

Mobility Hub Study and Program

Prepared for:
Town of Mammoth Lakes

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FEHR  PEERS

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1. Introduction

1.1 Project Introduction and Purpose

The Town of Mammoth Lakes ("the Town") is a year-round recreation destination for those seeking outstanding landscapes and outdoor recreation. This popularity, combined with large seasonal variations in climate, creates mobility challenges for residents, employees, and visitors.

The Mobility Hub Study and Program ("Study" and "Project") builds upon previous mobility planning efforts with the overarching goal of promoting the Town's "feet-first" philosophy by increasing and improving use of the transit system, preventing roadway congestion, improving circulation for residents and visitors, and helping to create a sense of place in Mammoth Lakes. Mobility hubs are a key component to achieving this goal.

This Study considers the unique mobility needs of the Town when identifying mobility hub locations and amenities, the process of implementing a mobility hub program, and potential funding sources. The following report identifies eight mobility hub locations. Two of the eight mobility hubs were selected for an initial pilot project program. Site design and amenities for these two pilot project sites were drafted in collaboration with Town Staff and refined through a community outreach process.

1.2 Building on Previous Efforts

The Mobility Hub Study and Program intends to utilize and build upon previous mobility-related plans and studies to align with existing mobility efforts completed by the community. Multiple plans and studies outline the Town's mobility needs and provide general guidance on potential strategies for mobility hubs and mobility hub locations.

The Study aligns and supports the findings and strategies developed as part of the [Main Street Plan, Walk, Bike, Ride Action Plan](#), (2017) and the [Town General Plan Mobility Element](#) (2016) These documents outline a need for mobility hub elements, such as "transit plazas," "a multi-modal transportation facility", and "a central transit hub." The *Town General Plan Mobility Element* establishes goals, policies, and actions necessary to achieve a progressive and comprehensive multi-modal transportation system that serves the needs of residents, employees, and visitors alike. The *Walk, Bike, Ride Action Plan* aims to provide seamless connections between destinations and high-quality mobility options for walking, biking, and riding transit.

1.3 Study Overview

This Study represents the culmination of the project and includes a summary of the recommendations and next steps for the Town. The Report is divided into six chapters.



1. Chapter 1 introduces the Study and outlines the document.
2. Chapter 2 introduces the mobility hub concept, mobility hub typologies, and amenities for enhancing a multi-modal network in the Town of Mammoth Lakes.
3. Chapter 3 provides an analysis of the data and community outreach used to identify key users and locations for mobility hub strategies.
4. Chapter 4 outlines the process used to identify quick-build strategies to enhance the use of each pilot mobility hub site.
5. Chapter 5 identifies steps for implementing the mobility hubs, including potential funding strategies and revenue sources.
6. Chapter 6 provides a summary of conclusions.



2. Mobility Hubs 101

2.1 What is a Mobility Hub?

Mobility hubs are places where people can make seamless connections between multiple transportation options. Mobility hubs offer visibility to – and connection between – public transit and other mobility services that in turn support sustainability, connectivity, and reduce dependence on private vehicles. Mobility hubs can also help reduce congestion due to community growth. Building a hub in one location of the Town can help alleviate congestion elsewhere as the benefits from mobility hub services and amenities are felt throughout the network. While individual hubs can form a cohesive network, the design and accommodations at each hub location will vary based on the unique transportation needs of the area.

2.2 Mobility Hub Typologies: Primary & Destination Hubs

Mobility hubs can vary in size and the types of amenities provided. Mobility hub typologies depend on a variety of factors, including proximity to activity centers, transit, and characteristics of nearby roadway and non-motorized transportation facilities. To support a “park-once” strategy and to reduce congestion and parking demand, a network of “primary” and “destination” mobility hubs is recommended. These categories are differentiated by scale, amenities, and context.

Primary mobility hubs are intended to be locations where ample space and existing public parking is available. The intent of these mobility hubs is to allow tourists and employees to park their vehicle at these locations for the duration of their trip and use various transportation options offered at the mobility hubs to travel to key destinations. Doing so would increase the likelihood that travelers will use alternate modes of transportation while they are in town, therefore reducing congestion along Town roads and parking demand at key destinations. To encourage mobility hub use, the parking lots at these locations should not have time restrictions and have minimal cost or free parking. The primary mobility hubs should include amenities and services that allow and encourages users to “park once” and utilize alternative modes of transportation to get around the Town. For example, transit access, comfortable transit stops (with benches, enclosures, and user information), bike share, robust travel and tourist information, and other amenities as described in Section 2.3 of this document.

Destination mobility hubs are intended to be smaller and will not include parking options that allow for all-day parking. The key purpose of these mobility hubs is to provide access to key destinations that do not offer robust parking such as Canyon Lodge, Eagle Lodge, and Main Street. A person would park at the “primary hub,” their lodging, or commercial areas and take transit to get to the “destination hubs”. The destinations hubs would provide return travel back to the primary hubs, lodging options, and commercial centers throughout the town. Many of the amenities and services are similar to the primary hubs but provided at a more basic scale and parking would be limited, very time restrictive, and potentially have a cost.



2.3 Mobility Hub Amenities

Mobility hub amenities can be tailored to specific modes (e.g., EV charging or bicycle parking) or be more general (e.g., travel information kiosks or traveler restrooms). Mobility hubs support and connect to major transportation modes like public transit, pedestrian routes, and existing bicycle facilities. Amenities can also provide useful travel information aimed at enhancing the transportation experience, such as information on local restaurants, shops, and hotels.

Potential mobility hub amenities (by mobility hub type) include:

Primary Mobility Hub

- Parking & Charging
 - Surface parking lots
 - Electric vehicle (EV) charging
 - Structure parking
 - Valet Parking
- Multi-modal Amenities
 - Transit Service/Stops
 - Transit Stop Enhancements
 - Taxi/Rideshare Service
 - Taxi/Rideshare Loading Zones
 - Robust Visitor Information
 - Real time travel & Trip Planning Information
 - Pedestrian Friendly Streetscape
 - Car Share
 - Bike/Racks/Secure Bike Lockers
 - Seasonal Bike Share Hub
 - Seating/Waiting Area
 - Restrooms
 - Concierge Service (Luggage Delivery)
 - Recreational Equipment Lockers & Storage

Destination Mobility Hub

- Parking & Charging
 - Limited Electric vehicle (EV) charging



- Limited Valet Parking
- Multi-modal Amenities
 - Transit Service/Stops
 - Transit Stop Enhancements
 - Taxi/Rideshare Service
 - Taxi/Rideshare Loading Zones
 - Basic Visitor Information
 - Pedestrian Friendly Streetscape
 - Bike/Racks/Secure Bike Lockers
 - Seating/Waiting Area
 - Restrooms
 - Recreational Equipment Lockers & Storage

Certain amenities like EV charging are easier to implement quickly, whereas other amenities like structured parking are typically thought of as long-term strategies.



3. Mobility Hubs in Mammoth Lakes

The project team analyzed available mobility data and conducted outreach to better understand how, why, and where people travel in the Town. The following section provides an overview of the analysis and outreach performed that supported the development of mobility hub strategies.

3.1 Description of the Town of Mammoth Lakes

The Town includes a mix of land use types, including single- and multi-family residential, commercial, and recreational, among others. High activity centers are not limited to the core of the Town. Inside the town core, high activity centers include commercial areas along Main Street (SR-203) and Old Mammoth Road, Mammoth Mountain access points at Main Lodge, Canyon Lodge, and Eagle Lodge, as well as at the Village at Mammoth. Popular destinations, such as Lakes Basin and Sherwin Recreational Area, are outside the town core and make it challenging to provide effective transit connections. Though transit and non-motorized transportation options exist, many people choose to drive due to extreme weather and limited transit effectiveness.

3.2 Data Overview

To better understand the Town's mobility needs, the project team reviewed parking utilization, travel demand, and US Census data.

3.2.1 Parking Utilization and Citation Data

Parking utilization and citation data was reviewed to determine areas where parking availability is limited and determine locations where parking or travel connections are desired, but not currently provided.

The parking utilization data provided parking occupancy collected on February 15, 2020, at 8 AM, 10 AM, 12 PM, 2 PM and 4 PM. Parking occupancy was most consistently high for the parking areas near the Village, along Main Street west of Old Mammoth Road, and along the Old Mammoth Road Commercial District.

The parking citation data collected between March 2019 and February 2020 shows a higher concentration of parking citations issued in the following areas:

- Canyon Lodge: along Rainbow Lane, Lakeview Boulevard, and Davison Road
- The Village: primarily along Canyon Boulevard, SR-203 (Minaret Road) and Forest Trail
- Old Mammoth Road Commercial District: Chateau Road east of Old Mammoth Road
- Main Street: near Stellar Brew and Natural Café
- SR-203 (Minaret Road): near the Stump Alley Express and Gold Rush Express ski lifts (i.e., The Mill)

Most of the parking citations were for vehicles parked in no parking zones or in time restricted zones.



Parking appears to be in highest demand (paired with lower availability) in areas that serve Mammoth Mountain Ski Area lifts or commercial destinations. These areas (listed above) may be good candidates for destination hubs that provide return service to primary mobility hubs, as they are desired destinations at which parking supply is low or substantial amounts of parking citations have been issued.

3.2.2 Travel Demand Data

The Teralytics¹ travel demand data that was provided includes the number of “home,” “work,” or “other” related trips (originating or terminating at home, work, or other destinations) from counties throughout California and Nevada. While this data does not show travel patterns within the Town of Mammoth Lakes, it does provide information about the purpose of travel to the town. The predominant trip purpose was “Other,” meaning that the trip is not a trip to home or work and is most likely associated with recreational or tourism trips. Additional insights are provided in the “Why People Travel” sections below.

3.2.3 US Census Data

The U.S. Census Bureau’s American Community Survey (2019: ACS 5-Year Estimate) commute mode choice breakdown for residents of Mono County was obtained to provide work related travel behavior and mode choice. Additional insights are provided in the sections below.

3.3 Community Outreach

The project team conducted public outreach through an online survey and in-person interviews in the summer of 2021. This outreach was used to identify amenities for the pilot project and the overall strategy for mobility hubs in the Town.

Key takeaways from the online survey and in-person interviews include:

- There is a lack of information about alternative transportation options (e.g., transit, e-bike rentals) that exist throughout town.
- There is a lack of reliable transit service.
- Many people did not know that transit service is free within town.
- There is an interest in having more EV charging throughout town.
- There is a lack of non-motorized infrastructure.
- There is a lack of secure bicycle parking at key destinations.
- There is a lack of information about existing non-motorized transportation networks like bicycle and pedestrian routes.

¹ Teralytics is a travel demand data (“big data”) provider that works with telecom operators to provide access to mobility metrics relating to people’s movement. The data comes from anonymous cell phone GIS and cell tower records.



3.3.1 Online survey

The survey was available online from 7/30/2021 – 9/3/2021. The survey focused on three goals: establishing the respondent's relationship to the Town, understanding travel behavior/needs, and understanding mobility preferences/perceptions. Respondents were asked a series of questions based on their relationship to the Town: visitor/tourist, resident, or worker. In effort to understand differences in travel behavior of each relationship type, travel behavior questions were grouped by relationship type. A total of forty-seven visitors/tourists, residents, and workers responded to the online survey. 51% of the respondents were visitor/tourists, 40% of respondents were residents, and the remaining 9% of respondents were workers. The complete survey data summary is provided in **Appendix C**.

Relationship Type

The respondents were primarily made up of year-round visitors/tourists, residents, and workers. Of the 24 visitors that responded to the survey, 50% of respondents (n=12) visit during the Winter and Summer months. Of the 19 residents that responded to the survey, 85% of resident respondents (n=17) live in the Town year-round. Similarly, 75% of workers (n=3) are not seasonal workers. As a result, the project team believes our survey results below reflect mobility needs and desires of a majority year-round population.

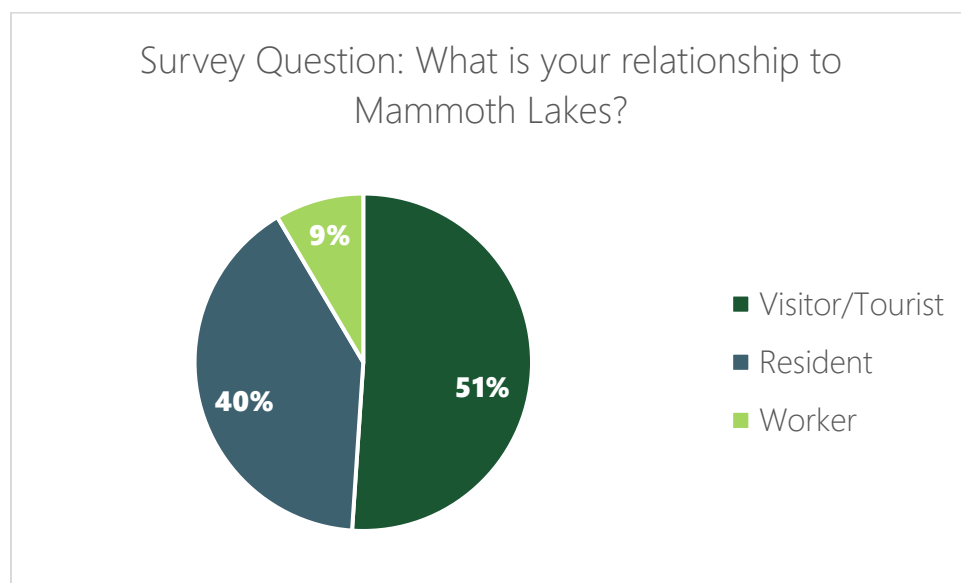


Figure 1: Survey Respondents Relationship to the Town

Each relationship type was asked about their existing mode of travel and what options they might use if convenience was not a factor. While 100% of resident respondents (n=19) typically drive with in the Town, our results indicate visitors/tourists and workers engage with modes other than a vehicle. Thirty-seven percent of visitors/tourists typically walk or bike and 17% of workers walk or take public transit. Visitors/tourists and workers expressed overwhelming interest in traveling around the Town by means other than driving if convenience wasn't a factor. Fifty percent of residents still believe they would opt to drive even if convenience was not a factor.



Transit

Several survey questions were dedicated to understanding use of the Town's free transit services, such as the Town Trolleys or ESTA shuttles. Sixty-six percent of respondents (n=31) had used the Town's free transit services. Of the 34% who had never used the Town's free transit service, most shared that they "didn't know it existed," "didn't know the route schedule," and "didn't know the service was free." More frequent shuttles, more reliable service, and real-time travel/trip planning information were the most common response for ways to make transit a more attractive mode type.

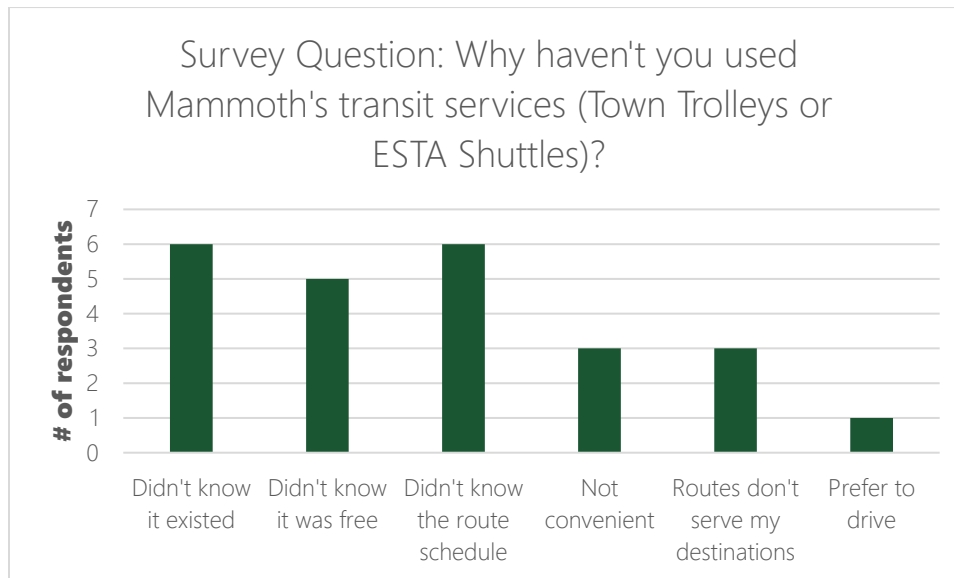


Figure 2: Survey Respondents Reason for Not Using Mammoth's Transit Services

Bicycle

Around half of all survey respondents had used a bicycle in the Town. Safe and protected bicycle pathways and secure bicycle parking were the most selected option for ways to make biking a more attractive mode. Lack of dedicated facilities and not comfortable riding a bicycle was the most common responses for why respondents have not used a bicycle to travel in the Town. As described, when asked the question, "What would make riding a bicycle more attractive?", 72% of respondents indicated that "enhanced bicycle pathways" would be their first choice, followed by "secure bicycle parking."



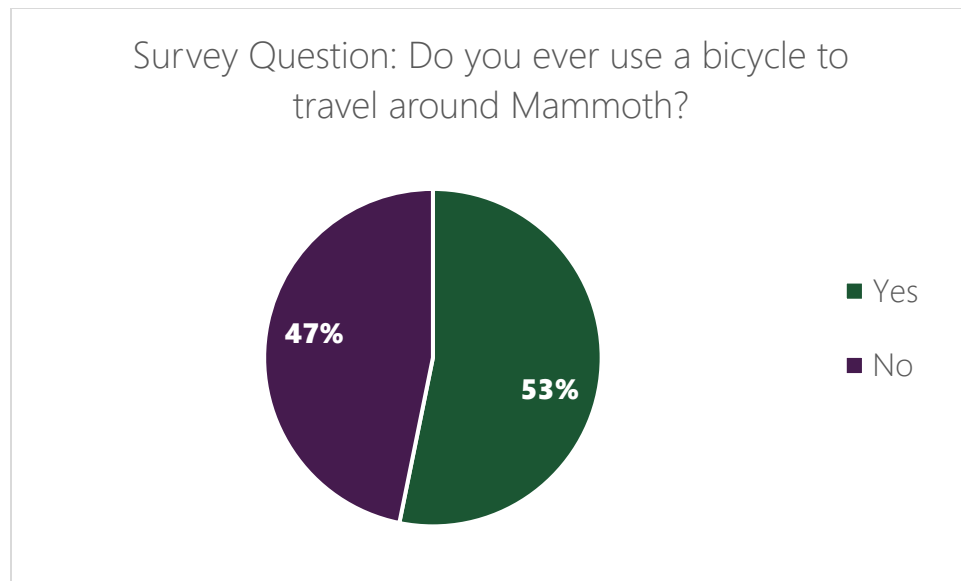


Figure 3: Survey Respondents Bicycle Use in Town

Park and Ride

Majority of survey respondents (89%) had never used the Park and Ride Lot (PNR) before. Of the 11% who had used the Park and Ride Lot, transit connection to other destination was the most common response for what motivated respondent to use the PNR. For the 89% of respondents who had never used the PNR before, the majority (n=21) indicated that they, “didn’t know it existed” followed by they “prefer to park at my destination.”

In addition to the questions mentioned above, respondents were asked to share desired mobility services at the Town’s Park and Ride Lot. Taxi/rideshare loading (n=20), bike share/rental station (n=19), and visitor information (n=16) were the top responses for desired services overall.

3.3.2 In-person Outreach Event

The project team attended the Mammoth Festival of Beers & Bluesapalooza on August 7, 2021, to collect in-person feedback on travel behavior and proposed mobility hub amenities. Outreach was conducted in two ways:

- A booth was set up inside the event with boards for people to review and provide feedback. The following interactive exhibits were provided:
 - Map boards asking participants, “Where do you go and stay?”
 - Mobility hub amenities board asking participants to “Place stickers on the amenities that make you interested in using a mobility hub.”
 - Board asking participants about the existing Park & Ride Lot.



- Jar activity asking participants to place a bottle cap into a jar indicating their favorite way to get around.
- Intercept surveys were performed of people standing in line to enter the event. The surveys asked basic questions including:
 - Do you live in Mammoth? If not, where are you traveling from?
 - How do you get around Mammoth?
 - What would make it easier for you to walk, bike, or take transit?

Approximately 65 people responded during the intercept survey and approximately 30 individuals stopped by the booth to ask questions and provide feedback.



Figure 4: Outreach Boards for Mammoth Festival of Beers & Bluesapalooza

Figure 5: Participants Sharing Feedback on Travel Behavior and Mobility Hub Amenities

A mix of visitors/tourists and residents engaged with the different data collection tools. Majority of the respondents who engaged in the jar activity prefer methods other than a vehicle when getting around Mammoth Lakes: walking (30%), transit (23%), biking (21%), and car (19%). Many of the tourists engaged did not know about the free transit or how to utilize the service. The following mobility hub amenities were desired by respondents:

- Gondola services
- Bike racks & lockers
- Seasonal bike share hub
- Shuttle service/stops
- Bus stop enhancement
- Taxi/rideshare loading zones
- Structured parking



- Visitor information
- Real-time travel/trip planning information
- Recreational equipment lockers & storage
- Limited direct equipment rentals (for bikes, helmets, skis, and boots)
- Overnight large vehicle parking

Feedback on amenity preferences were incorporated into the quick-build strategies outlined in **Table 2**.

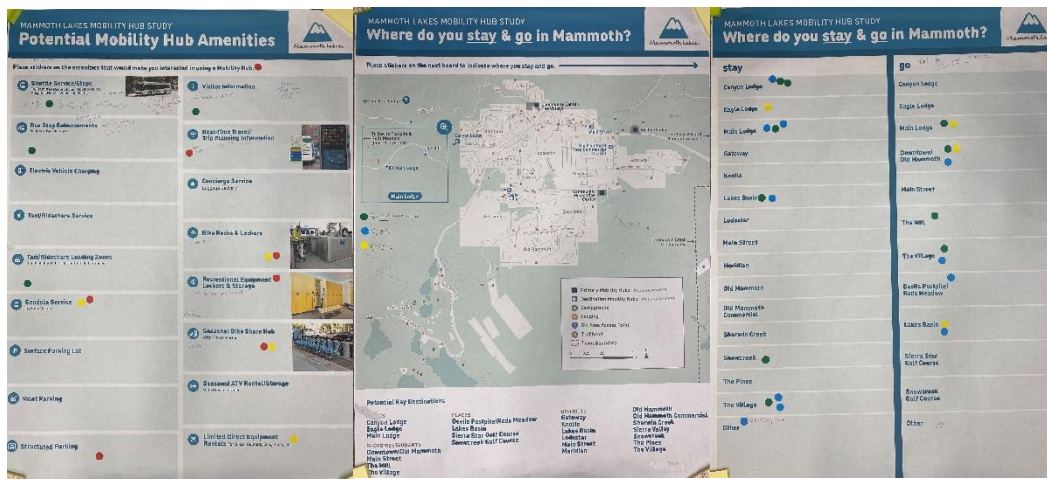


Figure 6: Community Input Collected at Outreach Event

3.4 How, Why, and Where People Travel

This section summarizes travel behavior for tourists, residents, and employees based on the data sources described above and anecdotal observations based on our discussions with Town staff and our experience visiting the Town.

3.4.1 Tourists

Tourists typically travel by private automobile, though they may complete short trips by foot or bike once in town. Most tourists traveling in and around the Town of Mammoth Lakes do so to access restaurants, shopping, and recreation. Tourists primarily visit The Village, Old Mammoth Road Commercial District, Canyon Lodge, Main Street, and along SR-203 between Main Lodge and The Mill.

3.4.2 Residents

According to the American Community Survey (2019: ACS 5-Year Estimate), most commuters in Mono County travel via automobile (62 percent) or by transit (21 percent), with the remaining portion either commuting by bicycle or walking, or telecommuting.



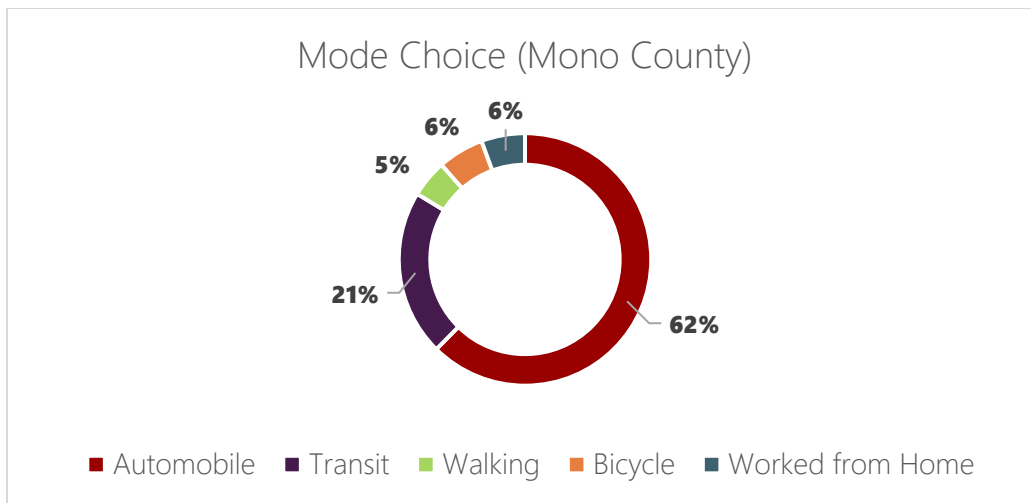


Figure 7: Mode Choice of Residents (ACS 5-Year Estimate, 2019)

This was further supported by the Study's community outreach survey data in which nearly two-thirds of residents who responded indicated they drive around town. Anecdotally, the project team understands that although some residents commute to work, residents primarily travel for personal (e.g., running errands, dining out) or recreational (e.g., skiing, hiking, camping) purposes. Residents will typically travel from their homes to grocery stores, restaurants, and recreational destinations.

3.4.3 Employees

The commute mode data presented above also applies to employees, as such it is expected that most employees travel to work in private automobiles. Employees travel within the town for work-related trips, while some make recreational trips or trips to access grocery stores or restaurants before or after work. Non-resident employees travel into town using SR-203 and continue to the various destinations along Main Street, in the Village, in the Old Mammoth Road Commercial District, and the Mammoth Mountain Ski Area.

3.5 Mobility Hub Location Recommendations

Using the information collected above on traveler markets and behavior, and to support a "park-once" strategy and to reduce congestion and parking demand, the following mobility hub locations are recommended:

Recommended mobility hub locations are shown below on **Table 1** and **Figure 2**. As previously mentioned in Section 2.2, mobility hubs are categorized into two typologies: Primary and Destination. Primary mobility hubs allow tourists and employees to park their vehicle at these locations for the duration of their trip and use various transportation options offered at the mobility hubs to travel to key destinations. Destination mobility hubs are smaller and have a key purpose of providing return service to the primary mobility hubs, lodging options, and commercial centers throughout the town.



Table 1: Mobility Hub Location by Typology

Location	Typology
Mammoth Lakes Community Center and the Village at Mammoth Parking area	Primary
Mammoth Lakes Visitor Center	Primary
The future Community Recreation Center (CRC) at Mammoth Creek Park	Primary
Old Mammoth Road Commercial District at existing Tavern Road Park-and-Ride lot near Old Mammoth Road and Tavern Road	Destination
Canyon Lodge	Destination
Main Street near Stellar Brew and Natural Café	Destination
Along Minaret Road (SR-203) near Main Lodge	Destination
Along Meridian Boulevard near Eagle Lodge	Destination



Figure 8: Recommended Mobility Hub Locations



4. Mobility Hub Pilot Project

The project team identified two mobility hub pilot project sites that would make the most impact on mobility overall and could be implemented using quick-build strategies.. Quick-build strategies will allow the Town to implement improvements faster and measure strategy effectiveness at a lower cost.A summary of this effort is described below.

4.1 Pilot Site Identification

The Towns PNR and future CRC sites were selected for mobility hub pilot projects. In this Study, the project team identified quick-build strategies that could be used to enhance the use of each site. These sites were selected because they either already exist (PNR lot) or are under construction (CRC site), and quick-build strategies could be implemented more easily. Site design is shown in more detail on **Figure 3 and Figure 4.**

4.2 Pilot Strategy Identification and Refinement

Building off the travel demand data and feedback from the community in the outreach survey and the in-person outreach at Bluesapalooza, the project team identified an initial set of quick-build strategies that could be implemented at either the PNR or CRC site. Strategies were identified that :

1. Support Mobility Element goals of reducing driving, increasing walking, managing parking, etc.
2. Are contextually appropriate (e.g., sized based on anticipated travel demand, applicable during winter and/or summer, etc.)
3. Meet travel demand needs
4. Can be implemented quickly and for a relatively low cost



Existing Park & Ride Lot

Quick-Build Mobility Hub Strategies

PARKING & CHARGING

P Free Surface Parking

EV Free/Subsidized EV Charging

NOTE: The number of **free surface parking** and **free/subsidized EV charging spaces** will be determined in coordination with Town staff. Staff will also explore expanding existing Tesla chargers to include universal chargers.

MULTI-MODAL AMENITIES

Restrooms

Seating/Waiting Area

Pick-up/Drop-off Area

**Secure Bike Lockers/
Short-term Bike Parking**

i **Public Information Kiosk**
Eye-catching kiosk that includes marketing of free transit

NOTE: Maps with information about mobility services, nearby destinations and walking routes will be included at the **Public Information Kiosk**.

SIDEWALKS & PATHWAYS

Paved Sidewalks

Proposed Pedestrian Connection to Old Mammoth Road

NOTE: The multi-modal amenities are most effective if a **pedestrian connection** to the bus stop is also implemented



Community Recreation Center



Quick-Build Mobility Hub Strategies

PARKING & CHARGING

- Free Surface Parking**
- Free/Subsidized EV Charging**

NOTE: The number of **free surface parking** and **free/subsidized EV charging spaces** will be determined in coordination with Town staff. Spaces may be limited or unavailable during certain hours and/or CRC events.

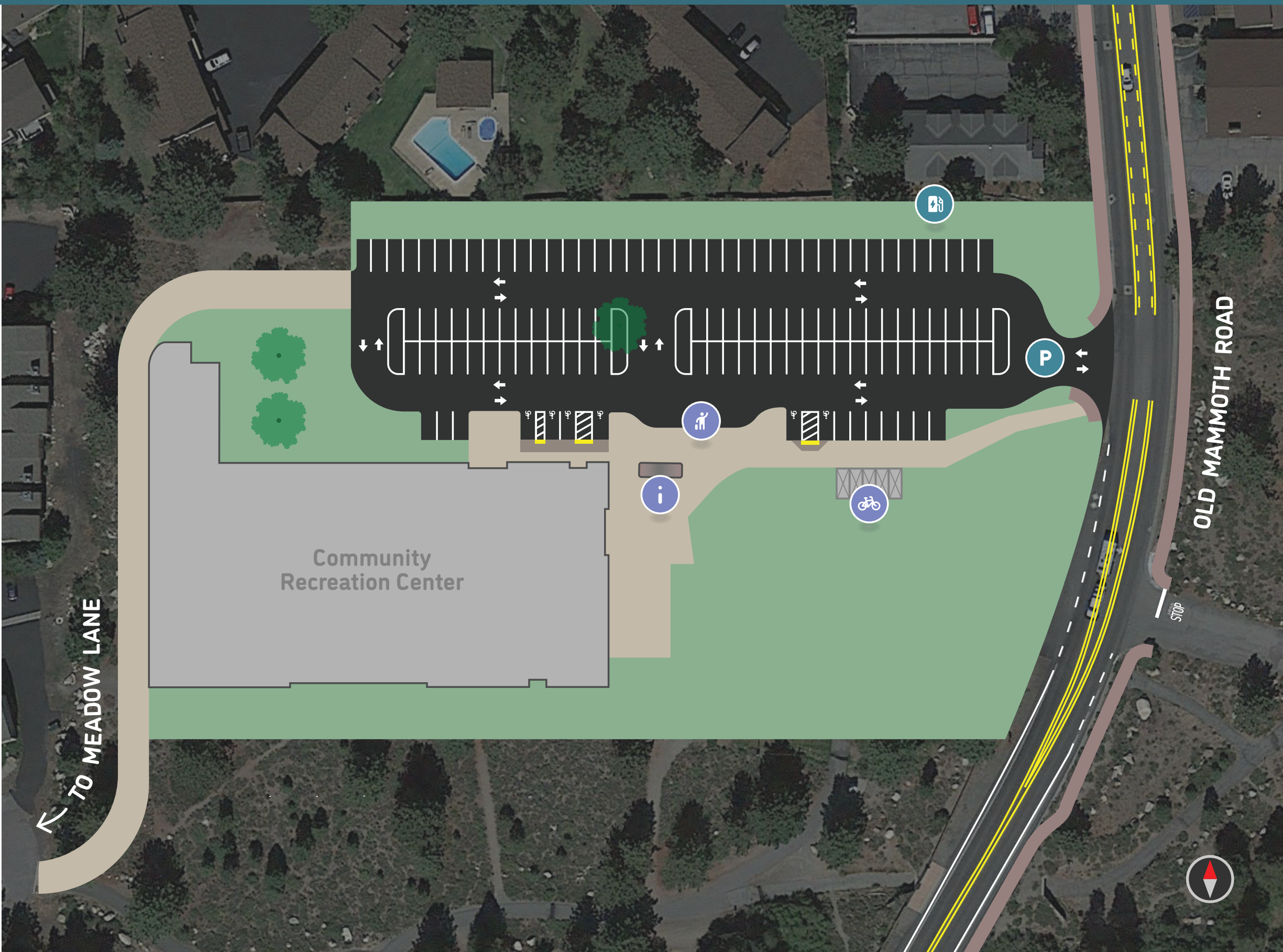
MULTI-MODAL AMENITIES

- Pick-up/Drop-off Area**
- Secure Bike Lockers/
Short-term Bike Parking**
- Public Information Kiosk**
Eye-catching kiosk that includes marketing of free transit

NOTE: Maps with information about mobility services and nearby destinations will be included at the **Public Information Kiosk**.

SIDEWALKS & PATHWAYS

- Paved Sidewalks**
- Pedestrian Connections**



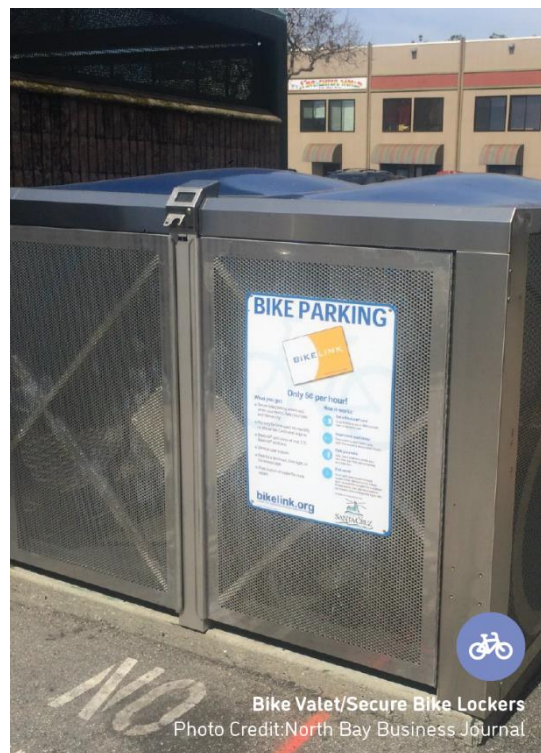
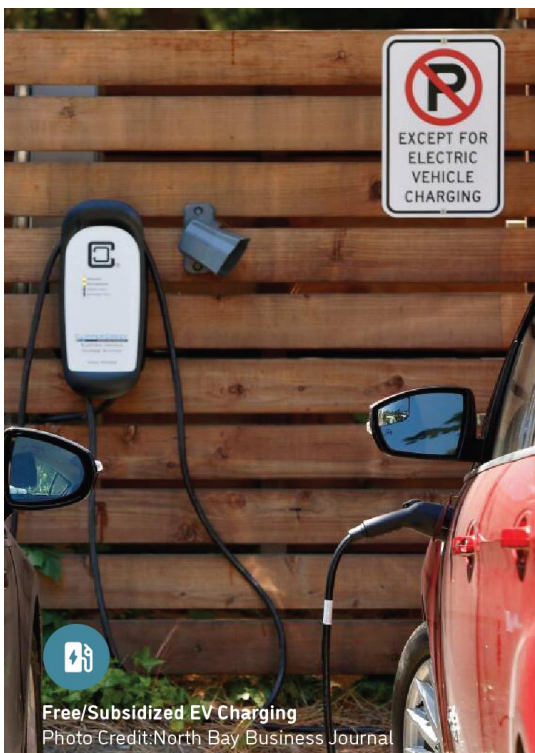
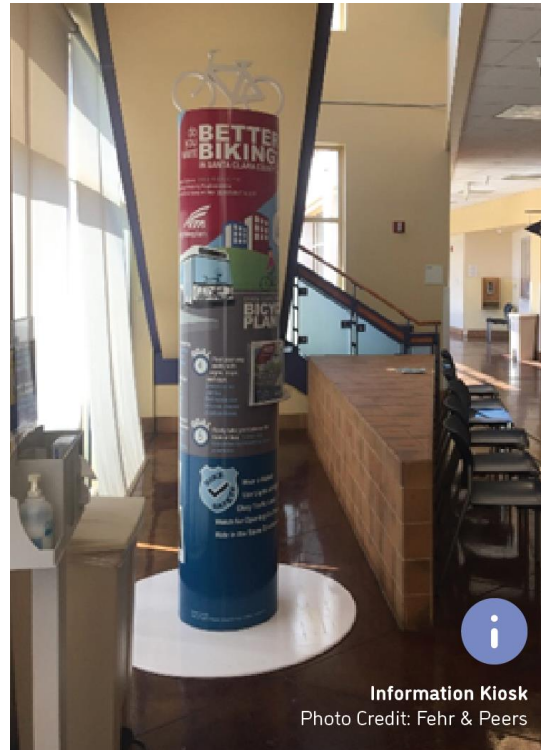
4.2.1 Quick-Build Strategies

Following the community outreach process, the project team refined the list of quick-build strategies and identified the following strategies for the pilot locations:

Table 2: Quick-Build Strategies for Pilot Project Locations

Strategy	Park & Ride	Community Rec Center
Free Surface Parking	X	X
EV Charging	X	X
Free Printed Map that Shows Walking Routes		X
Drop-off/Pick-up Area	X	X
Seating/Waiting Area		X
Restrooms		X
Bike Valet/Secure Bike Lockers	X	X
Public Information Kiosk (Marketing of FREE Transit)	X	X





5. Findings and Next Steps

The strategies identified above have the potential to reduce the percentage of trips made via private automobile, therefore enhancing mobility throughout town. This section outlines the steps to implement mobility hubs, monitor program effectiveness, and some of the potential funding strategies. This will include considerations from grant programs, potential recipients of these grants, and potential funding strategies.

4.3 Implementation

Mobility hub strategies will need to be designed in a coordinated effort between Town staff and key stakeholders. Successful implementation of mobility hubs is dependent on the Town's abilities to advance the program and success in identifying and implementing partnerships to provide mobility services.

Table 3 identifies key steps for implementing mobility hubs.



Table 3: Mobility Hub Implementation Steps

Note: TOML = Town of Mammoth Lakes; SMP = Shared Mobility Provider; PB = Private Business

Step	Description	Involved Parties and Responsibility
Identify and Secure Sites	The Mobility Hub Study identifies mobility hub locations, typologies, and amenities. While the pilot project focuses on land owned by the Town, some sites may require public/private partnerships, access agreements, or purchasing.	TOML and PB
Shared Mobility Partnerships	Public-private partnerships can increase the number of shared mobility options such as shared bicycles (or electric bicycles or scooters) available in the Town of Mammoth Lakes.	TOML and SMP
Mobility Hub Configuration/ Design	Design and implement mobility hubs, including context sensitive amenities and services. Design and construct necessary utility and communications upgrades. Incorporate and plan for additional pedestrian amenities, such as pedestrian pathways and improved crossings. Identify any impacts or changes impacting transit service operation.	TOML, SMP, and PB
Mobility as a Service/Smart Phone Mobility Application	Create a mobile smartphone application for residents and tourists to obtain information about mobility services, plan trips, compare mobility choices, purchase tickets, or reserve service.	TOML, SMP, and PB
Education and Encouragement Marketing Campaigns	Develop an education and encouragement campaign to provide information and increase awareness of mobility hub options and encourage use. Provide local businesses advertisement opportunities and campaign materials to promote program.	TOML, SMP, and PB
Performance Monitoring Plan	Establish data collection measurements, frequency, metrics to monitor performance and adjust shared mobility services to best meet changing demands.	TOML and SMP



Individual destination and primary mobility hub sites will be designed based on mobility needs and community preferences. Site design should allow for flexibility to incorporate future mobility services and technologies.

4.3.1 Suggested Guidance and Criteria for Development of a Mobility Application

As part of this Study, the Town requested preliminary research into the development of an app-based service for integrated multi-modal trip planning, ticketing, and fare collection/validation. Currently the mobility application TransitApp is available for free public use and provides users with information on ESTA transit times. At time of the Study, the application is not widely used. One of the key drawbacks is that the app uses crowdsourced data as the data source for producing transit times. This means that the app relies on people having the app downloaded and in use to get information while they are riding the transit. Since the app isn't widely used, the data is sparse and can be inaccurate.

The current TransitApp is specifically focused on providing transit route information. A more comprehensive multi-modal transportation application can support the Town in providing seamless travel for customers and effectively monitoring mobility hub amenities proposed in this Study. A more comprehensive app-based service could be used to support the existing transit system and proposed mobility hub amenities, such as electric vehicle charging stations, shuttle services, car share, secure bike racks, etc. The following section suggests elements and criteria for the Town to consider when procuring a provider and provides ideas for improving the existing application if switching service providers is not desired

Potential Requirements and Desirable Elements

The following list of features could all be identified as desirable elements. Some of the items below could be elevated to minimum requirements, keeping in mind that given the complexities of app development, a long list of requirements may unnecessarily constrain respondents and reduce the number of proposals. For example, the items listed below in **BOLD** could be identified as required and the remaining elements could be identified as desired.

The Town would need to assist the selected vendor in building the local relationships (technical and business) required to develop the features listed below.

- **Compatible with both Android and IOS, and responsive on all browsers/platforms**
- **Compliant with relevant accessibility standards (ADA, CVAA, WCAG, etc.)**
- **Available for free download on Apple iTunes and Google Play**

The following Mobility App-based services were reviewed as part of this Study:

- ByteMark
- Civic Connect
- Double Map
- Moovel
- Moovit
- RouteMatch
- Token Transit
- Transloc
- TransitApp
- TripShot



- **Allow users to search for and purchase rides from local transit agencies**
- **Display real-time vehicle locations and arrival predictions**
- **View automobile and bicycle parking locations**
- Accommodate demand responsive transit features
- Ability to prepay for automobile parking
- Allow users to search for and purchase rides from on-demand or shared mobility providers (Lyft/Uber, Taxi, bikeshare, scooter share, etc.) and private transportation operators (resort/hotel shuttles).
- Allow riders to purchase tickets for ski/mountain bike areas or special events
- Rewards program to incentivize transit use (points program, virtual gift cards, discounts at local businesses)
- Ability to send customer questionnaires
- Future applications such as Wallet, luggage concierge, links with on-line booking engines to allow trip planning on a pre-arrival basis, as well as integration capabilities with other applications

General Considerations for Selecting an App Developer

Based on discussions with customers of mobility application developers, a general theme is that when a small and more nimble application developer is acquired by a larger company, the responsiveness and flexibility decline significantly for existing/legacy clients. Review proposed contracts for unfavorable language that limits the responsibility of developers in the case of acquisition or merger. Some companies may have undergone changes in ownership that limit their ability to provide the kind of locally customized and branded or “white label” application desired by the Town of Mammoth Lakes.

We encourage using an app developer that is popular among mountain communities. This familiarity provides ease of use. There does not appear to be a universal mobility application in use among mountain communities. Utah Transit Authority also uses the TransitApp, while Park City uses myStop Mobile. Application providers like RouteMatch and TripShot have local business integration which could promote public-private partnership between the Town and local merchants.

Cost / Fee Structure

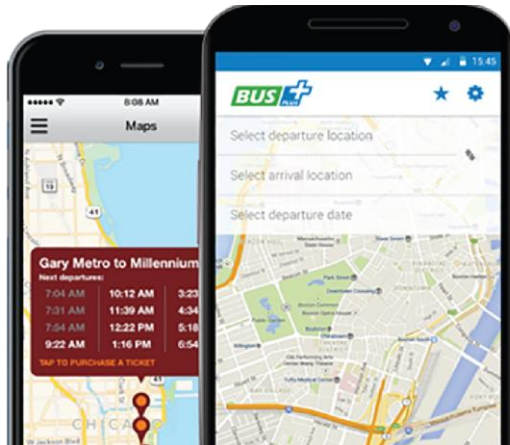
Customized Trip Planning: A customized app under complete ownership of the Town would likely be the costliest structure and there would be little incentive to upgrade or continue supporting the application beyond the agreed upon contract term.

White Label: These apps generally offer custom branding and some customization of functionality, but most elements of the application remain the property of the vendor. Up-front costs vary significantly based on desired elements and payments for ongoing support and maintenance are also typically required.

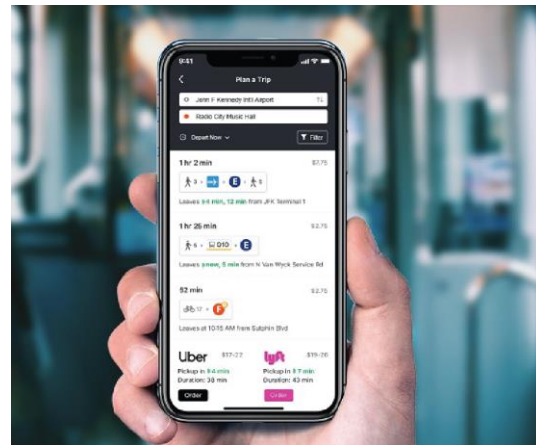


Commission Based: For applications that allow in-app purchases, contracts with revenue sharing agreements can significantly reduce up front capital costs and provide an incentive for the app developer to promote, maintain and update the application on an ongoing basis.

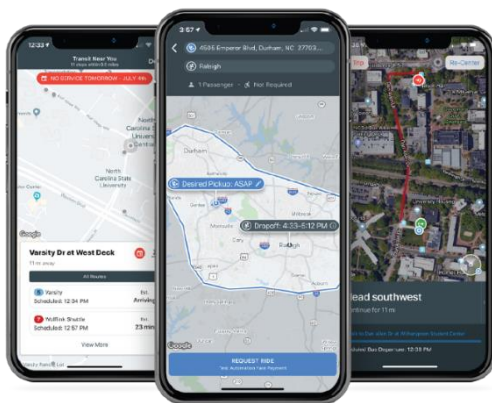
Service Provider: [Bytemark](#)



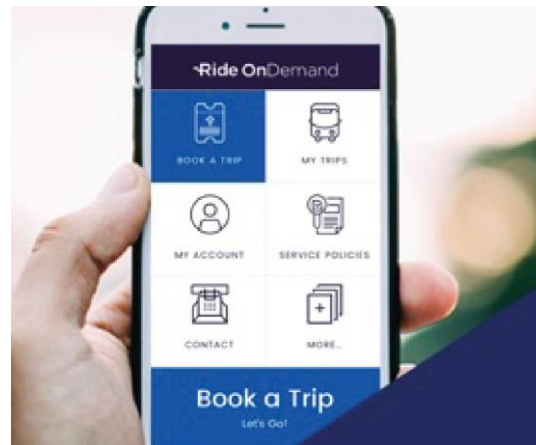
Service Provider: [Moovit](#)



Service Provider: [TransLoc](#)



Service Provider: [Route Match](#)



Ideas for Improving Usage of TransitApp and Ridership Data Collection

As mentioned above, ESTA currently uses TransitApp, but the application is not widely used. Since transit in the Town is free and application usage is low among riders, it is difficult to actively track transit ridership. In addition, since the app uses crowdsourced data to report transit times and the app usage is low, the data provided on the app is not reliable. Strategies to increase app usage is a key first step in deploying reliable data to users and obtaining transit ridership information.

The following strategies can be used to increase app use:



- Establish regular coordination between ESTA and Town staff to collaborate on encouraging transit usage, improving use of the app, and discussing next steps for either a new or improved app.
- Develop a marketing campaign for the app to increase usage. The app should be advertised on the transit vehicles and at transit stops. It would also be helpful to include an advertisement on the ESTA, Town, and www.visitmammoth.com websites as well as print materials that are provided to tourists at hotels (for example the map that is handed out upon check-in at many of the hotels). Marketing can also be done through radio and social media.
- Develop an incentive program that offers people who download the app coupons to local businesses or other prizes (for example stickers or other souvenirs that are branded with the Mammoth Lakes logo).
- Investigate if the app can utilize GPS module data instead of crowdsourced data. A GPS module would be installed on each transit vehicle to track and provide travel data within the app. This would provide more reliable information and not rely on increased app usage. However the improved data may encourage increased use.

4.4 Monitoring

The following section outlines recommended data collection types for six of the eight proposed pilot project quick-build strategies. Once implemented, the effectiveness of the strategies at each location will be analyzed using a data-driven process. Primarily, utilization and count data will be collected at regular intervals to determine if the proposed strategies are successful at supporting the Town mobility goals of reducing auto congestion by promoting a “park once” environment. This data will assist the Town in determining the best long-term strategies to include in future mobility planning efforts. Note that the specific measures of effectiveness may need to be adjusted once baseline data is collected.

Table 4: Mobility Hub Strategies Performance Measurements

Mobility Hub Strategy	Measure of Effectiveness	Data Type	Frequency	Estimated Cost	Implementation Considerations
Free Surface Parking	Increased use of mobility hub. Parking utilization of 70% or greater.	Utilization	Bi-Annually (Winter and Summer) with at least 3 days of data for each season	Low to high cost	Costs will vary based on the collection method used, whether from on-site observations (low cost) ² or sensors (high cost). ³

² On-site observations should also monitor amenities motorists use after parking on-site.

³ Streetlight Data (2021) <https://www.streetlightdata.com/modes/>



Mobility Hub Strategy	Measure of Effectiveness	Data Type	Frequency	Estimated Cost	Implementation Considerations
Free/Subsidized EV Charging	Increased EV use. EV space occupancy of 50% or greater.	Utilization	Bi-Annually (Winter and Summer) with at least 3 days of data for each season	n/a ⁴	Local agency should request EV Charging Station vendors include the installation of equipment capable of collecting and reporting utilization data. ⁵ Outside of EV vendors, occupancy data can be collected during parking occupancy surveys.
Free Printed Map that Shows Walking Routes	Increased pedestrian activity along identified walking route. 50% increase in pedestrian counts over the baseline count.	Pedestrian Counts	Annually	Low cost	On-site observations or feedback from business owners via survey or focus groups. ⁶

⁴ Vendors may include utilization data under service contract or provide for an additional cost. Cost for this data is not available at this time.

⁵ *Northeast Corridor Regional Strategy for Electric Vehicle Charging Infrastructure* (Nescaum 2018) <https://www.nescaum.org/documents/northeast-regional-charging-strategy-2018.pdf/>

⁶ *Curbside Management Practitioners Guide* (Institute of Transportation Engineers 2019) <https://s23705.pcdn.co/wp-content/uploads/2019/03/ITE-Kerbside-Curbside-Management-Guide.pdf>



Mobility Hub Strategy	Measure of Effectiveness	Data Type	Frequency	Estimated Cost	Implementation Considerations
Drop-off/Pick-Up Area	Curbside activity that results in 20 drop-off/pick-ups during daylight hours.	Vehicle counts	Annually. Basic observations performed for at least 3 consecutive days	High cost (for continual monitoring) Low cost for basic observations	Automated (video) data collection methods may require public transport and ride services to provide sufficient data to collect and monitor use of Drop-off/Pick-Up Area. ⁷ Data can also be collected through basic observations; however, it would be more limited.
Bike Valet/Secure Bike Lockers	Bike valet or bike parking occupancy of 50% or greater.	Utilization	Annually	Low cost to n/a ⁸	On-site observations can be performed if design allows for visibility. Bike lockers with digital access features are likely equipped with data reporting capabilities. ⁹ The local agency should confirm with service provider.
Marketing of FREE Transit and TransitApp	Transit ridership increase by 50% after first year of implementation of measures to expand TransitApp use or deployment of a new app.	Utilization	Annually	Low cost	The Town should consider measures to expand the use of the TransitApp or development of an updated transit or integrated app-based mobility service. Data can be collected, evaluated, and managed in partnership with the Eastern Sierra Transit Authority.

⁷ *The Shared-Use City: Managing the Curb* (OECD 2018) <https://www.itf-oecd.org/sites/default/files/docs/shared-use-city-managing-curb.pdf>

⁸ Vendors may include utilization data under service contract or provide for an additional cost. Cost for this data is not available at this time.

⁹ Cycle Safe (2021) <https://cyclesafe.com/bike-parking/options/bike-locker-digital-access/>



4.5 Potential Funding Strategies

Mobility hubs are often funded through local, state, and federal funding sources.

Potential local funding sources include:

- Funding from local or county tax measures such as sales or use tax
- Special assessments on property within neighborhoods or special districts
- Parking or other use fees with specific allocation for transportation investment
- Financing capital costs through local bond measure

4.5.1 Considerations

Transportation grant programs generally provide financial assistance to implement programs or facilities that support regional, county, and goals for mobility, land use, climate action and resiliency. Many grant programs require a local match financial contribution, or a local funding source that constitutes a portion of the overall cost. Generally, transportation grants do not cover the entire project cost. As such, it is highly recommended that the Town prepares a capital cost estimate for the project(s). The capital cost estimates should outline the cost against potential revenue sources, including financing (such as bond funds) and available grant funding. This effort will also assist the Town prepare and articulate the project(s) in a grant application process.

Once capital cost estimates are prepared, the Town should prioritize projects. Projects with the biggest effect on multiple facilities, modes, and aligned with Town mobility goals should be prioritized first. In addition, the projects should be prioritized based on how they set up implementation for other projects, for example, consider if you build one project does it help make it easier to construct the next one. Packaging projects from different planning documents will make the application stronger and help the Town achieve mobility goals more quickly and efficiently.

4.5.2 Grantees

Grant programs are available to different jurisdictions operating in the Town and eligibility may vary across entities. The potential grantee options for these project(s) are:

- Town of Mammoth Lakes (Town)
- Eastern Sierra Transit Authority (ESTA)
- Mono County
- Caltrans

Depending on the grant program, it is also possible for the Town to jointly apply for grants in partnership with the County or ESTA.



4.5.3 State of California Grant Funding Programs

The State of California offers a myriad of mobility grant programs to local communities and transit operators. The following programs may be opportunities for the Town.

- State Transportation Improvement Program
 - Five-year Program funding improvements that increase highway system capacity including transit and active transportation projects
- Active Transportation Program
 - Funds and promotes alternative transportation options to encourage active modes
- Local Partnership Program
 - Intended to incentivize cities/counties that have passed tax measures for transportation improvements
- California Climate Investment: Cap and Trade Program
 - Eligible grantees could be either the Town or ESTA, depending on the program type
 - The State offers Technical Assistance to support communities applying for funding under these program
 - California Climate Investments seek to invest in cleaner energy and innovative means to reduce pollution. Funding within this program does include investments in cleaner transportation as well as affordable housing, zero-emission, and renewable energy. A portion of California Climate Investments also invest in low-income and disadvantaged communities.
- Potential funding programs for Mobility Hubs:
 - Transit & Intercity Rail Capital: funds transformative capital improvements that modernize California's transit systems including bus
 - Low Carbon Transit Operations: offers capital assistance grants for transit agencies to improve mobility through new or expanded services

4.5.4 Federal Grant Programs

The United States Department of Transportation (US DOT) Federal Highway Administration (FHWA) and Federal Transit Administration (FTA) offer many grant programs for transit authorities, regional, and local entities to construct improvements within transportation networks. Grant programs range from formula programs where the program funding is allocated to the States Department of Transportation or discretionary funds awarded to Regional Planning organization through a competitive application process. The capital cost of mobility hubs generally could be eligible under the following programs:

- Grants for Bus and Bus Facilities Program



- Competitive program
- Supports the investment in bus facilities such as mobility hubs
- Grants can fund up to 80 percent of the total project cost and the grantee will be required to demonstrate funding plan
- Better Utilizing Investment to Leverage Development (BUILD)
 - Competitive program
 - For “shovel-ready” projects that have a significant regional or local impact
 - BUILD grants span US DOT with FTA administering for transit-related investments
 - Eligible projects include funding for re-construction activities and right-of-way acquisition
 - As a condition of award, FTA would likely require projects that involve right-of-way acquisition to commit to completing the anticipated improvements within a particular timeframe
- Congestion Mitigation and Air Quality Program (CMAQ)
 - Formula funding
 - Provides funding for nonattainment or maintenance areas for ozone, carbon monoxide, and/or particulate matter.
 - States that have no nonattainment or maintenance areas still receive a minimum apportionment of CMAQ funding for either air quality projects or other elements of flexible spending
 - Funds may be used for any transit capital expenditures otherwise eligible for FTA funding provided they have an air quality benefit
- Rural Transportation Grant Programs
 - Intended to support mobility and transit in nonurbanized areas
 - Formula and competitive grant programs exist
- Access and Mobility Partnership Grant
 - Competitive grant program
 - Grantee could be partnership of Town, County and/or other service providers
 - Provides competitive funding to support innovative projects for the transportation disadvantaged that will improve the coordination of transportation services and non-emergency medical transportation services
 - The Mobility Hub project could include innovative features to support the objectives of this grant program
 - Grant program requires project completion within 18 months of award



- Grants can fund up to 80 percent of the total project cost and the grantee will be required to demonstrate funding plan

4.5.5 Public-Private Partnerships

Mobility hubs and increased transit ridership will provide a myriad of benefits for local businesses. Businesses and developers may no longer need to provide as much parking, freeing up land for other revenue-generating uses or reducing barriers to development. This increases economic activity and funding for the Town. Reducing congestion and improving mobility improves quality of life for residents and can make the Town more desirable for tourists and residents alike. Operating a business near a mobility hub can provide a competitive edge for nearby businesses, making them more accessible to a larger market than other locations. These positive externalities associated with mobility hubs can be captured by the Town and formalized through the development of public-private partnerships.

Private contributions from local businesses can include land for mobility hubs, dedication of space for mobility hub services, reduced rates for shared mobility services, data to assist in identifying markets and monitoring performance, and contributions for education and encouragement marketing campaigns.

Public-private partnerships also include the provisions of some mobility hub services and amenities such as bikeshare, carshare, shared ride-hailing, and electric charging stations. The Town may be required to provide a benefit such as a subsidy, marketing, or exclusivity to the private entity for providing the service. These partnerships can be mutually beneficial for both parties and may further increase the effectiveness of mobility hub services and amenities.

4.5.6 Other Local Funding Strategies

Other funding opportunities are also available through parking fees or fees on other uses on the transportation network. One strategy for encouraging shared mobility use is to appropriately charge for parking. Parking charges may be set to align with the cost of land or to align demand and supply where parking supply is limited. While parking charges incur some cost, such as for enforcement, signage, and revenue collection, often there is surplus revenue that can be applied to services, such as amenities outlined in the mobility hub quick-build program above. This can be a valuable source to cover ongoing operating and maintenance costs.

Other potential user fee types could include:

- Recreational user fees that supplement day-use fees
- Lodging taxes
- Increased parking costs during congested periods
- Distance based parking fees

Local funding could also be provided for certain mobility hub amenities through a business improvement district that levies fees on local businesses in defined areas. Such mobility strategies that are commonly



funded through such programs include microtransit shuttles, local circulation and streetscape improvements, and marketing campaigns.



5. Conclusion

The Town of Mammoth Lakes has a unique set of transportation needs and constraints because of its seasonal weather and tourist-oriented services. This Study builds on previous planning efforts and existing Town philosophies, such as “park once” or “feet first,” to develop a proposed list of mobility hub locations to address the Town’s transportation needs. This Study identifies quick-build amenities for two mobility hub locations and outlines next steps for implementing a comprehensive mobility hub network that promotes the sustainable use of the transportation and enhances the daily life of residents and tourists.

Mobility hubs are an emerging transportation solution throughout the country. This Study aims to build on the evolving nature of mobility hubs and provide context sensitive solutions for the Town’s unique transportation needs. This Study used parking utilization, travel demand and US Census data, as well as community input, observations made by Town Staff, and expertise from the project team, to identify mobility hub locations and future users. The Study focuses on travel demands unique to the user types in the Town of Mammoth Lakes: Residents, Tourists, and Employees. Two mobility hubs typologies are proposed for Mammoth Lakes to reflect the different transportation needs in different parts of the community. These hub types are differentiated by scale, amenities, and magnitude of physical improvements.

This Study outlines recommended steps for implementing a smooth and effective roll-out of the mobility hub program. Additionally, performance measurements were outlined to measure and assess mobility hub utilization and success. This includes collecting utilization and count data regularly to determine if the proposed strategies are successful at supporting the Town mobility goals. In addition, funding strategies have been identified, such as grant programs, public-private partnerships, and additional revenue sources.

Mobility hubs offer a robust solution to implementing the Town’s vision of parking a vehicle once and relying on a well-connected multi-modal network to access the Town’s recreational, commercial, and cultural attractions. In this vision, visitors park at one of the primary or destination mobility hubs when they enter the Town and then use transit, biking or walking for the remainder of their stay. Residents have enough mode options to commute to work by walking, biking and/or transit and experience a higher quality of life by avoiding congestion and reducing expenses associated with automobile ownership and usage. Through this Study, mobility hub locations are strategically placed allowing visitors/tourists, residents, and the local work force to seamlessly connect between modes and services.

Mobility hub strategies will need to be designed in a coordinated effort between Town staff and key stakeholders. Successful implementation of mobility hubs is dependent on the Town’s abilities to advance the program and success in identifying and implementing partnerships to provide mobility services. The project team recommends the Town consider consolidating all existing mobility-related plans and studies into a Mobility Master Plan with a master multi-modal improvement priority list. Through a robust and inclusive planning process, the Town can synthesize the previous mobility planning studies, develop a list of priority projects, and secure funding to implement projects. The Mobility Master Plan should also



include designing an interactive web-based GIS platform to actively track and interact with public as mobility projects move through the planning progress. This plan can serve as the Towns transportation roadmap for years to come.



Appendix A – Task 2 Memorandum



Memorandum

Date: June 8th, 2021
To: Chandler Van Schaack, Town of Mammoth Lakes
From: Katy Cole, Madison Roberts and Chris Wahl; Fehr & Peers
Subject: **Draft Data Review and Mobility Hub Siting Refinement (Task 2)**

SD21-0403

The purpose of this memorandum is to review data collected for the Mobility Hub Study and Program Administrative Draft and determine whether the proposed mobility hub sites identified in the Administrative Draft are appropriate. Specifically, this memo reviews the parking utilization and citation data that was collected for the Mobility Hub Study and Program, travel demand (i.e., Teralytics) data that was previously collected and analyzed, and United States Census commute data. This memorandum summarizes predominant travel patterns throughout Mammoth Lakes and provides updated mobility hub siting recommendations.

The findings of this memorandum will support the development of mobility hub strategies and the refinement of the Mobility Hub Study and Program document.

Data Overview

The following data sources were reviewed to help understand travel behavior to/from and within the Town.

Parking Utilization and Citation Data

Key Finding: Parking appears to be in highest demand (paired with lower availability) in areas that serve Mammoth Mountain Ski Area lifts or commercial destinations. These areas (listed below) may be good candidates for smaller mobility hubs that provide return service to larger mobility hubs, as they are desired destinations at which parking supply is low or substantial amounts of parking citations have been issued.

Parking utilization and citation data was reviewed to determine areas where parking availability is limited and determine locations where parking or travel connections are desired, but not currently provided.



The parking utilization data provided parking occupancy collected on February 15, 2020, at 8 AM, 10 AM, 12 PM, 2 PM and 4 PM. Parking occupancy was most consistently high for the parking areas near the Village, along Main Street west of Old Mammoth Road, and along the Old Mammoth Road Commercial District.

The parking citation data collected between March 2019 and February 2020 shows a higher concentration of parking citations issued in the following areas:

- Canyon Lodge: along Rainbow Lane, Lakeview Boulevard, and Davison Road
- The Village: primarily along Canyon Boulevard, SR-203 (Minaret Road) and Forest Trail
- Old Mammoth Road Commercial District: Chateau Road east of Old Mammoth Road
- Main Street: near Stellar Brew and Natural Café
- SR-203 (Minaret Road): near the Stump Alley Express and Gold Rush Express ski lifts (i.e., The Mill)

Most of the parking citations were for vehicles parked in no parking zones or in time restricted zones.

Travel Demand Data

Key Finding: Most people traveling to the Town of Mammoth Lakes are doing so for recreational or tourism purposes.

The Teralytics travel demand data that was provided includes the number of home, work or “other” related trips (originating or terminating at home, work, or other destinations) from counties throughout California and Nevada. While this data does not show travel patterns within the Town of Mammoth Lakes, it does provide information about the purpose of travel to the town. The predominant trip purpose was “Other,” meaning that the trip is not a trip to home or work and is most likely associated with recreational or tourism trips. Additional insights are provided in the “Why People Travel” sections below.

US Census Data

The U.S. Census American Community Survey (2019: ACS 5-Year Estimate) commute mode choice breakdown for residents of Mono County was obtained to provide work related travel behavior and mode choice. Additional insights are provided in the “Why People Travel” sections below.

How, Why, and Where People Travel – Evaluating the Data

This section summarizes travel behavior for tourists, residents, and employees based on the data sources described above and anecdotal observations based on our discussions with Town staff and our experience visiting the Town.



Tourists

How

Due to limited transportation options from other counties to the Town of Mammoth Lakes and observed congestion in the town during peak tourism periods, it is assumed that most tourists will drive their private automobile to the town or rent a car at the airport when they arrive.

While in town some tourists may complete short trips by foot or bike, predominantly in the summer, but most trips to restaurants and recreational destinations are assumed to be completed by car or using the existing complimentary shuttle system operated by the Eastern Sierra Transit Authority (ESTA).

Why

The Teralytics data identifies weekend travelers (on a typical weekend in January 2019) traveling to the Town of Mammoth Lakes from 47 different counties within California and Nevada. Approximately 92% of all trips from this data set are not home or work-related trips, supporting the fact that the Town of Mammoth Lakes is a key regional destination for recreation and tourism. With this understanding, it can be assumed that travel in and around the Town of Mammoth Lakes is primarily for recreation and secondarily for work trips to and from recreational commercial uses. Of the trips completed only within Mono County, approximately 94% were categorized as non-home or work-related, indicating that even local travel (within Mono County) is most focused on recreation.

By reviewing the land uses surrounding the areas of highest travel demand (using parking occupancy and parking citations as a proxy) it appears that most tourists traveling in and around the Town of Mammoth Lakes do so to access restaurants, shopping, and recreation.

Where

The parking utilization and citation data illustrates that the areas with highest travel demand for tourists are the following:

- The Village: around Canyon Boulevard, Minaret Road and Forest Trail
- The Old Mammoth Road Commercial District
- Canyon Lodge: along Lakeview Boulevard
- Main Street: near Stellar Brew and Natural Café
- SR-203 (Minaret Road): near the Stump Alley Express and Gold Rush Express ski lifts (i.e., The Mill)

Predominately, trips are taken to access commercial, recreational, or lodging uses.

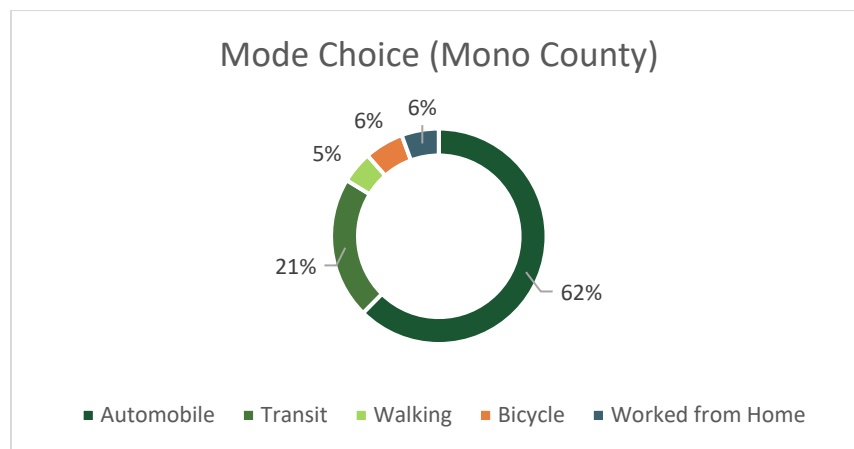


Citation data is assumed to be most indicative of preferred destinations for tourists because it is expected that tourists have a higher tolerance for parking citation fees than residents and employees. It is also assumed that residents and employees are more aware of locations where parking is allowed near destinations.

Residents

How

The U.S. Census American Community Survey (2019: ACS 5-Year Estimate) provides the following commute mode choice breakdown for residents of Mono County.



Note to Town Staff: The commute transit mode share (21%) reported by the ACS seems high for Mono County. Are you able to provide any insight as to why it is this high? For reference, the transit mode share for commuters in California is five percent.

Although commute or work trips do not represent all trips that a person makes throughout the day, work trips can be representative of a person's general willingness to use alternative modes of transportation. As the commute mode choice is predominantly automobile, it is expected that residents generally use their automobile to access destinations throughout the Town of Mammoth Lakes. It is also anticipated that residents of the town use automobiles more frequently during winter and spring months when temperatures tend to be much lower and the presence of snow and ice along roadways and adjacent nonmotorized pathways can create substantial mobility challenges.

Why

Data summarizing why residents travel was not available at the time this memorandum was prepared. However, anecdotally, the project team understands that although some residents commute to work, residents primarily travel for personal (e.g., running errands, dining out) or recreational (e.g., skiing, hiking, camping) purposes.



Where

Despite data not being currently available for town residents' travel patterns, it can be logically assumed that residents will typically travel from their homes to grocery stores, restaurants, and recreational destinations. A small portion of the residents are assumed to commute out of the town for work. Due to these relatively scattered travel patterns, it is not expected that residents will be the key market for the mobility hub network, though mobility hub strategies will be available for residents should they elect to do so.

Employees

How

Anecdotally, we understand that most employees who work in the Town of Mammoth Lakes do not live within the town, but rather in other areas within Mono and Inyo Counties. The commute mode data presented above for residents is also representative of the mode choices of employees commuting to the town and as such, it is expected that most employees travel to work in private automobiles. Additionally, seasonal weather fluctuations are anticipated to increase the percentage of the employees commuting to work in private automobiles in the winter and spring, similar to residents of the town.

Why

Employees are expected to travel within the Town primarily for work-related trips (either the commute to or from work or other work-related trips during the workday). While in the town a smaller portion of employees may complete recreational trips or trips to access grocery stores or restaurants before or after work, but these trips are expected to be infrequent.

Where

Although travel pattern data is limited, non-resident employees are expected to travel into town using SR-203 and continue to the various restaurants, lodging, and recreational destinations along Main Street, in the Village, in the Old Mammoth Road Commercial District, and the Mammoth Mountain Ski Area. This concentrated travel pattern along SR-203 may make employees an ideal audience for a mobility hub along SR-203 at the eastern edge of the town, especially if a mobility hub in this location provides transportation to employment centers during shift changes.

Review of Mobility Hub Siting

The Mobility Hub Study and Program Administrative Draft recommended three different types of mobility hubs: Recreational Gateway, Community, and Regional. Each type of mobility hub was proposed to include a different suite of amenities ranging from enhanced transit waiting areas to universal transportation accounts.



The final mobility hub sites identified in the report are:

- The Village
- Eagle Lodge
- Old Mammoth Road Commercial District
- Main Street/Old Mammoth Road
- Mammoth Creek Park
- Mammoth Yosemite Airport

Updated Mobility Hub Site Recommendations

To support a “park-once” strategy and to reduce congestion and parking demand in undesirable areas, a network of “primary” and “destination” mobility hubs is recommended.

Primary mobility hubs are intended to be locations where ample space and existing public parking is available. The intent of these mobility hubs is to allow tourists and employees to park their vehicle at these locations for the duration of their trip and use various transportation options offered at the mobility hubs to travel to key destinations. Doing so would increase the likelihood that travelers will use alternate modes of transportation while they are in town, therefore reducing congestion along Town roads and parking demand at key destinations. To encourage mobility hub use, the parking lots at these locations should not have time restrictions.

Destination mobility hubs are intended to be smaller and will not include parking options that allow for all-day parking. The key purpose of these mobility hubs is to provide return service to the primary mobility hubs, lodging options, and commercial centers throughout the town.

Recommended mobility hubs are described in more detail in **Table 1** and shown on **Figure 1**.



Table 1. Mobility Hub Recommendations

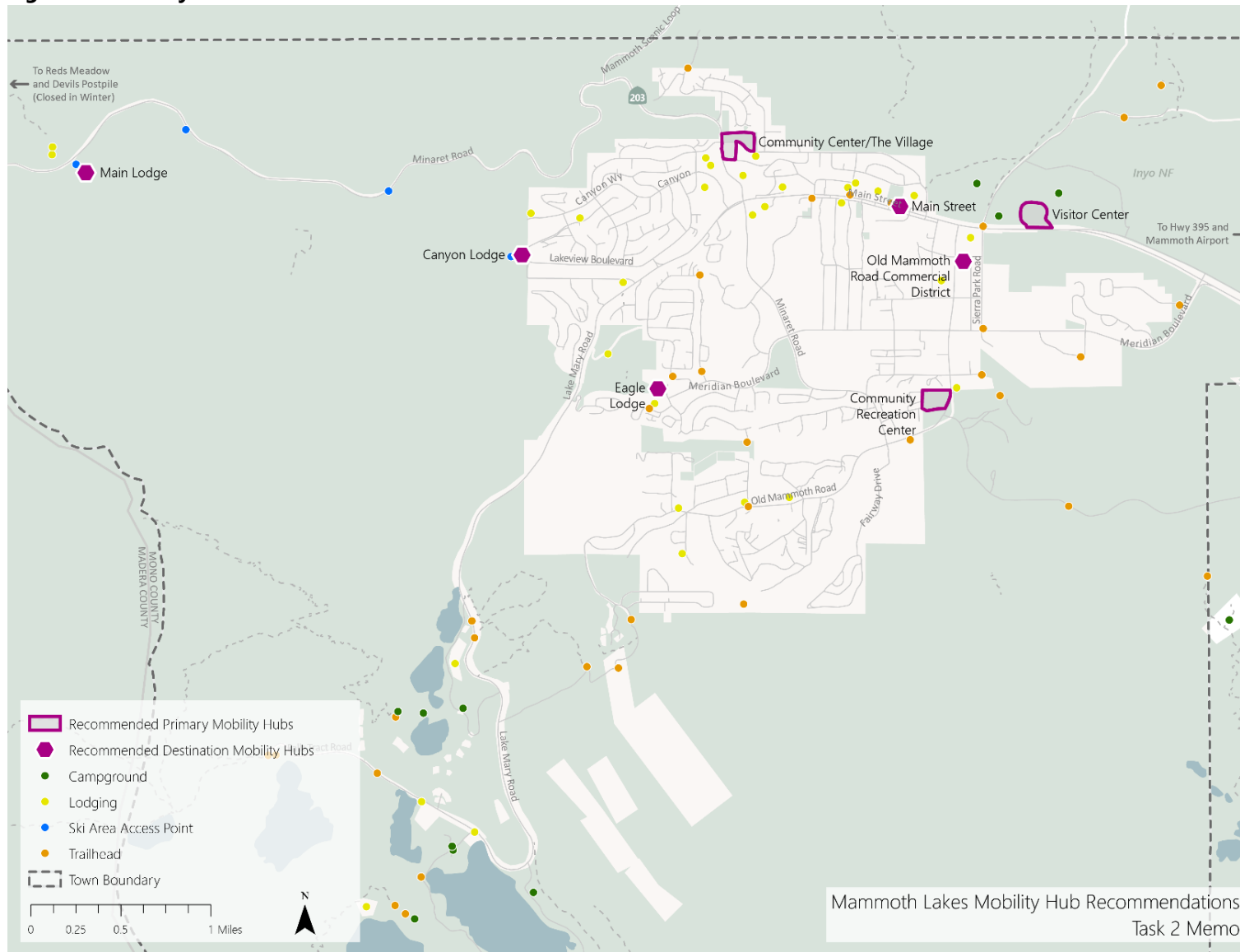
Type	Location	Recommendation Rationale	Implementation Considerations
Primary	Mammoth Lakes Community Center and the Village at Mammoth Parking area	The Village is a large tourist destination for lodging and restaurants, and a direct connection to Canyon Lodge and the Mammoth Mountain Ski Area is also provided via the Village Gondola. The Community Center is an ideal location as it is publicly owned and operated and within walking distance to the key destinations in the Village.	If the Village at Mammoth Parking area is privately operated the town may need to implement a memorandum of understanding to allow long-term parking.
	Mammoth Lakes Visitor Center	This is the eastern-most tourist destination that all visitors and most employees pass when entering town on SR-203. The location is ideal to prevent traffic from entering the town, thereby reducing traffic congestion in town.	Location is owned by the U.S. Forest Service. For the Town to use this site as a mobility hub a Memorandum of Understanding will need to be implemented. Since Main Street (SR-203) is part of the California state highway system, coordination with Caltrans may also be required when developing mobility hub strategies.
	The future Community Recreation Center (CRC) at Mammoth Creek Park	The future CRC will be centrally located within the Town, as well as along the Town Multi Use Path (MUP) and trail system (MLTS).	Vehicular parking for mobility hub users at this location may be limited during CRC events.
Destination	The Old Mammoth Road Commercial District, specifically the southeast corner of the intersection of Old Mammoth Road and Tavern Road.	This area is a key destination for tourists and residents accessing restaurants, shopping, and entertainment uses, and for employees accessing jobs.	Due to the nature of the commercial uses available, transportation options will need to run frequently as trips to nearby uses are expected to be short.



Type	Location	Recommendation Rationale	Implementation Considerations
	Canyon Lodge	This location is a key destination for tourists accessing the mountain. Its proximity to ski lifts makes it a convenient location to pick up tourists and take them back to primary mobility hubs.	As this is a key destination for accessing the mountain, subsidized or publicly provided ski or mountain bike storage and lockers should be located here.
	Main Street near Stellar Brew and Natural Café	Main Street is a popular commercial district that is far enough away from the Village mobility hub to make walking inconvenient.	Transportation option service can be less frequent in this location due to the nature of the commercial uses (i.e. – restaurants where tourists may stay for longer).
	Along Minaret Road (SR-203) near Main Lodge	Main Lodge is a key access point for the Mammoth Mountain Ski Area, and the area around it is a popular destination for tourist lodging.	Since Minaret Road (SR-203) is part of the California state highway system, coordination with Caltrans may be necessary depending on the siting of mobility hub features.
	Along Meridian Boulevard near Eagle Lodge	Eagle Lodge is a key access point for the Mammoth Mountain Ski Area, and the area around it is a large destination for tourist lodging.	Eagle Lodge typically closes winter operations prior Canyon Lodge and Main Lodge and remains closed through the summer/fall. As such, services here may be reduced or eliminated completely when ski operations conclude.



Figure 1. Mobility Hub Recommendations





Other Key Findings

Due to the impacts of seasonality on transportation choices in the Town of Mammoth Lakes, it is important that transportation options and strategies provided at the various mobility hubs are appropriate for the season in which they are available. For example, bikeshare may be popular during summer/fall months whereas ATV rentals or the free shuttle may be more appealing during winter/spring months. This seasonality may also impact the mobility hubs that are serviced in different seasons. For example, a full suite of transportation options is expected to be needed at the Canyon Lodge destination mobility hub in the winter months, but these services could be reduced, or the mobility hub could be closed during summer months depending on the number of tourists using the mountain for hiking and mountain biking.

Given that the Teralytics data shows most trips made to Mammoth Lakes are for recreational purposes, it is very important for the siting of mobility hubs, and the transportation options provided at these hubs, to cater to the unique needs of recreational users. Features like ski or snowboard storage, mountain bike racks and oversize personal effect storage for backpacks and trekking poles will need to be considered in the selection of transportation options to encourage use of these options over private vehicles. Mobility hub sites should be connected to trail heads, ski access points and other recreational destinations via existing or planned transportation services.

Appendix B – Task 3.2 Memorandum

Memorandum

Date: November 11, 2021
To: Chandler Van Schaack, Town of Mammoth Lakes
From: Katy Cole, Chris Wahl, and Angelica Rocha; Fehr & Peers
Subject: **Mammoth Lakes Mobility Hub Study and Program Wrap-up: Mini Pilot Project Performance Monitoring Plan**

SD21-0403

The purpose of this Performance Monitoring Plan (PMP) is to identify methods for analyzing the effectiveness of quick-build strategies proposed for the Mammoth Lakes park and ride (PNR) lot and future Community Recreation Center (CRC). The PMP will help determine if the proposed strategies are successful at supporting the Town's mobility goals of reducing auto congestion by promoting a "park once" environment. Monitoring the effectiveness of the quick-build strategies will assist the Town in determining the best long-term strategies to include in the future Mobility Master Plan. This PMP includes information on effectiveness of the proposed mobility hub strategies, monitoring data types, data collection frequency, and implementation considerations.

Performance Measurements

The following section outlines recommended data collection types for six of the eight proposed quick-build strategies. Restrooms and Seating/Waiting Area are the two mobility hub strategies excluded from the PMP. Although these strategies are recommended for the mini pilot project, other metrics are more effective at measuring and monitoring the success of the two mobility hubs.

A mix of utilization data and count data are recommended for measuring effectiveness as shown in **Table 1**. Relative annual costs were estimated based on professional planning experience.

Table 1: Mobility Hub Strategies Performance Measurements

Mobility Hub Strategy	Measure of Effectiveness	Data Type	Frequency	Estimated Cost	Implementation Considerations
Free Surface Parking	Increased use of mobility hub	Utilization	Bi-Annually (Winter and Summer)	Low to high cost	Costs will vary based on the collection method used, whether from on-site observations (low cost) ¹ or sensors (high cost). ²
Free/Subsidized EV Charging	Increased EV use	Utilization	Bi-Annually (Winter and Summer)	n/a ³	Local agency should request EV Charging Station vendors include the installation of equipment capable of collecting and reporting utilization data. ⁴
Free Printed Map that Shows Walking Routes	Increased pedestrian activity along identified walking route	Pedestrian Counts	Annually	Low cost	On-site observations or feedback from business owners via survey or focus groups. ⁵

¹ On-site observations should also monitor amenities motorists use after parking on-site.

² Streetlight Data (2021) <https://www.streetlightdata.com/modes/>

³ Vendors may include utilization data under service contract or provide for an additional cost. Cost for this data is not available at this time.

⁴ *Northeast Corridor Regional Strategy for Electric Vehicle Charging Infrastructure* (Nescaum 2018) <https://www.nescaum.org/documents/northeast-regional-charging-strategy-2018.pdf/>

⁵ *Curbside Management Practitioners Guide* (Institute of Transportation Engineers 2019) <https://s23705.pcdn.co/wp-content/uploads/2019/03/ITE-Kerbside-Curbside-Management-Guide.pdf>

Mobility Hub Strategy	Measure of Effectiveness	Data Type	Frequency	Estimated Cost	Implementation Considerations
Drop-off/Pick-Up Area	Curbside activity	Vehicle counts	Annually	High cost	Automated (video) data collection methods may require public transport and ride services to provide sufficient data to collect and monitor use of Drop-off/Pick-Up Area. ⁶
Bike Valet/Secure Bike Lockers	Increased bicycle mode share	Utilization	Annually	Low cost to n/a ⁷	On-site observations can be performed if design allows for visibility. Bike lockers with digital access features are likely equipped with data reporting capabilities. ⁸ The local agency should confirm with service provider.

⁶ *The Shared-Use City: Managing the Curb* (OECD 2018) <https://www.itf-oecd.org/sites/default/files/docs/shared-use-city-managing-curb.pdf>

⁷ Vendors may include utilization data under service contract or provide for an additional cost. Cost for this data is not available at this time.

⁸ Cycle Safe (2021) <https://cyclesafe.com/bike-parking/options/bike-locker-digital-access/>

Mobility Hub Strategy	Measure of Effectiveness	Data Type	Frequency	Estimated Cost	Implementation Considerations
Marketing of FREE Transit	Improved transit ridership	Utilization	Annually	Low cost	The Town should consider implementing a transit or integrated app-based mobility service. Data can be collected, evaluated, and managed in partnership with the Eastern Sierra Transit Authority.

Summary

The PMP was developed to support the Town of Mammoth in measuring the success of the quick-build strategies proposed for two mobility hub mini pilots. The goal of this document is to provide the Town with different data types at varying costs. Fiscal and staffing constraints will influence the type of data collected and collection frequency.

Appendix C – Survey Data



Mammoth Lakes Transportation Improvement Survey

47

Responses

07:27

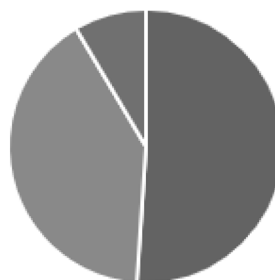
Average time to complete

Active

Status

1. What is your relationship to Mammoth Lakes? If more than one choice applies, you may take the survey once for each.

● Visitor/Tourist	24
● Resident	19
● Worker	4



2. During which seasons do you typically visit Mammoth Lakes?

● Winter (Nov-May)	8
● Summer (Jun-Oct)	4
● Both	12



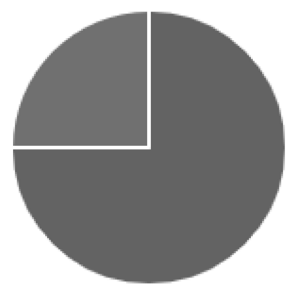
3. What times of year do you live in Mammoth Lakes?

● Year-Round (Full-Time)	17
● Mostly Winter (Nov-May)	2
● Mostly Summer (Jun-Oct)	0



4. What times of year do you work in Mammoth Lakes?

● Year-Round (Full-Time)	3
● Mostly Winter (Nov-May)	0
● Mostly Summer (Jun-Oct)	1



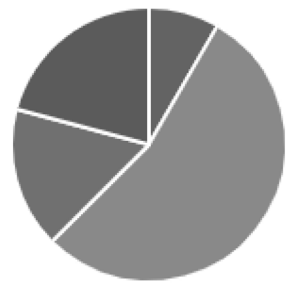
5. What is the typical size of your travel party?

● 1 (myself)	2
● 2	5
● 3	2
● 4	5
● 5 or more	10



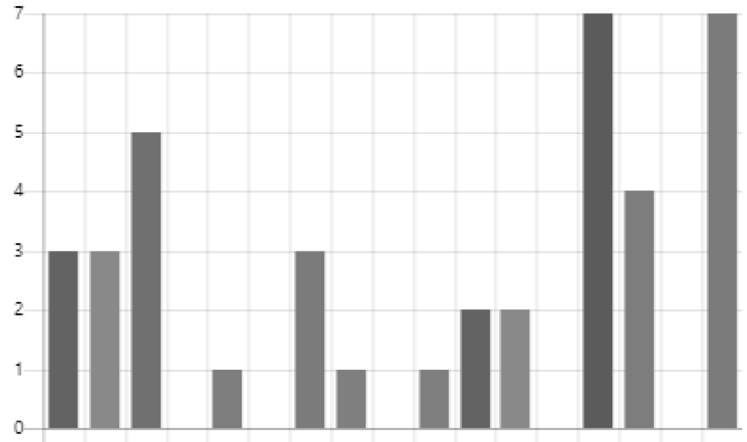
6. Where do you typically stay in Mammoth?

● Hotel	2
● Vacation Rental	13
● With Friends	4
● Campsite	5



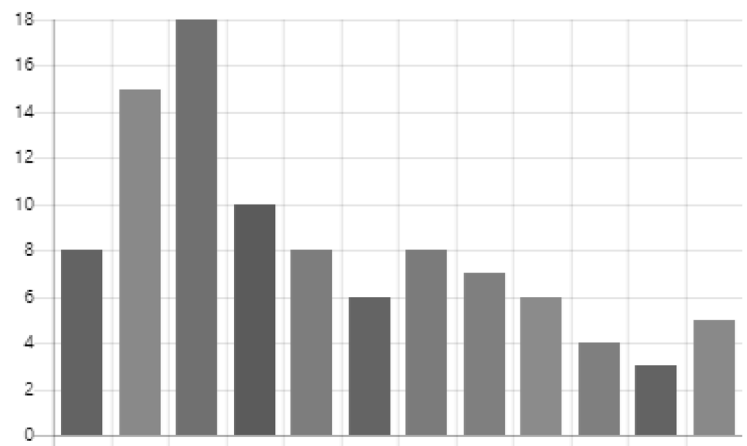
7. When visiting Mammoth, where do you typically stay? Check all that apply.

☒ Main Lodge	3
☒ Canyon Lodge (Mammoth Slo...	3
☒ The Village	5
☒ The Pines (north of Eagle Lod...	0
☒ Eagle Lodge (West Ridge)	1
☒ Lodestar (near Sierra Star golf ...	0
☒ Old Mammoth (south of Eagle...	3
☒ Sierra Valley (east of Sierra Sta...	1
☒ Knolls (east of The Village)	0
☒ Main Street	1
☒ Old Mammoth Commercial (O...	2
☒ Meridian	2
☒ Gateway (east of Old Mammo...	0
☒ Snowcreek (southeast of Eagle...	7
☒ Lakes Basin	4
☒ Sherwin Creek	0
☒ Other	7



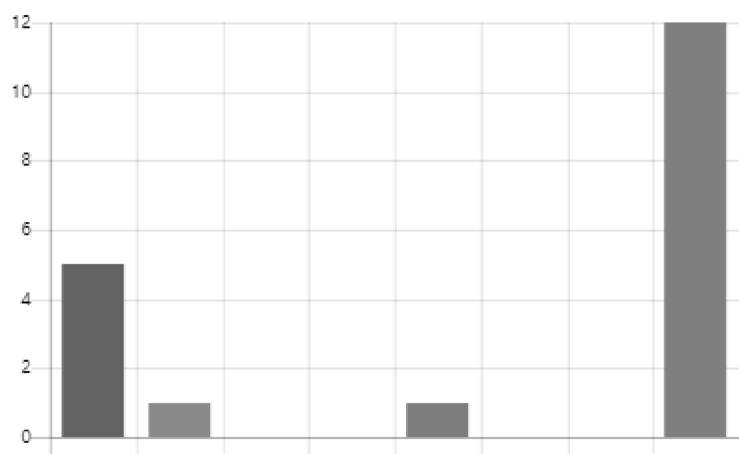
8. When visiting Mammoth, where do you typically go? Check all that apply.

☒ Main Street	8
☒ Downtown/Old Mammoth (sh...	15
☒ The Village	18
☒ Main Lodge	10
☒ Canyon Lodge	8
☒ Eagle Lodge	6
☒ The Mill	8
☒ Lakes Basin	7
☒ Reds Meadow/Devils Postpile	6
☒ Sierra Star Golf Course	4
☒ Snowcreek Golf Course	3
☒ Other	5



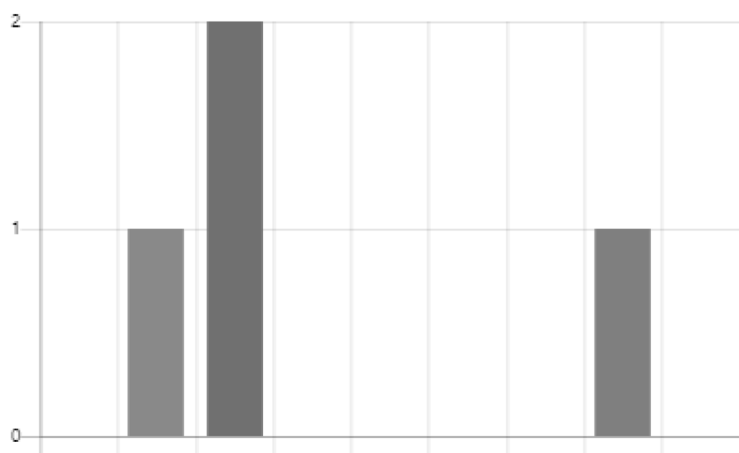
9. Which neighborhood (district) do you live in?

Downtown	5
North Old Mammoth Road	1
North Village	0
Sherwin	0
Sierra Star	1
Snowcreek	0
South	0
Other	12



10. Where do you work?

Business Park	0
Main Street	1
Downtown/Old Mammoth	2
The Village	0
Main Lodge	0
Canyon Lodge	0
Eagle Lodge	0
Lakes Basin	1
Other	0



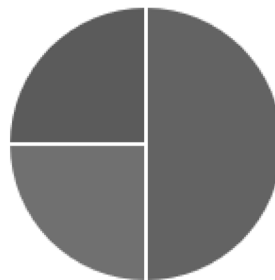
11. If convenience wasn't a factor, how would you like to travel around Mammoth?

Drive	4
Transit	2
Walk	4
Bike	8
Other	1



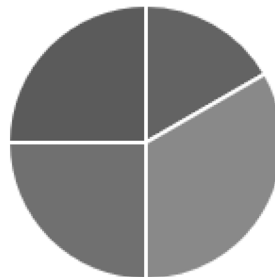
12. If convenience wasn't a factor, how would you like to travel around Mammoth?

● Drive	2
● Transit	0
● Walk	1
● Bike	1
● Other	0



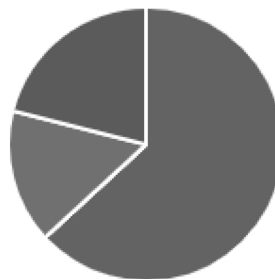
13. If convenience wasn't a factor, how would you like to travel around Mammoth?

● Drive	4
● Transit	8
● Walk	6
● Bike	6
● Other	0



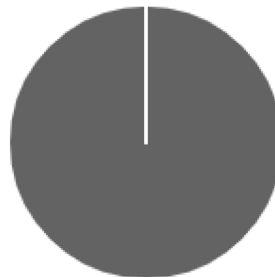
14. How do you typically travel around Mammoth?

● Drive	12
● Transit	0
● Walk	3
● Bike	4
● Other	0



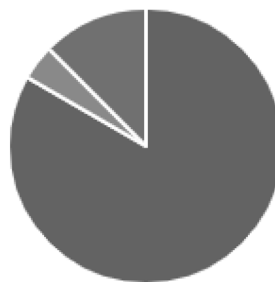
15. How do you typically travel around Mammoth?

● Drive	4
● Transit	0
● Walk	0
● Bike	0
● Other	0



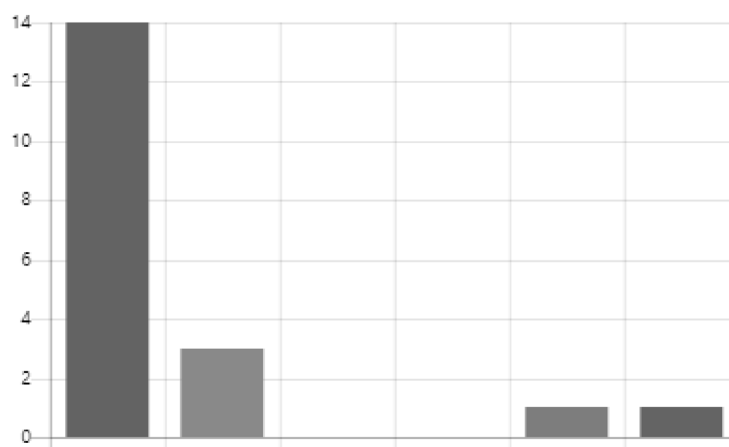
16. How do you typically travel around Mammoth?

Drive	20
Transit	1
Walk	3
Bike	0
Other	0



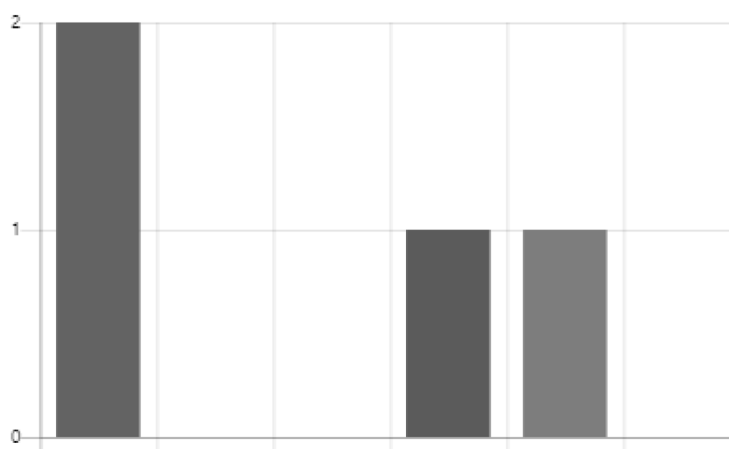
17. If you don't live in Mammoth full-time, how do you typically travel when you're living elsewhere?

I live in Mammoth full-time	14
Drive	3
Transit	0
Walk	0
Bike	1
Other	1



18. When you are in your home city/town how do you typically travel?

Drive	2
Transit	0
Walk	0
Bike	1
I live in Mammoth	1
Other	0



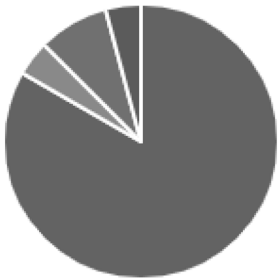
19. If you don't live in Mammoth full-time, where else do you live? Please enter your city/town and Zip Code.

4
Responses

Latest Responses

20. When you're at home, how do you typically travel?

● Drive	20
● Transit	1
● Walk	2
● Bike	1
● Other	0



21. Where do you live? Please enter your city/town and Zip Code.

3
Responses

Latest Responses

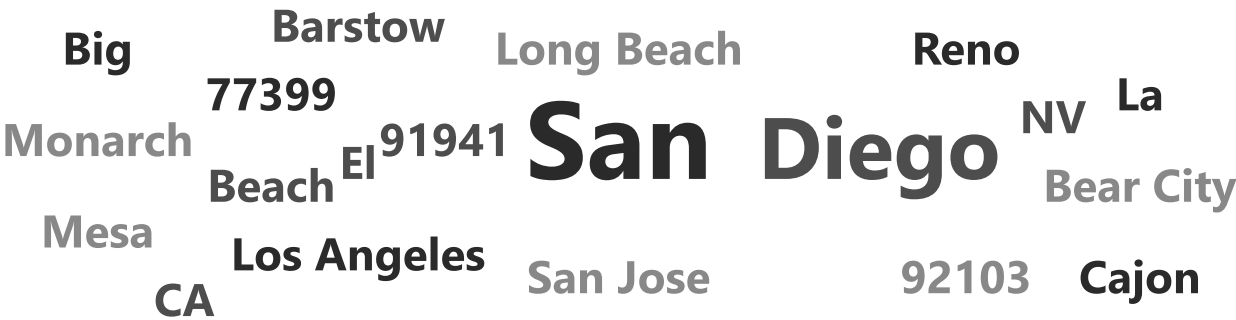
22. Where do you live? Please enter your city/town and Zip Code.

24
Responses

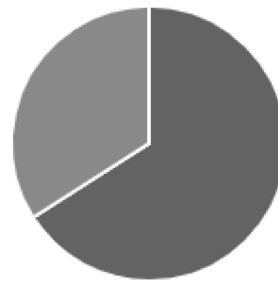
Latest Responses

"Big Bear City 92314"
"Reno, NV 89509"

5 respondents (21%) answered **San** for this question.



23. Have you used Mammoth's free transit services (Town Trolleys or ESTA shuttles)?



24. How could Mammoth's free transit services (Town Trolleys or ESTA shuttles) be improved?

31
Responses

Latest Responses

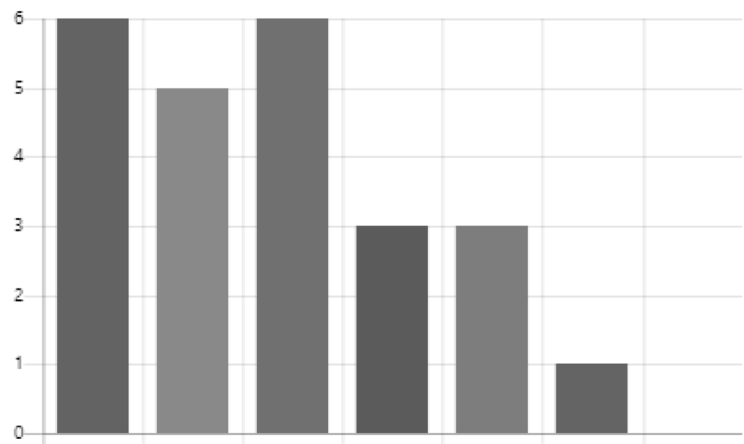
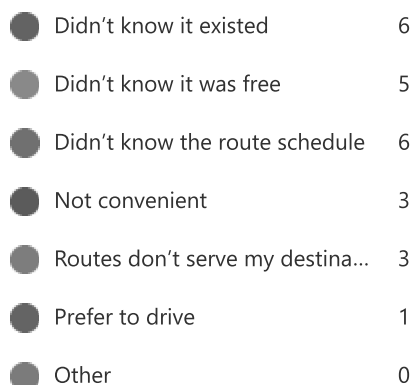
"more consistent schedules across seasons (the seasonal schedules are ...

"More routes"

8 respondents (26%) answered **times** for this question.



25. Why haven't you used Mammoth's free transit services (Town Trolleys or ESTA shuttles)? Check all that apply.



26. What would make using transit more attractive? Rank in the order of importance.

Rank Options

- | Rank | Options |
|------|------------------------------------|
| 1 | More frequent shuttles |
| 2 | More reliable service |
| 2 | Real-time travel/trip planning ... |
| 3 | Dedicated passenger loading ... |
| 3 | More shuttle routes / expande... |
| 4 | Enhanced bus stops: shelters, ... |
| 5 | Other (please specify) |

First choice Last choice



27. If you selected "other" in the previous question, please describe what you mean.

7

Responses

Latest Responses

2 respondents (29%) answered **busses** for this question.

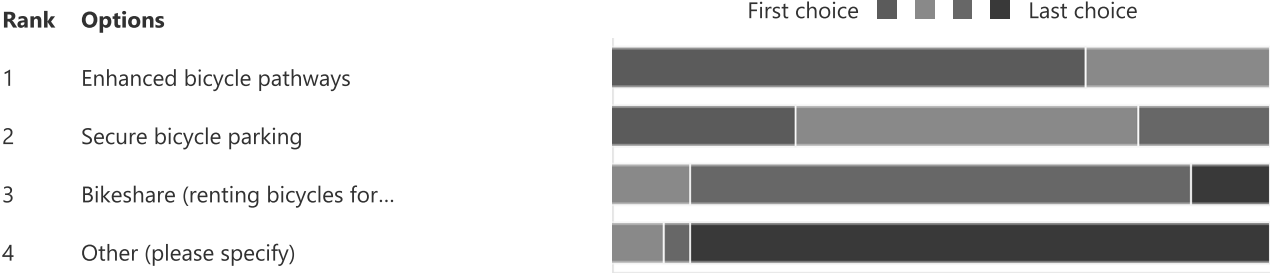
pedestrian realm
 Main Street street network Pet friendly
 Pm running uber and lyft
busses Bus Lanes realm is bleak
 signal priority bus signal
 easy to see the route OMR Lanes and bus
 Meridian mountain Mammoth people largest bottleneck
 question

28. Do you ever use a bicycle to travel around Mammoth?

- | | |
|-----|----|
| Yes | 25 |
| No | 22 |



29. What would make riding a bicycle more attractive? Rank from most effective to least.



30. If you ranked "Other" in the previous question first or second, please describe what would make riding a bicycle more attractive.



31. Why haven't you used a bicycle to travel around Mammoth? Check all that apply.

- ☒ I only visit Mammoth during ... 5
- ☒ Not comfortable riding a bicy... 6
- ☒ Not enough dedicated facilities 7
- ☒ Lack of secure bicycle parking 1
- ☒ Other 8



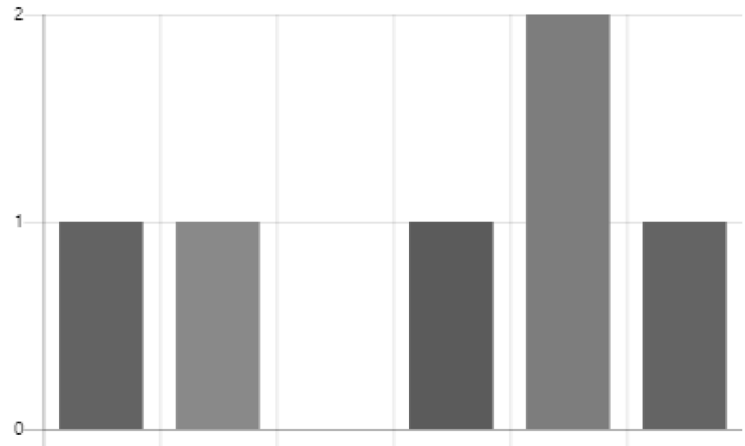
32. Have you used the Mammoth Lakes Park and Ride Lot?

- ☒ Yes 5
- ☒ No 42



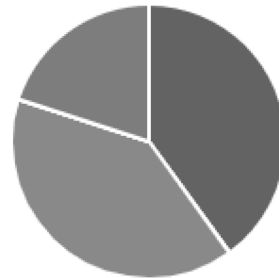
33. What is motivating you to use the park and ride lot? Please select all that apply.

Central meeting place	1
Proximity to shops/restaurants	1
Hotel/lodging isn't ready for c...	0
Carpooling	1
Transit connection to other de...	2
Other	1



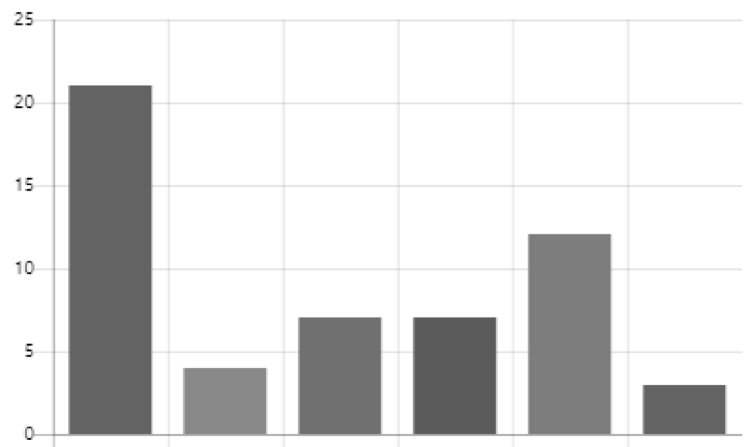
34. When you park at the Park and Ride lot, how do you get to your destination?

Walk	2
Shuttle	2
Carpool	0
Bike	0
Other	1



35. Why haven't you used the Mammoth Lakes Park and Ride Lot? Check all that apply.

Didn't know it existed	21
Didn't know it was free	4
Didn't know I could park and t...	7
Not convenient	7
Prefer to park at my destination	12
Other	3



36. In addition to the free transit services (Town Trolleys or ESTA shuttles), which other mobility services would be useful to have at the Mammoth Lakes Park and Ride Lot? Check all that apply.

