BIG PINE PAIUTE

CLEAN MOBILITY NEEDS ASSESSMENT

Final Report November 2021

Acknowledgements

Big Pine Paiute Tribe

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Funding for Project Made Possible by:

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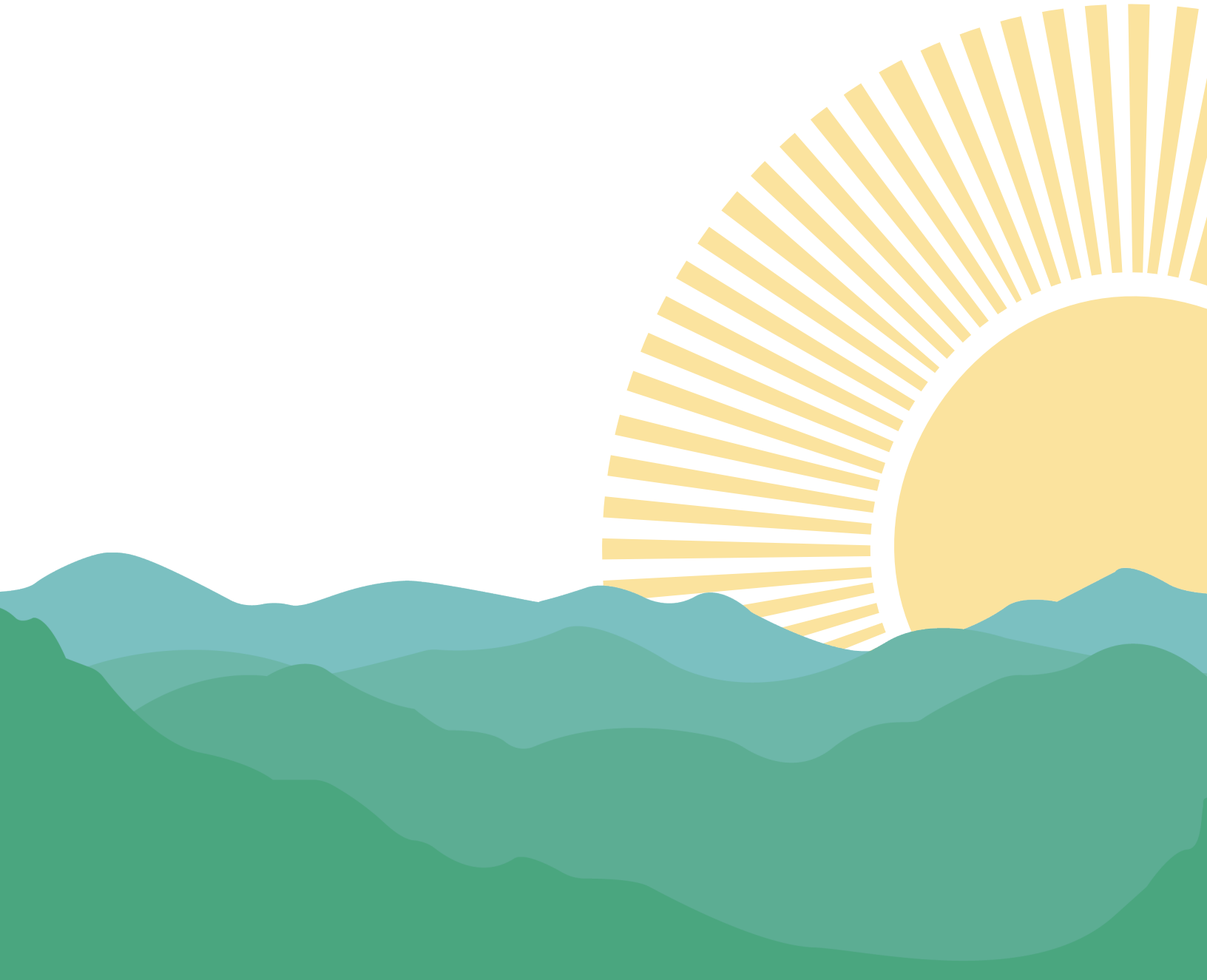
Introduction



Mobility Needs Assessment Introduction

The Big Pine Paiute Mobility Needs Assessment assessed the Tribe's mobility needs, identified transportation gaps and safety concerns, and recommends measures that increase access to safe, reliable, convenient, and affordable transportation options. The planning process included several community outreach methods designed to gather existing conditions input as well as to inform the community about feasible mobility options. The goal of this Needs Assessment is to have a guiding document that allows the Tribe to effectively pursue future funding and grant opportunities.

The Needs Assessment includes separate chapters for existing conditions, community engagement, analysis, and project recommendations. Funding for this project was made possible by the Clean Mobility Options Program and the California Climate Investments Program.

About the Clean Mobility Options Program and the California Climate Investments Program

The Clean Mobility Options Voucher Pilot Program (CMO) provides voucher-based funding for zero-emission carsharing, carpooling/vanpooling, bikesharing/scooter-sharing, innovative transit services, and ride-on-demand services in California's historically underserved communities.

CMO is funded by California Climate Investments (CCI), a statewide initiative that puts billions of Cap-and-Trade dollars to work reducing greenhouse gas emissions, strengthening the economy, and improving public health and the environment, particularly in underserved communities.

The program aims to improve underserved communities' access to clean mobility options that are safe, reliable, convenient, and affordable, by creating a streamlined application process for communities to apply for funding. The program also seeks to further mobility equity, improve local air quality, increase zero-emission vehicle adoption, reduce vehicle miles traveled, and advance workforce development in clean transportation.

About the Big Pine Paiute Tribe

The Big Pine Paiute Tribe of the Owens Valley (Tribe) is federally-recognized and located in Inyo County. Approximately two-thirds of the Tribe's 627 members reside on the Big Pine Indian Reservation (Reservation). The Reservation is 279 acres contiguous with the town of Big Pine, California.

The Reservation is bisected by a federal highway (US 395) which also serves as the main street through the town of Big Pine. The Reservation is relatively small, but residents travel to places near and far to address their daily needs. The main school for the town of Big Pine and the Reservation is located approximately one city block from the Reservation boundary on Main Street.

Big Pine is a small, rural community with a few convenience stores, gas stations, local eateries, and a small grocery store. All of the town's destinations are within walking or bicycling distance for most Tribal residents.

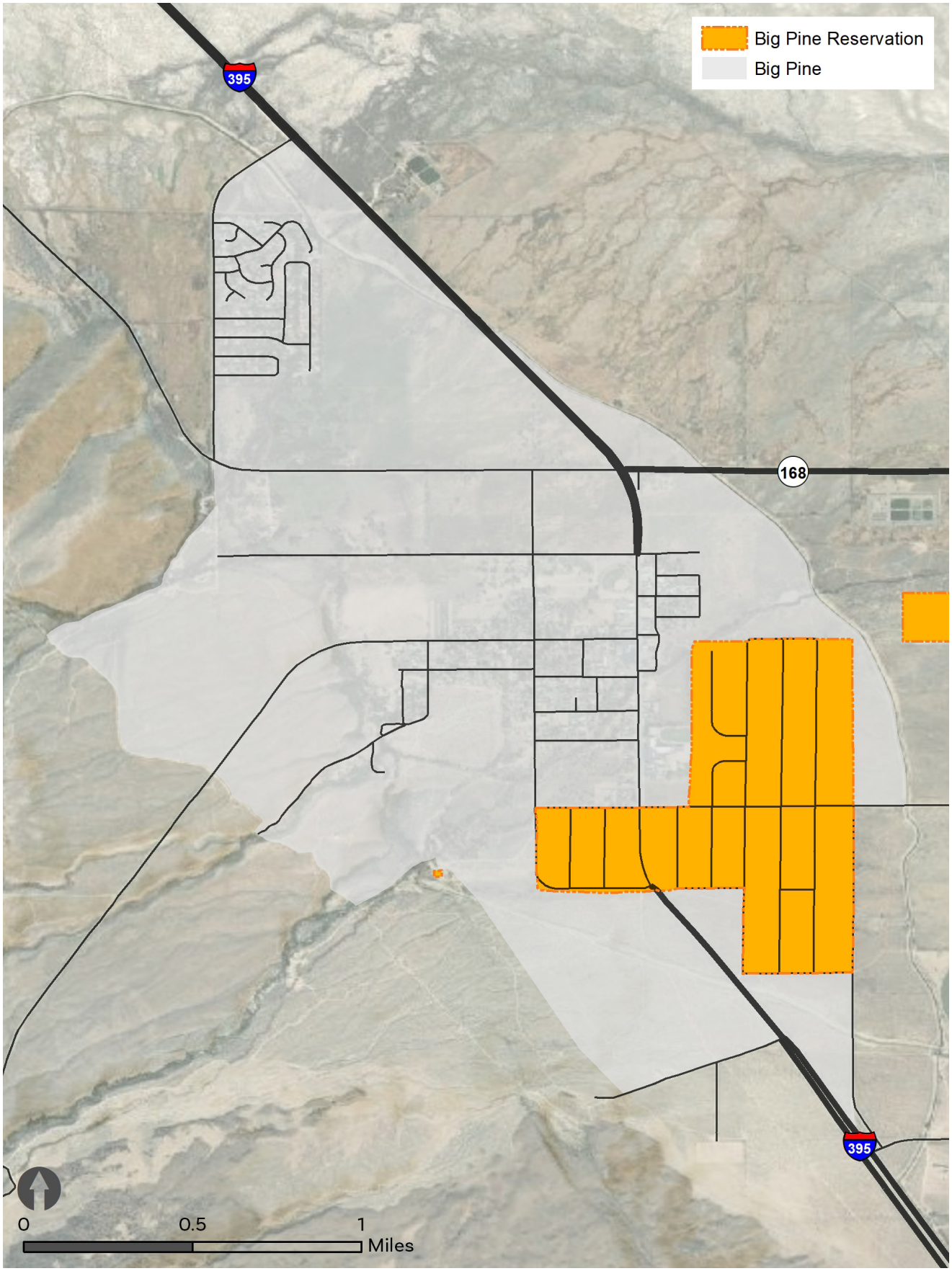


FIGURE 1-1: Big Pine Paiute Tribe Vicinity Map

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02

Existing Conditions

Existing Conditions

Understanding the existing roadway conditions, demographics, and other context-sensitive information in the Reservation and the adjacent community is important for this Needs Assessment. This chapter summarizes available data, previous reports, and field work observations to provide a meaningful understanding of the Reservation's transportation infrastructure.

Project Area and Demographics

Big Pine is a census-designated place in the Owens Valley region of Inyo County. In 2019, Big Pine was home to 1,524 people within 2.5 square miles. The Big Pine Paiute Reservation is adjacent to Big Pine, and in 2019 had 409 residents in approximately 0.4 square miles. Figure 2-1 shows the population trends in Big Pine and the Reservation from 2010 – 2019. Highway 395 is the primary north-south highway in the Owens Valley and serves as the main arterial for local traffic and through-traffic for goods movement and tourism for the many small communities along the corridor (Figure 2-2). In Big Pine, Highway 395 averaged 7,700 vehicles per day in 2016, with peak month average daily traffic 10,500 vehicles per day in 2016. Highway 395 has the highest truck volumes in Inyo County, averaging 1,468 trucks per day in 2016. Outside of populated areas, the posted speed limit on Highway 395 is 65 MPH. Approaching populated areas, posted speeds decrease quickly within a short distance.

Along Highway 395, the Reservation is approximately 26 miles north of the county seat in Independence and 16 miles south of Bishop. Bishop is the largest populated place and only incorporated city in Inyo County and provides employment and services for residents of Big Pine and the Reservation. The Mammoth Lakes mountain resort town is 58 miles north and also provides employment and services. On the north end of Big Pine, State Route 168 and Glacier Lodge Road serve as gateways to outdoor recreation opportunities in Inyo National Forest to the east and west such as the Ancient Bristlecone Pine Forest and Palisades Glacier. Highway 168 connects east to Nevada, and in 2016 averaged 8,200 vehicles per day at the intersection with Highway 395.

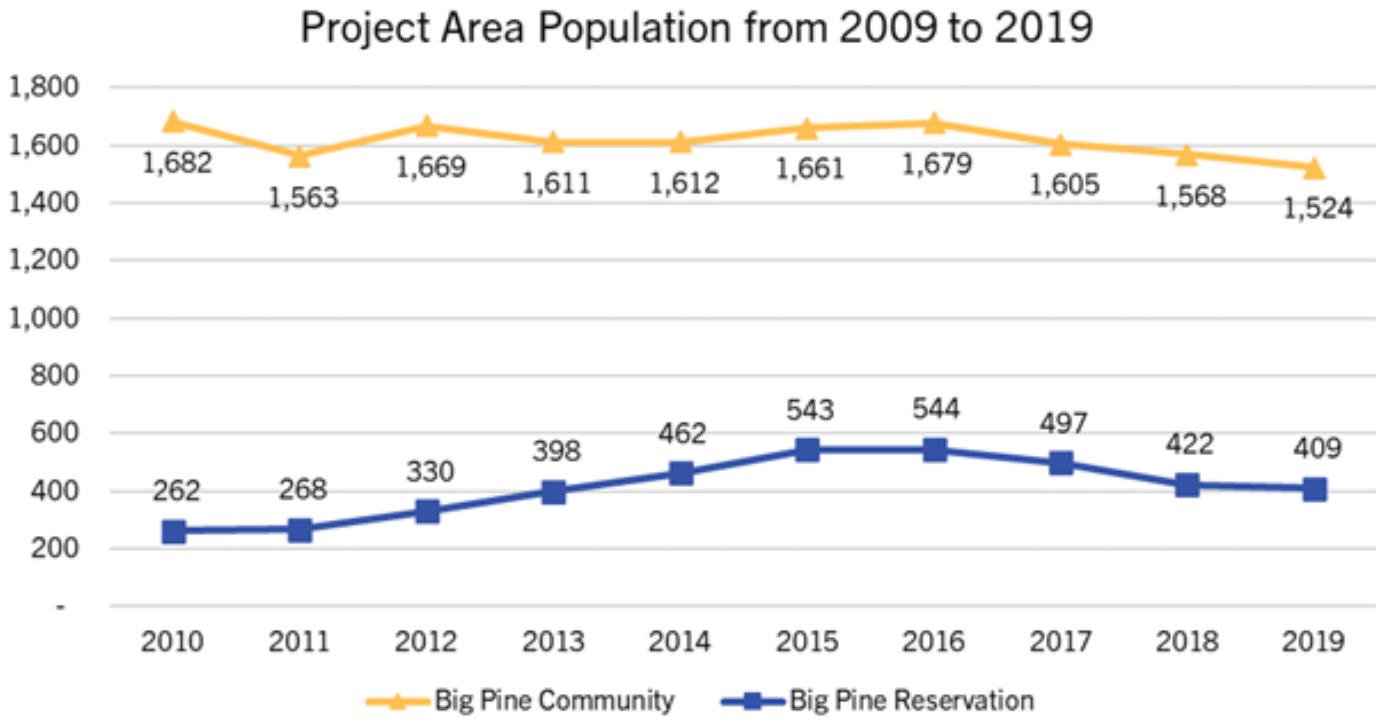


FIGURE 2-1: Project Area Population from 2009 to 2019. Note: the population of the Reservation is not part of the population of the community of Big Pine.

FIGURE 2-2: The Big Pine Paiute Reservation, Community, and other communities in the Owens Valley

Existing Transportation Infrastructure

Highway 395 bisects both Big Pine and the Reservation and serves as the community's commercial corridor (Main Street). Bartell Road and Blake Street are the Reservation's primary east-west roads, which intersect Main Street at a 2-way stop sign for vehicles and a high-visibility crosswalk for pedestrians crossing Main Street. Sepsey Lane provides the only other access to the Reservation from Main Street (Figure 2-3). The western leg of this intersection is paved, but the eastern leg is undeveloped and used informally by vehicle traffic. Main Street averages 72 feet wide with two lanes in each direction, a center turn lane, and an 8-foot-wide parking lane in each direction that is largely underutilized.

The 1.25 miles of Main Street from Sepsey Lane to Highway 168 has 10 intersections with local roads. None of the intersections on Main Street are signalized, and only three have crosswalks: Blake Street / Bartell Road, Walnut Street, and Crocker Avenue. The posted speed limit is 35 MPH from Sepsey Lane to Blake Street / Bartell Road, then 25 MPH to Baker Creek Road. The posted speed limit on the Reservation is 25 MPH. For northbound traffic, school zone signage for a 25 MPH speed limit begins adjacent to the tribal offices between Sepsey Lane and Blake Street / Bartell Road.

Infrastructure for non-motorized transportation in the project area is minimal. The only sidewalks in the study area are on Highway 395 from Blake Street / Bartell Road to Baker Creek Road/Poplar Avenue. There are no bicycle facilities on the Reservation or in Big Pine (Figure 2-3).

Transit services are minimal in the project area. The Eastern Sierra Transit Authority has one bus stop on Main Street (Figure 3) that provides service to Mammoth Lakes and Bishop to the north and Independence, Lone Pine, Inyokern, Mojave, and Lancaster to the south. The line runs on weekdays only and requires advanced reservations. Fares to Independence are $4.50 and $3.75 to Bishop, with discounts available for elderly, individuals with disabilities, and youth.

Intersection of Highway 395 and Bartell Road

Residential road posted speed limit

Possible sidewalks and bike lanes along Watson Street

Missing sidewalks and bike facilities along Blake Street

Possible sidewalks and bike lanes along along Blake Street

Missing sidewalks and bike facilities along School Street

Possible sidewalks along Watson Street

Opportunity for multi-use path along Baker Ln

Opportunity for multi-use path and creek crossing

Opportunity for multi-use path along Big Pine Canal

Existing unsignalized crossing at Highway 395 and Bartell Rd

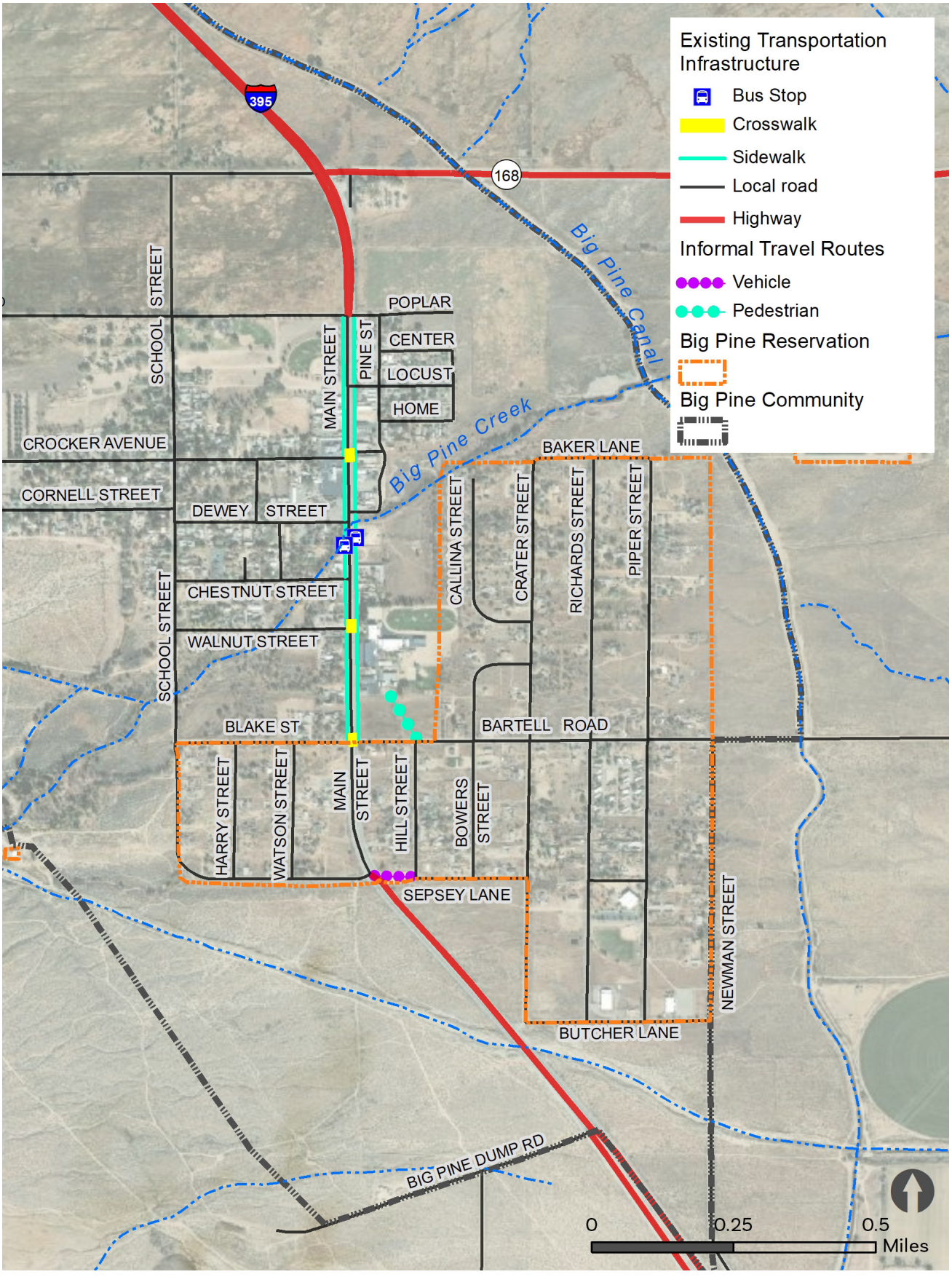


FIGURE 2-3: Existing infrastructure for motorized and non-motorized transportation

Land Use: Travel Generators and Attractors

In the broader Big Pine community, residential areas extend east and west of Main Street from Sepsey Street to Baker Creek Road (Figure 2-4). The Reservation is mostly residential land, though a small office park houses the tribal offices and a weekly summertime farmer's market. Other community destinations include a community gymnasium (Alan Spoonhunter Memorial Gym) on Spratt Lane and a community wellness center on Butcher Lane, both located between Richards Street and Piper Street on the southern part of the Reservation (Figure 2-4). A short distance east of the Reservation, Bartell Road crosses the Big Pine Canal, along which residents utilize a north-south dirt road for recreation.

Approximately 150 kindergarten through high school students attend Big Pine Schools, which is adjacent to the Reservation boundaries east of Main Street and north of Bartell Road. Students commonly use an informal trail across a vacant lot from Bartell Road to a back entrance of the school (Figure 2-3)

Collision History

From 2009 to 2020, there were 43 vehicle collisions in the broader Big Pine area. Four of these collisions occurred on the Reservation, one of which involved a bicyclist on Hill Street in 2009. There was one pedestrian-involved collision in the broader Big Pine area, which occurred in 2010 at the intersection of Main Street and Crocker Avenue. Four collisions during this time period – 9.3% of total – involved a large truck on Highway 395.

Previous Planning Efforts

1997 and 2008 Big Pine Reservation Transportation Plans

The Reservation has undergone two transportation planning efforts with the following goals:

- Document the public roads that comprise the Indian Reservation Road System (IRR) on the Reservation
- Collect field data to assess transportation needs on the Reservation
- Conduct transportation engineering and planning evaluations to identify existing and future transportation deficiencies of the Reservation roads
- Develop a plan for improving Reservation Roads to meet the existing and future needs of the Reservation
- Identify and prioritize specific improvements and the timeline in which they should be implemented.

The plans recommended safety signage and striping for roads as the top priority, followed by improvements to the intersections of Butcher Lane, Blake Street and Bartell Road, and Sepsey Street with Highway 395. A notable – but lower priority – recommendation from the 1997 Plan was 40-foot-long, 34-foot-wide bridge at the northern end of Callina Street, possibly connecting to Locust Street in Big Pine with a new road. This project was identified as mid-term priority with an implementation timeline of six to ten years. Pedestrian or bicycle improvements are not mentioned as part of this recommendation nor anywhere in these plans.

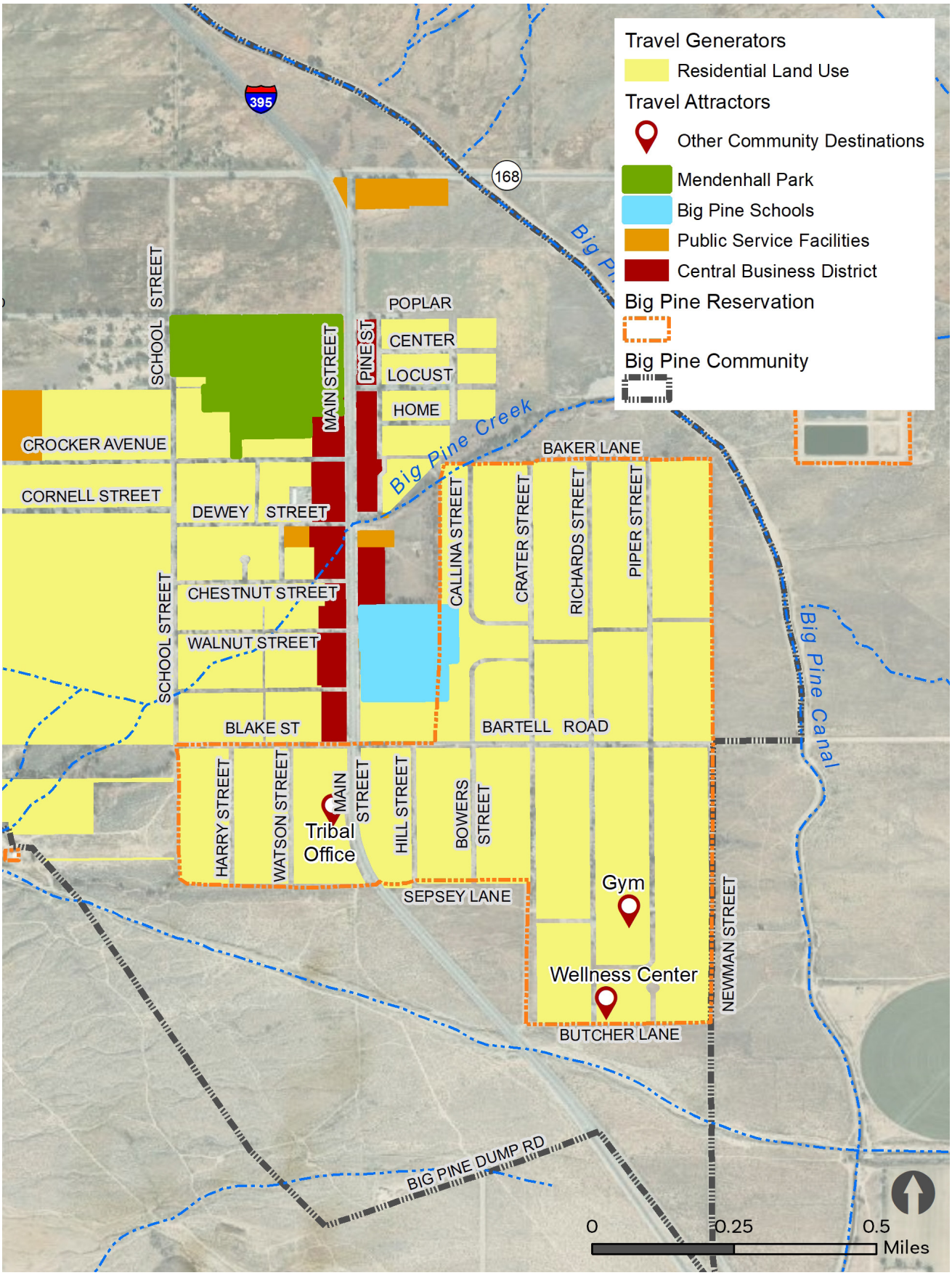


FIGURE 2-4: Travel Generators and Attractors in the broader Big Pine Community

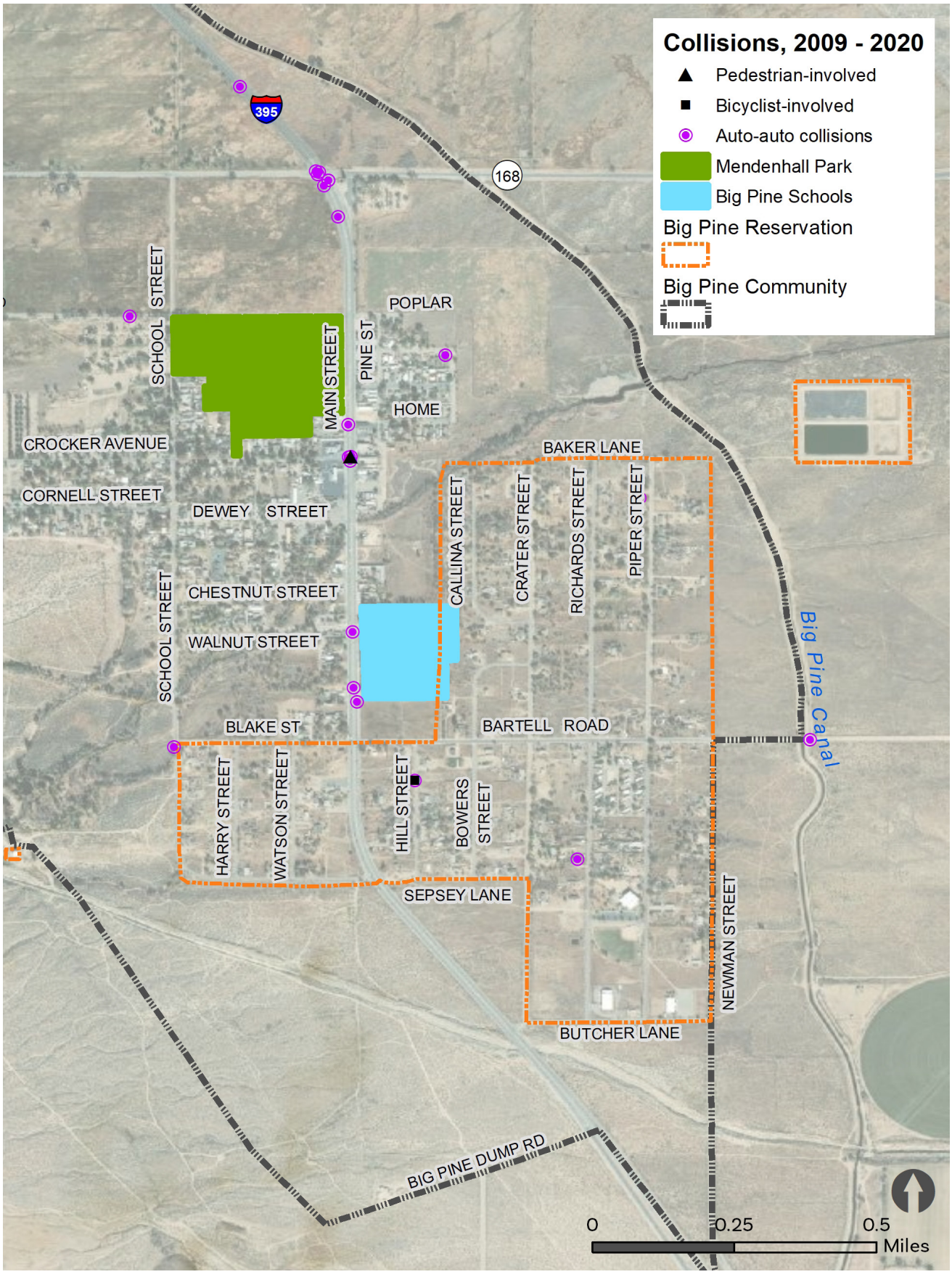


FIGURE 2-5: 2009-2020 Recorded Collisions in the broader Big Pine Community

2019 Inyo County Regional Transportation Plan

The 2019 Inyo County Regional Transportation Plan is a 20-year plan for coordinating regionally significant improvements and policies for motorized and non-motorized transportation. The following transportation issues and needs were recorded through community outreach for this plan:

- Speeding is an issue through the Reservation.
- There is a need for more formal roads.
- The intersection of US 395 and Butcher Lane needs improvements for a proposed development, as well as the intersection of Highway 395 and Sepsey Lane, which is not an authorized intersection.
- There is a need for increased public transit service.
- Safe crossings of Highway 395 are an issue identified by staff at Big Pine Schools
- There is a need to improve connectivity and create a safe bicycling and walking alternative other than Highway 395 between Big Pine and the Reservation

Facility	From	To	Proposed Project Description	Length
Steward Ln	US 395	Newman St	Expand shoulder - add shoulder stripes or bike lanes and signage.	0.1
County Rd	Keough Hot Springs Rd	US 395	Expand shoulder - add shoulder stripes or bike lanes and signage.	7.1
County Rd	Reynolds Rd	US 395	Expand shoulder - add shoulder stripes or bike lanes and signage.	1
Fish Springs Rd	US 395	US 395	Expand shoulder - add shoulder stripes or bike lanes and signage.	3
Newman St	Bartell Rd	Steward Ln	Expand shoulder - add shoulder stripes or bike lanes and signage.	1
Steward Ln	Newman St	Big Pine Canal	Expand shoulder - add shoulder stripes or bike lanes and signage.	0.1
US 395	County Rd	Fish Springs Rd	Add shoulder stripes or bike lanes, share the road signage.	5.2

TABLE 2-1: Unfunded Bicycle Facility Projects in the broader Big Pine Community

03

Public Outreach

Outreach Plan Overview

The community engagement process was developed in a comprehensive manner to ensure Big Pine Paiute residents and stakeholders had ample opportunities to comment on the Clean Mobility Needs Assessment. Outreach strategies included in-person and online tools such as phone calls, one-on-one meetings, project website, and project survey. Due to the COVID-19 pandemic, the Big Pine Reservation held the right to shift in-person outreach events when needed to abide by all health and safety regulations.

Outreach strategies and events included:

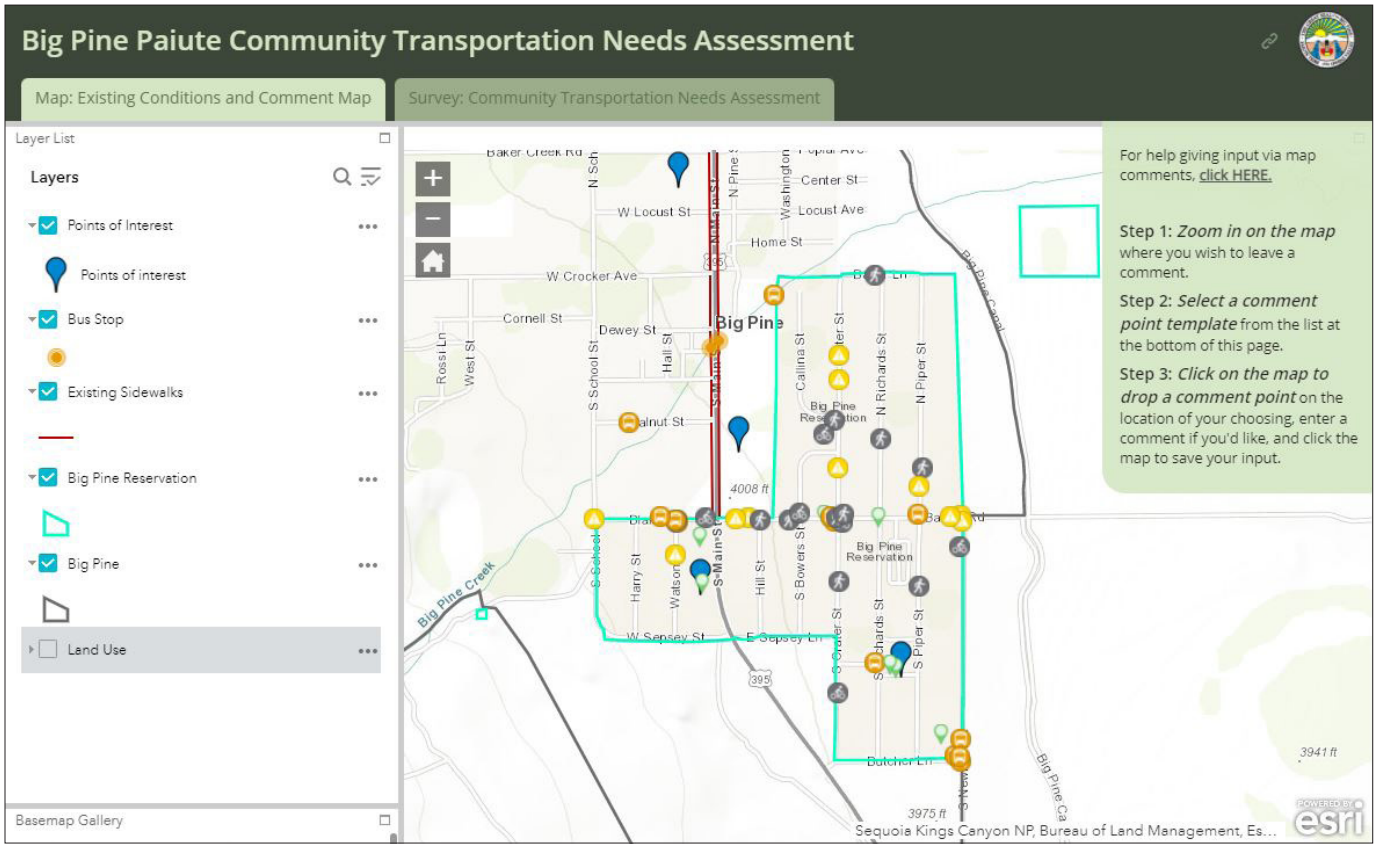
- Workshop flyers and postcards
- Social media announcements
- One online and printed survey
- One in-person community workshop
- Stakeholder phone calls
- One online map survey

Outreach Materials

The project team created numerous outreach materials to promote and gather feedback for the Needs Assessment. Social media flyers that contained workshop details were posted to Facebook to inform community members about upcoming events.

A project survey was designed via Alchemer to gather valuable existing conditions information. The survey was announced via social media and other community meetings throughout the planning process. Survey results were summarized and presented as infographics for Workshop #1.

The team also created a dedicated project website and an online comment map to gather location-specific feedback. The comments posted to the online map will be used to assess the existing conditions and needs for this planning process.



Project website and online comment map

Community Outreach Events

Workshop #1

The first community workshop took place on Monday, June 21, 2021 at the Alan Spoonhunter Memorial Gym. The goal of this workshop was to gather input from residents on their current travel behaviors and their preferences for future transportation enhancements. Feedback collected during this event would be used to determine solutions to increase access to safe, reliable, and affordable transportation options on Reservation lands and to neighboring destinations.

The workshop included a presentation by the planning team and an additional electric shuttle consultant, interactive voting exercises, aerial table maps, electric vehicle, and electric bicycle demonstrations. A local community group was also invited for food and refreshments.

Over 12 residents and stakeholders attended this workshop.

Workshop #2

The second community workshop was a two-day community event that took place on August 17 and August 18, 2021. The goal of this workshop was to provide a project update and to collect additional feedback that would help make informed decisions on future mobility improvements. The workshop was supported by information presented by the Green Transportation Summit that was broadcast live during the community event. Discussion topics during the workshop were organized by the following categories:

- Sidewalks
- Vegetation planting
- Roaming dogs
- Bicycle safety
- Bus access/E-shuttles
- Signage
- Street lights
- Electric vehicles

Workshop 1 flyer

Workshop 2 flyer

Workshop 1 participants

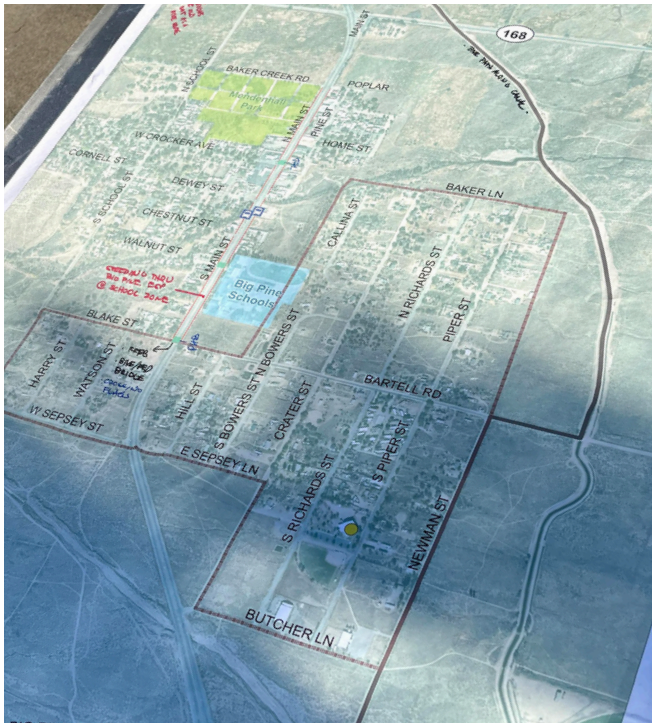
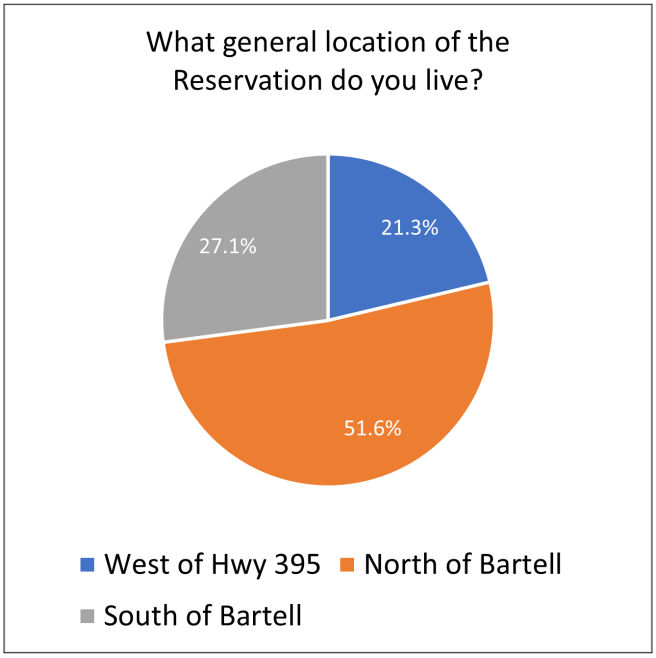
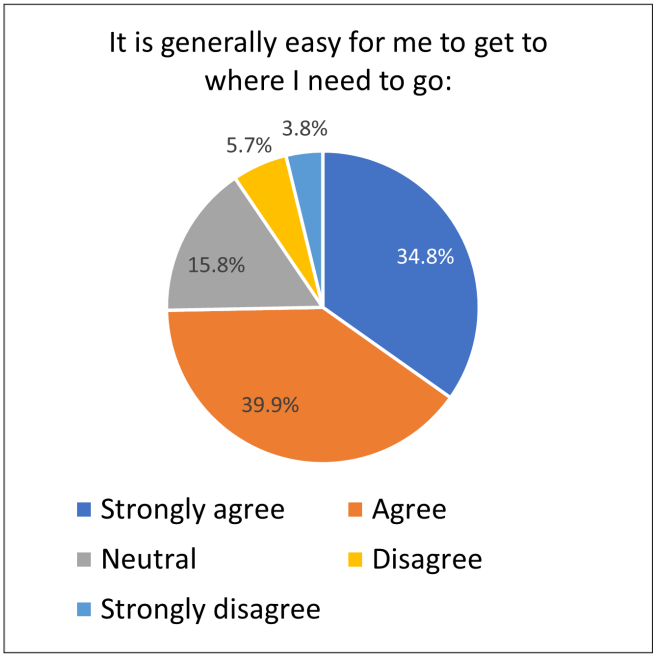

168
BAKER CREEK RD
POPLAR
MAIN ST
PINE ST
HOME ST
W CROCKER AVE
CORNELL ST
DEWEY ST
CHESTNUT ST
WALNUT ST
BAKER LN
CALLINA ST
N RICHARDS ST
PIPER ST
Big Pine Schools
BLAKE ST
HARRY ST
WATSON ST
N BOWERS ST
BARTELL RD
HILL ST
CRATER ST
W SEPSEY ST
E SEPSEY LN
S BOWERS ST
S PIPER ST
S RICHARDS ST
NEWMAN ST
BUTCHER LN

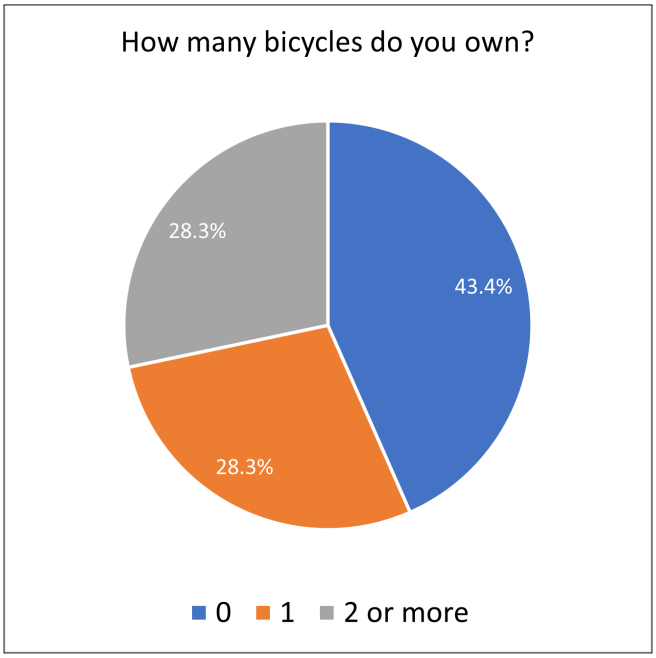
FIGURE 3-1: Story Map Input

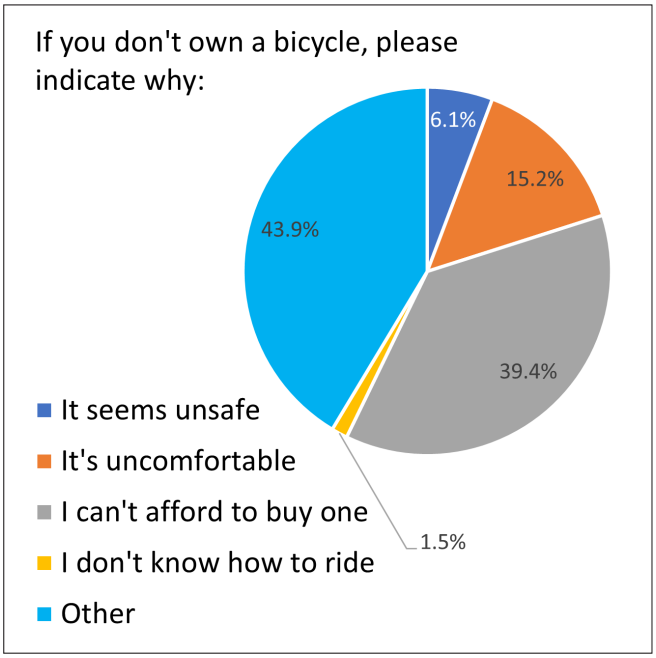
Survey Summary

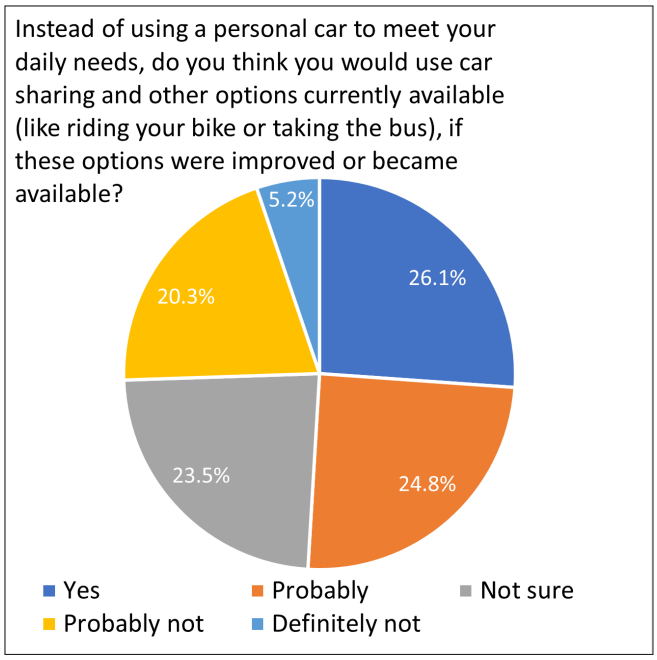
The Needs Assessment survey was distributed to all members of the Reservation through social media and via mail. The planning team encouraged community members to complete the survey by promoting incentive giveaways. A total of 176 surveys were completed. The following graphics highlight a few key questions that shed insight into the Reservation's mobility challenges and opportunities. A full summary of the survey results can be found in Appendix A of this document.

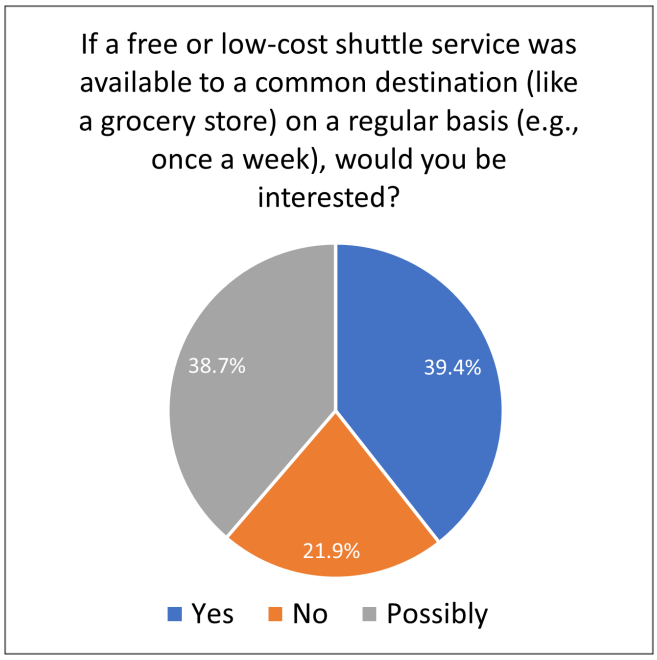


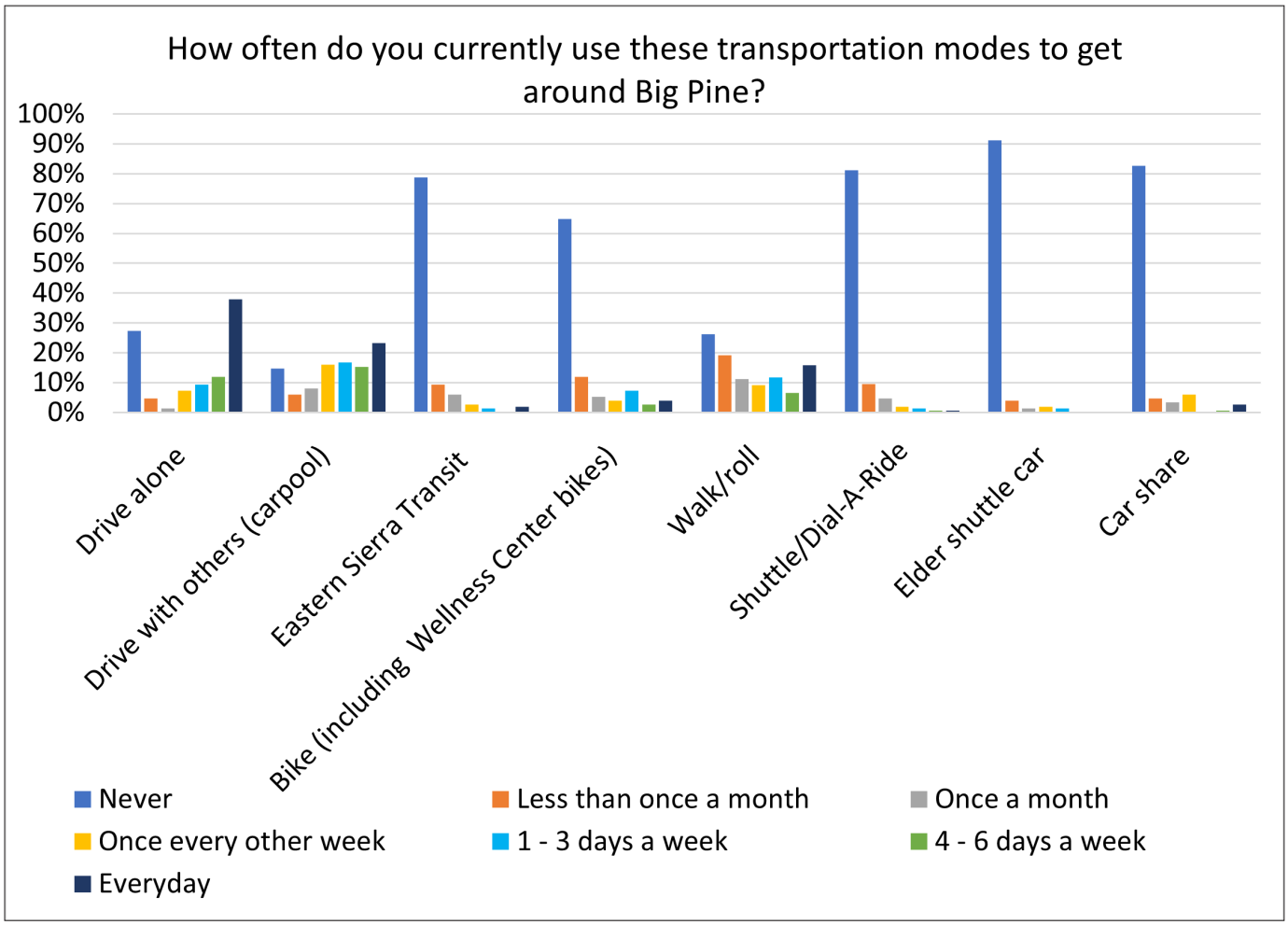


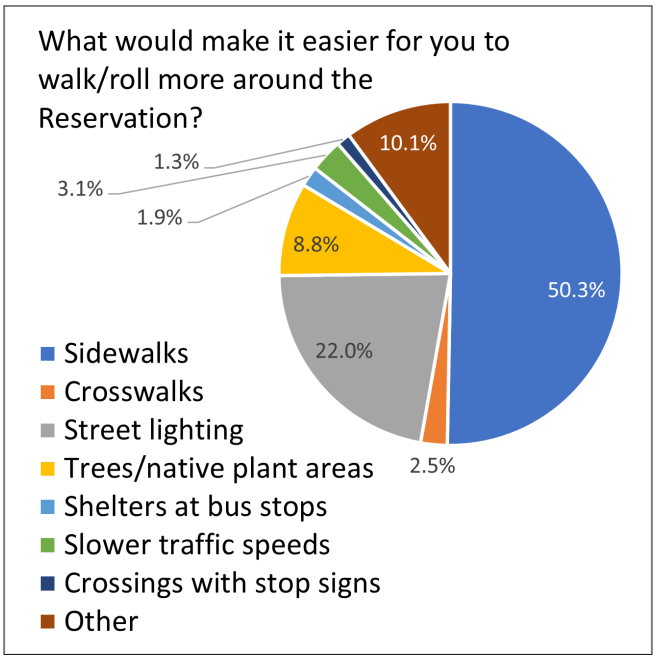


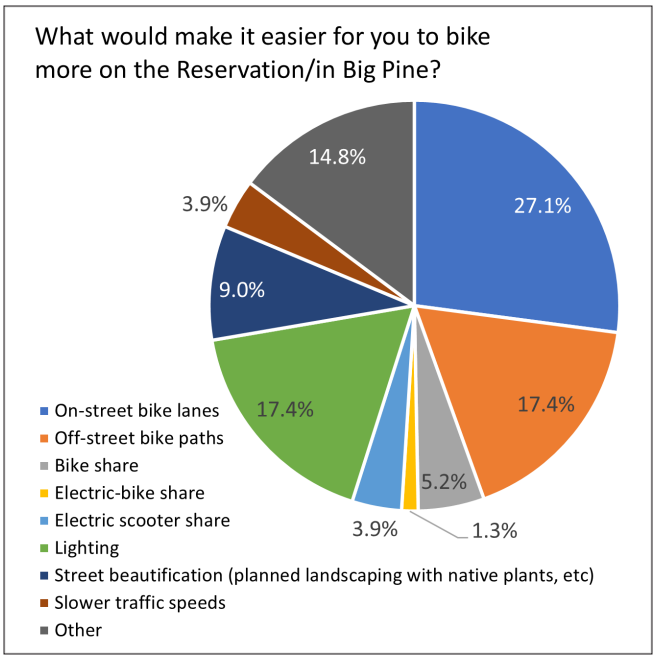


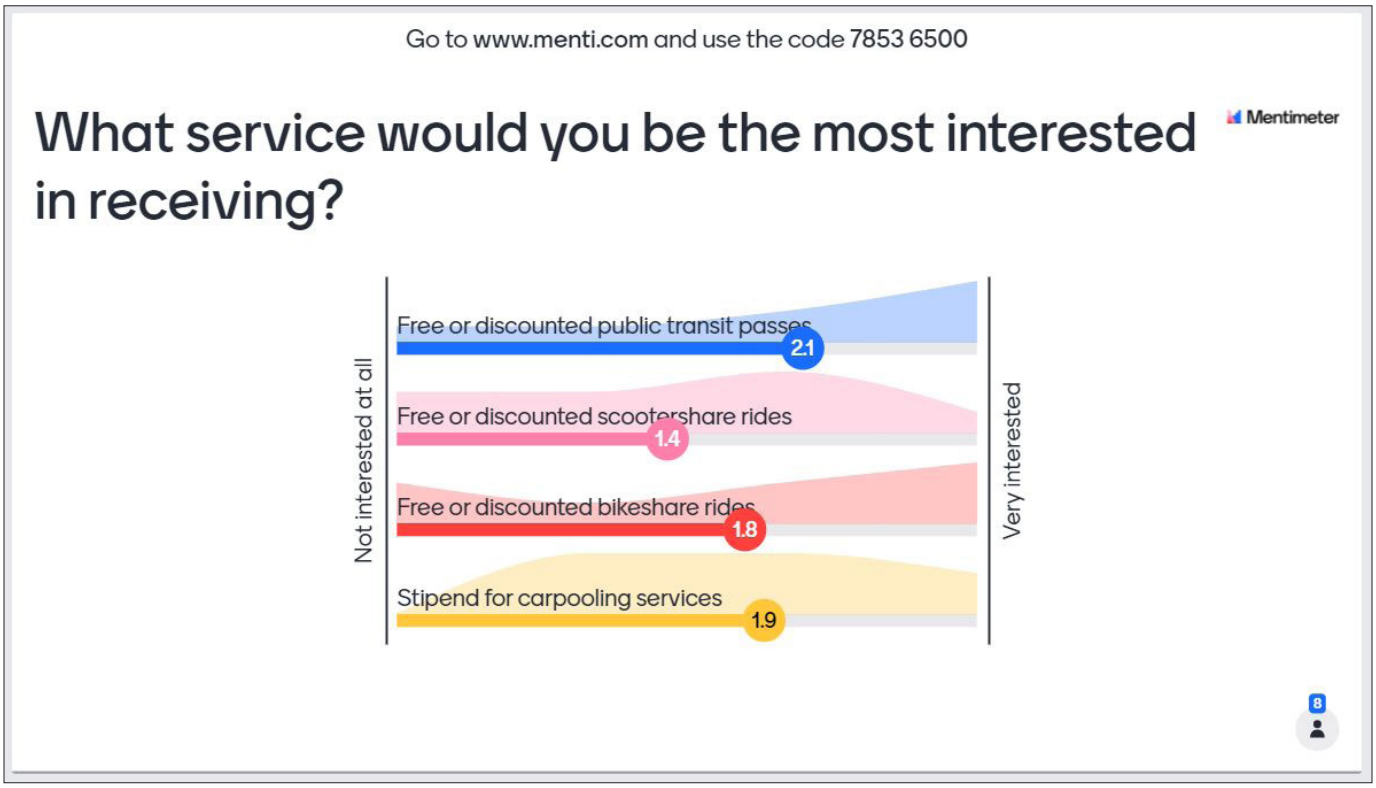

Instead of using a personal car to meet your daily needs, do you think you would use car sharing and other options currently available (like riding your bike or taking the bus), if these options were improved or became available?
26.1%
24.8%
23.5%
20.3%
5.2%
Yes
Probably
Not sure
Probably not
Definitely not


If a free or low-cost shuttle service was available to a common destination (like a grocery store) on a regular basis (e.g., once a week), would you be interested?
39.4%
21.9%
38.7%
Yes
No
Possibly


How often do you currently use these transportation modes to get around Big Pine?
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
Drive alone
Drive with others (carpool)
Eastern Sierra Transit
Bike (including Wellness Center bikes)
Walk/roll
Shuttle/Dial-A-Ride
Elder shuttle car
Car share
Never
Less than once a month
Once a month
Once every other week
1 - 3 days a week
4 - 6 days a week
Everyday


What would make it easier for you to walk/roll more around the Reservation?
50.3%
2.5%
22.0%
8.8%
1.9%
3.1%
1.3%
10.1%
Sidewalks
Crosswalks
Street lighting
Trees/native plant areas
Shelters at bus stops
Slower traffic speeds
Crossings with stop signs
Other


What would make it easier for you to bike more on the Reservation/in Big Pine?
27.1%
17.4%
5.2%
1.3%
3.9%
17.4%
9.0%
3.9%
14.8%
On-street bike lanes
Off-street bike paths
Bike share
Electric-bike share
Electric scooter share
Lighting
Street beautification (planned landscaping with native plants, etc)
Slower traffic speeds
Other


Go to www.menti.com and use the code 7853 6500
What service would you be the most interested in receiving?
Mentimeter
Free or discounted public transit passes
2.1
Free or discounted scootershare rides
1.4
Free or discounted bikeshare rides
1.8
Stipend for carpooling services
1.9
Not interested at all
Very interested

Focus Group Input

Input Shared Among Both Groups

The following section is a summary of the input collected through a series of focus group meetings.

- Sidewalks installed on Bartell and all the way along Blake to School St. Piper St., along parts of Callina or Crater St., and School St. along the Reservation boundary north to Big Pine Creek.
- Another sidewalk location would be along Hwy 395/Main st. from the Tribal main office (Sepsey intersection) to connect up with the Blake St. intersection sidewalk.
- Designated covered bus/e-shuttle stops at three intersections: Blake St. in the Farmer's Market parking area corner, Bartell and Crater St., Piper St. behind the Big Pine Indian Education Center. These would also double as school bus stops.
- Make Baker Lane a more multi-use road for all types of transportation and install the bridge over the creek for easier access to Big Pine proper.
- The area of Baker Lane, west of Callina St. to west to Main St. is a safety concern for people walking or biking because of homeless or intoxicated people there. It is a sheltered, semi-hidden area. Maybe if it got consistent use or was well traveled these would not be issues. Another option is to install a new trail or paved walkway/bike path running west to east at Callina, where there already is an intersecting walking trail north of the school, that runs across that northern part of the Reservation to Newman.

Both groups are undecided about where and if bike lanes should be installed or at least until the loose dogs issue is dealt with. Both agree a viable option for dealing with unconfined dogs is to install fencing where residents want to have it (around the dog owners' yard). Since people who do not already have fencing cannot afford to buy and install it, we could use project money to purchase materials and labor to install fencing.

There are state worker programs or our own Tribal Employment Rights Ordinance (TERO) workers that can install fencing. Bike lanes should be installed where the road is wide enough and on streets that are most travelled. The group talked about both Blake and Bartell streets, Baker Lane if it can be made safe, Newman Street and maybe School Street.

Streetlighting to help with safety was also discussed. Main intersections should have solar powered streetlights that are fully shielded to protect our dark night skies. These intersections would include: Blake and Main St., Harry and Blake or Sepsey, Crater and Bartell, middle of Callina in the north part of the Reservation, middle of Richards Piper and Newman Streets on both north and south sections of the Reservation.

Both groups also like the idea of Bioswales and/or tree planting (for shade) on Bartell and Newman Streets. There could also be the rectangular cement planter boxes installed along these two streets or at main intersections depending on the cost. Both groups asked who will take care of these plants? The idea of planting fruit or nut trees in people's yards was discussed because it will help with food security, better air quality, safety, and overall beautification. Using planter barrels or other containers in resident's yards would depend on demand and cost.

The E-shuttle(s) idea is popular all around. Residents would like to see 1 or 2 shuttle buses purchased and a charging station installed close to the Main office location and right off Hwy 395. These shuttle buses would help Elders and disabled residents go to Bishop for supplies, groceries, doctor appointments. Additional input included:

- The schedule could be more flexible than the existing Eastern Sierra Transit buses as they are now running. This makes it possible for more people to get to desired locations during convenient times of day, especially for work commuters to Bishop or Mammoth, Independence.
- If people are already using their own cars or family cars to get around there does NOT appear to be a desire to carpool for goods and services, or when traveling to work. Carpooling would be used for recreational, socializing activities or if a family member does not have other means of transportation.
- The Elder focus group wants to have access to and make better use of the existing Elder shuttle car that was purchased in early 2021.

Where the Elder focus group (met on 9/27/21) differs in their more detailed responses would be to have the E-shuttles equipped with handicap access chair lifts and could provide door to door pick up for residents. The commuter group (met on 10/7/21) wanted to make sure the shuttles have bike racks on the back. They were also asking how many people would use the E-shuttles or a local Tribal car share. The car share could become popular if a few people started using it on a regular basis and for car pooling purposes when going to similar, close by locations. It was felt that car sharing would take more coaxing for people to try it than E-shuttles.

Where the Elder Focus Group Input Differed

- Planting and greening project would only happen if there was enough project money left over.
- Maybe purchase upgraded wheelchairs for easier mobility of residents that use a wheelchair or electric scooter carts.
- Provide specific transportation modes for disabled residents such as the IMAH shuttle bus.
- One of the Elder's that participated wanted to own an E-scooter and not do the share program.

Commuter Focus Group Specific Input

- Like the idea of having E-bike and/or E-scooter share as part of future clean mobility options.
- It was shared that most Tribal residents are cautious when presented with something new or slow to change their current travel habits/modes of transportation.
- A car share, bike/scooter share program would need to become more common place or used by many people before it will be seen as useful or contributing to better lifestyles.
- The car share, bike/scooter share docking stations would need to be equally distributed on the Reservation. One could be near the main offices area and one near the Wellness Center or Education Center.

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04

Analysis

Analysis

Common community destinations in Big Pine were used in a travelshed analysis to show the importance of safe and direct infrastructure for walking and biking in Big Pine. The destinations used in the travelshed analysis were Big Pine Schools, bus stops, the tribal office, and Mendenhall Park.

The maps show in yellow the area that can be reached from each destination within a ten-minute walk. A large percentage of Big Pine is covered by each walkshed, suggesting that non-motorized modes of transportation can be effectively used to reach these everyday destinations.

Existing transit stop on Main Street

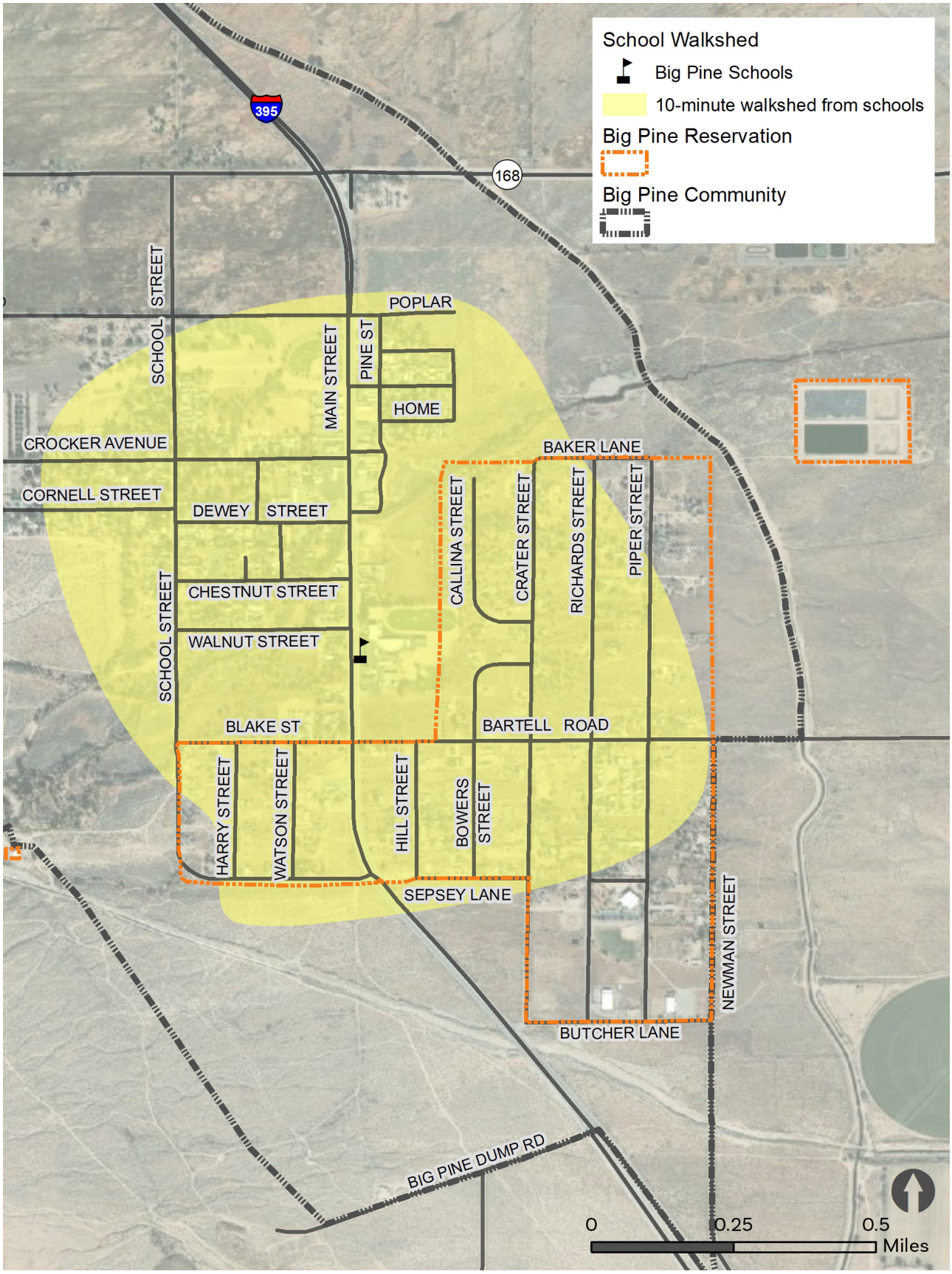


FIGURE 4-1: Big Pine schools 10-minute walkshed

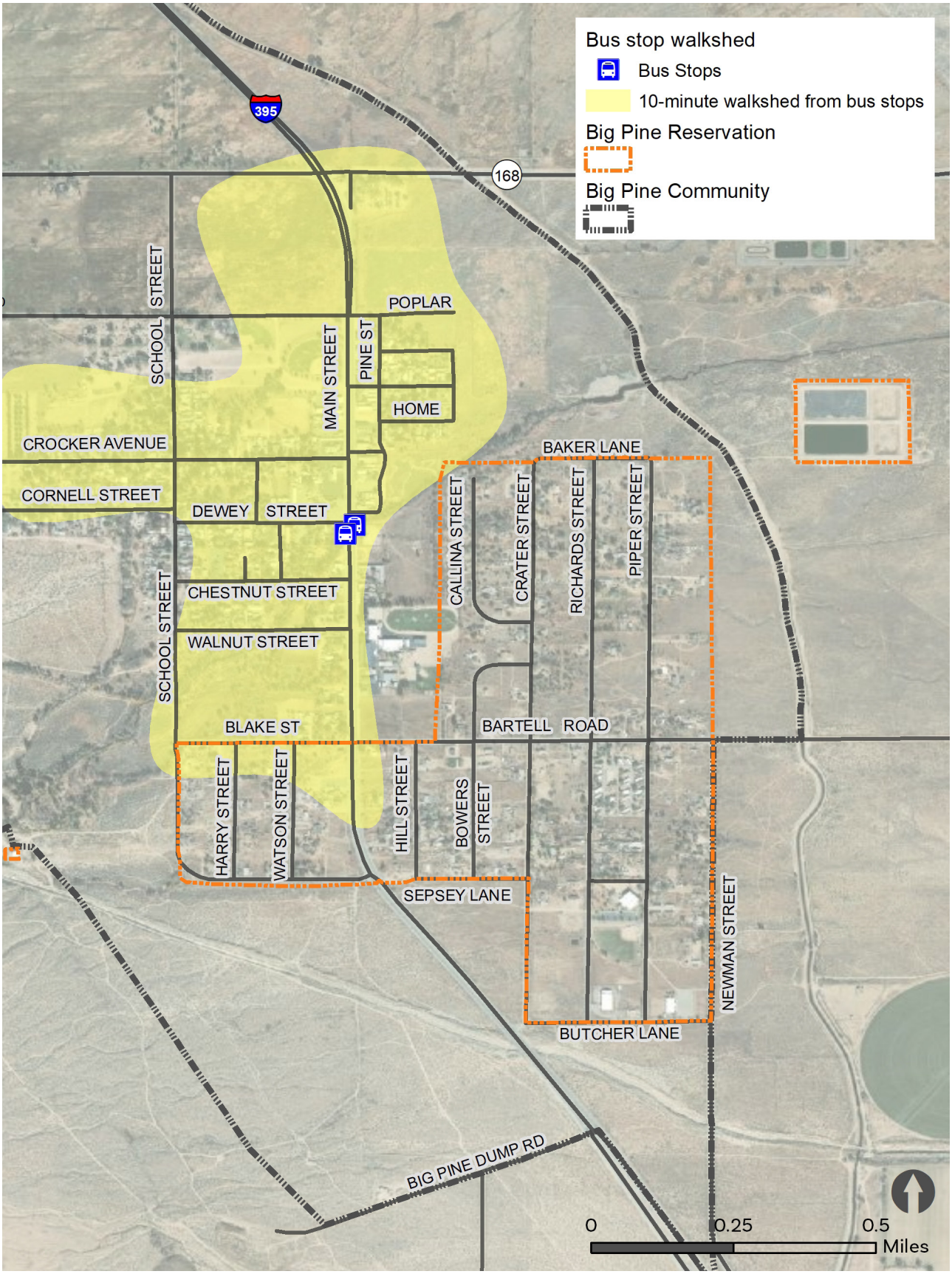


FIGURE 4-2: Transit stop 10-minute walkshed

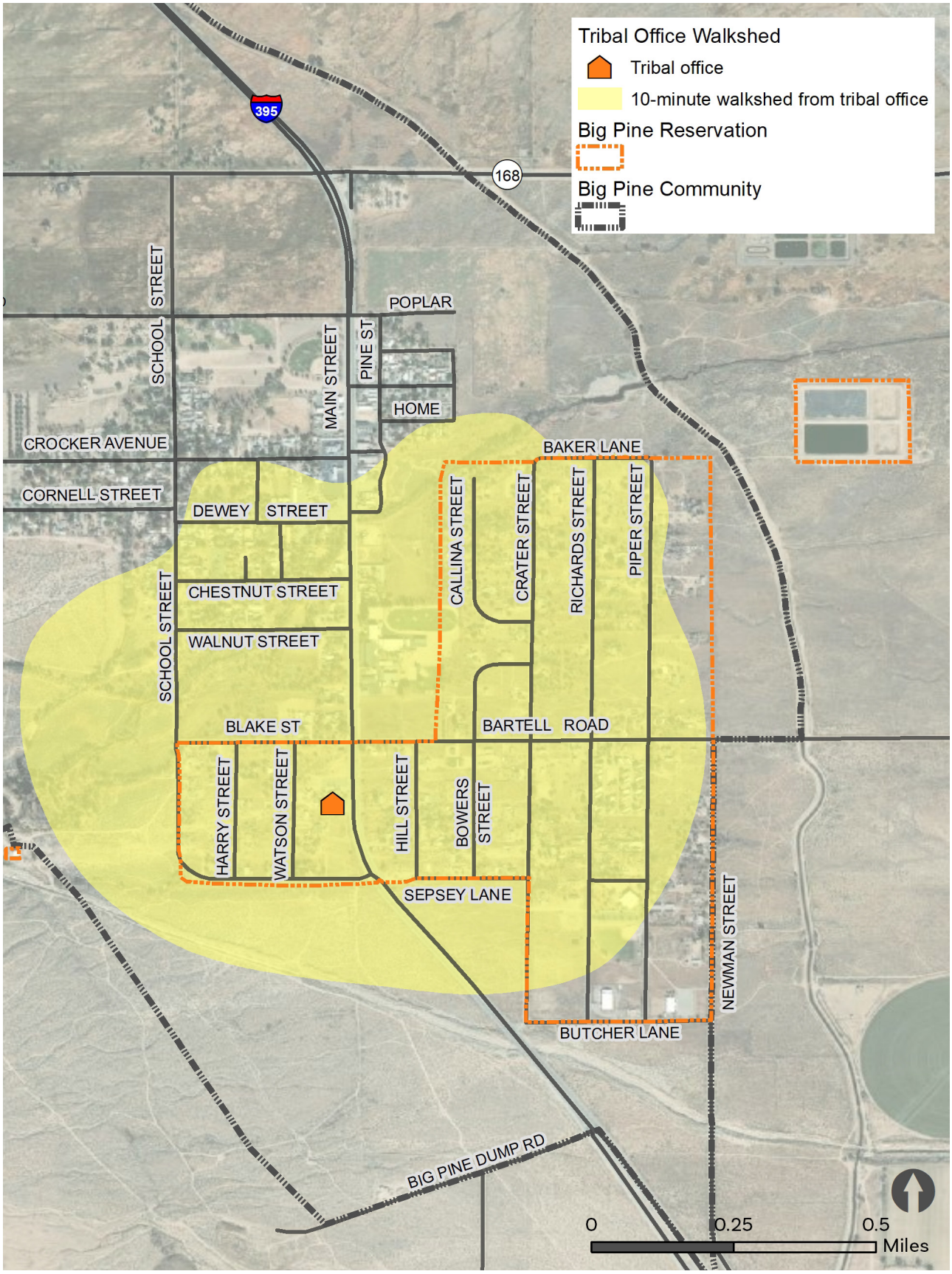


FIGURE 4-3: Tribal offices 10-minute walkshed

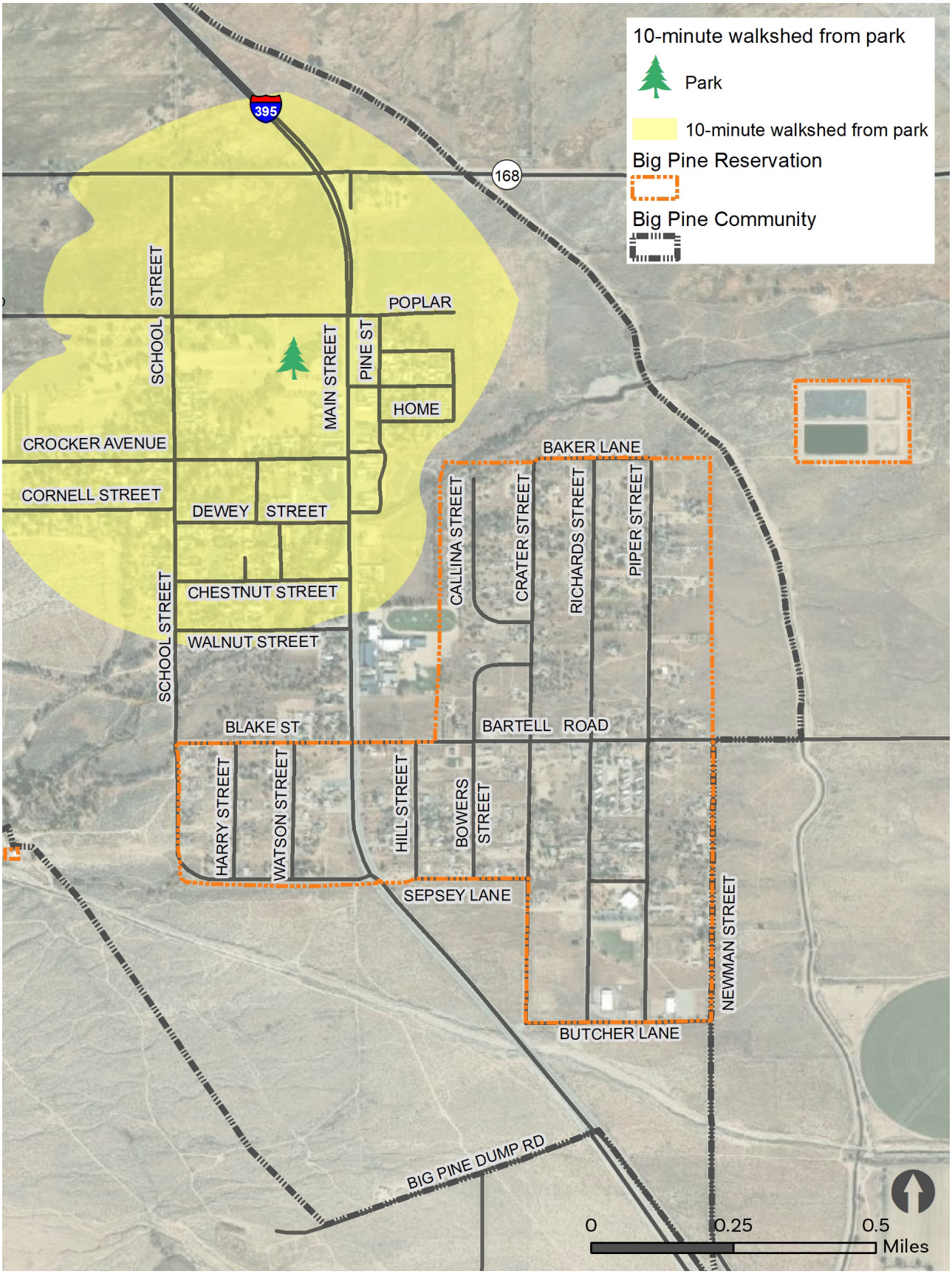


FIGURE 4-4: Park 10-minute walkshed

05

Recommendations

Recommendations Overview

This chapter describes the physical improvements recommended to enhance bicycling, walking, transit, and other related forms of transportation. The project recommendations include both short-term and long-term improvements and are meant to help the Big Pine Paiute Reservation pursue future funding opportunities, additional design and engineering opportunities, public/private partnerships between agencies and businesses, and help keep track of mobility improvements made on the Reservation and in the Big Pine community. The chapter contains maps and tables that detail location, extent, and type. The project recommendations are designed to support the findings of this Mobility Needs Assessment.

There is also a section dedicated to standard mobility infrastructure elements to inform the reader of potential treatments that can be constructed throughout the community.

Pedestrian Treatments

Pedestrian infrastructure is the most basic and fundamental type of transportation. Items such as sidewalk, crosswalks, and curb ramps ensure equitable multi-modal transportation because they serve populations that may not be able to afford or have the ability to ride bicycle, those that rely on transit and walking, and those affected by disability mobility.

High Visibility Crosswalks

High visibility crosswalks can be installed at existing or proposed crosswalk locations. They are designed to both guide pedestrians and to alert drivers of a crossing location. A bold crosswalk pattern is intended to enhance visual awareness.

Curb Extension/Bulb-out

Curb extensions, also called bulb-outs, extend the curb line outward into the travel way, reducing the pedestrian crossing distance. Typically occurring at intersections, they increase pedestrian visibility, reduce the distance a pedestrian must cross, and reduce vehicular delay. Curb extensions must be installed in locations where they not interfere with bicycle lanes, separated bikeways, driveways, or transit stops.

It's common for communities to have minimum road widths for fire truck access where those widths are not impeded by curb extensions or median islands. These minimums tend to range from 14 feet to 20 feet, with 16 feet and 18 feet being the most common minimum widths. The minimum will depend on the size of the city's fire trucks and the level of comfort of the fire department with those road widths.

Signals and Warning Devices

Traditional pedestrian signals remain the gold standard for high quality pedestrian crossings, although some cases warrant new signal technologies. Pedestrian Hybrid Beacons (PHBs) and Rectangular Rapid Flashing Beacons (RRFBs) are special signals used to warn and control traffic at unsignalized locations to assist pedestrians in crossing a street via a marked crosswalk. Either of these devices should be installed at locations that have pedestrian desire lines and that connect people to popular destinations such as schools, parks, and retail. Research has shown that PHBs tend to have a 90 percent motorist compliance rate versus RRFBs, which tend to have an 80 percent motorist compliance rate. Traditional pedestrian signals tend to have around a 100 percent compliance rate, which improves safety over other types of signals, and therefore are preferable for pedestrian facilities.

Signals and warning devices should be paired with additional pedestrian improvements, where appropriate, such as curb extensions, enhanced crosswalk marking, full cut-off street lighting, roadside refuge islands/water capture areas, corresponding signage, and advanced yield markings to mitigate multiple threat crashes on multi-lane roadways.

High visibility crosswalk

Curb extensions

Rectangular Flashing Beacons (RRFB)

Pedestrian Hybrid Beacon (PHB)

Bicycle Treatments

Providing safe, convenient, and comfortable bicycle travel should always be the goal. The state of practice for bicycle travel in the United States has undergone a significant transformation, much of this may be attributed to bicycling's changing role in the overall transportation system. No longer viewed as an "alternative" mode, it is increasingly considered as legitimate transportation that should be actively promoted as a means of achieving community environmental, social, and economic goals.

Class I: Multi-Use Paths

Class I multi-use paths (frequently referred to as "bicycle paths") are physically separated from motor vehicle travel routes, with exclusive rights-of-way for non-motorized users like bicyclists and pedestrians.

Class II: Bicycle Lanes

Bicycle lanes are one-way route types that carry bicycle traffic in the same direction as the adjacent motor vehicle traffic. They are typically located along the right side of the street (although can be on the left side) and are between the adjacent travel lane and curb, road edge, or parking lane. They are not physically separated from motor vehicle traffic.

Class III: Bicycle Routes

A bicycle route is a suggested bicycle path of travel marked by signs designating a preferred path between destinations. They are recommended where traffic volumes and roadway speeds are fairly low (35 mph or less).

Class IV: Separated Bikeways

A Class IV Bikeway (separated bikeway) is a bikeway designed for the exclusive use of bicyclists. It includes a physical separation between the bikeway and the adjacent vehicular traffic lane. The separation may include, but is not limited to, grade separation, flexible posts, inflexible physical barriers, or on-street parking. Where there is on-street parking, the separated bikeway is typically between the parking and the sidewalk.

Class 1 multi-use paths

Class 2 bike lanes

Class 3 bike route

Class 4 separated bikeway

Transit Access Treatments

Improved access to public transit can make transit facilities more accessible to people that lack access to other modes of transportation or that choose to forgo an automobile. Safe, convenient, and attractive transit options improve its perception as a reliable form of transportation for community members.

Transit Shelters

Sheltered waiting areas provide much-needed protection from rain, sun, and snow, especially in communities like Big Pine that experience seasonal changes. Seating, trash/recycling receptacles, and route maps and information are typically included. Transit shelters can be artfully designed with the local aesthetic in mind to reflect the local culture and environment, as seen in the example to the right.

Cooling Stations

Bus shelters can be designed and upgraded as cooling stations to provide added comfort and safety from extreme heat. Cities such as Phoenix in the U.S. and cities in Asia have used cooling bus shelters to improve transit access and comfort for their community. Costs and infrastructure should be considered when designing these cooling stations.

Lighting

Improved, fully-shielded solar powered lighting enhances the feeling of personal safety and may eliminate some barriers to transit use. Lighting should be designed for pedestrians and when possible, match local design aesthetics.

Artistic bus shelter

Bus shelter with cooling features

Pedestrian-scale lighting

Urban Greening Treatments

The purpose of urban greening is to create environmentally sustainable and livable communities by designing and constructing natural and engineered systems. Urban greening treatments can include stormwater capture, groundwater recharge, planted parkways, and street trees. Additional benefits include reductions in the urban heat island effect, improving air quality, increasing walkability, and increasing neighborhood safety.

Tribal Council provided significant feedback on the importance of adding appropriate street trees where possible. A tree planting program should be developed and it should include trees native to the area as well as trees that are also low maintenance and can withstand the seasonal changes the Big Pine region experiences yearly. Trees can be planted along the proposed Class 1 multi-use paths or at the proposed shuttle stops.

Street Trees

Street trees increase the livability of communities and streets by reducing stormwater runoff, improving air quality, storing carbon, and providing shade. Street trees also have positive traffic calming benefits such as reducing traffic speeds. Street trees create vertical visual walls that frame streets, provide a defined edge and help motorists guide their movement and assess their speed.

Bioswales/Rain Gardens

Bioswales are vegetated with native plants, shallow, landscaped depressions designed to capture, treat, and infiltrate stormwater runoff. Bioswales are the most effective type of green infrastructure for slowing runoff velocity and cleaning water while recharging the groundwater table. They have flexible siting requirements, allowing them to be integrated with medians, culdesacs, bulb outs, and other public space or traffic calming strategies.

Street trees

Bioswale

Rain garden

Placemaking

The inclusion of other urban design elements help transform transportation corridors into spaces that are welcoming, beautiful, and overall safer.

Wayfinding Signage

Wayfinding signage is a fundamental element of a comprehensive bicycling, walking, and trail network. Effective wayfinding systems communicate designated corridors, destinations, and other points of interest throughout a community. Wayfinding signage should be designed with local design aesthetics in mind.

Wayfinding signage

Crosswalk Art

Special intersection paving and crosswalk art provide unique opportunities at intersections to highlight crossings while breaking the visual monotony of asphalt. Intersection paving treatments and crosswalk art can integrate context-sensitive colors, textures, and scoring patterns. Revised FHWA standards on colored pavement in crosswalks allow for unique opportunities. Standard transverse or longitudinal high visibility crosswalk markings are still required.

Crosswalk art

Monument Sign

Monument signs can serve as powerful tools that welcome people to visit, engage, and enjoy a space or area in a unique way. These signs often reflect the character or personality of the culture and are usually located near popular points of interest or at intermediary gathering spaces along a corridor.

Monument sign

Clean Mobility Options

The following section highlights several clean mobility options. These forms of transportation can utilize clean renewable energy to reduce consumption of fossil fuels and can help reduce greenhouse gas emissions. Clean mobility options also help address transportation equity when combined with appropriate programs and policies. The desire for more personal mobility devices has been shared by several tribal members. It is important to recognize that the needs of less-abled community members will be different than those that can use bikes and scooters, so providing multiple options such as the proposed shuttle service and vanpool program can help balance the community's various needs.

Electric Shuttles

Electric shuttles can help address gaps within a community by supplementing the existing transit network or by creating a new transit routes where they currently don't exist. Depending on the make and model, electric-powered shuttles can be used to offer transit services within a specified radius. Zero emission models reduce the carbon footprint by eliminating greenhouse gas emissions.

Electric Vanpool/Carpool

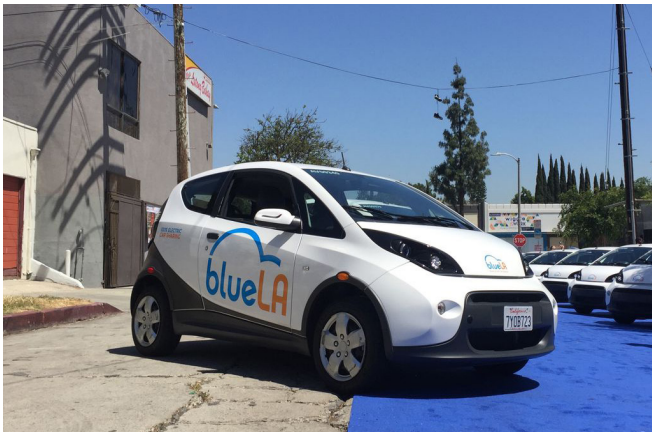
Vanpool and carpool programs have existed for several decades, but these services have evolved with the "electrification" the transportation industry is experiencing. Electric version of typical 12 and 18-passenger vans are being welcomed as clean mobility options for communities. The existing Elder Shuttle car fits this category.

A Tribal Electric Carsharing Service

An electric carsharing service would include a few cars that could be available sharing between work commuters, people running errands, or that need to get to medical appointments. The Tribe would have its own EV charging infrastructure which can be combined with other electric mobility options such as electric shuttles and electric vanpool/carpool services.

Electric shuttles

Electric vanpool/carpool



Electric carsharing services

Docked Bikeshare

Docked bikeshare is a shared transport service in which bicycles or e-bicycles are made available for shared use to individuals on a short term basis for a price or free. Docked bikeshare systems typically include electric-assist bicycles that provide extra comfort for users. Docked bikeshare systems allow people to borrow a bike from a "dock" or station and return it to another dock belonging to the same system.

Docked bikeshare

E-Scootershare

Scootershare programs are another popular form of shared transportation services that involve the rental of electric motorized scooters for short trips. These programs involve the use of a mobile app to look for, rent, pay, and park the rented scooter. Scootershare programs provide a high degree of flexibility for the invididual user and can be an effective method for closing mobility gaps. Short trips to visit family members, access to school, parks, commercial areas, or to a transit stop can all be done with a scootershare program.

Scootershare

Project Recommendations

The following section summarizes project recommendations that reflect the feedback gathered through the community engagement, project survey, and field work process. The projects can be used by the Air Program Coordinator and other Big Pine Paiute Tribal Agency members to pursue future funding opportunities.

The proposed mobility projects include active transportation and transit improvements such as sidewalks, curb ramps, crosswalks, multi-use paths, transit shelters, and urban greening infrastructure. All proposed projects will require additional design and engineering phases to determine proper cost and implementation.

#	Corridor	Type	Length (miles)	Between	
1	Bartell Rd	Class 1	0.88	School St	Big Pine Canal
2	Main St Pedestrian Crossing	Pedestrian	-	Main St	Bartell Rd
3	School St	Class 3	0.24	Blake St	Sepsey St
4	Sepsey St	Class 3	0.16	School St	Main St
5	Watson St	Class 1	0.24	Blake St	Sepsey St
6	Richards St	Class 1	1.00	Baker Ln	Butcher Ln
7	Crater St	Class 3	0.99	Baker Ln	Butcher Ln
8	Piper St	Class 3	1.00	Baker Ln	Butcher Ln
9	Crocker Ave	Class 1	0.17	Main St	Big Pine Creek
10	Big Pine Creek Bridge	Class 1	0.04	Crocker Ave	Baker Ln
11	Baker Ln	Class 1	0.32	Crater St	Big Pine Canal
12	Big Pine Canal	Class 1	1.66	County 168	Butcher Ln
13	Big Pine School Trail	Class 1	0.27	Main St	Callina St
14	Butcher Ln	Class 1	0.42	Crater St	Big Pine Canal
15	Main St	Class 1	0.34	Bartell Rd	Sepsey St

TABLE 5-1: Proposed Mobility Projects

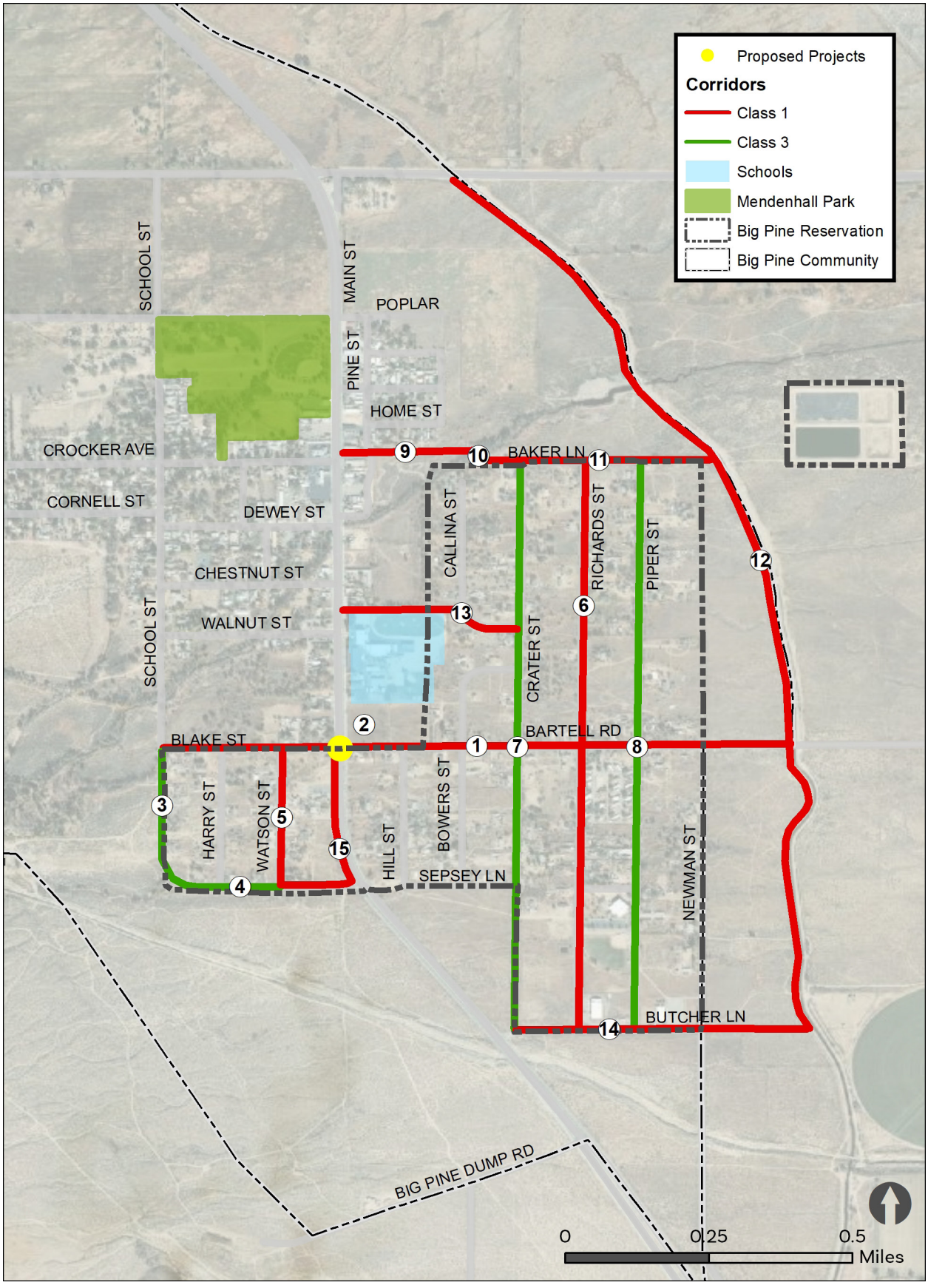


FIGURE 5-1: Proposed Mobility Projects

Proposed Shuttle Route and Stops

One of the main goals of the Clean Mobility Grant is to identify opportunities to implement sustainable and renewable forms of energy consumption related to transportation. The community engagement process highlighted the demand and popularity of implementing a shuttle program to address the mobility gaps and challenges throughout the Reservation and the neighboring communities. A fleet of electric shuttles with the appropriate charging stations, shuttle stops, and shuttle route would be a valuable and much-needed mobility project if implemented.

Figure 5-2 depicts a potential shuttle route and its associated transit stops. The transit stops are strategically located at and near community destinations. The transit stops would be designed with appropriate amenities such as covered shelter, cooling station features, seating, signage, and pedestrian lighting. It is recommended that the Tribe continue exploring all options, grant programs, and public-private partnerships to determine how to make an electric shuttle program a reality.

#	Shuttle Stop Location	Notes
TS 1	Alan Spoonhunter Memorial Gym	Beginning and end of proposed shuttle route at Alan Spoonhunter Memorial Gym. Shuttle stop amenities to include covered shelter with benches, signage, trash/recycling receptacles, and lighting.
TS 2	Big Pine Wellness Center	Shuttle Route Stop #2 at Wellness Center. Shuttle stop amenities to include covered shelter with benches, signage, trash/recycling receptacles, and lighting.
TS 3	Bartell Rd at Richards St	Shuttle Route Stop #3 at Bartell Rd and Richards St intersection. Shuttle stop amenities to include covered shelter with benches, signage, trash/recycling receptacles, and lighting. Can be enhanced as a “Cooling Station” with features such as misters and additional landscaping.
TS 4	Bartell Rd at Main St	Shuttle Route Stop #4 at Bartell Rd and Main St intersection. Shuttle stop amenities to include covered shelter with benches, signage, trash/recycling receptacles, and lighting. Can be enhanced as a “Cooling Station” with features such as misters and additional landscaping.
TS 5	Big Pine Paiute Tribal Offices	Shuttle Route Stop #5 at Tribal Offices. Shuttle stop amenities to include covered shelter with benches, signage, trash/recycling receptacles, and lighting.
TS 6	Crocker Ave at Main St	Shuttle Route Stop #6 at Crocker Ave and Main St intersection. Shuttle stop amenities to include covered shelter with benches, signage, trash/recycling receptacles, and lighting.
TS 7	Main St at Walnut St	Shuttle Route Stop #7 at Main St and Walnut St intersection. Shuttle stop amenities to include covered shelter with benches, signage, trash/recycling receptacles, and lighting.

TABLE 5-2: Proposed Shuttle Stops and Shuttle Route

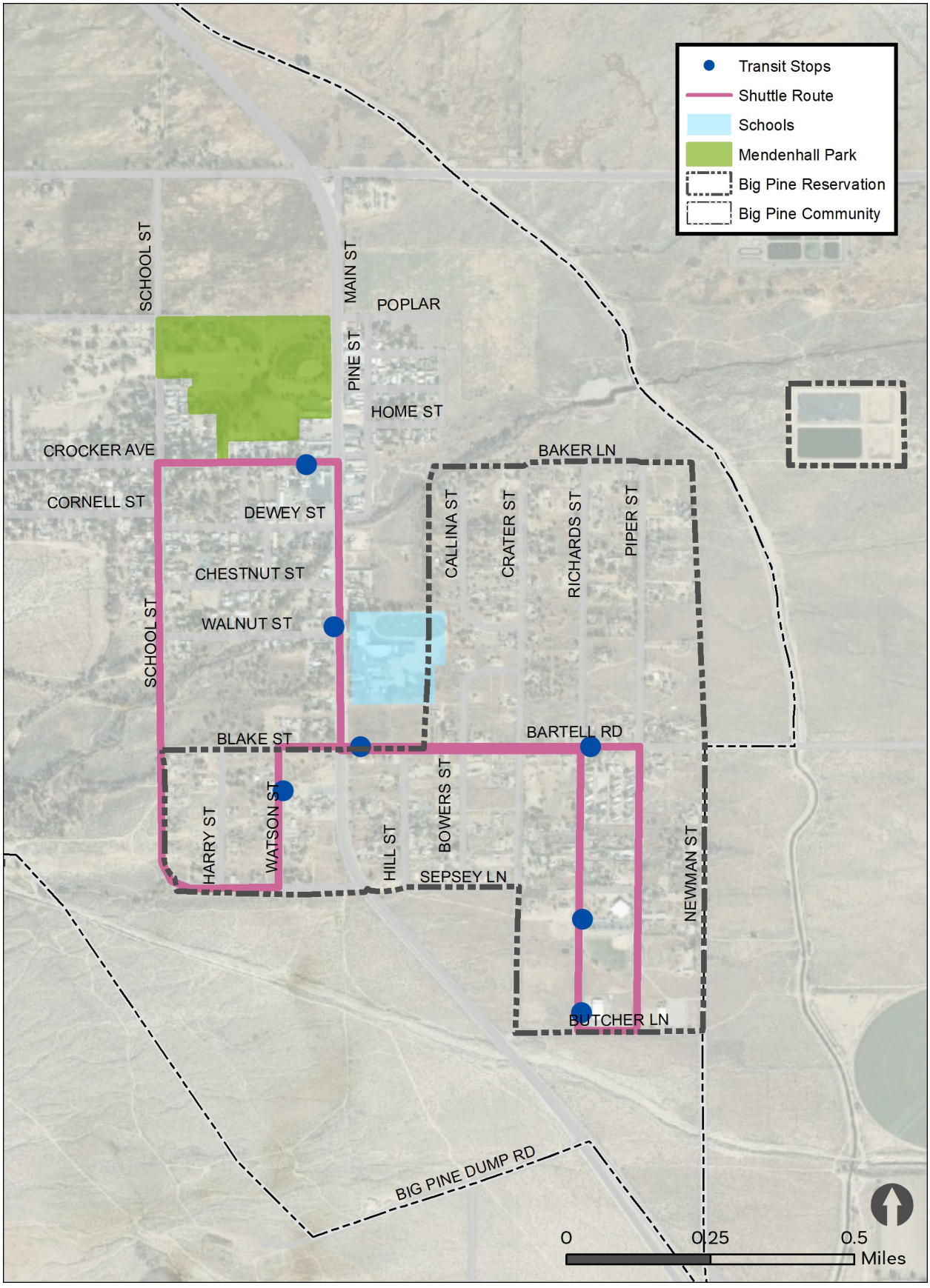


FIGURE 5-2: Proposed Shuttle Stops and Shuttle Route

Other Opportunities

The planning team also identified projects outside of the Big Pine Paiute Reservation boundaries that would positively affect mobility needs for the community. It is encouraged that the Reservation continue discussions with Caltrans and Inyo County to determine possible design and engineering solutions for the proposed active transportation projects.

The proposed projects include Class 3 bike routes along a few residential streets and a complete streets project along Main Street to transform this central corridor into a space that:

- Welcomes community members and visitors;
- Allows for safe and comfortable travel by addressing traffic speeds, intersections, and other related mobility infrastructure; and
- Implements local aesthetics and landscape to reflect the culture and environment.

#	Corridor	Type	Between		Notes
OP 1	Main St	Class 2	Baker Creek Rd	Sepsey St	Class 2 bike lanes provide enhanced access along Main St destinations such as businesses and schools. Requires removal of on-street parking or a reduction in the number of travel lanes. Add striped buffer where excess right-of-way exists. Requires coordination with Caltrans to determine final design.
OP 2	Crocker Ave	Class 3	School St	Main St	Class 3 bike route enhanced with green-backed sharrow markings and wayfinding signage.
OP 3	School St	Class 3	Crocker Ave	Blake St	Class 3 bike route enhanced with green-backed sharrow markings and wayfinding signage.
OP 4	Main St School Pedestrian Crossing	Pedestrian	Main St	Walnut St	Enhances the existing marked crosswalk with the addition of a pedestrian-actuated signal such as Pedestrian Hybrid Beacon (PHB) or RRFB (Rectangular Flashing Beacon).
OP 5	Walnut St	C 3	School St	Main St	Class 3 bike route enhanced with green-backed sharrow markings and wayfinding signage.
OP 6	Main St Pedestrian Crossing	Ped	Main St	Crocker Ave	Enhances the existing marked crosswalk with the addition of a pedestrian-actuated signal such as Pedestrian Hybrid Beacon (PHB) or RRFB (Rectangular Flashing Beacon).

TABLE 5-3: Other Mobility Opportunities

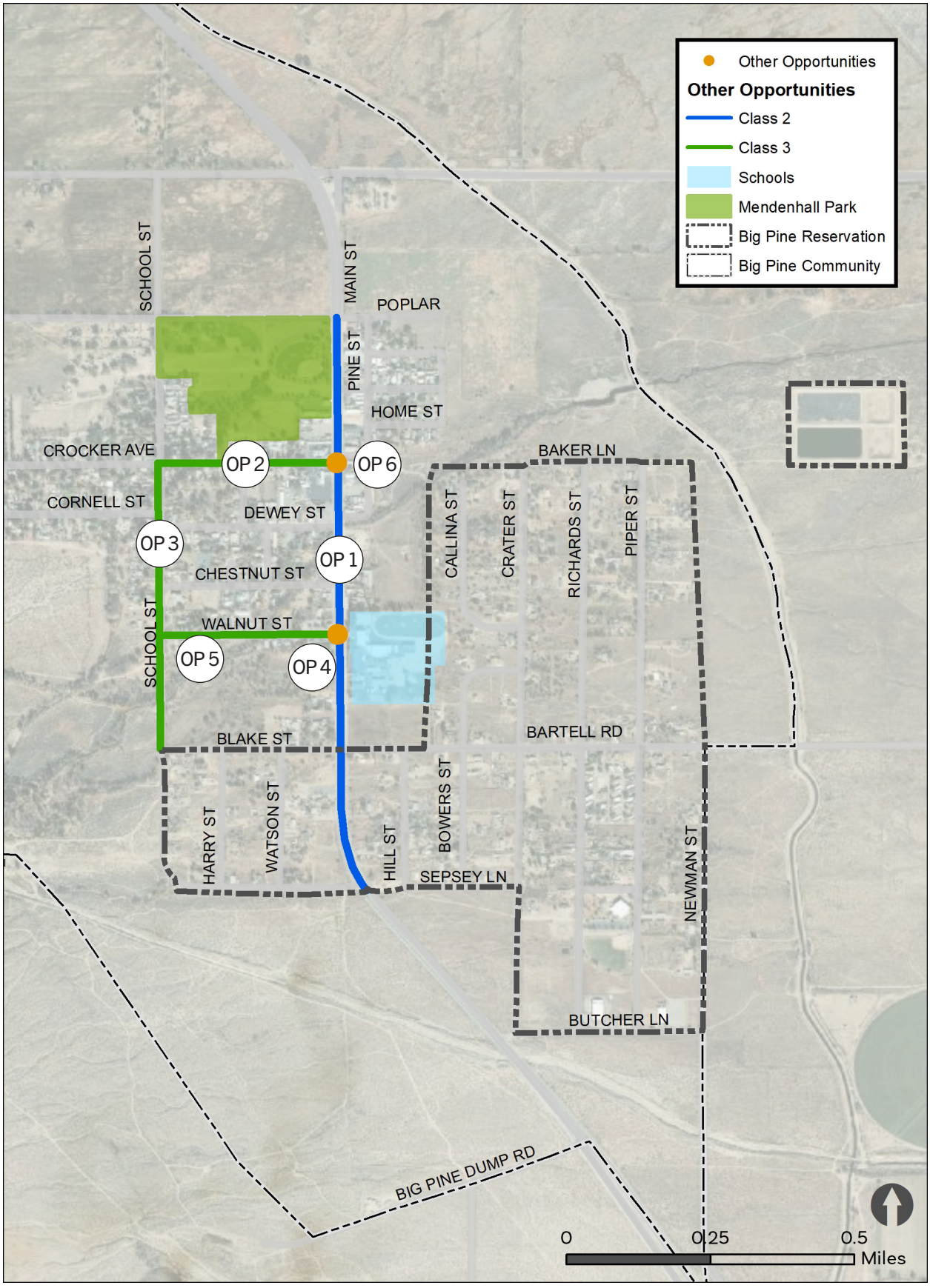


FIGURE 5-3: Other Mobility Opportunities

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