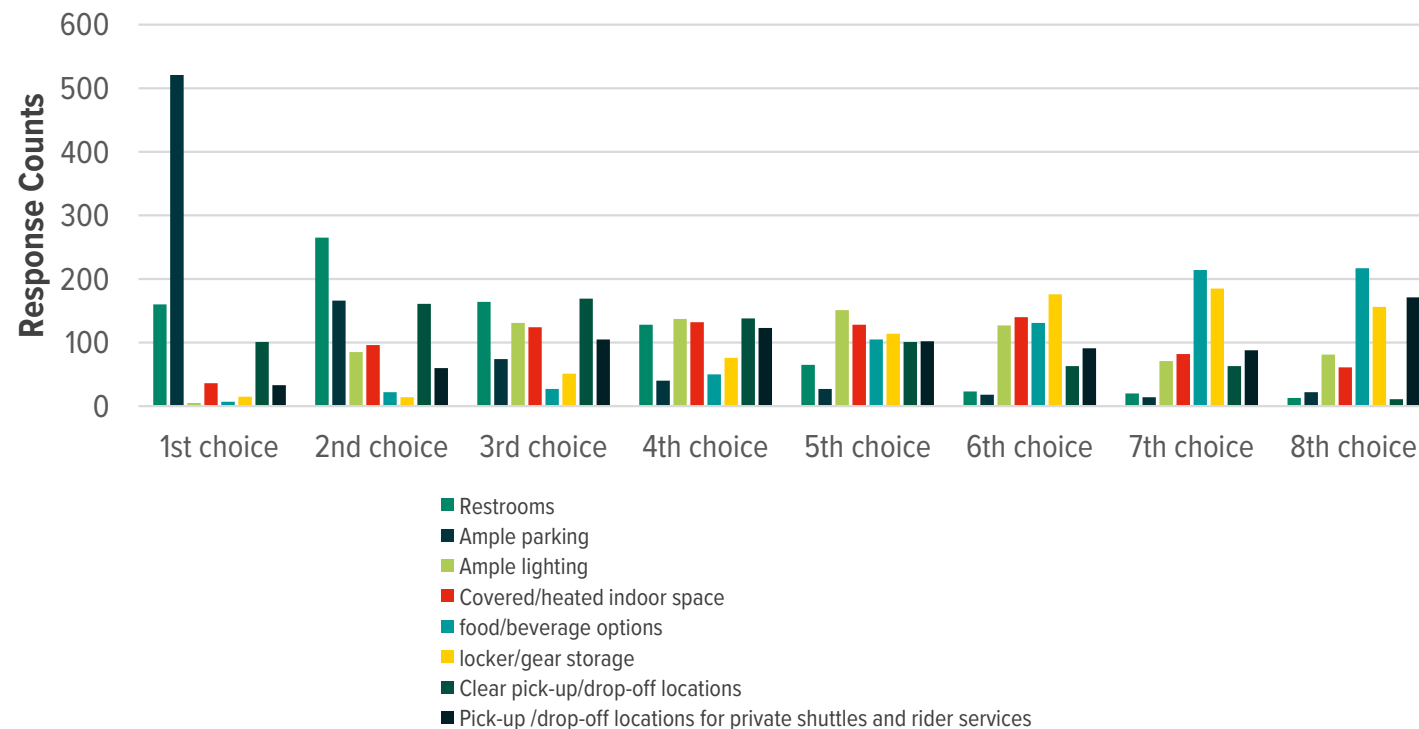
Mobility Hubs

Multiple questions asked about preferences for mobility hub amenities / facilities, locations, etc.

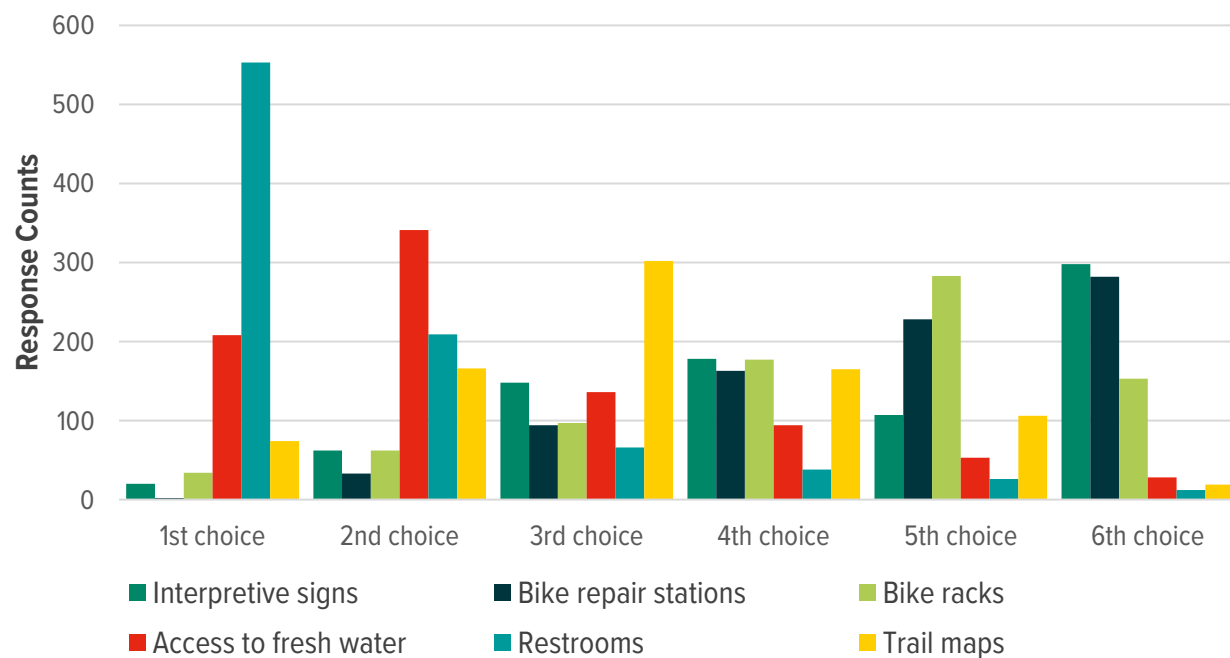
- Regarding a more substantial mobility hub that would be used to access a bus or shuttle, ample parking and restrooms were top-ranked amenities.
- With the option to provide a write-in comment regarding preferred amenities at a more robust mobility hub at the mouth of the canyon (i.e., the gravel pit), the most commonly noted features were parking and restrooms, followed by water access and connection to quality transit.

- Preferred amenities for in-canyon transit stops indicate a clear preference for restrooms, followed by access to fresh water, and trail maps.

Please rank the following amenities that would encourage you to utilize a mobility hub and ride a bus or shuttle:



Please rank amenities that could be provided at in-canyon transit stops:



What is a mobility hub?

In general, “mobility hub” refers to a location where users can make a safe and convenient switch between modes of transportation (transit, personal vehicle, bicycle, etc.). Terms like “transit hub” and “transit center” may be used interchangeably with mobility hub or used to describe different variations of this concept. For the purposes of the BCC MAP survey, the term “mobility hub” was used to reference a location connecting transit with other modes.

As part of the LCC FEIS, mobility hubs were specifically defined as a location where riders can transfer from their personal vehicles to a bus. For the BCC MAP, this relates to the gravel pit mobility hub. Throughout the BCC MAP process, when referring to the gravel pit mobility hub, this definition is assumed (i.e., a connection between personal vehicles and a bus). In addition to the gravel pit, the BCC MAP is analyzing mobility hubs at additional locations in Big Cottonwood Canyon. The amenities, size, configuration, and types of modes served (beyond transit) may vary depending on the location and needs.

Priorities for Mobility Improvement Strategies

Consistent among responses throughout the survey, there is strong support for both seasonal and year-round transit. Seasonal (winter) service ranked as the top option, with year-round transit a close second, followed by a robust mobility hub at the gravel pit and dynamic tolling during winter months rounding out the top four options by a notable margin.

The survey also provided an open comment area where respondents could provide additional comments. A summary of key themes from those comments is provided in Table 3.

Please rank or prioritize the following list of strategies to improve mobility in Big Cottonwood Canyon:

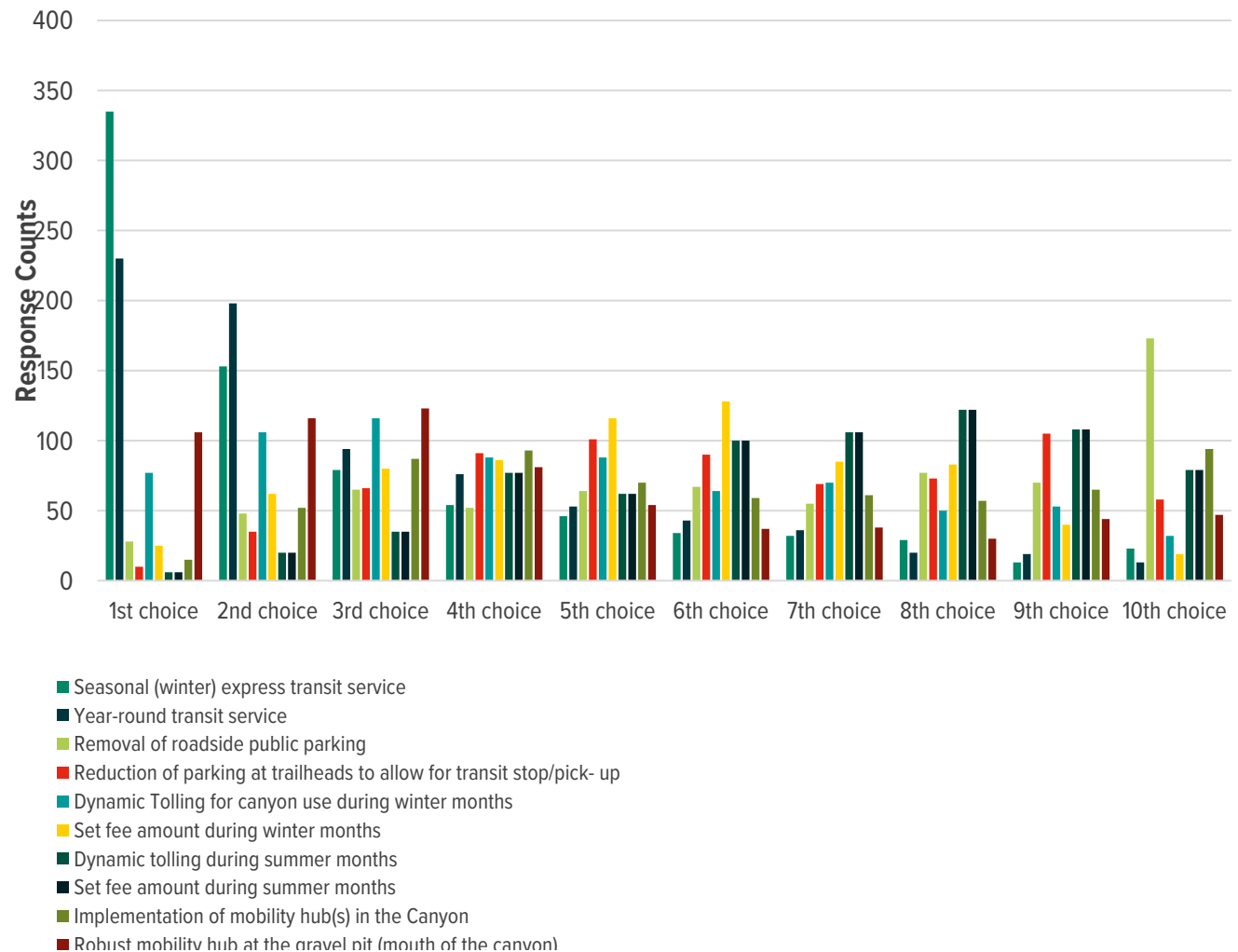


Table 3: Summary of Key Themes from Survey Open-Ended Comments

Improved Transportation System	Tolling/Fees and Access Limits	Parking Solutions	Fair and Open Access	Other
– Improved transit (expanded bus service, increased service levels, implementation of rail) – Better connectivity with valley – More amenities – Dedicated transit lanes – Alternate transit solutions (i.e., gondola, shuttle, rideshare, etc.) – Zion model – Lane expansion	– User fees – Dynamic or flat tolling – Charge single-occupancy vehicles and private recreational users – Vehicle quotas – Dedicated canyon passes	– Reservations – Increased resort parking – Limit roadside parking – Increase parking outside canyon	– Equitable access concerns – Prioritize Utahns and canyon residents – No tolls for canyon residents – Lower Utahn tolls – Access to alternate uses (trails) – No tolls	– Temporal traffic limitations – Time block one-way traffic (e.g., 6-9 AM supports up-canyon only, 4-6PM supports down-canyon only) – Time block one-way traffic with priority bus and essential worker lane – 20-minute blocks of one-way traffic at key times – Resort financial responsibility – Safety concerns – Traction law enforcement – Reduced speed limits – Environmental concerns – Anti-gondola (Little Cottonwood Canyon) – No intervention

3.2.3 Public Comment on Draft BCC MAP

The Draft BCC MAP was shared on the CWC website (www.cwc.utah.gov) for public review and comment. Notifications about its availability were distributed through the CWC's website and the CWC email newsletter. Public comments were accepted from March 27 to April 17, 2023. Comments were accepted via a blank comment form on the website, via email, and through hard copy mail.

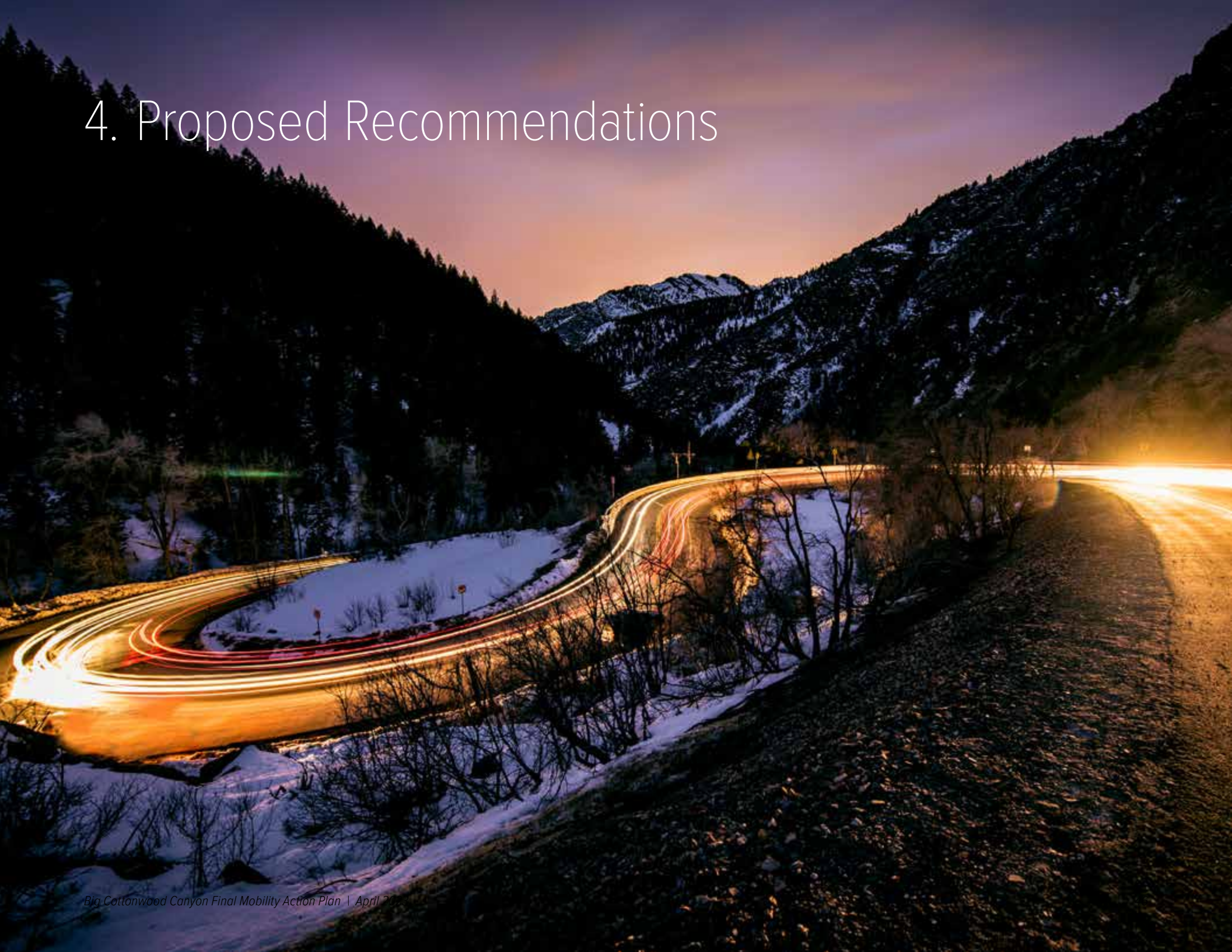
In total, 45 comments were received. Notable comments and common themes are summarized below:

- General support for the BCC MAP effort and its recommendations
- Support for seasonal and year-round transit, decreasing single-occupancy vehicles, with varying preferences for service specifics, connections to regional transit, and timing/type of mechanisms to incentivize transit and disincentivize single-occupancy vehicles
- Desire for active transportation (bicycle and pedestrian/runner) safety improvements and considerations in the BCC MAP
- Desire for electric, battery electric bus considerations
- The need for further analysis (and eventual monitoring and enforcement) of the canyon's carrying capacity in terms of natural resources, wilderness, watershed, etc.
- Canyon residents' use of or impacts related to recommendations

The comments received are further described and provided in their entirety in the BCC MAP Public Comment Summary Memo (April 2023).

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4. Proposed Recommendations



4.1 Proposed Recommendation Descriptions

This section lays out proposed recommendations consistent with the issues, goals, and priorities highlighted below. They are presented as a range of potential near-, mid- and long-term options that could be implemented independently or combined based on readiness and funding. Implementation timing is assumed to be 0 to 2 years for near-term, 2 to 5 years for mid-term, and 5+ years for long-term.

The implementation considerations (e.g., cost, jurisdictional actions, timeline) presented in this section assume the recommendation is implemented on its own. As described in Section 4.2, the proposed recommendations could be implemented as a package with others to take advantage of different funding sources or to streamline environmental or other jurisdictional processes. Examples of potential packages of multiple recommendations are provided in Section 4.2. All

recommendations are presented with the overarching, and ongoing, goal to protect the watershed and the natural resources within the canyon.

Unless explicitly stated, the inclusion of any recommendations in this report does not imply they have already been approved or agreed-upon by all pertinent entities. They are presented as proposed recommendations that may not yet be included in relevant fiscally constrained planning documents, agency budgets, operating plans, etc. Ongoing coordination has occurred with the CWC, its partners, and the Town of Brighton, City of Cottonwood Heights, Brighton Resort, Solitude Mountain Resort, USFS, SLCDPU, UTA, and UDOT. Continuing this coordination will be key in moving any recommendations forward toward implementation.

Address seasonal peak-period and year-round mobility issues in Big Cottonwood Canyon, with a focus on shifting car trips to transit and reducing single-occupancy vehicles.



Support mode shift from cars to transit by increasing transit service that serves and connects to Big Cottonwood Canyon.



Decrease single-occupancy vehicles through incentivizing transit and disincentivizing single-occupancy use.



Improve transit reliability and convenience within and accessing the canyon.



Decrease seasonal peak-period vehicle volumes in the canyon and at the Wasatch Boulevard/Fort Union intersection.



Effectively manage parking within the canyon, while providing greater parking opportunities connecting to transit in the valley.



Increase Service on Route 972

In response to the winter 2022/23 decrease in service, increase service to 15-minute frequency on existing UTA Route 972, servicing Solitude and Brighton from Midvale Fort Union Station.

This item is identified in UTA’s 2023 - 2027 Five-Year Service Plan under the Salt Lake County Ski Service category. The recommendation is noted as an increase in service with a timeframe of December 2023, dependent upon resources and need.

Due to operator shortages, the service frequency was changed to 30 minutes for the winter 2022/23 season instead of its typical 15-minute service. The primary constraint in implementing this service improvement remains a lack of enough bus operators to run this route at an increased frequency. This is a challenge that extends beyond this particular route.

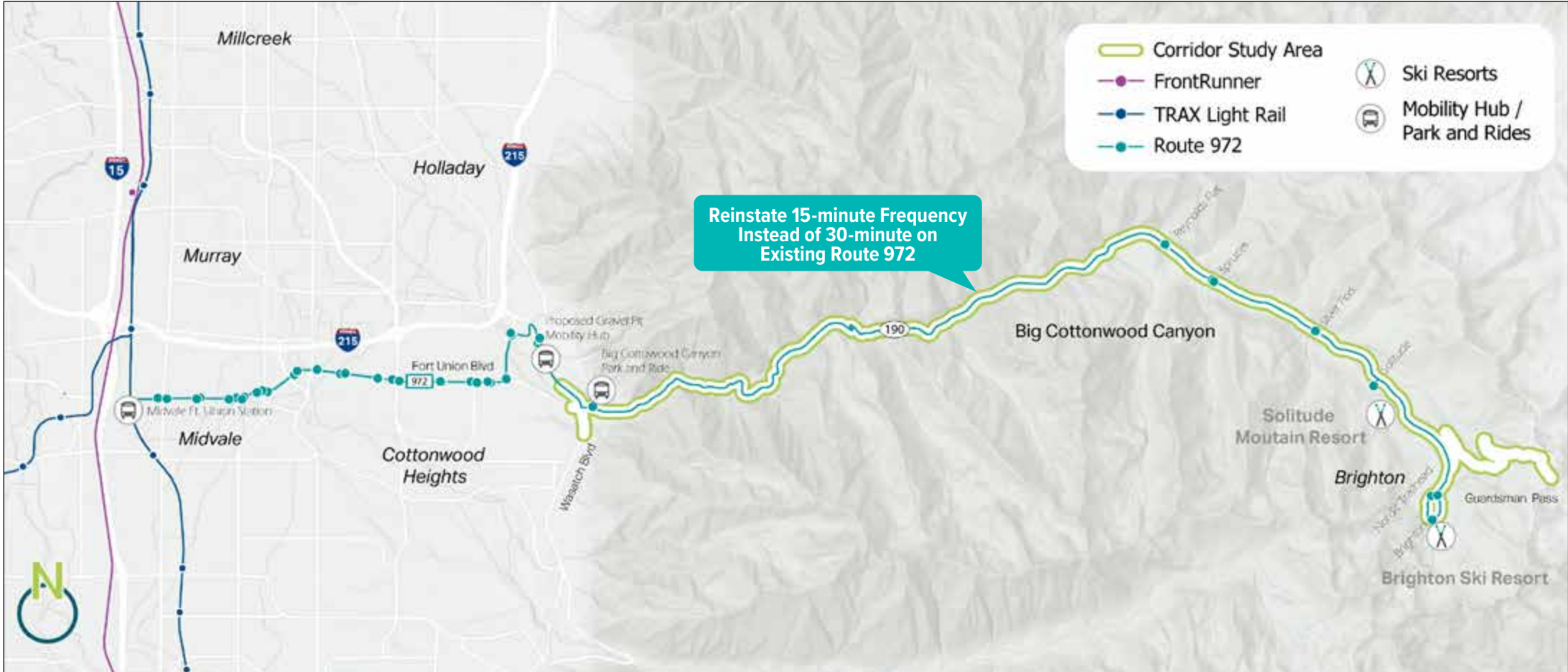
The 2023 - 2027 Five-Year Service Plan was available for public comment in early 2023. Multiple commenters noted the lack of ski service this year and the general desire for improved ski bus service.

If this is to be reinstated for the 2023/24 ski season, UTA would need to confirm its ability to hire additional operators to run this service. Potential long-term options for this route beyond winter 2023/24 are described as separate longer term recommendations.

Immediate Next Steps

Implementation Considerations

Problems Addressed	Jurisdictional Actions	Potential Funding Sources	Cost Estimate	Timing
- Support mode shift from cars to transit - Decrease single-occupancy vehicles - Improve transit reliability and convenience - Decrease seasonal peak-period vehicle volumes	Environmental (NEPA) approval not required.	Included in existing UTA budget, as service was not cut due to funding shortage	Included in existing UTA budget	Near (contingent upon resources)





Supplementary Reservation-based Shuttle

Implementation of reservation-based shuttle between the Salt Lake Valley and Solitude and Brighton resorts that supplements underlying bus service.

This option would utilize a reservation-based shuttle system that would supplement underlying bus service. It could be implemented as a supplement for winter ski bus or year-round bus service. While this recommendation focuses on supplementary winter service, it does not restrict the possibility of utilizing the same service year-round.

In reaction to the reduced ski bus service during winter 2022/23, Visit Salt Lake partnered with Salt Lake County, UTA, Brighton, Solitude, Alta, and Snowbird resorts to provide the Cottonwood Connect reservation-based shuttle service between various hotel and public Park & Ride locations within the valley direct to the ski resorts. The shuttle runs Thursdays, Fridays, Saturdays, Sundays and holidays. Reservations cost \$10 round-trip and are first-come, first-served.

The opportunity exists for multiple entities to partner to identify funding and/or manage either a stop-gap option for the winter 2023/24 ski season or commit to a longer term investment. Details to confirm include: service provider; if using a third party service provider, confirm contract owner; if dropping off beyond the resorts or creating a year-round shuttle service, confirm NEPA and Special Use Permit needs with USFS.

Meet with Visit Salt Lake to gather takeaways from the winter 2022/23 Cottonwood Connect shuttle, including user totals, costs, successes, and challenges.

Immediate Next Steps

Implementation Considerations

Problems Addressed	Jurisdictional Actions**	Potential Funding Sources	Cost Estimate*	Timing
– Decrease single-occupancy vehicles – Decrease seasonal peak-period vehicle volumes	– No UTA/FTA or UDOT NEPA approval required.** – USFS environmental analysis/approval may be required; nature and level of which would be determined by USFS in response to formal proposal. Potential NEPA analysis would also be dependent on if the proposed shuttle service is proposed as a year-round option and/or servicing trailheads beyond the resorts. – If dropping passengers at locations other than ski areas, USFS would put this action out for a competitive bid; following NEPA analysis, a Special Use Permit may be issued. – If only transporting passengers to the ski areas, no USFS Special Use Permit required.	– Public-private partnership (similar to the Cottonwood Connect shuttle, funded by Salt Lake County, Visit Salt Lake, UTA, Alta, Snowbird, Solitude, and Brighton resorts) – Federal: FTA Bus and Bus Facilities Grant, Low or No Emission Vehicle Grant Program – Federal FTA funding would require an agency to oversee the process that is a designated recipient of FTA funding and has the capability to ensure federal compliance. This option would be a long-term consideration, independent of the near-term opportunities for winter 2023/24.	~ \$560K (winter season only)	Near

**Cost estimate reflects the estimated cost for the Visit Salt Lake Cottonwood Connect shuttle for the winter 2022/23 season. Providing this service year-round, using a different service provider, frequency, etc. would all impact the potential cost.*



The BCC MAP public survey asked about the likelihood of using a similar service (couched as a year-round option in the survey). More than 900 people responded to this question. More than 50% indicated they would use this type of service, and more than 30% responded with a “Maybe/Other” response, noting the need for clear scheduling, frequent service, and enough space to accommodate gear and bicycles.

Throughout this document, a mix of USFS, UTA/Federal Transit Administration (FTA), and/or UDOT are noted as the relevant lead agencies for potential environmental (NEPA) analyses and approval. UTA/FTA is noted based on the project entailing transit components or potentially being eligible for federal FTA funding. However, there is the potential that responsibility could fall to UDOT or even a new transit agency depending on the nature of the project and its funding source(s).

Depending on which proposed components move forward, NEPA compliance may need to meet the requirements of multiple agencies. Depending on the project, these environmental documents may have joint lead agencies, or they might have a single lead agency but will be completed in coordination with other agencies to ensure environmental requirements are met for all agencies in a single environmental document. These points are relevant for any options listed in this document. See Section 5.2.

****Lead Agencies for NEPA Compliance**



Seasonal Enhanced Bus to Resorts

Implement a minimum 10-minute frequency (at peak periods) enhanced bus serving Solitude and Brighton resorts.

UTA and UDOT are currently coordinating to further analyze current and potential future bus operations, ridership, stop locations, and transit service provider options for Big Cottonwood Canyon; analysis results are anticipated later in 2023, and will help determine next steps in addressing transit needs in the canyon.

Until those updated operational outputs are available, the baseline assumptions described here are based on the CWC MTS Alternatives Report (September 2020) assumptions, including 10-minute headways or better during peak demand hours with 15-minute headways during non-peak periods. The route would run from Midvale Fort Union TRAX station, with one stop one stop at the mouth of Big Cottonwood Canyon and directly to each ski resort. The service is assumed to generally run for the duration of ski season (approximately the end of November to the end of March). The western terminus (noted as the Midvale Fort Union TRAX station) would need to be confirmed, based in part on the aforementioned operational analysis.

This service is not currently listed on UTA's mid-range plans or WFRC's long-range plan. UTA does not currently have the operational budget, number of vehicles, or operators to run this service as specified. The ultimate cost, funding source(s), and operational needs to run the proposed service, and determine the appropriate agency to do so.

Coordinate with UDOT and UTA on operational analysis findings. Coordinate with UDOT on \$150M legislated funding availability and process. Progress concept/project definition enough to determine if appropriate to add to WFRC Regional Transportation Plan (RTP) or UTA's forthcoming Long-Range Transit Plan. Identify project sponsor.

Immediate Next Steps

Implementation Considerations

Problems Addressed	Jurisdictional Actions	Potential Funding Sources	Cost Estimate*	Timing
- Support mode shift from cars to transit - Decrease single-occupancy vehicles - Improve transit reliability and convenience - Decrease seasonal peak-period vehicle volumes	- USFS NEPA not likely needed for increased frequency only; would need to be formally confirmed with USFS once project formally defined. - UTA/FTA Categorical Exclusion (CE) or state-study equivalent (depending on state or federal funding) - if implemented independently without exclusive lane or additional mobility hubs	- Enhanced bus was identified as part of the one-time \$150M funding appropriated to the Cottonwood Canyons in the 2023 legislative session - Leverage local/private partnerships - State/Local: TTIF, WFRC Congestion Mitigation Air Quality (CMAQ), Carbon Reduction Program Fund - Federal: FTA CIG (if bundled)	Capital: \$60M O&M: \$10M Lifecycle: \$480M	Near (if implemented as standalone project without exclusive lane or additional hubs)

*Cost estimate from 2020 MTS Draft Alternatives assumptions (2020 dollars). Cost estimate should be updated to correlate with operational outputs and assumptions being analyzed by UTA and UDOT (see description to the left).



This service improvement could be bundled with the resort mobility hubs, or the mobility hubs and proposed exclusive lane for implementation. Bundling these components into a single project could make them collectively more competitive for potential FTA Capital Investment Grants (CIG) funding. See Package No. 2 in Section 4.2.

Package Options

The Utah State Legislature approved \$150M in one-time funding for enhanced bus, tolling, and mobility hub considerations in the Cottonwood Canyons. The enhanced bus and tolling recommendations in the BCC MAP are assumed to fall within the eligibility for this funding, and thus are well-positioned to move forward with the appropriate next steps.

\$150M Appropriated for Cottonwood Canyons



Exclusive Transit Lane(s)

Implement an exclusive transit lane at strategic location(s) in the canyon to allow bus to bypass traffic during congested peak periods.

Implementing a bus-only lane along strategic portions of the canyon can allow the bus to bypass congested traffic and further incentivize transit use by providing reliability and improved travel times. This concept requires further vetting to confirm ideal exclusive lane locations, optimal operations and safety, and design feasibility. Potential concepts to be further analyzed and vetted include a center-running variable exclusive lane that carries buses uphill during morning peak hours and downhill during afternoon peak hours; potential side-running exclusive lanes between Guardsman Pass and the Brighton roundabout; and an exclusive bus lane around Brighton Loop.

Any exclusive lane option includes various design and operational challenges to be addressed, including: available right-of-way and minimizing impacts beyond the existing right-of-way; center vs. side-running to best balance safety and efficient operations; the best treatments to keep general purpose vehicles from using the lane but also allow for snow removal (typical treatments such a curb and gutter or flexible delineators are problematic for snow removal, and using colored pavement can be problematic for maintenance); ideal exclusive lane placement along the Brighton Loop (interior vs. exterior side of the roadway); and best operational treatments to allow the bus to enter and exit the exclusive lane most safely and efficiently.

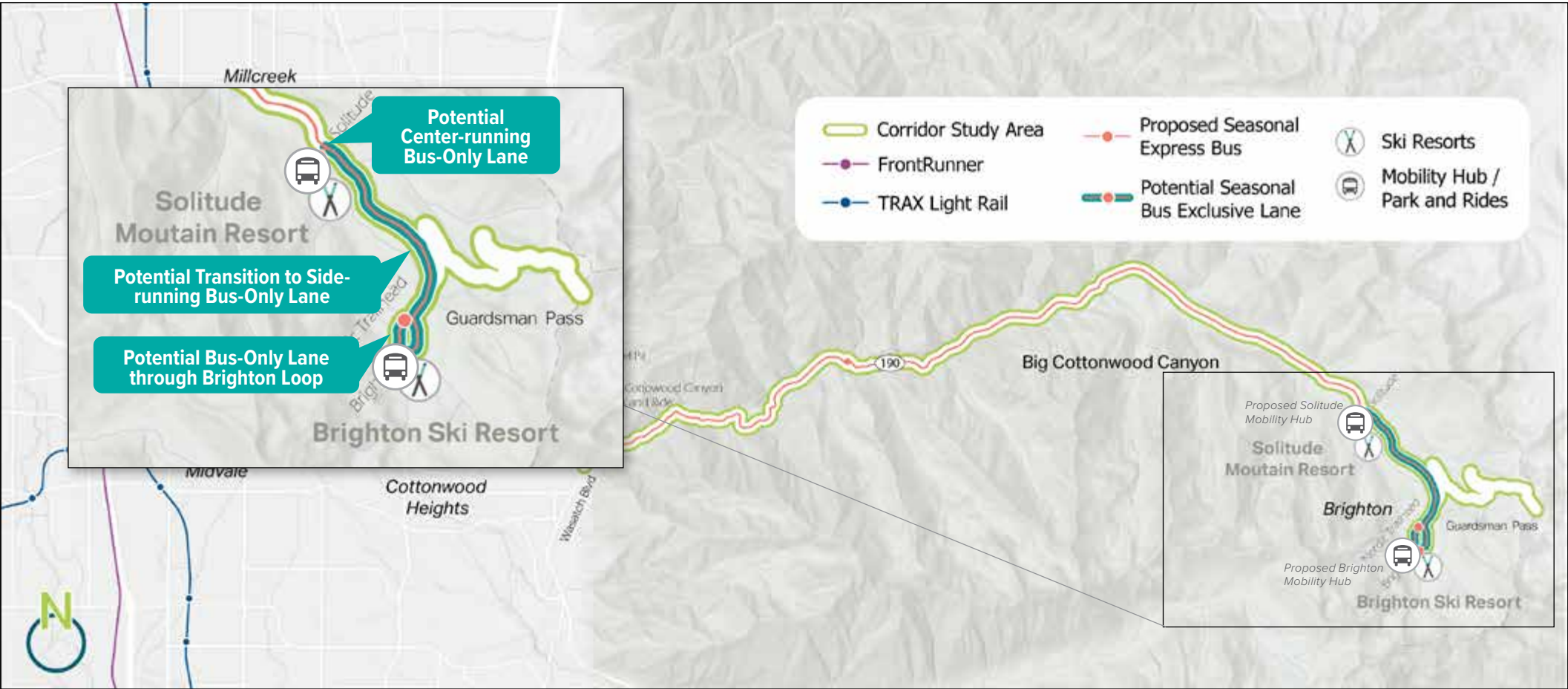
Further analysis needed to confirm operations, locations, and design feasibility depending on location. Identify funding to continue analysis of potential concepts and coordinate with Brighton, and other agencies accordingly.

Immediate Next Steps

Implementation Considerations

Problems Addressed	Jurisdictional Actions	Potential Funding Sources	Cost Estimate*	Timing
– Support mode shift from cars to transit – Decrease single-occupancy vehicles – Improve transit reliability and convenience – Decrease seasonal peak-period vehicle volumes	– USFS environmental analysis/approval may be required; nature and level of which would be determined by USFS in response to formal proposal. – UDOT or UTA/FTA CE	– State/Local: WFRC Surface Transportation Program, CMAQ, Transportation Alternatives Program, Carbon Reduction Program – Federal: RAISE, FTA CIG (both of which would require bundling with enhanced bus, other options)	\$30M - \$50M (2023 dollars)	Mid to Long

**Assumes center-running exclusive lane from Solitude Mountain Resort to Guardsman Pass intersection, side-running exclusive lanes from Guardsman Pass intersection to Brighton Loop roundabout, and exterior exclusive lane around Brighton Loop. Due to the very high level of conceptual design, significant contingency is included to account for the substantial unknowns at this point. Wide-ranged estimate also depends heavily upon UDOT/USFS right-of-way perfecting process to confirm existing right-of-way. Cost estimate errs on the high end.*



This option would be ideally paired with the enhanced bus option, or with both the enhanced bus and resort mobility hubs. Bundling these component into a single project could make them collectively more competitive for potential FTA CIG funding. See Package No. 2 in Section 4.2.

Package Options

The UDOT Big Cottonwood Canyon Corridor Study proposed conceptual roadway improvements to the Guardsman intersection. If the exclusive lane were to be included at that location, improvements would be needed to accommodate the exclusive lane at the intersection. If the exclusive lanes were to move forward first, the Guardsman intersection could be updated at that point and included as part of the project to accommodate the transit lane. This combination of improvements could potentially meet the eligibility requirements for CMAQ funding.

Package Options



Mobility Hubs - Brighton Resort

Addition of mobility hub at Brighton Resort.

The exact location and amenities that would be included at this proposed site are yet to be confirmed. From a conceptual level, amenities assumed to be included consist of a structure that houses restrooms and lockers, at a minimum. Additional features such as real-time bus signs, trailhead maps, bike racks, etc. could be further included. Given the Brighton Lakes trail's 3,700 trips per day during the summer months, this location is strongly positioned for year-round transit service.

Multiple items of note that would need to be considered at this location would be the interaction of frequent buses approaching the hub at the Brighton parking lot, and avoidance of potential impacts to wetlands or an increase in impervious area. Utilizing the location shown in the conceptual rendering would require Brighton Resort to relocate the existing maintenance shed to another location.

The conceptual rendering provides an illustrative idea of how a potential bus-only lane on Brighton Loop could potentially function with the proposed mobility hub. This mobility hub could be bundled with the enhanced bus service; or the enhanced bus service, proposed exclusive lane(s) and Solitude Mountain Resort mobility hub for implementation. Bundling these components into a single project could make them collectively more competitive for potential FTA CIG funding.

Identify project sponsor and continue coordination for approval to move forward with planning, concept design/study. Incorporate outcomes of UDOT and UTA's enhanced bus analyses. Review and compare locations, timing, and process to relocate existing maintenance shed.

Immediate Next Steps

Implementation Considerations

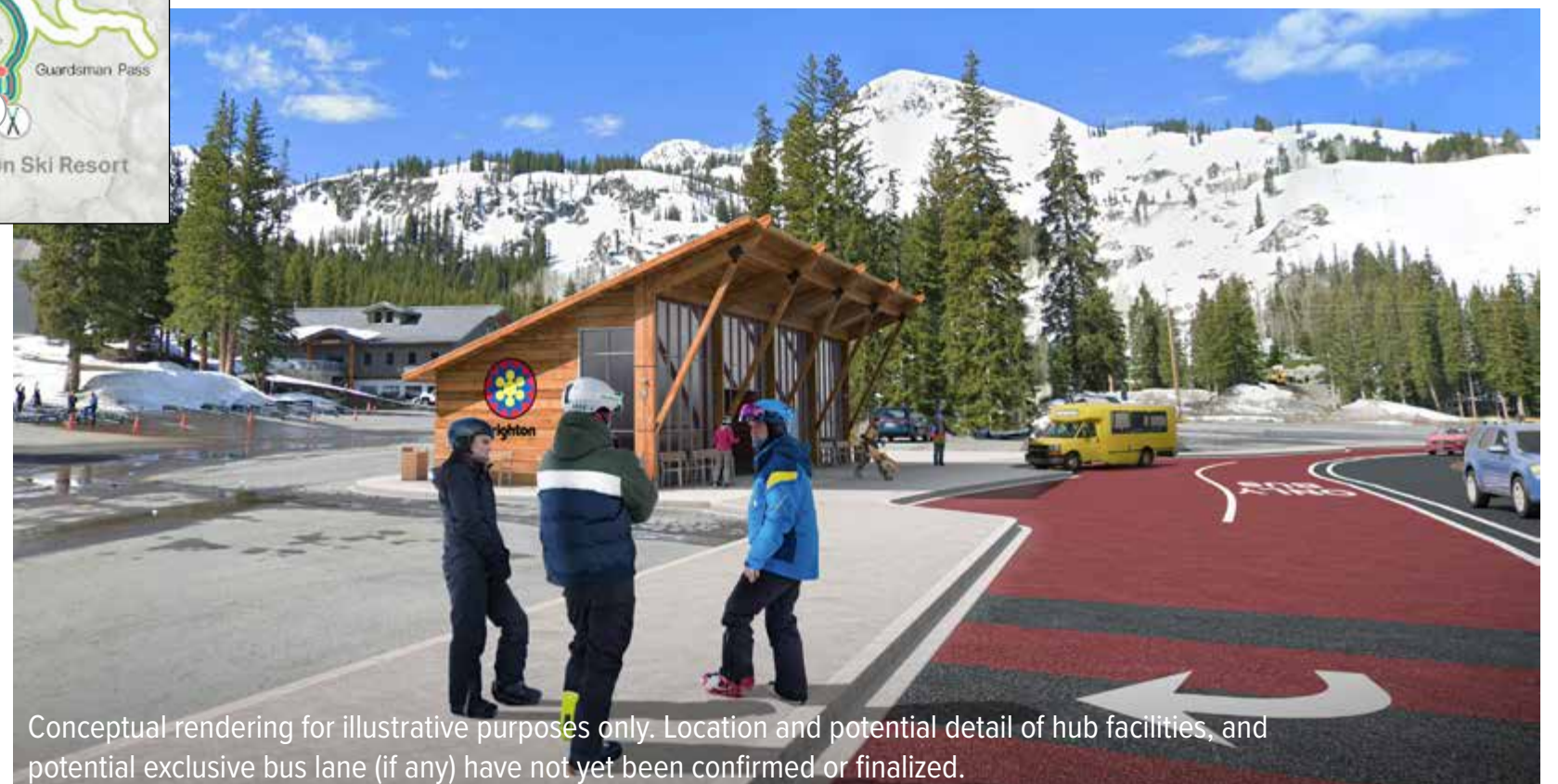
Problems Addressed	Jurisdictional Actions	Potential Funding Sources	Cost Estimate*	Timing
– Support mode shift from cars to transit – Decrease single-occupancy vehicles – Improve transit reliability and convenience – Decrease seasonal peak-period vehicle volumes	– USFS environmental analysis/approval may be required; nature and level of which would be determined by USFS in response to formal proposal. – UDOT or UTA/FTA CE	– Resort/private partnership (possible use of FTA Expedited Delivery with federal share up to 25% of project) – State/Local: WFRC Transportation and Land Use Connection, CMAQ, Surface Transportation Program, Transportation Alternatives Program, Carbon Reduction Program – Federal: CIG Small Starts (if bundled), Rebuilding American Infrastructure with Sustainability and Equity (RAISE) (if bundled), FTA Bus and Bus Facilities Grant, FTA Low or No Emission Vehicle Grant Program	\$1M to \$1.1M (2023 dollars)	Mid

**Estimate based on highly conceptual level of design, including significant contingency to account for the substantial unknowns.*



The Utah State Legislature approved \$150M in one-time funding for enhanced bus, tolling, and mobility hub considerations in the Cottonwood Canyons. The mobility hub recommendations (Brighton and Solitude) may fall within the eligibility for this funding, which would position them to move forward with the appropriate next steps.

\$150M Appropriated for Cottonwood Canyons



Conceptual rendering for illustrative purposes only. Location and potential detail of hub facilities, and potential exclusive bus lane (if any) have not yet been confirmed or finalized.



Mobility Hubs - Solitude Mtn. Resort

Addition of mobility hub at Solitude Mountain Resort.

The exact location and amenities that would be included for a Solitude Mountain Resort mobility hub are yet to be confirmed. Additional progress any preferred options. Placement of a mobility hub within Solitude's parking lot would not see as efficient bus travel times as if the hub were located on the road, and would impact additional parking stalls in Solitude's lot. Placement of the hub on the road (utilizing a concept that would need to be further vetted and refined beyond what is shown here), would improve bus operations by avoiding the parking lot, but would require substantial accommodations to make for a comfortable and safe pedestrian environment in that location.

Beyond confirming the preferred location for the hub, the types of amenities included at the hub would also need to be confirmed, such as: scale and type of shelter or structure, safe and effective pedestrian facilities, features such as real-time bus signs, trailhead maps, bike racks, etc.

This mobility hub could be bundled with the enhanced bus service, or the enhanced bus service, proposed exclusive lane(s) and Brighton Resort mobility hub for implementation. Bundling these components into a single project could make them collectively more competitive for potential FTA Capital Investment Grants funding.

Incorporate outcomes of UDOT and UTA's enhanced bus analyses. Identify project sponsor and continue coordination for approval to move forward with planning, concept design/study. Include Solitude, USFS, UTA, UDOT, and others (such as SLCDPU) in coordination efforts.

Immediate Next Steps

Implementation Considerations

Problems Addressed	Jurisdictional Actions	Potential Funding Sources	Cost Estimate*	Timing
- Support mode shift from cars to transit - Decrease single-occupancy vehicles - Improve transit reliability and convenience - Decrease seasonal peak-period vehicle volumes	- USFS environmental analysis/approval may be required; nature and level of which would be determined by USFS in response to formal proposal. - RHCA considerations (coordinate with USFS to avoid or follow appropriate process if impacted). - UDOT or UTA/FTA CE (potential for public controversy could influence the class of action).	- Resort/private partnership (possible use of FTA Expedited Delivery with federal share up to 25% of project) - State/Local: WFRC Transportation and Land Use Connection, CMAQ, Surface Transportation Program, Transportation Alternatives Program, Carbon Reduction Program - Federal: CIG Small Starts (if bundled), RAISE (if bundled), FTA Bus and Bus Facilities Grant, FTA Low or No Emission Vehicle Grant Program	\$1.5M - \$2.5M (2023 dollars)	Mid

**As location (in-parking lot or on street) and corresponding amenities are yet to be confirmed, estimate based on highly conceptual level of design, including significant contingency to account for the substantial unknowns. Key design components that would impact cost for these options include widening of the bridge to accommodate pedestrians (assumed for cost estimate purposes) and parking lot repaving with the addition of the roundabout (also assumed for cost estimate purposes, but would need to be confirmed through more detailed design).*



The Solitude and Brighton mobility hubs could be bundled with the seasonal enhanced bus and proposed exclusive lane for implementation. Bundling these components into a single project could make them collectively more competitive for potential FTA CIG funding. See Package No. 2 in Section 4.2.

Package Options



Conceptual rendering for illustrative purposes only. Location of hub in relation to Solitude Mountain Resort and potential detail of hub amenities have not yet been finalized.



Mobility Hubs - Gravel Pit

Construct mobility hub at gravel pit location.

The gravel pit is an existing aggregate (gravel) mine located on the east side of Wasatch Boulevard between 6200 South and Fort Union Boulevard. The gravel pit mobility hub was identified as a component of the Little Cottonwood Canyon phased implementation option, which would include improved bus service, part of which would entail the proposed mobility hub at the gravel pit location.

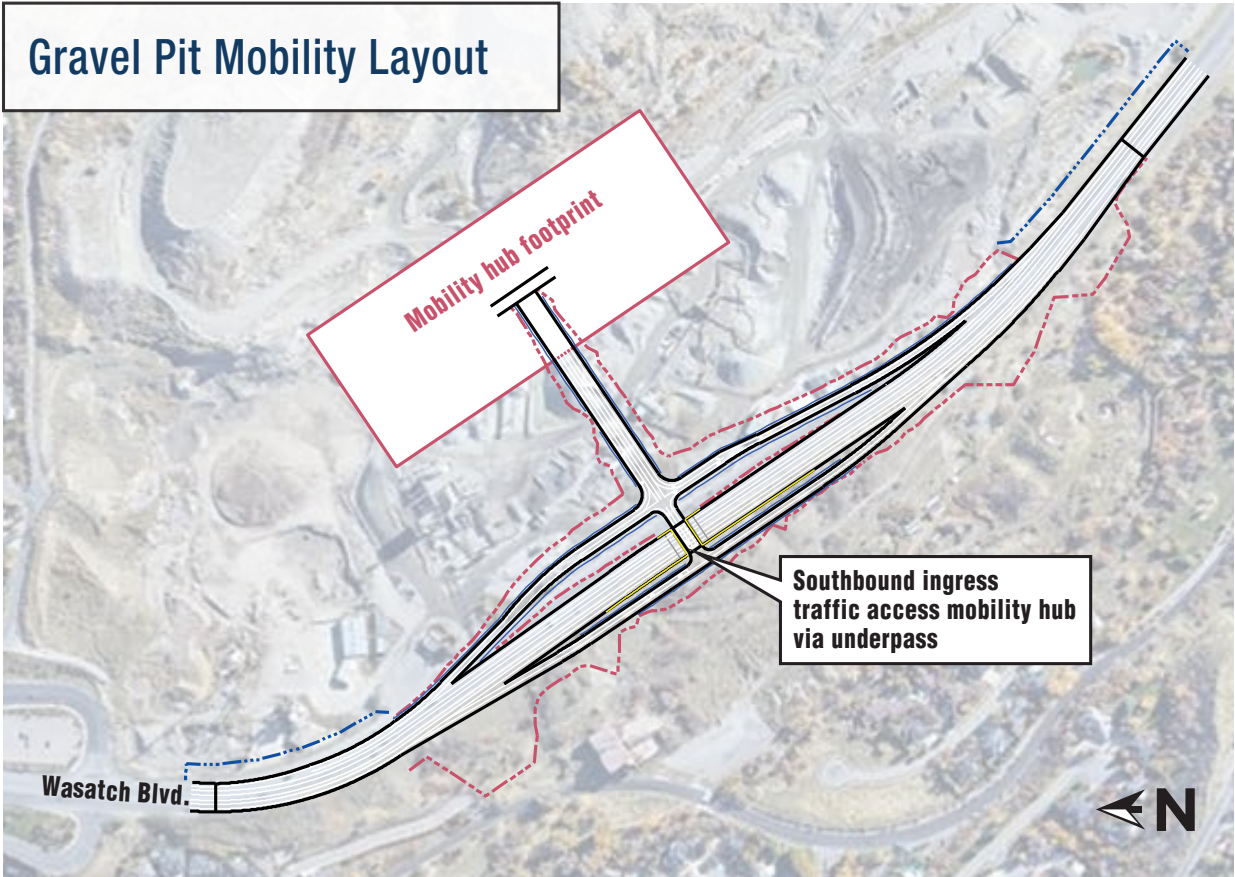
At this time, the BCC MAP is not providing independent recommendations for this mobility hub beyond acknowledging that it was proposed in the LCC FEIS released in fall 2022 and recognizing the need for long-term coordination regarding this component. A Record of Decision for the LCC EIS process is anticipated for summer 2023.

Assumptions and next steps for this mobility hub are contingent upon the outcomes of the LCC EIS process. A Record of Decision for that project is anticipated in summer 2023.

Immediate Next Steps

Implementation Considerations

Problems Addressed	Jurisdictional Actions	Potential Funding Sources	Cost Estimate	Timing
– Support mode shift from cars to transit – Decrease single-occupancy vehicles – Improve transit reliability and convenience – Decrease seasonal peak-period vehicle volumes – Effectively manage parking	– No USFS NEPA required. – Assume environmental approval and management of next steps through UDOT's LCC EIS process.	– Dependent upon LCC EIS process.	To be determined by LCC EIS outcomes	To be determined by LCC EIS outcomes



Source: UDOT Little Cottonwood Canyon Final Environmental Impact Statement, August 2022



Concept of mobility hub at the Gravel Pit



Restripe Existing BCC Park & Ride

Restripe existing parking lot at BCC Park & Ride to accommodate additional parking.

As currently striped, the lot accommodates approximately 80 vehicles. By shifting the angle of the parking and restriping the lot accordingly, the lot could potentially fit close to 150 vehicles.

Peak-period traffic volumes and operations at this intersection and in this area are recognized as an ongoing issue; this recommendation is not intended to solve those challenges. This would be seen as a straightforward, near-term improvement that accommodates more parking for cars that are already seeking parking in this area. Longer term improvements to address internal transit circulation or access at this location, or to the stop amenities, would be contingent upon status and final plan for the gravel pit mobility hub.

Potential conceptual mobility hub / stop improvements were considered for this location as part of the BCC MAP process. Should longer term transit stop improvements be required based on the timing of the proposed gravel pit mobility hub, those improvements would require additional coordination and funding.

Coordinate with UDOT Region 2 to determine availability of funding and timing of improvement.

Immediate Next Steps

Implementation Considerations

Problems Addressed	Jurisdictional Actions	Potential Funding Sources	Cost Estimate*	Timing
Effectively manage parking	- No USFS NEPA or requirements apply - No UDOT NEPA required if improvements are constrained to restriping - UDOT or UTA CE could be needed if more substantial improvements were added to the scope	For restriping only, assume funding could be identified in existing UDOT budget	\$30K (2023 dollars)	Near

*Cost estimate assumes stall restriping only. Removal and replacement of any existing curb and gutter, sidewalk, pavement, etc. to address any necessary changes in circulation are not included.





Year-round Local Bus Service

Provide year-round bus service connecting Midvale Fort Union Station with various stops within the canyon.

UTA and UDOT are currently coordinating to further analyze current and potential future bus operations, ridership, stop locations, and transit service provider options for Big Cottonwood Canyon; analysis results are anticipated later in 2023, and will help determine next steps in addressing transit needs in the canyon.

This option would create year-round local bus service, assumed to start at Midvale Fort Union TRAX Station, and provide access to businesses, communities, trailheads, and resorts. For the purposes of this document, service assumptions include 15-minute headways during weekends and holidays, and 30-minute headways during periods with less visitation (weekdays).

Additional analysis and agency coordination will be critical for determining appropriate stop locations. For example, some stops utilized for winter ski bus service may not necessarily have the same ridership during summer months. Potential stops at USFS trailheads would need Special Use Permits from USFS to allow drop-offs at those locations. In addition, a key concern for any potential trailhead stop location would be potential additional burden on the natural resources, and trailhead amenities' capacity to accommodate either more users or more users at a single time (see Trailhead Bus Stops recommendation).

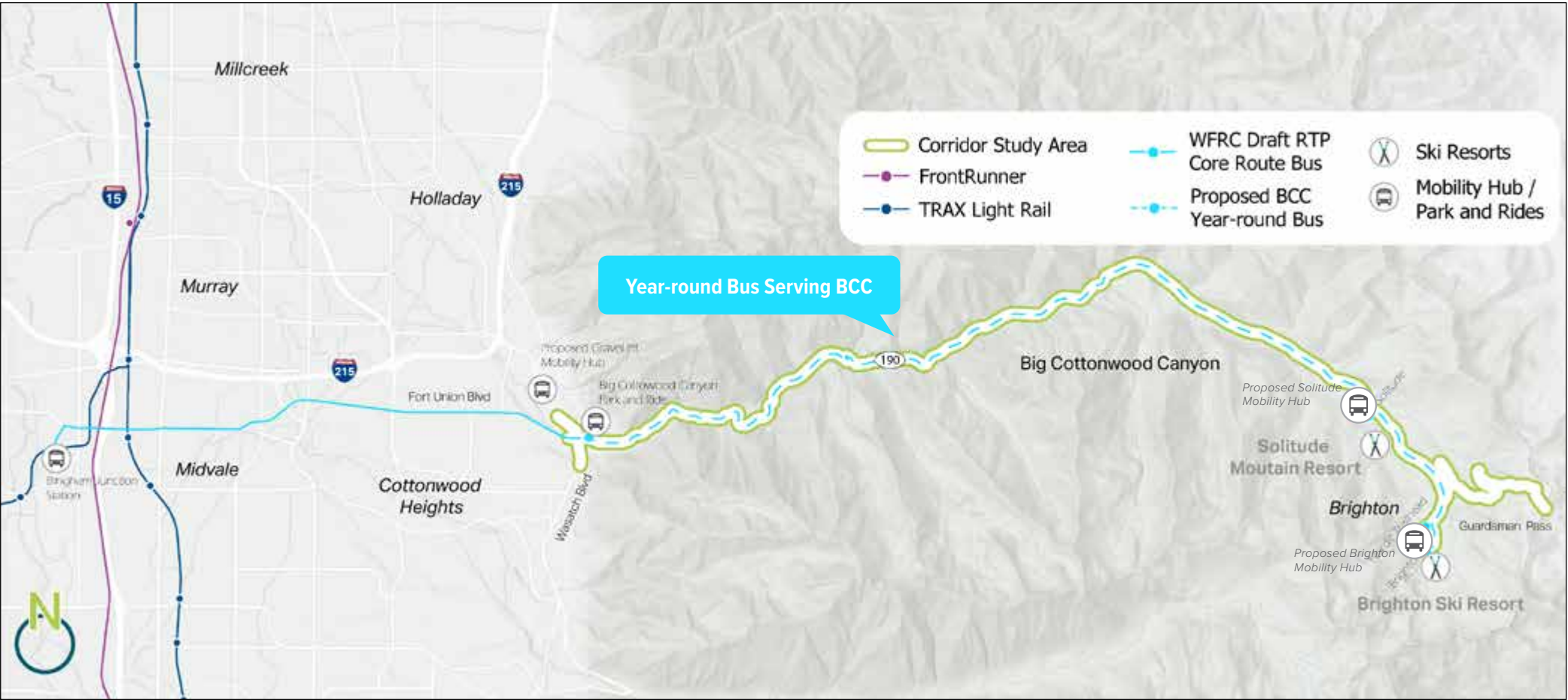
Coordinate with UDOT and UTA on operations, ridership analyses outcomes. Pair those outcomes with those of the Visitor Use Study to identify short list of preferred stop locations within the canyon.

Immediate Next Steps

Implementation Considerations

Problems Addressed	Jurisdictional Actions	Potential Funding Sources	Cost Estimate*	Timing
- Support mode shift from cars to transit - Decrease single-occupancy vehicles - Improve transit reliability and convenience	- USFS environmental analysis/approval may be required; nature and level of which would be determined by USFS in response to formal proposal. - UTA/FTA CE required. Level of CE analysis increased if additional right-of-way is required.	- State/Local: CMAQ (ITS equipment / Bus and Bus Facilities), Carbon Reduction (ITS equipment / Bus and Bus Facilities), Surface Transportation Program (Transit capital projects), TTIF (Transit capital projects, First and Last Mile active transportation connections) - Federal: FTA Bus and Bus Facilities Grant, FTA Low or No Emission Vehicle Grant Program	Capital: \$18M O&M: \$9.125M Lifecycle: \$327.75M	Mid to Long

*Cost estimate should be updated to correlate with operational outputs and assumptions being analyzed by UTA and UDOT (see description to the left).





Trailhead Bus Stops

Provide bus stops at key trailhead/ recreation site locations.

This option would likely support the proposed year-round local bus service, assumed to start at Midvale Fort Union TRAX Station and serving multiple locations within Big Cottonwood Canyon. However, depending on implementation of other proposed transit improvements, and ongoing agency coordination, particular trailhead bus stops could be implemented as part of or in addition to other transit system options.

Additional analysis and agency coordination will be critical for determining appropriate stop locations, based on assumed transit operations and ridership, USFS and SLCDPU permitting and other approvals/restrictions, trailhead or recreational user counts, physical constraints, etc. Potential stops at USFS trailheads would need Special Use Permits from USFS to allow drop-offs at those locations. Concerns to address through further exploration of potential stop locations would be USFS's desire to address existing capacity issues at trailheads prior to implementing any actions that would increase visitation at trailheads; pedestrian crossing accommodations (e.g., pedestrian crossing signals, utilizing UDOT's signal warrant process, and public input regarding additional pedestrian signals in the canyon); restrooms (and their related challenges or constraints from both USFS and SLCDPU perspectives), and other additional burden on natural resources and the trailhead amenities' capacity to accommodate either more users or more users at a single time.

Should trailhead bus stop options move forward, their scale and type of amenities would be further confirmed. Amenity assumptions for the purposes of this study are at a minimum—shelters, safe pedestrian accommodations, trail maps/interpretive signing, and trash cans.

Implementation Considerations

Problems Addressed	Jurisdictional Actions	Potential Funding Sources	Cost Estimate*	Timing
– Support mode shift from cars to transit – Decrease single-occupancy vehicles – Improve transit reliability and convenience	– USFS environmental analysis/approval may be required; nature and level of which would be determined by USFS in response to formal proposal. – UDOT or UTA/FTA CE dependent of scale of improvements and any impacts beyond the existing right-of-way.	– State/Local: TTIF, CMAQ, Carbon Reduction Program – FTA CIG (bundle) – Partnering opportunities through USFS funding (e.g., Great American Outdoors Act improvements)	\$200K - \$1.5M per stop (2023 dollars)	Mid to Long

**Cost is highly dependent on stop location, assumed amenities, need for additional right-of-way, retaining walls, pedestrian crossings (such as RRFB as shown below or HAWK), etc. The cost for each stop location would vary accordingly.*



Conceptual rendering for illustrative purposes only. Potential locations for trailhead bus stops, and corresponding amenities, dependent upon continuing agency coordination.

USFS consultation will be required to determine which stops may be included on a shuttle or bus route, and the specific location of those stops. Previously prioritized stop locations (such as those shown in Figure 2) need to be revisited and re-prioritized with USFS based on current conditions and use.

USFS Consultation



Cottonwood–Midvale Corridor Core Route (15-minute service)

New Core Route with 15-minute service between Bingham Junction TRAX Station and BCC Park & Ride.

WFRC's Draft 2023 RTP identifies this project as an 8-mile-long Core Route (15-minute service) connecting Bingham Junction TRAX Station to the Big Cottonwood Canyon Park & Ride. The project is identified as a Phase 2 (2033 - 2042) project on the fiscally-constrained plan. The project was identified with project number T-S-43 on the previous Adopted 2019 RTP.

Due to its terminus at the Bingham Junction TRAX Station and its direct, frequent service directly to the mouth of the canyon, this proposed route would play an effective role in providing additional options throughout the valley to access the canyon via transit without driving to the base of the canyon.

Identifying funding, ensuring adequate fleet availability and ongoing lack of operators could prove to be challenges in implementation of the project.

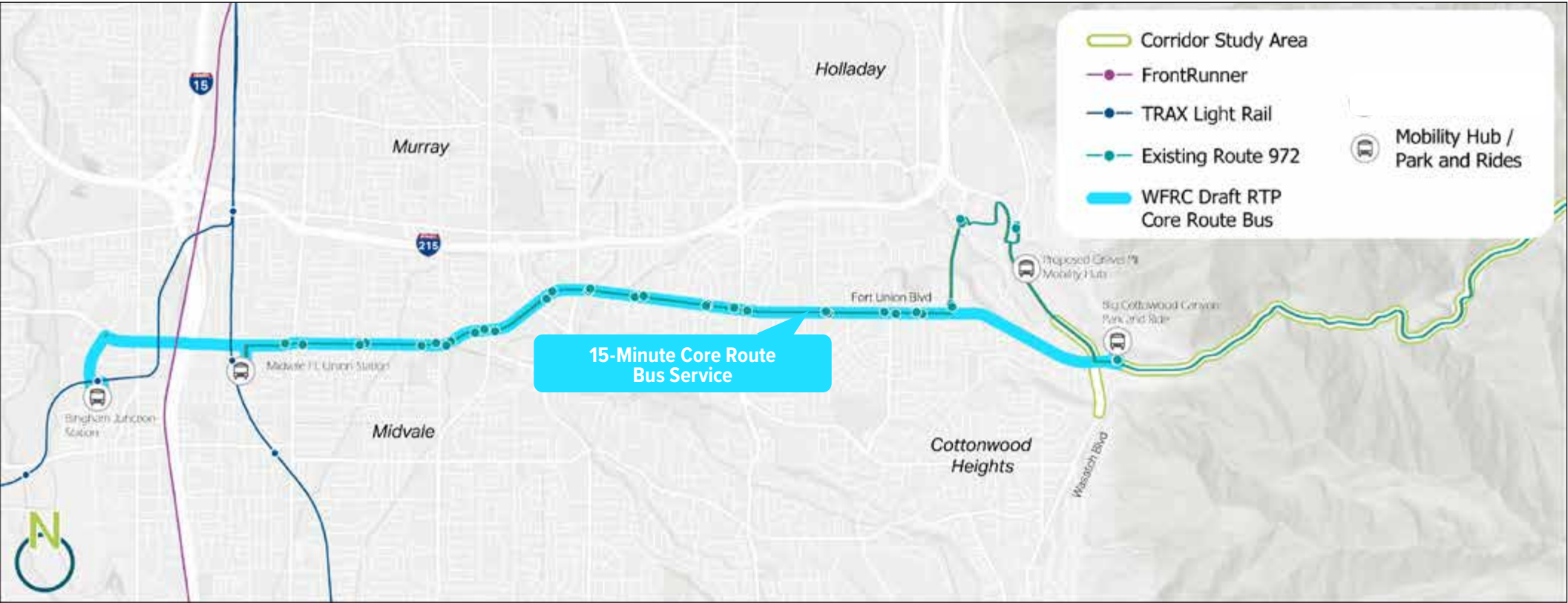
Operational study, funding, adoption of
WFRC 2023 RTP.

Immediate Next Steps

Implementation Considerations

Problems Addressed	Jurisdictional Actions	Potential Funding Sources	Cost Estimate*	Timing
– Support mode shift from cars to transit – Decrease single-occupancy vehicles – Improve transit reliability and convenience – Decrease seasonal peak-period vehicle volumes – Effectively manage parking	– No USFS NEPA required. – UTA/FTA CE	– State/Local: WFRC Surface Transportation Program Funds – Carbon Reduction Program Funds, CMAQ – Federal: Low or No Emission Vehicle and Support Facilities Grant Programs	\$4.8M (2021) \$8.395M (Phased)	Mid to Long

**Cost estimate included from WFRC Draft 2023 RTP.*





6200 South Core Route (15-minute service)

New Core Route with 15-minute service between 5600 West and BCC Park & Ride.

WFRC's Draft 2023 RTP identifies this project as a nearly 15-mile-long Core Route (15-minute service) connecting 5600 West to the BCC Park & Ride. The project is identified as a Phase 3 (2043 - 2050) project on the fiscally-constrained plan. The project was identified with project number T-S-41 on the previous Adopted 2019 RTP.

This route would provide a crucial new high-frequency connection from the west side of the valley to the mouth of the canyon. This proposed route would play an effective role in providing additional options throughout the valley to access the canyon via transit without driving to the base of the canyon.

Identifying funding, ensuring adequate fleet availability and ongoing lack of operators could prove to be challenges in implementation of the project.

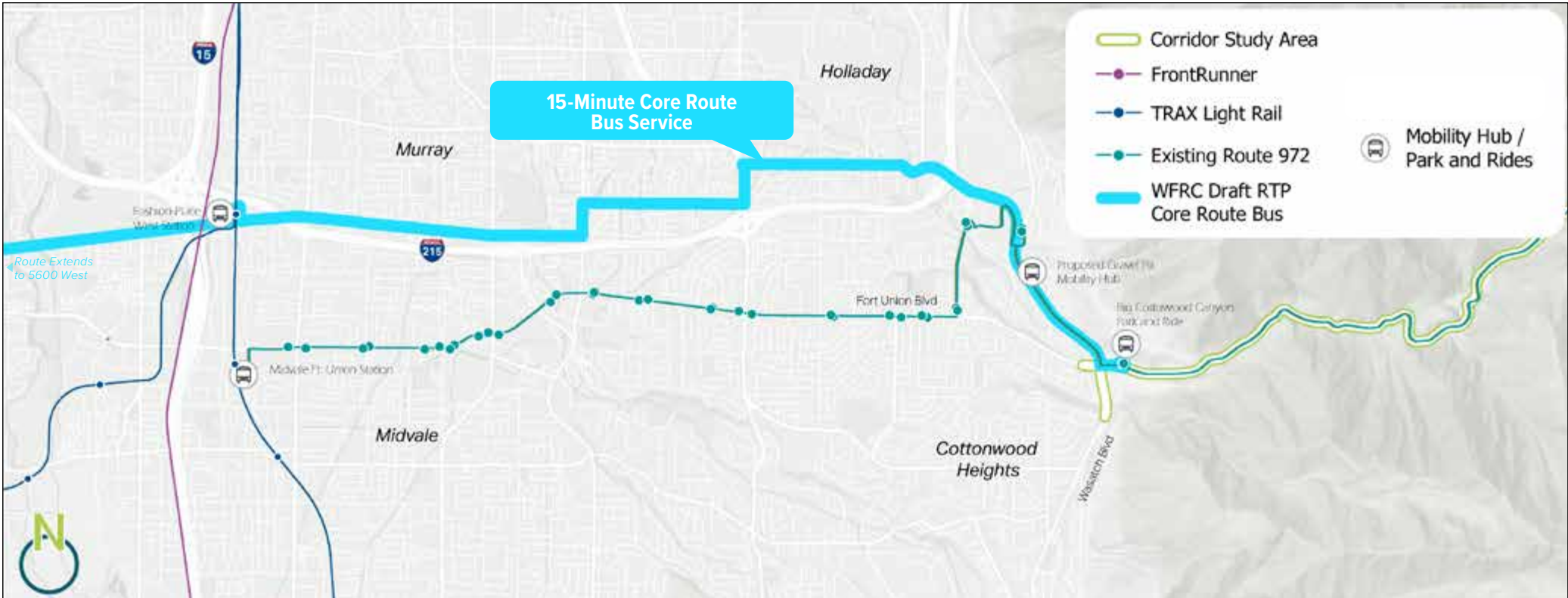
Operational study, funding, adoption of WFRC 2023 RTP.

Immediate Next Steps

Implementation Considerations

Problems Addressed	Jurisdictional Actions	Potential Funding Sources	Cost Estimate*	Timing
– Support mode shift from cars to transit – Decrease single-occupancy vehicles – Improve transit reliability and convenience – Decrease seasonal peak-period vehicle volumes – Effectively manage parking	– No USFS NEPA required. – UTA/FTA CE	– State/Local: WFRC Surface Transportation Program Funds, Carbon Reduction Program Funds, CMAQ – Federal: Low or No Emission Vehicle and Support Facilities Grant Programs	\$4.38M (2023) \$10.903M (Phased)	Mid to Long

*Cost estimate included from WFRC Draft 2023 RTP.





Valley Transit Centers Serving High-Frequency Transit Connections to BCC

Create transit-to-canyon stations strategically connecting high-frequency transit in the valley to BCC.

This recommendation poses the option to create transit-to-canyon stations strategically located in the Salt Lake Valley to provide users additional access to the canyon, and to disperse parking and transit access throughout the valley instead of the mouth of the canyon.

Potential options to explore would be locations with the following characteristics: space to accommodate parking; conveniently located near highways, freeways, or regional arterials to allow convenient roadway access; and located along existing or planned high-frequency transit routes (FrontRunner, TRAX, and high-frequency bus routes, including the proposed Core Route service options noted previously as additional recommendations). General areas to explore are highlighted in the map to the right; potential options to review could be I-215 slip ramps to existing UTA Park & Ride (e.g. 3900 South/Wasatch Boulevard) or new use of existing commercial park lots (in the Midvale or Murray areas). These are noted as potential options to consider and have not been formally vetted.

Identify funding;
concept study/operational study

Immediate Next Steps

Implementation Considerations

Problems Addressed	Jurisdictional Actions	Potential Funding Sources	Cost Estimate	Timing
– Support mode shift from cars to transit – Decrease single-occupancy vehicles – Improve transit reliability and convenience – Decrease seasonal peak-period vehicle volumes – Effectively manage parking	– No USFS NEPA required – UDOT or UTA/FTA CE level of analysis dependent of infrastructure needs/improvements	– State/Local: CMAQ – Federal: FTA Bus and Bus Facilities Grant, FTA Low or No Emission Vehicle Grant Program, RAISE Planning Grant	Variable; will depend upon location, scale, and facility amenities	Long



These potential transit centers would be complementary to implementation of either Core Route previously noted, depending on the location of the transit center(s). Incorporating a more robust opportunity for users to park their car at one of these locations and utilize one of the proposed Core Routes to access the canyon may bolster the benefit of those routes in terms of BCC transit connections.

Package Options



Fort Union Intersection Dual Left Turn Lane

Add dual left turn lane and extend queue storage length at Wasatch Blvd/Fort Union intersection to provide for more reliable transit service.

This option accounts for intersection improvement concepts that were identified in the UDOT Big Cottonwood Canyon Corridor Study (2022). The BCC MAP is identifying this option as a prioritized improvement to provide near-term improvements to the peak-period congestion at the Wasatch Boulevard/ Fort Union intersection to allow for more reliable transit service.

The dual left alternative adds an additional southbound left turn lane and extends the storage length of each turn lane to 750 ft from the existing intersection. This alternative will provide for more intersection throughput and increased car storage for high congestion days. This project is required to be built in conjunction with the merge lane alternative recommended in this report to provide for dual receiving lanes. The primary goal of the dual left alternative is to reduce traffic backups and add more car storage in the turn lanes for in-canyon movements. The alternative widens the existing structure by 16 feet on east/northbound side of the existing yellow centerline. The existing southbound travel lanes, right turn lane, and shoulder remain in place across the bridge. The south leg of the intersection on Wasatch Boulevard needs to be modified to align with the new intersection configuration which requires a cut and large wall on the southeast corner of the intersection.

Identify funding to move forward with project development (concept, operational analysis).

Immediate Next Steps

Implementation Considerations

Problems Addressed	Jurisdictional Actions	Potential Funding Sources	Cost Estimate*	Timing
Improve transit reliability and convenience	- No USFS NEPA required. - UDOT CE, in coordination with Cottonwood Heights (23 CFR 771.117(c) if federally funded) or state-equivalent study if state funding	- State/Local: Surface Transportation Program Funds, CMAQ - Federal: Highway Safety Improvement Program	\$5.533M (2021) \$6.875M (2025)	Mid

*Cost estimate included from UDOT Big Cottonwood Canyon Corridor Study (2022)



Source: UDOT Big Cottonwood Canyon Corridor Study, January 2022

Fort Union
Intersection
Merge Lane

Extend merge lane approximately a half-mile east up S.R. 190 from Wasatch Blvd/Fort Union intersection to provide for more reliable transit service.

This option accounts for intersection improvement concepts that were identified in the UDOT Big Cottonwood Canyon Corridor Study (2022). The BCC MAP is identifying this option as a prioritized improvement to provide near-term improvements to the peak-period congestion at the Wasatch Boulevard/Fort Union intersection to allow for more reliable transit service.

The Merge Lane Alternative starts at the signaled intersection of Wasatch Boulevard (S.R. 190) and Fort Union Boulevard and ends a half mile to the east after the Tavaci subdivision access on the north side of S.R. 190. The Merge Lane Alternative will provide more car storage on high congestion days, allowing traffic from the four intersecting roadways more area to consolidate into one lane of travel. The primary goal of the Merge Lane Alternative is to reduce the traffic back up and travel delays on the roadways that merge into the Big Cottonwood Canyon at this intersection. The alternative also connects the bike lane on Fort Union with an eastbound bike lane along S.R. 190. The bike lane ends at Mine Shaft Road, east of here it is a shoulder bikeway within the canyon.

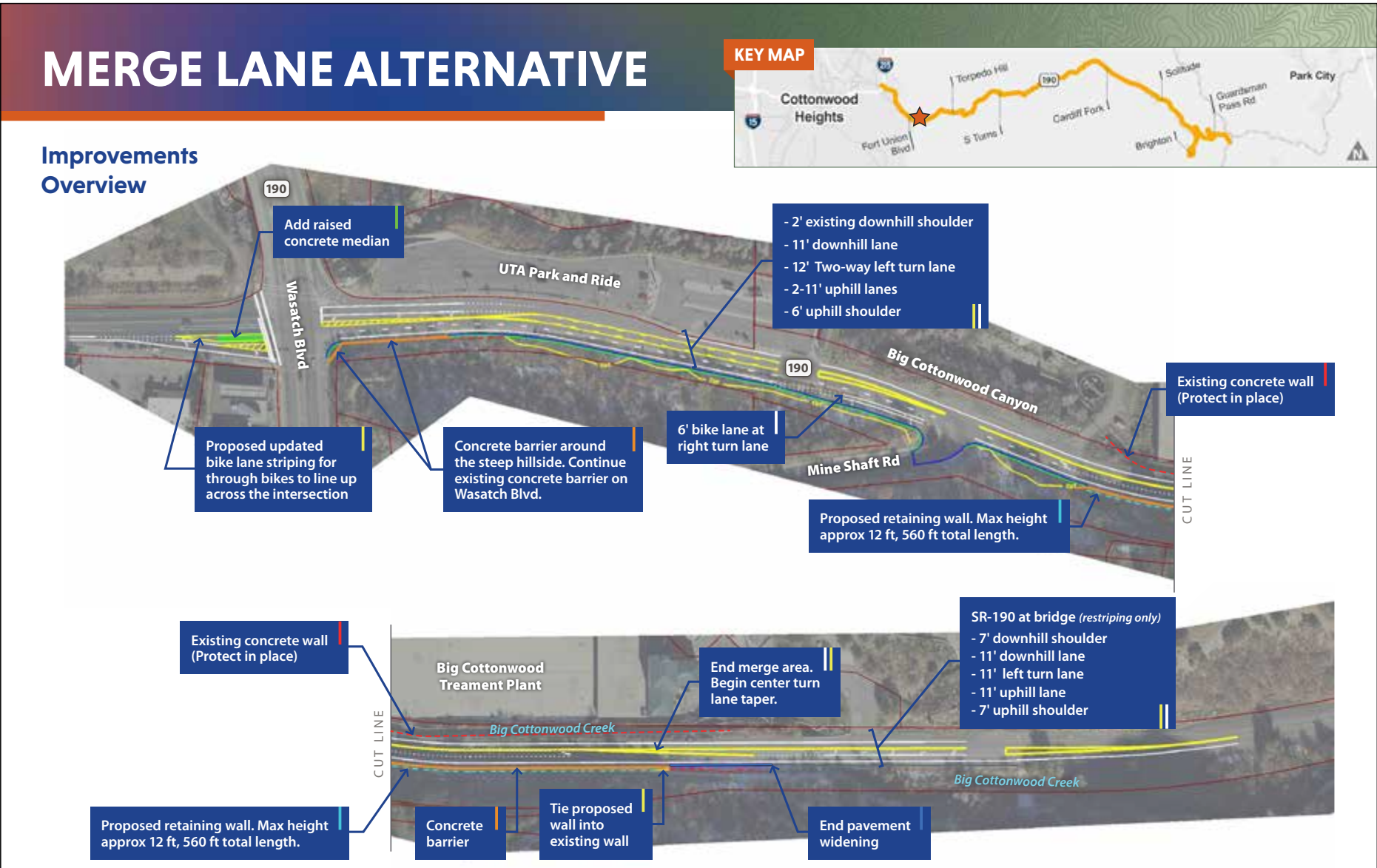
Identify funding to move forward with project development.

Immediate Next Steps

Implementation Considerations

Problems Addressed	Jurisdictional Actions	Potential Funding Sources	Cost Estimate*	Timing
Improve transit reliability and convenience	- No USFS NEPA required - UDOT CE (23 CFR 771.117(c)(26) if federally funded), or state-equivalent study if state funded - UDOT could assume an EA (federal funds) or a State Environmental Study (state funds) if they would like to formally analyze multiple alternatives or if there is concern over public controversy	- State/Local: WFRC Surface Transportation Program Funds, CMAQ, Transportation Alternatives Program - Federal: Highway Safety Improvement Program	\$2.015M (2021) \$2.562M (2025)	Mid

**Cost estimate included from UDOT Big Cottonwood Canyon Corridor Study (2022)*



Source: UDOT Big Cottonwood Canyon Corridor Study, January 2022

Additional Options

Recommendation Description	Problems Addressed	Jurisdictional Actions	Timing, Cost Estimate	Unknowns, Benefits, Challenges
Dynamic (Congestion-based) Tolling This recommendation is to implement a variable tolling structure with fees that are schedule based when there is higher demand. The specific details for this option are related to tolling or vehicle-occupancy restriction decisions being explored with the LCC EIS process, and thus will need to continue to be coordinated to confirm consistency with the outcomes of the LCC EIS process. As described in UDOT's LCC EIS documentation, "UDOT would likely implement a toll or a ban on single-occupant vehicles on this road as well, so both S.R. 190 and S.R. 210 would have similar congestion-management policies. If a toll were implemented for S.R. 190, transit service would need to be improved in that canyon for those not willing to pay a toll or for single-occupant vehicles. The tolling gantry would likely be placed immediately below Solitude Entry 1, to focus the toll on the main, peak-hour winter canyon user, skiers. If a decision is made to toll Big Cottonwood Canyon, a separate environmental analysis would be conducted if necessary."	– Support mode shift from cars to transit – Decrease single-occupancy vehicles – Improve transit reliability and convenience – Decrease seasonal peak-period vehicle volumes	USFS environmental analysis/ approval may be required; nature and level of which would be determined by USFS in response to formal proposal. UDOT CE or state-study equivalent (depending on funding source)	Near to Mid Cost (Tolling Gantry): \$5M Capital: \$1M, O&M: \$300K, 2050 Lifecycle: \$12M (cost estimates from the 2017 BCC 3T Improvement Project) Tolling was identified as part of the one-time \$150M funding appropriated to the Cottonwood Canyons in the 2023 legislative session	Tolling impacts to low-income populations would need to be analyzed and addressed specifically for Big Cottonwood Canyon. Potential measures UDOT acknowledged for Little Cottonwood Canyon would be similarly analyzed and considered for Big Cottonwood Canyon. Ongoing assumptions and next steps for potential tolling will need to occur with UDOT. Additional details to eventually confirm include the toll range (identified as potentially between \$20 and \$30 for most vehicles in the LCC FEIS), and the strategy for utilizing the tolling revenue.
Incentivize Bus Use, beyond Tolling This option captures additional actions that could be utilized to incentivized bus use, beyond the tolling noted above. This could include additional vehicle occupancy restrictions, a parking reservation system that builds upon the resorts' existing parking reservation systems, and/or incentivizing bus use through its fare structure. Reservation + Environmental Monitoring system (long-term): As user demand continues to increase a reservation based system for canyon users could be implemented to limit the vehicles/users in canyon. A reservation system would be available for differing trailheads and destinations throughout the canyon. This would be similar to reservation systems used in national parks throughout the nation. This is a long-term option and would be a tool that could be used if demand on the canyon reaches a tipping point and more restrictive and deliberate use is necessary to maintain the health of the ecosystem. Environmental monitoring should be implemented to create a baseline and metric for understanding the health of the canyon ecosystem. Understanding the health of the canyon's water, air, flora and fauna should be used as an important metric to aid how we curb pressures of use and demand in the canyon.	– Support mode shift from cars to transit – Decrease single-occupancy vehicles – Improve transit reliability and convenience – Decrease seasonal peak-period vehicle volumes	No USFS NEPA required UTA/FTA (transit agency) CE	Near to Long Cost: Variable, depending on combination of options	Various options to explore include: possible resort partnership, variations to existing subsidies for transit fare, opportunities for scaled bus fare depending on peak days, income; opportunities for combined reservation systems with ski resorts and USFS reservations The ideal variable pricing structure for bus fare would increase transit use, reduce vehicles per hour and encourage an increase in number of occupants per vehicle. This would lead to a reduction in overall congestion and improve the level of service of the roadway. This option provides an opportunity to address questions of equity. Equitable fare structures or payment options should be explored and built into the long-term assumptions. The next step for this option would be to identify funding to study changes to bus fare/seasonal/select bus service. Unique funding sources could include FTA 5312 grant, which supports development of innovative products and services assisting transit agencies in better meeting the needs of their customers, or the U.S. Department of Transportation's Strengthening Mobility and Revolutionizing Transportation (SMART) Grants Program.

Additional Options Cont'd.

Recommendation Description	Problems Addressed	Jurisdictional Actions	Timing, Cost Estimate	Unknowns, Benefits, Challenges
Reduce / Eliminate Roadside Parking Implement restrictions on roadside parking. Exact locations and nature of these restrictions are yet to be confirmed, but could be location-specific (e.g., extending quarter-mile from each resort), timeframe specific (winter only, or during peak-period hours during the winter or summer), etc. Parking limitations would ideally be phased in over time to allow for the expansion of transit service and the addition of parking improvements in the valley to accommodate users who switch from driving to using transit.	– Support mode shift from cars to transit – Decrease single-occupancy vehicles – Effectively manage parking	– No USFS NEPA required specifically for a prohibition of on-road parking. However, if infrastructure were needed to facilitate this, USFS environmental analysis/approval may be required; nature and level of which would be determined by USFS in response to formal proposal.	Near Cost: \$250K (O&M), \$7.5M (Lifecycle 2050)*	The option to limit roadside parking should be bundled with increased transit service. Collectively these strategies will make parking more difficult while creating a bus service that is more frequent. Input from the resorts and the USFS would both be critical. Opportunities to streamline efforts should be explored in the case of USFS moving forward with removing any roadside parking (and potentially consolidating parking at existing lots), if/as they undertake that process moving forward. Ongoing considerations would need to include potential ownership and strategy for enforcement, and identifying annual enforcement costs. This is another area where similar strategies could be used between both Big and Little Cottonwood Canyons to provide consistency for the public, and potentially identify efficiencies in management or enforcement of parking restrictions.
New Canyons-specific Transit Agency Creation of a new Canyons-specific transit agency to oversee funding, implementation, and management of transit in the Cottonwood Canyons.	Potential to support and carry out the other recommendations	Would likely require a Special Use Permit	Mid to Long	This recommendation identifies the opportunity to explore if a supplementary or new transit agency could be formed to focus specifically on transit in the Cottonwood Canyons (this could also include other Central Wasatch canyons). This option could provide flexibility for seasonal service and potentially more flexibility in timing, type, and execution of services. The ASPEN/Roaring Fork Transportation Authority should be referenced as an example for lessons learned and best practices to be considered.
Bicycle, Pedestrian, Americans with Disabilities Act (ADA) Accommodations Inclusion of bicycle, pedestrian, and ADA features into design and implementation of broader improvements.	Improve safety for non-motorized modes	For the purposes of the BCC MAP, assumed to be implemented as part of broader improvements, not requiring standalone actions	Near to Long	The key priority of the BCC MAP recommendations is addressing seasonal peak-period and year-round mobility issues, with a focus on shifting car trips to transit and reducing single-occupancy vehicles. However, accommodations to increase safety for bicycles, pedestrians, runners, and ADA compliance should be incorporated into the aforementioned recommendations where feasible. All mobility hub and trailhead stop recommendations will be designed to comply with ADA requirements, and will include improved pedestrian facilities, at a minimum. Any progression of the proposed recommendations should include, to the extent feasible, consideration of bicycle accommodations on buses and shuttles, bike racks at trailheads/mobility hubs, and for recommendations altering the roadway, options for incorporating improved bicyclist conditions (e.g., shoulder and/or striping improvements) in the roadway design.

*Cost estimate from 2020 MTS Draft Alternatives assumptions.

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4.2 Potential Implementation Packages

All proposed recommendations in this BCC MAP have been defined such that they could move forward independently, depending on prioritization, funding, and identifying a project sponsor/champion to take the next steps to move the project forward. The recommendations laid out in Table 4, below, are those that are likely the most straightforward—requiring the least (or no) additional environmental analysis/NEPA approval, minimal to no capital investment, etc.—and could be carried forward in the most immediate near term.

In addition, there may be advantages to "bundling" multiple recommendations into packages to progress together. These advantages primarily consist of opening the door to additional funding mechanisms or consolidating NEPA or jurisdictional actions. Table 5 provides a list of potential packages of bundled improvements;

the packages presented are not exhaustive of all potential pairings. They are listed in the table in order of progressive implementation that would ultimately lead to a mobility system that meets the goals and needs noted in this document. Packages 2 and 3 are the most critical components for the BCC mobility challenges. Specifically, incorporating the dedicated transit lane(s) to allow for bus reliability, and implementing the resort mobility hubs to safely and comfortably accommodate the frequent bus service are important components to the success of the enhanced bus route. In addition, the ideal scenario from a mobility perspective is implementing Package 2 and 3 in tandem, or portions of the two together to disincentivize personal vehicle use while also providing a transit system that is a desirable, convenient option over driving a personal vehicle.

Table 4: Summary of Potentially Straightforward Options to Progress in the Near-term

Potential Near-Term Item	Cost	Environmental / Permitting	Immediate Next Steps
Restripe BCC Park & Ride	\$30K	N/A (if restriping only)	Identify funding and move forward with implementation.
Supplementary Shuttle	\$560K (single winter season)*	Dependent on service provider and locations of drop-off; for near-term recommendation, assume drop-off to ski resorts only	Identify best practices, successes, and challenges from Visit Salt Lake's Cottonwood Connector service for winter 2022/23; confirm desire for similar option winter 2023/24, move forward with identifying funding and partnerships.
Increase 972 Service	Already accounted for in UTA's current budget	N/A	Identified in UTA 5-Year Service Plan, but is contingent upon resource availability; confirm likely availability of adequate operators if service to be provided by UTA.

*See recommendation description in Section 4.1. \$560K is based on Visit Salt Lake Cottonwood Connect Ski Shuttle service for winter 2022/23.

Table 5: Opportunities to Package Multiple Potential Options for Implementation

Package No.	Package Description	Timing / Cost*	Package Reasoning
1	Wasatch Boulevard / Fort Union Intersection Improvements + Merge Lane	Mid \$7.548M	Sets the stage for operational improvements in this area where peak-period congestion hampers bus movements along with general traffic. As UDOT has done initial conceptual work and identified next steps, these components — whether implemented together or separately — are posed for next steps independent of (and supporting) longer term transit improvements.
2	Enhanced Bus + Exclusive Lane + Resort Mobility Hubs**	Mid to Long Roughly \$100M (highly variable due to conceptual design assumptions and broad range of unknowns for exclusive transit lane(s))	Combining all three components into a single package would deliver a more comprehensive enhanced bus project at a single time. Enhanced bus has been identified as a portion of the \$150M appropriated for Cottonwood Canyons enhanced bus, tolling, and mobility hub improvements. Thus, next steps for implementing the Big Cottonwood Canyon enhanced bus system are well positioned to continue into additional operational analysis and planning. As a combined package, this is more likely to be eligible (and competitive) for FTA CIG funding. TTIF funds should also be explored as a state funding opportunity. Most effective if implemented with components of Package 3.
3	Tolling, Restricting On-street Parking, Incentivizing Bus Options	Mid to Long Variable cost (at least \$6M depending on options)	These items related to incentivizing transit and disincentivizing personal vehicle use are included as a standalone package directly following implementation of the enhanced bus system. However, to see the greatest benefit for both Package 2 and Package 3, they should come into place together to best complement each other and create the greatest collective benefit to mobility in and accessing Big Cottonwood Canyon. The tolling portion of this package has been identified as a portion of the \$150M appropriated for Cottonwood Canyons enhanced bus, tolling, and mobility hub improvements.
4	Midvale Core Route + 6200 South Core Route + Valley Transit Centers	Long \$9.18M (Core Routes) + TBD for Transit Centers	These long-term high-frequency routes, paired with the proposed valley transit centers, would play an effective role in providing additional options throughout the valley to access the canyon via transit without driving to the base of the canyon. This recommendation pairs two proposed 15-minute Core Routes noted in the WFRC Draft 2023 RTP with supporting yet-to-be-identified transit-to-canyon stations strategically located in the Salt Lake Valley.
5	Year-round Bus Service + Trailhead Stops	Long \$18M + \$200K to \$1M per trailhead stop	Trailhead stops are assumed to best complement the long-term implementation of a year-round service, serving more locations throughout the canyon. The enhanced/express bus option focuses on limiting the number of stops and serving the resorts directly. Trailhead stop improvements could move forward independent of implementation of the year-round service itself.

*See cost estimates provided for each independent recommendation. Note that cost estimates are a high-level estimate based on preliminary assumptions and minimal detailed design; all of which would need to be further refined as any project progresses.

**As the gravel pit is part of the ongoing considerations in the LCC EIS process, that is assumed to be independent of the recommendations noted here.

5. Implementation Considerations



5.1 Funding

The recommendation tables in Section 4 list various funding options for which each recommendation could be eligible. This section provides additional detail about the range of considerations for each funding source, including eligibility requirements, timing considerations, competitiveness, associated environmental review (NEPA or state), etc. These details will help guide decision-makers in determining the preferred path forward. This section focuses on prioritized funding sources based on the proposed recommendations, and does not represent a comprehensive list of all possible funding sources.

The BCC MAP recommendations vary widely in their cost estimates, from \$30K for implementation of the straightforward Park & Ride restriping, to \$60M+ for implementation of the more substantial enhanced bus and/or exclusive transit lane options. These costs similarly vary depending on if recommendations are implemented on their own or packaged into more substantial projects to take advantage of different funding sources. The following outlines funding options to provide flexibility in securing funding, to best set the stage for implementation.

Tips to be Competitive for WFRC TIP Funds

- Consider requesting funding for smaller components of the project to get the project started (for example, a trail or path connecting to a mobility hub). A smaller amount of funding can also be utilized as seed funds for future requests to WFRC and others.

5.1.1 State / Local

WFRC Transportation Improvement Program (TIP)

Funding through WFRC's TIP program is both limited and competitive (see Table 6). Of the 101 projects submitted to the region during the 2022 funding cycle, 42 were selected, addressing 20% of the need. Table 6 summarizes the relevant programs in the TIP that could be further pursued for the recommendations noted in Section 4. As noted in the table, funds available in the Salt Lake City/West Valley Urbanized Area for the 2023 application cycle total approximately \$30.2M, with Letters of Intent due September 2023 for 2026 and 2030 funds.

Key considerations for utilizing TIP funds include:

- Identify a local sponsor – CWC, a local jurisdiction, or transit/transportation agency.
- Leverage local partnerships.
- All grants identified could be utilized, but will not fund entirety of project.
- Similar to RAISE or other federal grants, applicants need to compete by bringing more to the table.
- Surface Transportation Program funds have the most flexibility, and those projects do not need to be included on the RTP if they are not a capacity project.

- Provide more than the required local match.
- Leverage as many funding sources as possible (private, local, state, federal).
- Focus applications on improving safety, access to recreation, access to jobs and air quality.

Table 6: WFRC Transportation Improvement Program (TIP)

Programs (Competitive)	Eligible Projects	Salt Lake City/ West Valley Urbanized Area \$	Year Available*	Local Match	Letter of Intent Due
Surface Transportation Program (STP): Program provides a fair amount of flexibility. Major highway and transit capacity improvements must be identified in the first phase of the 2019-2050 RTP. Non-capacity projects do not need to be included in the RTP.	– Roadway projects – Transit capital – Active transportation	\$20M	2030	6.77% minimum	Annually in September (Next due in September 2023)
Congestion Mitigation Air Quality (CMAQ): Provides funding for transportation projects that improve air quality; projects must demonstrate those air quality benefits. Eligible projects include construction/purchase of new public transportation facilities and equipment; construction of bicycle or pedestrian facilities serving commuter transportation needs; and certain traffic control measures, such as traffic signal coordination, intersection improvements, and incident management.	– Roadway projects – Transit capital – Active transportation – Promotion of alternative modes (ridesharing) – ITS projects	\$5.6M	2030	6.77% minimum	Annually in September (Next due in September 2023)
Transportation Alternatives Program (TAP): Planning and construction of active transportation facilities used for construction, planning, and design of on-road and off-road trail facilities for pedestrians, bicyclists, and other non-motorized transportation that will provide safe routes for non-drivers, and transportation projects to achieve ADA compliance.	– On- and off-road facilities – Sidewalks – Signals – Traffic-calming – Lighting – Other safety-related projects	\$2M	2026	6.77% minimum	Annually in September (Next due in September 2023)
Carbon Reduction Program (CRP): Funds must be used to reduce on-road CO2 emissions, which may include projects and strategies for safe, reliable, and cost-effective options to reduce traffic congestion by facilitating the use of alternatives to single-occupant vehicle trips, including public transportation facilities, pedestrian facilities, bicycle facilities, and shared or pooled vehicle trips within the Urbanized Area.	– Transportation facilities – Active transportation – Shared/pooled vehicle trips	\$2.6M	2030	6.77% minimum	Annually in September (Next due in September 2023)

Source: <https://wfrc.org/programs/transportation-improvement-program/>

*Assumed to be applying in 2024

State Funding

TIF and TTIF summaries are presented in Table 7. TIF funds can be used to fund highway capacity projects as well as standalone active transportation projects. TTIF funds can be used to fund capital transit projects as well as active transportation projects with a direct connection to a transit station, also known as first-and-last mile projects. These projects must be included on the RTP and approved by the Utah Transportation Commission.

Local governments and districts may nominate projects for consideration in the prioritization process to be considered for the RTP. The projects are then prioritized and ranked using the Transportation Capacity Project Prioritization Process. The Utah Transportation Commission then uses the ranked list as a decision support tool to determine which projects to fund. In 2022, the TIF and TTIF programs funded approximately \$131M in transit, first-last mile, and active transportation projects.

Tips for Success with State TIF and TTIF Funds

- Project is included on a locally adopted plan.
- There is a staff member at the local community level who is available to champion the project through construction.
- Clearly defined extents or limits.
- Design-level cost estimate provided.
- There has been careful consideration of any environmental impacts that could occur as a result of the project.

Table 7: Transportation Investment Fund (TIF) & Transit Transportation Investment Fund (TTIF)

Programs (Competitive)	Eligible Projects	\$ (2022)	Year Available*	Local Match*	Upcoming Project Nominations
TIF	– Capacity projects	-	2025	40% minimum	May 2023
TIF (Active)	– Mitigate traffic congestion – Paved non-motorized projects – Be a part of the UDOT Active Transportation Plan – Projects maintained by local government	\$24.3M	2025	40% minimum	May 2023
Regionally Important Active Transportation	– Projects that cross jurisdictional boundaries or provide access to a regional destination – Be maintained by local government	\$33.6M	2025	40% minimum	May 2023
TTIF (Transit)	– Public transportation project – Have an ongoing operating and maintenance plan	\$55.8M	2025	30% minimum	May 2023
TTIF (First-Last Mile)	– Pedestrian or non-motorized transportation project that provides connection to a public transit system – Be maintained by local government	\$18.3M	2025	30% minimum	May 2023

*Assumed to be applying for 2024 funds. For TIF active projects and TTIF transit and first-last mile projects, a match is required. This match cannot be from a UDOT administered state funding source, but most other funding sources (i.e., local, county, federal, private) are eligible. In addition, the match can be in-kind, meaning non-cash matches including services (labor), right-of-way, construction, materials, and/or labor/equipment time valued at fair market value .

Source: <https://wfrc.org/programs/transportation-improvement-program/>

5.1.2 Federal

Table 8 provides additional detail on key FTA discretionary fund programs:

- 5339(b) – Grants for Buses and Bus Facilities Program provides funding to replace, rehabilitate and purchase buses and related equipment and to construct bus-related facilities, including technological changes or innovations to modify low or no emission vehicles or facilities.
- 5339(c) – Low or No Emission Vehicle Program provides funding for the purchase or lease of zero-emission and low-emission transit buses as well as acquisition, construction, and leasing of required supporting facilities.
- 3005(b) – Expedited Project Delivery Pilot Program streamlines project delivery of new transit infrastructure that meets program requirements. It encourages innovative partnerships and funding.
- 5312 – Enhancing Mobility Innovation Program provides funds to advance innovative public transportation.

There are several considerations for CIG funding. Sponsors should prioritize and time the application for CIG funding: only a few projects will get funding from any one sponsor. CIG is competitive. The following metrics can increase your chances:

- Keep ridership projections high and costs low (need a medium rating and cost-to-rider ratio is a key relationship for the CIG application process).
- Justice40 criteria (highlight private, public partnerships; public participation; workforce development)
- Increase local match

Upfront work to be completed to ensure readiness for CIG includes:

- Pre-NEPA/feasibility study is common to solidify the locally preferred alternative and get your project on the WFRC long range plan.
- Public engagement early and often goes a long way with FTA (during all early work).
- NEPA and 30% design needs to be complete and is part of the application for CIG.

Tips for Success with FTA Discretionary Funds

- **Do:** Form strong partnerships and talk about it. Partnerships show favorably with FTA for funding strength and commitment. Partnering for funding, support with resorts, county, cities will show well.
- **Do:** Include Justice40 criteria into your evaluations. Equity and demographics should be considered when talking about site location, use and access.
- **Do:** Document a robust public participation process as part of your grant application. This should include Justice40 disadvantaged communities.
- **Do:** Talk about jobs and workforce. Will this project improve access to jobs and larger capture for workforce?
- **Don't:** Go through the grant application if your project is low dollar and can be done with other funds. Make sure you have a solid return on investment—grants take money and time.

Table 8: FTA Discretionary Grants

Programs (Competitive)	Eligible Projects	Fund Amount	Local Match	2023 Notice of Funding Opportunity Schedule
5309 Capital Investment Grants (CIG): Funds transit capital investments, including heavy rail, commuter rail, light rail, streetcars and bus rapid transit. – Highly competitive – Exceed match requirements – Identification of a locally preferred alternative – Environmental clearance (NEPA) – Adoption into the RTP – Funding commitments identified – Coordination with FTA on timing and process	– Major Capital Investments: – Small Starts: Project cost < \$400M and asking < \$150M – New Starts: Project cost > \$400M and asking > \$150M	\$3B (2022-2026)	Small Starts: 20% minimum New Starts: 40% minimum	-
5339: Grants for Buses and Bus Facilities; 5339: Low and No Emission Buses and Equipment – Highly competitive – Exceed match requirements – Joint Notice of Funding Opportunity-applicant can submit on one or both – May include partnerships with other eligible entities	– Replace, purchase, rehabilitate and purchase buses – Construct bus related facilities – Low and no emission vehicles and supporting facilities	\$1.7B combined (2023)	20% minimum (Bus and Bus Facility) 15% minimum (Low-No)	January 2023
5312: Enhancing Mobility Innovation: Provides funds to advance innovative public transportation; applicants are encouraged to identify one or more partners to advance the following: – Support innovation in passenger-centric mobility that meets evolving needs – Advance equitable and climate-smart transportation – Contribute to knowledge of national significance to improve public transportation service – Advance the vision of mobility for all	– Projects that: improve mobility and rider experience or innovative service deliver – Novel partnerships – Creative financing – Software solutions	\$4M (2022) 9 Transit agencies awarded	20% minimum	-
3005(b) Expedited Delivery Pilot Program: Projects must utilize public-private partnerships and be operated by an existing transit operator.	– Expedited delivery of New Starts and Small Starts projects	-	75% minimum	-

Table 9: Capital and Planning Grants

Programs (Competitive)	Eligible Projects	Fund Amount	Local Match	2023 Notice of Funding Opportunity Schedule
U.S. Department of Transportation Rebuilding American Infrastructure with Sustainability and Equity (RAISE) – Highly competitive – Exceed match requirement – Coordination with state agencies (limited regional awards) – Projects must be included local plans or RTP – Requires a Benefits-Cost Analysis – Letters of support (local, state, fed) – Minimum award is \$5M – No minimum for planning funds – Grant application production can be costly and time intensive	– Surface Transportation Infrastructure Projects: Implementation and Planning	\$2.5B (2023)	20% minimum	Notice of Funding Opportunity December 2022
WFRC Transportation and Land Use Connection (TLC): Supports local governments with technical assistance to integrate land use planning and regional transportation, implementing the Wasatch Choice Vision. The program is made available through a partnership with Salt Lake County, UTA, and UDOT. – Competitive – Exceed match requirement	– Planning projects focused on enhancing mobility, access, and maximizing the value of investment in public infrastructure	\$1.1M (2023 awards)	6.77% minimum	Letter of Intent Due Annually in September (Next Application September 2023)

5.1.3 Other

Additional non-transportation funding programs are available for projects with specific relation to federal lands. Each of the following can be further considered to complement the previously described programs, as well as USFS's ongoing efforts to utilize Great American Outdoors Act funds.

The Western Federal Lands Program provides funding for use by the Federal Land Management Agencies (FLMAs) and Federal Highway Administration (FHWA) for the planning, design, construction or reconstruction of designated public roads that provide access to, through or within Federal or Tribal lands. FHWA and the FLMAs (e.g., National Park Services, USFS, Fish and Wildlife Service) jointly develop transportation projects, based on the need and availability of funds. All regionally significant FLMA projects, regardless of funding source, that affect the public are coordinated with the appropriate state or local agencies responsible for planning implementation of transportation improvements.

The Federal Lands Access Program (FLAP) provides funds to improve transportation facilities that provide access to, are adjacent to, or are located within Federal lands. The program supplements state and local resources for public roads, transit systems, and other transportation facilities, with an emphasis on high-use recreation sites and economic generators. The program is funded by contract authority from the Highway Trust Fund and subject to obligation limitation. Funds will be allocated among the states using a statutory formula based on road mileage, number of bridges, land area, and visitation.

Unique Funding for Incentivizing Bus Use beyond Tolling (e.g., apps and ticketing processes)

FTA's 5312 Enhancing Mobility Innovation Grant Program funds the development of products and services assisting transit agencies in better meeting the needs of their customers. This funding source could be considered for the development of apps or similar tools.

The U.S. Department of Transportation's Strengthening Mobility and Revolutionizing Transportation (SMART) Grants Program (Table 9) funds purpose-driven innovation to build data and technology capacity and expertise for state, local, and tribal governments. Los Angeles County recently won a \$2M grant to integrate transit trip planning with the event ticketing process through an adaptable web program for safe access to events in Los Angeles, including the upcoming Olympic and Paralympic Games. This serves as an example of the innovative opportunities to secure funding for tools that would support trip planning, reservations, etc.

Both of these funding sources provide potential funding opportunities for apps or online programs to support reservation or ticketing, parking or bus capacity tracking, etc.

5.2 Environmental Review / NEPA

Local, state and federal funds or a mix of all three may be utilized to implement the proposed projects. The source of the funding and the footprint (state right-of-way only vs USFS lands) of the project also has bearing on required environmental procedures. If there is a federal nexus (federal funding, federal lands), then the NEPA process must be followed.

NEPA allows for three types of processes or “classes of action” to analyze and disclose potential environmental impacts that may result from the implementation of a federally funded project or “action”:

- Environmental Impact Statement (EIS): Utilized for federal actions that may significantly affect the quality of the human environment. An EIS is a full disclosure document that details the process through which a project is developed, considers a range of reasonable alternatives, analyzes the potential impacts and demonstrates compliance with applicable environmental laws and executive orders.
- Environmental Assessment (EA): Is a public document that provides sufficient evidence and analysis for determining whether an EIS is required or concludes with a Finding of No Significant Impact.
- Categorical Exclusion (CE): A document that discloses any environmental impacts, utilized when an action fits a predetermined category and there are no extraordinary circumstances associated with the project that would require preparation of an EA to fully analyze.

It is anticipated that the projects proposed would likely meet the CE criteria. Ultimately, the lead agency (or lead agencies) are responsible for formally determining the class of action for any project. The CE would be completed during the preliminary or final design phase. Mitigation of any impacts (during construction or as a result of implementation) would also be identified. In addition, any necessary federal, state or

local permitting requirements would be completed during this phase.

Throughout this document, a mix of USFS, UTA/FTA, and UDOT are noted as the relevant lead agencies for potential NEPA analyses and approval. UTA/FTA is noted based on the project entailing transit components or potentially being eligible for federal FTA funding. However, there is the potential that responsibility could fall to UDOT or even a new transit agency depending on the nature of the project and its funding source(s). Similarly, the classes of action noted previously in the document are typically assuming a federal funding source, which equates to a CE, EA, or EIS. If state funding is utilized instead, state-equivalent documents would be assumed.

Depending on which proposed components move forward, NEPA compliance may need to meet the requirements of multiple agencies. Depending on the project, these environmental documents may have joint lead agencies, or they might have a single lead agency but will be completed in coordination with other agencies to ensure environmental requirements are met for all agencies in a single environmental document. These points are relevant for any options noted as potentially needing environmental approval in this document.

5.2.1 Federal Funding

Depending on the source of funding (FHWA or FTA), the responsibility may fall to UDOT or UTA to complete the environmental analysis. Coordination between UTA and UDOT would be required to determine the proper course of action. UDOT has NEPA delegation from FHWA to complete environmental processes and would act as the lead agency. If FTA funds are utilized, FTA would be the lead agency (with the document likely overseen by a local agency, such as UTA), requiring FTA review and approval.

5.2.2 State Funding

If the project is 100% state funded, the state environmental clearance process would be followed. The process, similar to NEPA, would analyze and disclose impacts resulting from the proposed projects and identify any necessary mitigation

measure to minimize potential impacts. In addition, the project would meet any necessary local, state and federal permitting requirements.

5.2.3 USFS NEPA

Currently, UDOT does not have a perfected easement for the entirety of S.R. 190 over National Forest System lands in Big Cottonwood Canyon. USFS has granted UDOT authority for the operation and maintenance of the highway between the top of cut slopes to the bottom of fill slopes in these areas. However, UDOT proposals pertaining to S.R. 190 outside of typical operation and maintenance activities are subject to USFS NEPA. If/when UDOT obtains a perfected easement for S.R. 190 over National Forest System lands, typically through FHWA's authorities under Title 23 Section 317, UDOT typically only obtains jurisdiction for highway-purposes within the easement, with USFS retaining jurisdiction over all other uses. Proposed uses within the easement, other than those for dedicated highway purposes, are subject to USFS NEPA, potentially in addition to FHWA NEPA. Additionally, USFS also retains the right to review proposals for dedicated highway actions within the easement to evaluate their potential impacts to National Forest System lands.

Specific details regarding a couple of the BCC MAP recommendations are further outlined below. Ultimately, the necessary level of USFS NEPA (i.e. CE, EA, EIS) for any appropriate action would be determined by USFS after receipt and evaluation of a formal proposal.

USFS NEPA may be required for summer transit/shuttle service to the ski resorts since it is currently unknown if the respective Big Cottonwood Canyon ski resorts will commit to the management and safety of visitors, and mitigation of potential impacts to National Forest System resources under their respective ski area permits during the non-ski season.

Currently, management of National Forest System lands within the resort boundaries during the summer is a mix of USFS and ski area management. For example, during the non-ski season, USFS builds and maintains USFS trails and trail signs within both Big Cottonwood Canyon ski areas. USFS has uniformed interpretive rangers educating the public and enforcing regulations at Silver Lake, Lake Mary and Catherine's Pass, etc. Not all ski area restrooms are typically open in the summer. As such, NEPA and a Special Use Permit for summer transit/shuttle service to the resorts may be required if there are unmitigated impacts to National Forest System resources associated with the proposed summer transit/ shuttle service to the resorts. Additional discussion between USFS, Solitude and Brighton resorts, and any other appropriate agencies will be needed for any recommendations entailing summer transit/shuttle service.



5.3 Additional USFS Considerations

5.3.1 UDOT / USFS Perfected Right-of-Way

UDOT currently does not have a perfected right-of-way/easement for S.R. 190 over National Forest System lands, therefore they would need to perfect an easement prior to seeking any "expanded right-of-way" onto USFS lands or obtain a USFS Special Use Permit for a proposed action (requiring USFS NEPA analysis, per the processes noted in the previous section). If UDOT obtains a FHWA easement over National Forest System lands prior to proposing the expansion of S.R. 190 on Forest lands, then FHWA would be the lead agency, with UDOT implementing the NEPA analysis and decision under their current NEPA-assignment by FHWA. USFS would likely be a cooperating agency under this scenario and FHWA/UDOT would determine the necessary level of NEPA under the FHWA NEPA regulations. It is understood that UDOT and USFS are currently working through the process of perfecting the right-of-way. The outcome of this effort will be an important consideration and input for most of the BCC MAP recommendations potentially entailing S.R. 190 and/or actions related to USFS lands.

5.3.2 USFS Proposed Fee System

USFS is currently proposing a fee system at select sites in Big Cottonwood Canyon under the Federal Lands Recreation Enhancement Act. Note that if implemented, and if transit, shuttle, and/or tolling is implemented in the canyon outside of winter/resort-only service, users may be required to pay multiple fees to visit a site unless a method to combine the USFS fee at respective sites with the associated transit/shuttle/ tolling fees is devised. As any fee or tolling options are further defined, this USFS fee system will be taken into account.

5.4 SLCDPU Considerations

While the BCC MAP is heavily focused on mobility and transportation, SLCDPU and other agencies play a key jurisdictional role for Big Cottonwood Canyon. The following components should be incorporated into any further analysis and implementation of the BCC MAP recommendations.

Watershed Protection

Decisions on transportation impact the culinary watershed via different avenues. Any recommendations further progressed should strive to optimize the addition of water quality protective measures in all infrastructure, including roadway modifications, in all recommendations. Considerations to include:

- Addition of roadway barriers in accident hot spots to promote public safety and minimize the risk of vehicles ending up in the creek.
- Avoiding aquatic resources, such as streams, ephemeral channels and wetlands.
- Create storm water retention features, bioswales, etc., to protect water quality from parking lots. Many of the parking lots in the canyon are directly adjacent to the creek (by necessity) and stream water quality could benefit from creation of runoff migration and treatment from these impervious surfaces.
- Potential long-term capacity issues with visitor resources in Big Cottonwood Canyon.
- Long-term consideration of optimizing public transit over private automobiles.

Recognition of Water Quality Jurisdictions

The following entities have jurisdiction over water quality components within the canyon, and should be appropriately acknowledged and coordinated with as any recommendations are further progressed:

- SLCDPU
- Salt Lake County Health Department
- Salt Lake County Flood Control
- Salt Lake County Planning
- Utah Department of Environmental Quality

Wildfire Mitigation Planning Integration

Incorporate fire mitigation considerations in the efforts. Many parallel efforts are underway to optimize the main Highway 190 corridor for the safety of ingress/egress during wildfires, reduce potential wildfire fuels and right size culverts to accommodate debris post fire.

Infrastructure Limitations

With any associated transportation amenity proposed, incorporate and acknowledge underlying funding and infrastructure limitations. Water supply and sewer connections may not be feasible at all locations given proximity to sewer mains or availability of drinking water and associated underlying supply contracts.

Dark Sky Strategies

Incorporate Dark Sky strategies with new infrastructure and mobility hubs/bus stops.

5.5 Electric Vehicles & Energy Resilience

5.5.1 Zero-Emission Buses

Transitioning buses to a zero-emission technology (i.e., battery electric buses (BEBs) or hydrogen fuel cell buses (HFCBs)) can help improve the Big Cottonwood Canyon corridor. As this plan focuses on facilitating travelers to utilize transit instead of driving themselves through the canyon, providing zero-emission buses (ZEBs) can help make transit more attractive as ZEBs are quieter, are a smoother ride for passengers, and emit less emissions in the canyon. Additionally, there is an increase in federal funding available to pay for ZEBs through the expanded Low or No Emission Vehicle Program for buses and bus facilities.

When planning to implement ZEBs, there are multiple things to consider. The first is the zero-emission technology: electric or hydrogen – each with their own set of trade-offs. BEBs are being deployed in greater numbers each year by transit agencies around the country with multiple manufacturers offering a variety of models and different battery sizes, but BEBs have a shorter range than traditional diesel/CNG buses (under current battery technology) and require a much longer time to recharge than refueling traditional gas-powered buses. Additionally, BEBs require upgraded electrical infrastructure at depots and/or along the route and therefore require additional operational planning to ensure there is sufficient time to charge vehicles. There are also increased capital costs associated with upgrading the infrastructure that need to be considered when planning. HFCBs have ranges between refueling commensurate with diesel/CNG buses which is longer than BEBs, but hydrogen infrastructure is not as built up as electricity which can result in complications and higher costs with obtaining hydrogen for use in the buses. If there is not a nearby hydrogen generation plant, then hydrogen needs to be delivered on a diesel truck to the depot which negates many of the zero-emission benefits of a HFCB.

Although the Big Cottonwood Canyon corridor study area is only approximately 15 miles in length and well within the range of a BEB, the elevation change of approximately 4,000 feet would drain the battery traveling east into the mountain range. The downhill return trip would utilize much less energy and could help recharge the battery through regenerative braking. To be a full ZEB, the bus would need to operate its heating system with the on-board battery, but diesel heaters could be considered if full zero-emission is not the goal and would increase the operational range. It is anticipated that each bus would be able to make a couple of roundtrips before needing to recharge, but predictive energy modeling or another future analysis would be required to confirm how many trips to support operational planning efforts. Other charging considerations could include opportunity charging at the ski resorts and/or Park & Ride locations to recharge the BEB while at layovers waiting to load up passengers; this would help get additional round trip(s) before needing to head back to the depot for a full charge and therefore could be an alternative to buying additional buses to serve this route.

Another form of opportunity charging is a more innovative approach with the emerging technology of wireless inductive charging embedded in the roadways that would charge BEBs and other electric vehicles (EVs) as they drive over applicable segments. This concept is being piloted and should be monitored for future applicability.

5.5.2 EV Charging Stations

Providing EV charging infrastructure for public use at the Park & Ride stations could further help facilitate travelers to use transit instead of driving the canyon. As EV registrations increase year-over-year, more travelers will be looking for convenient places to charge their vehicles. As nearly all EV drivers taking transit in the canyon will have their vehicles parked for multiple hours at a time in the Park & Ride facility, Level 2 charging infrastructure can satisfy drivers' needs. EV chargers could also be provided at the ski resorts but would be more subject to weather hazards at the higher elevation as well as would not facilitate travelers to use transit through the corridor.

5.5.3 Energy Resiliency

If BEBs and/or EV chargers are implemented for the Big Cottonwood Canyon corridor, it is a good practice to pair with energy resiliency, including on-site energy generation and storage. Installing solar panels at the Park & Ride lot(s) can serve the on-site energy generation to offset energy needs and lower dependence on the electric grid; solar panels could be installed on a canopy over the parking spaces to maximize space while also providing overhead protection to the parked vehicles.

While solar energy generation is less in the winter than summer months, on-site energy storage (i.e., batteries) can provide benefits by storing energy generated by the solar panels to use on the site throughout the year (instead of feeding any excess energy back to the electrical grid). This further helps manage potential demand charges that the utility company could charge to obtain energy during times of high energy use as the site could pull power from its on-site storage instead of the grid and therefore not be impacted by demand charges. Additionally, this energy generated and stored can be used to help power nearby facilities, roadway lighting, pedestrian active lighting, real-time bus signage, etc.

Large batteries are needed to use year-round for a Park & Ride site; therefore, options for large battery second life uses could be considered such as re-purposing a BEB's battery after multiple years of operation. These batteries will have decreased capacity due to battery degradation over time that result the battery not being reliable anymore for transit use but could be used for other purposes such as on-site energy storage.

5.6 Little Cottonwood Canyon EIS

For BCC MAP recommendations involving tolling and enhanced bus specifically, the details and timing should be coordinated with the outcomes of the LCC EIS process. The LCC Record of Decision is expected to be released in summer 2023. Implementation of related BCC MAP project components should be coordinated with the LCC EIS process timeline to optimize project prioritization, eliminate project duplication, and to use public funds wisely.

5.7 Carrying Capacity

Analyzing and addressing carrying capacity in terms of natural resources, watershed, visitor use, etc., is beyond the scope of the BCC MAP. However, the BCC MAP acknowledges the importance this component plays in long-term planning and conservation of Big Cottonwood Canyon. It is recommended that as further carrying capacity analyses and findings are conducted, they be considered in the implementation of BCC MAP recommendations as appropriate and feasible.



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