Fresno Council of Governments

Regional Microtransit Feasibility Study

April 2024

Fresno Council of Governments

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Acknowledgements

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Above: FAX Handy Ride vehicle.

Executive Summary

Introduction and Project Goals

In December 2022, the Fresno Council of Governments (Fresno COG) commissioned a county-wide study to evaluate the feasibility of introducing microtransit service. Many Fresno County residents live and work beyond walking distance of a bus stop. Likewise, many of the communities least well-served by public transit are also among the most socioeconomically disadvantaged. Low densities and car-oriented development patterns pose major challenges for extending cost-effective and sustainable transit using traditional, fixed-route bus service. Given the COG's strategic planning and advisory role, it has a strong interest in coordinating between the county's transit agencies to improve transit service throughout the region.

The Regional Microtransit Feasibility Study explores microtransit throughout the county with four key objectives:

1. **Evaluate the current public transit and demographic landscape** in Fresno County to determine key areas of improvement
2. **Explore the feasibility of implementing microtransit in Fresno County,** with particular focus on areas with limited transit service
3. **Engage with local community members** to increase local understanding of microtransit and gather input on potential solutions
4. **Enable Fresno COG to make an informed decision** regarding microtransit implementation

Above: example of a microtransit vehicle used to operate the Imperial County Transportation Commission's (ICTC) Calexico On Demand service in Calexico, California.

What is Microtransit?

- Microtransit is **shared, technology-enabled, demand-responsive** public transportation.
- **Mobile app** enablement allows trip planning, booking, fare payment, and live vehicle tracking.
- Unlike ADA paratransit services, anyone can use the service; it is **open to the public**.
- One or more vehicles complete trips based on passenger requests, with software adjusting their routes and stop locations on the fly, based on where passengers need to travel.
- In urban or suburban areas, rides can be booked **on-demand,** meaning passengers typically wait 10-20 minutes to be picked up.
- In lower density rural areas, rides must be **pre-scheduled** in advance to make sure a vehicle is nearby.
- Riders can travel **anywhere** within the designated service zone.
- In some zones, riders may have to **walk 1-3 minutes** to meet the vehicle.*
- Whenever possible, rides are **shared** between passengers traveling in the same direction at the same time.
- Rides may be subsidized by transit agencies or other organizations (e.g. nonprofits) to keep fares **affordable** for everyday travel.
- There are often **multiple ways to book** (mobile app or call center) **and pay for rides** (e.g., cash, bus passes, or mobile app).
- Microtransit may be operated with any vehicle, but it typically uses smaller vehicles like minivans, 8-12 passenger vans, or shuttles to reduce costs.

wheelchair accessible and curb-to-curb services are available for those who require them

Existing Conditions Analysis & Needs Assessment

The project team first conducted an extensive review of more than 20 previous plans and studies completed by Fresno COG and transit agencies in Fresno County to identify unmet transit needs and ensure the study's alignment with other initiatives. Key findings from previous studies include:

Ridership on the three transit agency networks continues to **increase** following the COVID-19 pandemic.

Riders are **generally satisfied** with service**,** but recommend **improvements** related to limited service coverage, a pedestrian environment that limits access to bus stops, and long wait times due to infrequent service.

County transit agencies have a history of pioneering **innovative transit solutions** to mitigate gaps in service, including microtransit and Electric Vehicle solutions adapted to rural and hard-to-serve areas.

Previous studies have consistently recommended **rider-focused improvements** such as extended service hours later in the evenings and on weekends, broader service coverage, zero-emissions vehicles, first/last-mile connections to key transfer points, and **increased service to disadvantaged communities** where residents rely upon transit the most to get around.

Improvements to transit service often lack **sustainable funding options** for implementation; funding for operations is particularly constrained.

Above: Courthouse Park, a major FAX transfer point in Downtown Fresno.

The study's Existing Conditions Analysis continues by evaluating the current demographic patterns and transit network characteristics of Fresno County to identify areas with significant, unmet public transit needs. This analysis evaluates population, employment, and the quantity and spatial distribution of disadvantaged groups known to ride transit at higher rates than the County average. Analysis also included key activity centers throughout the County that generate and attract significant transit ridership, such as shopping centers, affordable housing communities, medical centers, schools, social services organizations, community centers, and more. The map of Cal EnviroScreen Disadvantaged Communities below, for example, shows the intertwined challenges of poverty, socioeconomic disadvantage, and exposure to environmental hazards.

21%

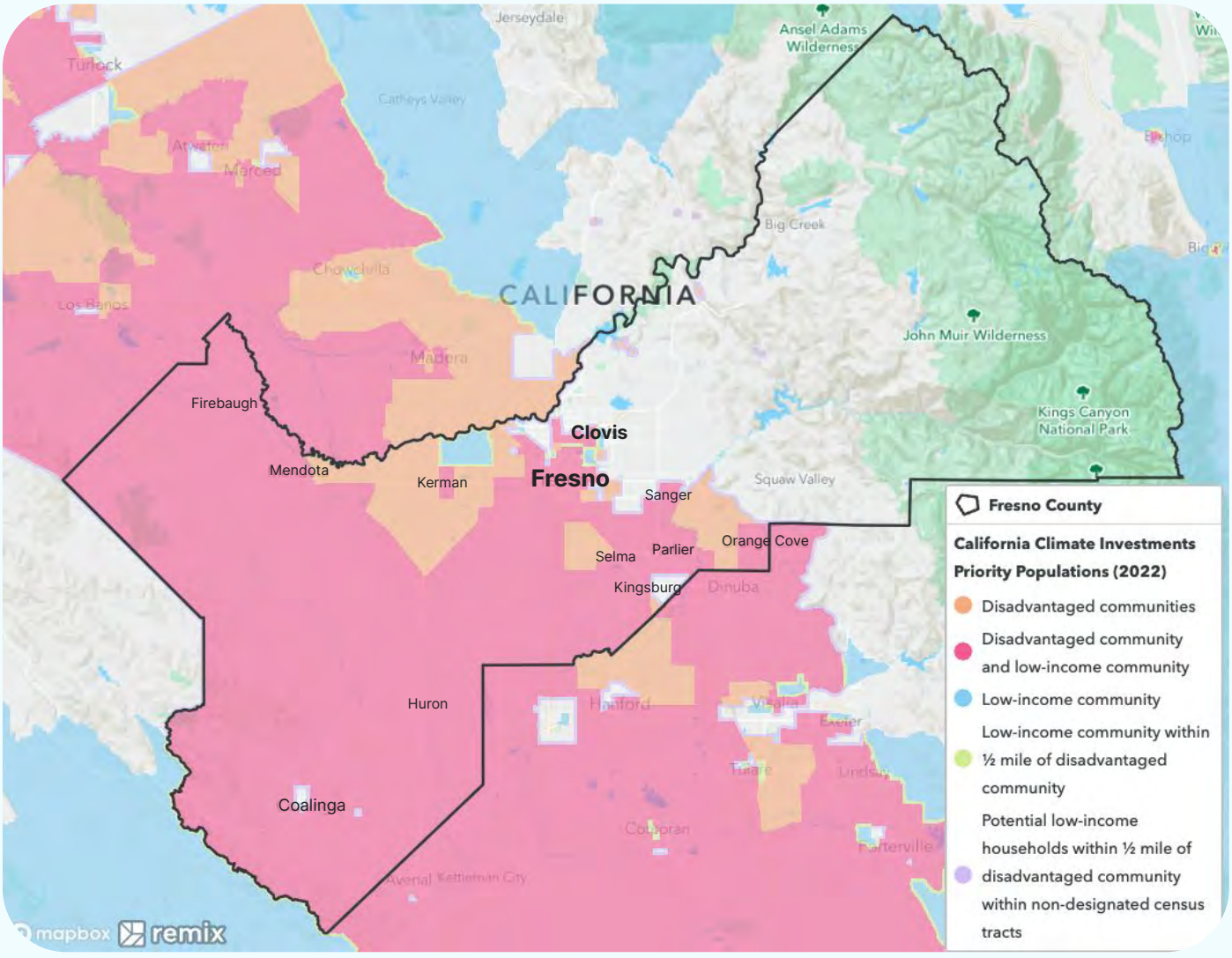
of Fresno County residents are below the poverty line.

73%

of Fresno County residents identify as a race or ethnicity other than non-Hispanic White.

7%

of Fresno County households do not have access to a personal vehicle.



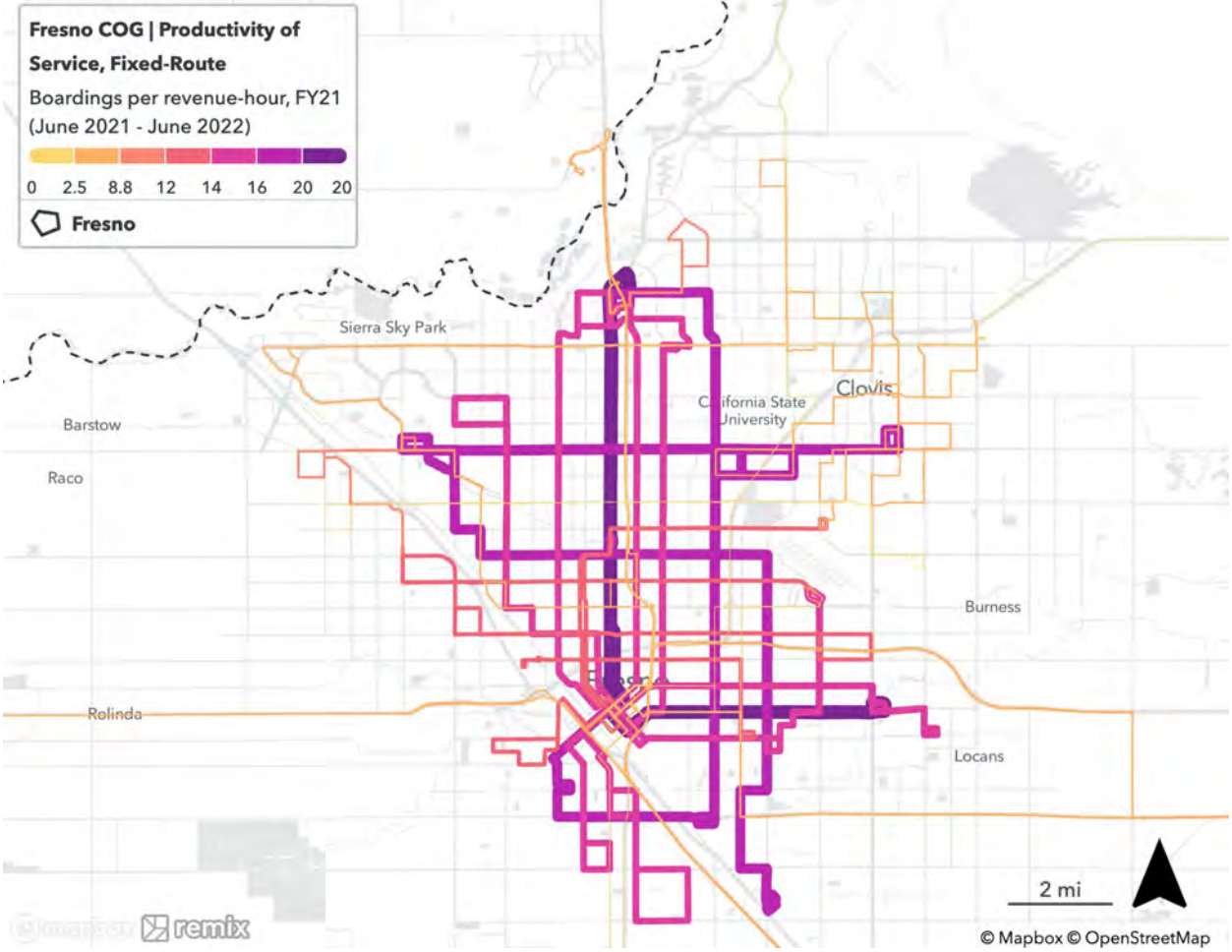


Figure 10: Productivity of service (passenger boardings per revenue-hour) in Fresno County.

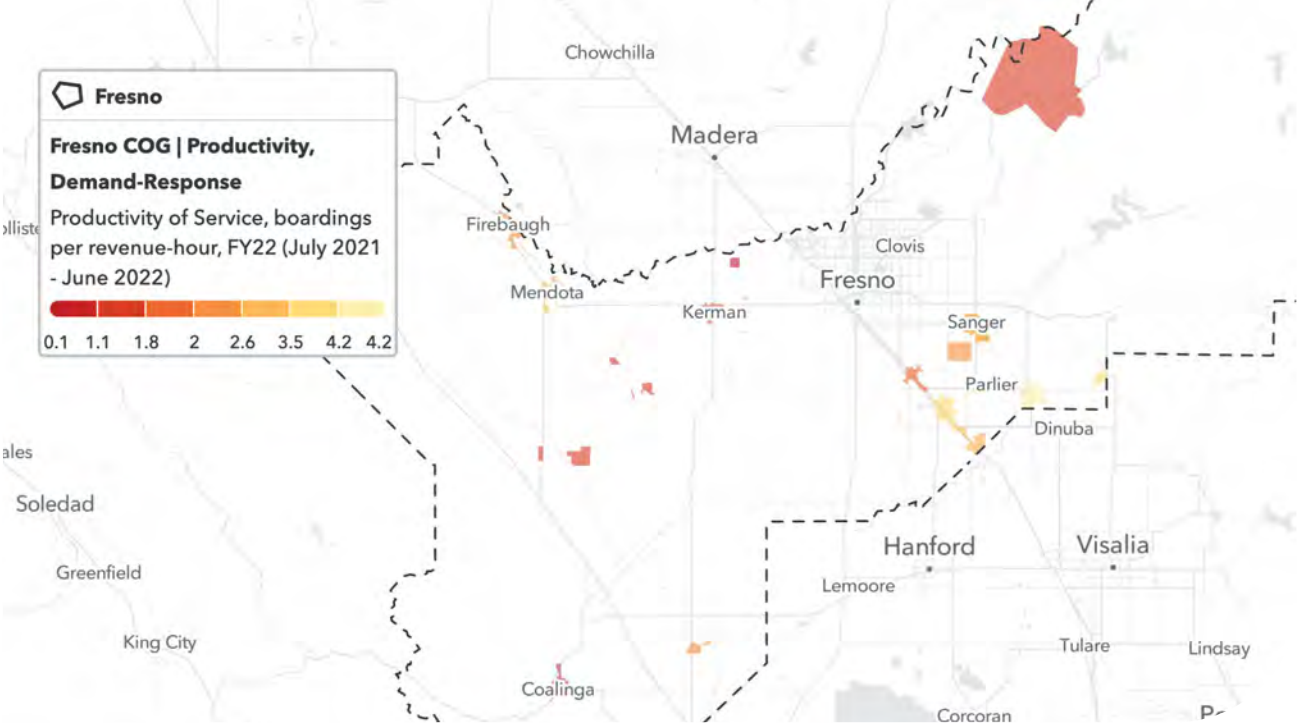
The Existing Conditions Analysis then evaluates transit ridership and service performance patterns for FAX, Clovis Transit, and FCRTA networks, including fixed-route buses, ADA paratransit, and rural intracity demand-response services. This analysis surfaced several areas of Fresno County with unmet transit needs that could potentially be served by microtransit, particularly in relatively high-need communities that have limited or no fixed-route service.

Key findings from the Existing Conditions Analysis validated many of the findings gleaned from previous plans and studies, including:

- **Service is most frequent along North/South and East/West axes in central Fresno.** The most frequent fixed-route services (15-minute frequency or better) are routes 1 (FAX Q), 9-Shaw, 34-First Street, and 38-Cedar. These routes serve corridors with the highest volumes of stop-level ridership, such as the Courthouse Park/Van Ness Station, Shaw Station, and Chestnut Station stops along the FAX Q line. These routes are also among the most productive in the County's transit network, serving the most ridership per hour of operations.

Countywide Fixed-Route Services by Frequency

Over 60 Minutes	31-60 Minutes	16-30 Minutes	15 Minutes or Less
14 Routes	2 Routes	14 Routes	4 Routes



Above: Productivity of Demand-Response service (boardings per revenue-hour) in Fresno County.

- **Much of Fresno and Clovis is covered by moderately frequent service.** Most locations in the cities of Fresno and Clovis are located within a quarter-mile of a bus stop, with 20-30 minute frequencies on most arterial streets.
- **However, some urbanized areas have limited transit coverage,** including high-poverty areas such as the portion of Southwest Fresno west of Walnut Avenue and Fresno's West Area (west of SR-99) as well as relatively affluent communities such as northern and eastern Clovis, Sunnyside, and Fort Washington.
- Given **Clovis' higher levels of car ownership and a more affluent population**, two Clovis Transit routes serve relatively low ridership and productivity. This makes service more costly to operate, on a per-ride basis, compared to FAX services.
- **Fixed-route service becomes less available further from urban areas.** In rural areas of the County, FCRTA fixed-routes offer intercity connections between incorporated city pairs on **less frequent schedules** and are generally unsuitable for locally oriented travel. With lower population density and widely distributed community destinations, local coverage within rural incorporated cities is typically provided using an **intracity, demand-response (rather than fixed-route) service model.**
- In unincorporated rural communities, lifeline service is available from the Rural Transit subsystem. This service requires 24-advance reservation and is not suitable for everyday transportation, due to limited vehicle availability.

Average operating cost per passenger trip, FY 2022

FCRTA Fixed-Route	FCRTA Demand-Response	Clovis Transit	FAX
$40	$20 - $40	$42	$3 - $6

Source: Fresno COG FY2022 Transit Productivity Evaluation Report.

Public and Stakeholder Engagement Summary

The project team engaged in extensive public and stakeholder engagement throughout the study to ensure findings aligned with and best served the community's transportation needs. Engagement activities were organized into two distinct phases as follows:

Phase 1 gathered feedback on existing public transit, increase awareness of the study, and introduce microtransit through the following:

- Stakeholder Committee Meetings (1 and 2)
- Online Survey
- Virtual Workshop
- Pop-up events in the community

Key results: While there is broad enthusiasm for microtransit, a significant minority (32%) of those surveyed also expressed concern about sharing rides with others. About 20% of those surveyed would be unable to use a smartphone app to book or pay for rides. These findings underscore the importance of rider education to set appropriate expectations of service and ensure it is equitable and accessible to all.

Phase 2 collected community input on draft microtransit service alternatives and recommendations, including proposed opportunity areas and key service parameters, through the following activities:

- Stakeholder Committee Meeting
- Online Survey
- Outreach flyer and poster
- Pop-up events in the community

Key results: The San Joaquin, Fort Washington, and Wolf Lakes/Far East Clovis zones were the most frequently selected microtransit zones when survey respondents (n=48) were asked which opportunity area would be most useful to them.

56%

Survey respondents reporting using fixed-route buses or paratransit at least twice per week.

87%

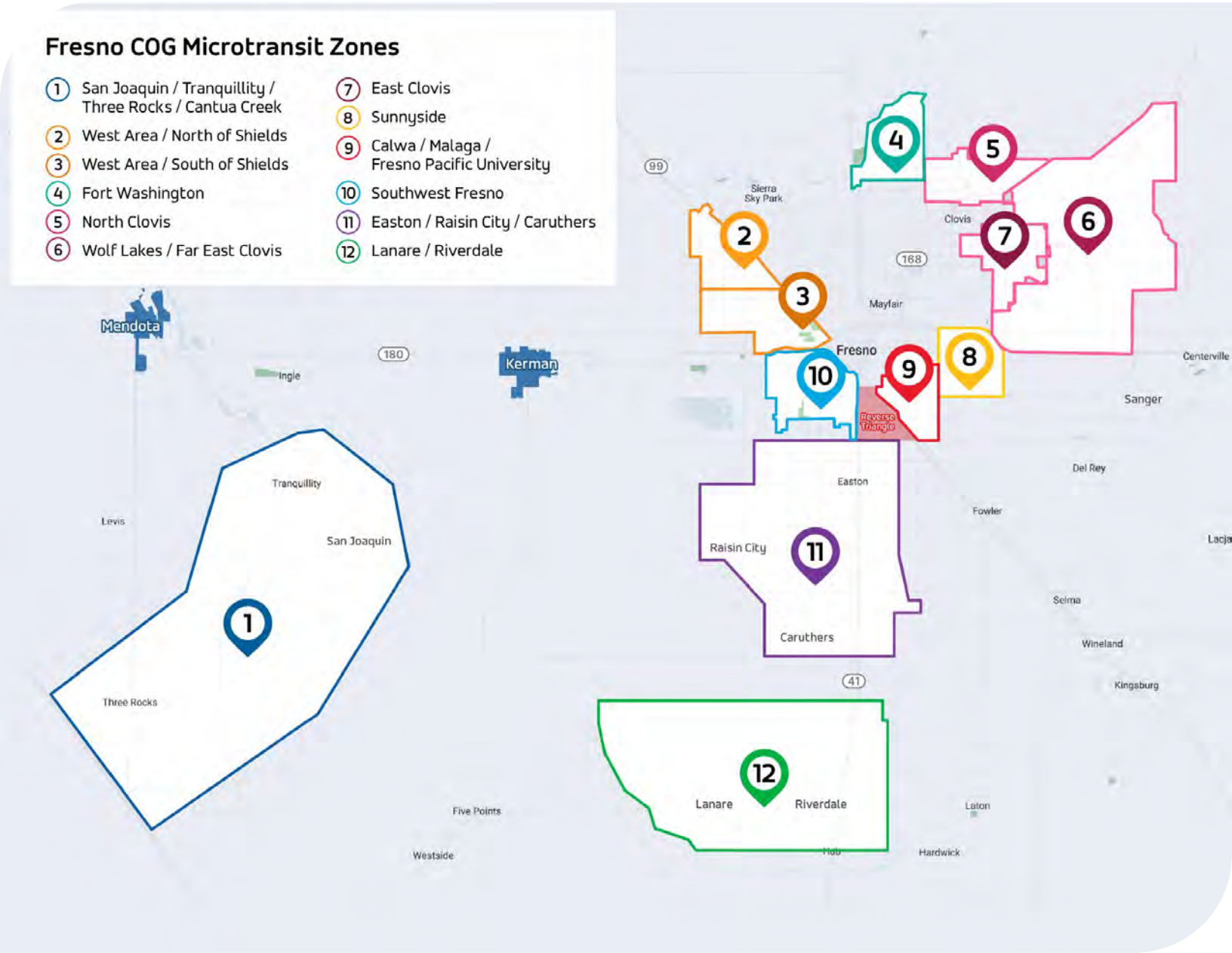
Survey respondents indicating that they would use microtransit service if it were available in their community.

51%

Of Phase 2 survey respondents indicated that if the microtransit service alternative most useful to them were available, they would use it two or more times per week.

Microtransit Service Alternative Development

Findings from the Existing Conditions Analysis informed the study's development of microtransit opportunity areas shown on the map below. The opportunity areas are intended to expand transit coverage to places with limited service coverage, enhance service in disadvantaged communities, and provide connections to fixed-route bus service to increase the convenience of regional, multimodal trips. Four of these areas are rural and within FCRTA's jurisdiction, as shown in the map below: San Joaquin (1), Wolf Lakes / Far East Clovis (6), Easton/Raisin City/Caruthers (11), and Lanare/Riverdale (12). North Clovis (5) and East Clovis (7) are within Clovis Transit jurisdiction, while six others are within the FAX service area. Each of these 12 opportunity areas were evaluated further to determine their feasibility for microtransit operations.



Each of this study's 12 microtransit opportunity areas were selected with a series of **quantitative and qualitative criteria.**

Online Survey Responses

Survey responses identify where Fresno County residents have difficulty accessing by public transit — and places they would like to reach with microtransit

Community Demographics

Distribution of high-need groups who rely on transit at higher rates indicates where uptake of on-demand microtransit may be most promising

Transit Connections

Extension of microtransit service to areas with limited transit coverage, and supporting first/last-mile connections between microtransit and fixed-route service at transfer hubs

Pilot Programs

Insights from previous pilot programs indicate where new service may be suitable, and potential challenges that microtransit may face

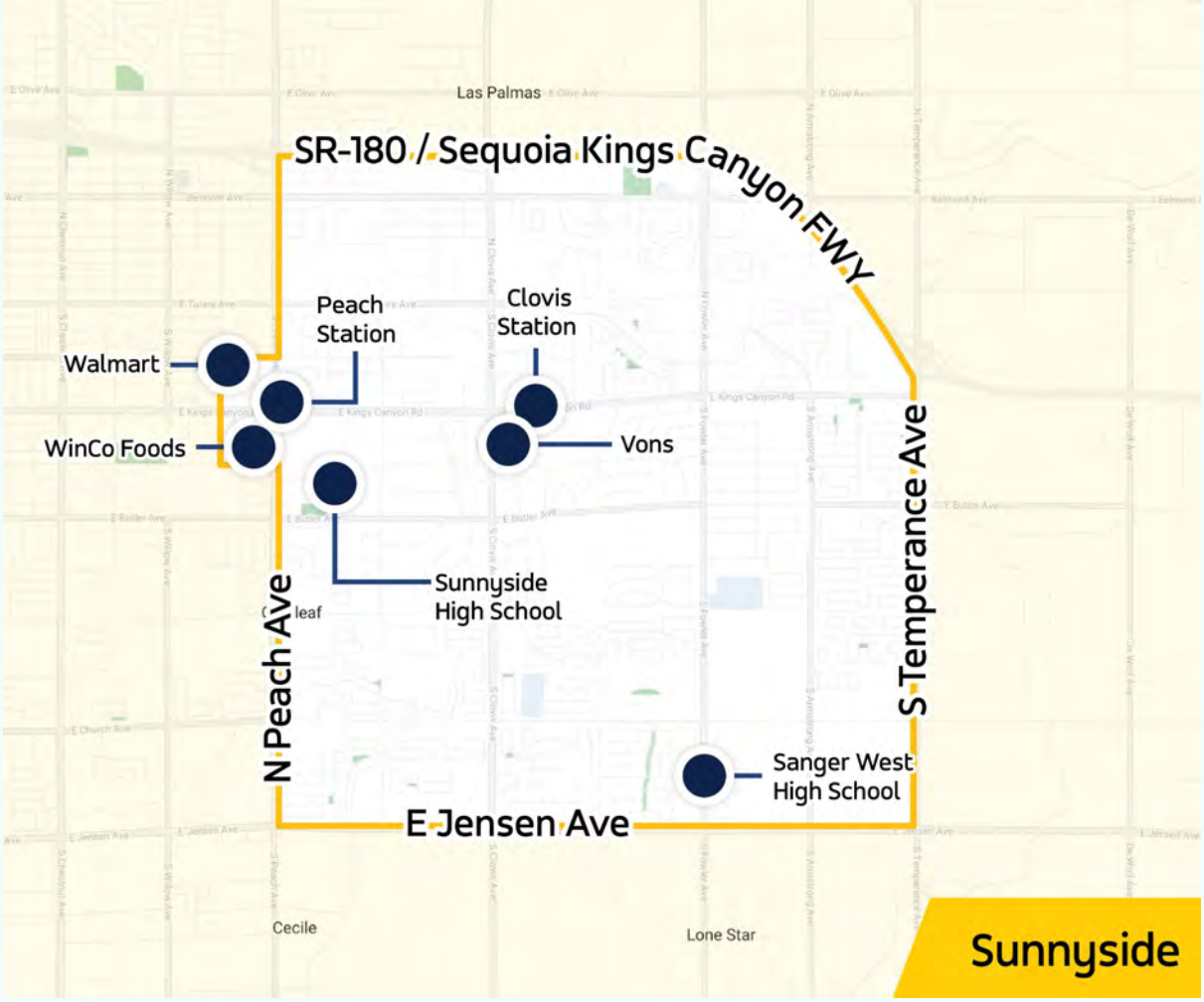
Previous Plans & Studies

Transit agencies within Fresno County have previously identified communities and destinations with potential unmet transit needs an on-demand microtransit service could address

Key Activity Centers

Areas with essential destinations (e.g., shopping centers, medical, schools, social services, recreation centers) support a broader range of useful trips within the community

Above: Electric vehicle (Chevy Bolt) used to operate the FCRTA's Biola Rideshare/Microtransit service.



Above: Boundaries and key destinations of the Sunnyside microtransit opportunity area, in southeastern Fresno.

Microtransit Simulations

This study developed ridership estimates for each service alternative based on the observed performance of other microtransit services operated by peer microtransit services in Western states with similar characteristics to the Fresno region. These ridership estimates were an important input that supported agent-based simulations of microtransit service in each of the proposed opportunity areas. Conducting simulations enabled the project team to refine service alternatives and provided Fresno COG with a better understanding of how each opportunity area would likely perform under real-world conditions.

These simulations provide essential outputs for understanding the performance of each microtransit alternative, including the number of vehicles required (and therefore the cost to operate the service), the efficiency and cost-effectiveness of service, and quality-of-service outcomes passengers would experience, such as average wait times and walking distances to pick up points.

Such findings are important for transit agencies to prioritize those service alternatives that offer the most cost-effective, high-quality service. Simulation results also highlight some alternatives that are less suitable for microtransit service, under current conditions.

Prioritization Analysis

Since not all potential service zones are equivalent, each potential service zone was also evaluated according to a series of prioritization metrics that align with Fresno COG's strategic goals for microtransit. This approach enables transit agencies to compare zones across various evaluation criteria. These criteria include ability to serve high-need or disadvantaged communities, simulated efficiency and cost-effectiveness of proposed microtransit alternatives, and the extended reach of microtransit to unserved areas. These findings improve our understanding of the relative strengths and weaknesses of each microtransit alternative, summarized in **Table 42** of the report.

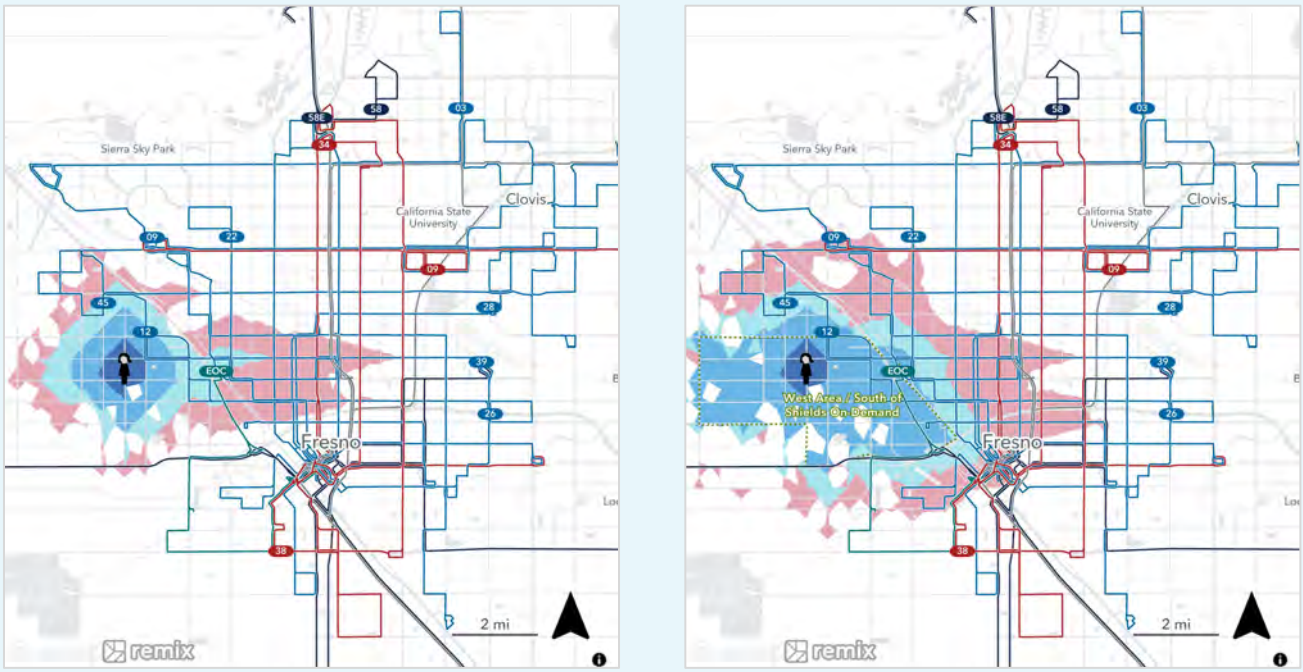
The Sunnyside zone would perform best in terms of ridership, utilization, and cost-per-ride relative to the other urban/suburban opportunity areas. This opportunity area is estimated to have a utilization of more than six passengers per vehicle-hour. The East Clovis and West Area/North of Shields opportunity areas are each estimated to have the second-highest ridership, and each would operate with a utilization of five passengers per vehicle-hour. Among the rural microtransit opportunity areas evaluated, the Lanare/Riverdale and San Joaquin zones are forecast to serve insufficient ridership to justify their operating costs. The Easton/Raisin City/Caruthers and Wolf Lakes/Far East Clovis zones, however, would feature greater ridership and lower cost per ride relative to other rural microtransit alternatives.

Table 42: Urban/suburban microtransit opportunity area comparison of service performance (medium-demand scenario).

Simulated Service Performance	East Clovis	North Clovis	Fort Washington	Southwest Fresno	West Area / North of Shields	West Area / South of Shields	Calwa / Malaga	Sunnyside
Fleet Size at Peak	3	3	3	3	2	3	3	3
Avg. Weekday Ridership *Boardings*	193	145	163	174	129	138	128	244
Avg. Weekday Utilization *Boardings / Vehicle Hour*	5.1	3.8	4.3	4.5	5.0	3.7	3.4	6.4
Annual Ridership	61,000	46,000	51,000	55,000	41,000	44,000	41,000	77,000
Annual Vehicle Hours	12,000	12,000	12,000	12,000	8,300	12,000	12,000	12,000
Total Estimated Annual Operating Cost [1]	$1.6 M	$1.6 M	$1.3 M	$1.3 M	$890,000	$1.3 M	$1.3 M	$1.3 M
Cost per Ride	$26	$35	$25	$24	$22	$29	$32	$15
Estimated Fare Revenues [2]	N/A	N/A	$60,000	$70,000	$50,000	$50,000	$50,000	$90,000
Net Subsidy per Passenger	N/A	N/A	$24	$23	$20	$28	$30	$15

Key:

Higher performing zone *Lower performing zone*



Figures 30-31. Expanded access to jobs analysis from El Capitan Middle School, in the West Area/South of Shields microtransit opportunity area

Transit network analysis compares the impact of microtransit service in terms of the number of jobs reachable from a given point of origin, within 30 minutes via public transit from the urban/suburban opportunity areas and within 60 minutes from the rural opportunity areas. This analysis indicates that the Fort Washington zone offers the largest increase in jobs accessible within 30 minutes among the urban/suburban microtransit opportunity areas, adding nearly 15,000 new jobs in close proximity to the transit network, primarily by offering connections to transit corridors such as the FAX Q, Route 34, and Route 38 at Woodward Station and River Park Shopping Center, respectively.

The Calwa / Malaga zone offers the second-largest increase in jobs access (over 12,000 new jobs), by providing better connectivity between Calwa, Malaga, and the "Reverse Triangle" warehousing district across SR-41. Of rural microtransit opportunity areas, the largest increase in jobs access via transit is in the Wolf Lakes / Far East Clovis zone, which connects job centers and transfer points in central Clovis and eastern Fresno. The Easton / Raisin City / Caruthers zone also offers increased jobs access via transit (+8,000 jobs) by connecting with the Reverse Triangle and enabling transfers to FAX Route 34. Findings are in Tables 44 and 45 of the report.

44%

Poverty rate in the Southwest opportunity area, double the County average

10,000

Number of jobs newly accessible via public transit within 30 minutes from Konkel Junior High School, in the Calwa/Malaga microtransit opportunity area

$15

Estimated cost per passenger trip in the Sunnyside microtransit zone under a medium-demand scenario

Implementation Plan

Should FAX, Clovis Transit, or FCRTA decide to advance a microtransit service alternative to implementation, the agencies and the COG will need to secure funding for, implement, and launch the service. This report covers funding sources at the federal and local levels and follows with an action-oriented implementation plan.

This implementation plan includes recommendations for selecting an operating model, including guidance and implications for opting for a directly-operated service, turnkey purchased transportation, a hybrid model, or partnering with non-dedicated transportation providers (e.g., taxis, Uber, and Lyft). The report also includes action-oriented recommendations for launch preparation, establishing key performance indicators for monitoring and evaluation, marketing and rider engagement strategies, and policies to ensure microtransit is equitable and accessible. This section of the report provides key insights for a sustainable, accessible, and equitable service that meets community needs.

Above: Manchester Transit Center on Blackstone Avenue, in Fresno, a major transfer point for FAX and FCRTA services.

1. Introduction

1.1 Background on Fresno County and Fresno COG

Fresno County is located in the San Joaquin Valley of California, south of Madera, west of Yosemite and Sequoia/Kings Canyon National Parks, and north of Bakersfield. The county covers around 6,000 square miles, with a population of around 1 million residents and a population density of about 170 residents per square mile. The county consists of a combination of urban centers, rural communities, and less populated farmland and mountainous regions. It includes the city of Fresno, which is the county seat and, as of 2021, the fifth-most populous city in the state of California, with a population of just under 550,000 residents. Fresno County also consists of a handful of mid-sized urban centers, including the city of Clovis (120,000 residents), Sanger (27,000 residents), Reedley (25,000 residents), and Selma (25,000 residents). In total, the county includes 15 municipalities and countless rural communities. The county has around 375,000 jobs, or an employment density of around 63 jobs per square mile. More than half of the county's jobs are located in the city of Fresno.

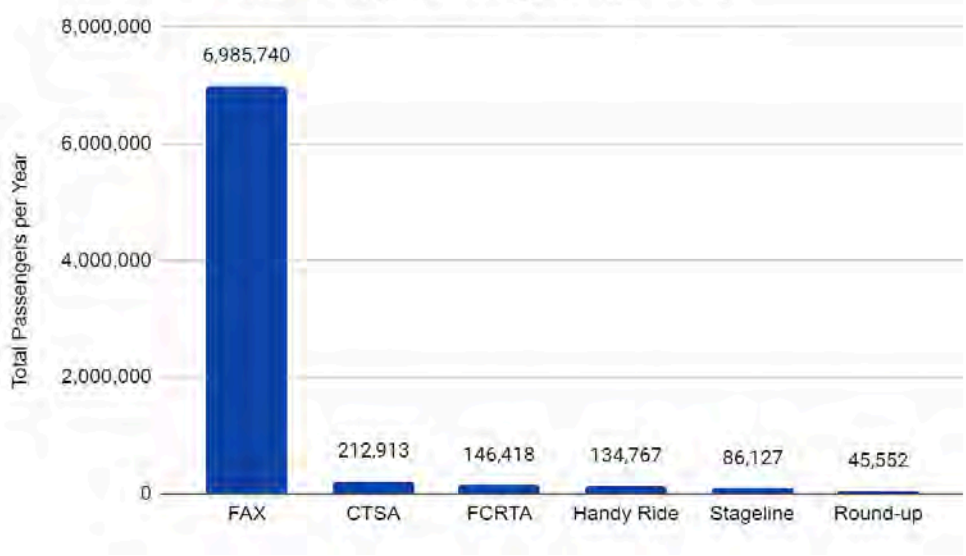
In addition to the more densely-populated urban centers in Fresno County, around half of the county's total area, or just under 3,000 square miles, is considered agricultural land, with agriculture serving as the top local industry. The county's fertile soil and Mediterranean climate lend themselves to successful production of several crops, including grapes, pistachios, cotton, almonds, and tomatoes, which the county provides for the region and the United States as a whole. Fresno County is also home to several major commercial and industrial employers, including significant warehousing and logistics industries (e.g. Amazon, Ulta Beauty, Kraft Foods, Del Monte Foods, Pepsi Bottling Group, and Sun-Maid), which drive economic development and local travel in the region. The county has a handful of higher education institutions, namely California State University, Fresno; Fresno Pacific University; Clovis Community College; Fresno City College; and Reedley College.

Fresno Council of Governments (Fresno COG) is both a state-designated Regional Transportation Planning Agency (RTPA) and federally-designated Metropolitan Planning Organization (MPO) for Fresno County, California. The COG is responsible for project planning and programming of state and federal transportation funds, including formula funds dedicated to public transit. The agency is also responsible for programming of transit projects by Measure C, the county's ½-cent sales tax approved in 1986 and again in 2006. The COG must therefore coordinate between the county's three public transit agencies — the Fresno Area Express (FAX), the Fresno County Rural Transit Agency (FCRTA), and Clovis Transit — and the county's combination of urban, suburban, and rural communities. With widely distributed population and community destinations, the county faces unique challenges in providing cost-effective and sustainable public transportation. Its many low-density, rural, or otherwise difficult-to-serve areas pose challenges to providing equitable transit throughout the county, challenges that are compounded by the fact that many of these areas are also the region's most disadvantaged communities that rely upon public transportation at higher rates than the county average.

There are three FTA-designated public transit agencies in Fresno County. Fresno Area Express (FAX), a division of the City of Fresno, operates 18 fixed-route services and complementary ADA paratransit service (branded "Handy Ride") in and around Fresno. Clovis Transit operates two fixed-route and two school-oriented services (branded "Stageline") and complementary ADA paratransit service (branded "Round Up") in the City of Clovis. Fresno County Rural Transit Agency (FCRTA) operates rural, intercity fixed-route and intracity demand-response services in the county's smaller municipalities and rural areas. Its network includes nine fixed-route and 17 demand-response services, one of which is an experimental rideshare/microtransit service in the unincorporated community of Biola.

Fresno County also has an additional fixed-route shuttle service under the Consolidated Transportation Services Agency (CTSA), contracted to the Fresno Economic Opportunities Commission (FEOC), serving Fresno's West Area (including the Three Palms Mobile Home & RV Park, CalVet Veterans Home, and other nearby destinations). The COG also manages two human services transportation programs for older adults: the Senior Taxi Scrip program, which offers 75%-discounted taxi fares for Fresno County residents age 70 and older; and the Senior Rides to Community Centers program, a demand-response program that connects older adults with four Fresno community centers for nutrition and day programs. Each of these programs are funded by Measure C. Fresno County's transit providers and their distribution of annual ridership (FY22) are shown in Figure 1 below.

Figure 1. *Total Yearly Passengers by Service, Fresno County FY2022*



Source: Fresno COG Transit Productivity Evaluation Report, FY 2022

Due to the wide distribution of job centers and other community destinations across the County and a long history of low-density and car-oriented development patterns, Fresno County faces particular challenges in providing cost-effective public transportation options to its communities, especially outside of its two largest cities of Fresno and Clovis. While most residents of Fresno and Clovis have access to moderate-to-high frequency bus service with headways of 30 minutes or better, significant gaps in several fast-growing suburban communities remain. Urban bus routes operated by FAX often run on the city's wide arterial roads, and community destinations on local

streets are often less accessible by transit. For others, limited hours of operation on certain routes or longer-than-desirable wait times may discourage ridership.

Likewise, while Fresno County's smaller incorporated cities have access to intracity, demand-response service for local trips, intercity service to regional destinations is much more limited. Given limited operating resources, low ridership in rural areas, and the high cost of running buses the long distances throughout the Central Valley required to serve intercity trips, FCRTA has limited capacity to run intercity, fixed-route service. The County's significant number of unincorporated communities have access to a pre-scheduled, demand-response service, Rural Transit, which is funded by Measure C and serves areas not covered by its other, intra-city demand-response or intercity fixed-route services. However, the capacity of this service is limited, with just three vehicles available, and its $10 fare makes it less suitable for shorter, locally oriented trips within unincorporated areas.

As such, Fresno COG has prioritized taking on key issues affecting regional transit in the coming years, namely declining ridership, transit level of service, transit revenue and competition for funding, uncertainty around emerging technologies, changing demographics, and necessary improvements to first- and last-mile experiences.[1] The COG is considering a variety of key strategies to mitigate these issues, such as establishing first and last mile partnerships with alternative transit providers, improving first and last mile experiences through public realm improvements, and facilitating communication between Fresno County's transit agencies to share learnings and simplify service and fare structures.

[1] Fresno County Regional Long-Range Transit Plan (2019-2050)

1.2 Study Overview

With its unique position at the intersection of both strategic planning and programmatic coordination, Fresno COG has a strong interest in coordinating between the county's transit agencies to improve public transit service throughout the region. Fresno COG is therefore actively exploring innovative solutions to address identified gaps in transit service. Recognizing the persistence of these challenges, and that operating resources for fixed-route bus and demand-response services will remain limited for the foreseeable future, Fresno COG initiated this **Regional Microtransit Feasibility Study (the 'study')** to evaluate whether microtransit — shared, demand-responsive, technology-enabled public transportation — could offer a suitable and sustainable service delivery model for local transportation in select areas of the County. The study has four key objectives:

1. Evaluate the current public transit and demographic landscape in Fresno County to determine key areas of improvement
2. Explore the feasibility of implementing microtransit in Fresno County with particular focus on areas with gaps in transit
3. Engage with local community members to increase local understanding of microtransit and gather input on potential solutions
4. Enable Fresno COG to make an informed decision regarding microtransit implementation

Disclaimer: At this time, none of the Fresno County transit agencies or other local governments have agreed to implement microtransit or committed funding for its operation. Rather, this is a study to identify whether this type of service is realistic and sustainable for certain areas of Fresno County.

This Final Report summarizes the findings from all previous phases of the study:

- **Existing Conditions Analysis** and **Needs Assessment Report** evaluating current performance of the county's transit network, demographics related to transit ridership, and unmet mobility needs in Fresno County.
- **Service Alternative Development Report** investigating the feasibility of implementing microtransit in opportunity areas throughout Fresno County by using the results of the existing conditions analysis and needs assessment to develop microtransit service alternatives and simulate their expected performance.
- **Prioritization Analysis** prioritizing each of the microtransit service alternatives according to three categories of evaluation metrics that were informed by the study's goals and key findings from Existing Conditions Analysis and Service Alternative Development, enabling Fresno COG and its stakeholders to compare different service alternatives and justify decisions regarding prioritization and implementation of microtransit service alternatives.

This report concludes with an **Implementation Plan**, which includes operational considerations and recommendations for successfully launching a microtransit service. This section is intended for use by Fresno COG for planning and advisory purposes, and Fresno County transit agencies, should they ultimately decide to launch a microtransit service based on the results of this study.

1.3 Microtransit Overview

Microtransit, also known as on-demand transit, is a shared, flexible, technology-enabled form of public transportation that dynamically routes vehicles according to passenger demand, adjusting routes and stop locations based on where passengers need to travel in real time. While more traditional demand-responsive transportation services have existed for decades, often in the form of Dial-a-Ride and other paratransit services, microtransit has significantly grown in popularity since about 2015. The key difference between microtransit and other forms of demand-responsive transportation is that microtransit is technology-driven and encourages riders to book trips and track their vehicle in real-time through a mobile phone app, though a call-in option is also available to accommodate riders who cannot or prefer not to use smartphones.

Microtransit can be operated as an on-demand service, in which riders book at the time they need to travel, or a pre-booked service in which rides must be booked at least the day before travel. The key distinction between on-demand microtransit and pre-booked microtransit is as follows:

- **On-Demand Microtransit**: Passengers can request a journey in real-time. Passengers receive several proposals for a ride with a range of estimated pickup times.
- **Pre-Booked Microtransit:** Passengers can request a journey in advance. Requests can be scheduled from the day before a ride to as many as several weeks ahead of time. Riders are quoted an estimated pickup time within a broader reservation window set by the transit operator. For example, a rider who on Sunday books a ride departing for 9am on Monday can receive an estimated pickup time at any point within the window of 8am and 10am Monday. However, the exact pickup time communicated to them on Monday morning is a narrower window determined by the microtransit software and dispatcher, such as 8:30 - 9am Monday. During this time, the rider can track the vehicle's location in real time while they wait to be picked up.

Table 1 below demonstrates some of the pros and cons of each booking type.

Table 1. *Pros and cons of on-demand vs. prebooked microtransit*

Booking Type	PROS	CONS
On-Demand Microtransit	• Lower average wait times • Higher capacity for same-day bookings • Flexibility to book at time of need, adjusts easily to daily schedule • Simpler user experience • Automatic adjustments of supply without the need for dispatch intervention	• Rides cannot be booked in advance nor can recurring rides be booked • Selection of correct booking time is up to rider (e.g., to make a bus connection) • Challenging to operate in rural areas due to the longer distances and travel times between destinations.
Pre-booked Microtransit	• Customers can book rides in advance and recurring rides • Higher level of guarantee that a ride is indeed booked and the rider will reach their destination on-time (barring unforeseen circumstances) • Effective for shift planning in a mixed-fleet context (e.g. sedans vs. wheelchair-accessible minivans) • Greater potential for grouping passengers into shared trips, especially in low-density areas	• Higher average wait times • In a hybrid system, lower capacity for same day bookings because seats are filled "in advance" • Worse experience for rider if a pre-booked ride is missed compared to on-demand • Service must have adequate supply to meet pre-booked ride commitments

Unlike a traditional bus service, there are no fixed routes or schedules. Instead, routing and stop locations are based on rider pickup and dropoff requests received in real-time. If there are no requests, vehicles usually have designated terminals or staging areas (e.g., a local shopping center, public parking facility, or transit agency depot) where they can wait until a new trip request is scheduled — the terminal number and locations are determined based on the size of the zone and frequent ride request locations. This approach minimizes the amount of driving a vehicle does without passengers on board.

Microtransit service is often operated using minivans or vans (6-12 passenger vehicles are most common), though larger cutaway shuttles or other vehicles may be used. It is also possible to operate microtransit with 2-4 passenger sedans or SUVs. As with traditional bus service, passengers will share their ride with others traveling in the same direction at the same time, and the service's algorithm often adjusts routing to maximize rides shared between multiple passengers. Unlike ADA paratransit, microtransit is open to the public and anyone can use the service; wheelchair-accessible vehicles ensure the on-demand service is accessible to people with disabilities.

Above: example of a microtransit vehicle used to operate the Imperial County Transportation Commission's (ICTC) Calexico On Demand service in Calexico, California.

Typically, microtransit operates within a predefined service zone, meaning passengers can only book trips where both their origin and destination are within the same zone, but can travel anywhere within the zone. For passengers who want to travel beyond the zone boundaries, microtransit can provide a first/last-mile connection to fixed-route buses that serve areas beyond the zone boundaries. In this case, passengers will only be able to complete part of their journey using microtransit and must transfer to complete their trip, typically at a major bus stop or station within the service zone.

Most services allow passengers to book a trip using either a smartphone application or by calling a dispatcher. If the service charges a fare, multiple fare payment options are also available, such as mobile payments linked to a credit/debit card, transit agency-issued tickets, transfers or passes, or cash. Transit agencies often charge fares equivalent to local bus service to encourage ridership, while others charge a "premium" fare of two to three times the local bus fare due to the shorter wait times microtransit may offer compared to fixed-route services; in some transit networks that operate with a zero-fare policy, microtransit is also operated as a zero-fare service.

To book a ride, the passenger indicates the number of passengers in their party and their desired pickup and dropoff locations. When booking using the app, passengers will see a map of the service zone where they can book rides. The application often shows key destinations and transit hubs in the service area. Once the passenger submits a trip request, they are given a proposal that tells them when the vehicle will arrive and where to meet it. Riders are often asked to walk to a nearby pickup point to meet their vehicle, typically a 1-3 minute walk away to the nearest

intersection. However, riders who indicate they have a disability — either in the mobile app or by notifying the dispatcher — will receive curb-to-curb service and are not asked to walk any distance.

Typically, passengers must wait between 10 and 20 minutes for a trip, although this may vary depending on the level of demand and the number of vehicles available. Passengers can track the vehicle in real-time using the app. The passenger is also provided with vehicle information—for example, license plate, driver name, driver photo, and vehicle ID number. For trip requests made through a call center, passengers can choose to receive text message updates for their trips. Call center bookings also ensure the service is accessible to those who cannot or prefer not to use a smartphone.

Once the passenger(s) has boarded the vehicle, they are driven to their destination. Along the way, the vehicle will pick up and drop off other passengers heading in a similar direction, but services are configured to avoid lengthy detours for passengers already on board. The passenger can continue to track their trip's progress using the app. Passengers may also be asked to walk a few minutes from their dropoff point to their final destination. After each trip, riders who booked with the mobile app may be automatically emailed a receipt. They may also be able to provide real-time and post-trip feedback through the app.

1.4 Objectives for Microtransit Service

In discussions with Fresno COG staff and representatives of the county's transit agencies, the COG has established several key objectives for microtransit service in Fresno County:

1. **Expand transit coverage to unserved or underserved communities**, particularly those that have limited or no access to fixed-route bus service.
2. **Enhance service in disadvantaged communities** by reducing wait times and travel times for shorter, local trips within high-need communities that rely most heavily on transit as their primary means of transportation around the community.
3. **Provide first- and-last mile connections to fixed-route bus service** by connecting outer suburban and rural areas with frequent bus corridors to increase the convenience and accessibility of region-wide multimodal trips.

These goals have influenced several key elements of the study, including which opportunity areas were developed and by which metrics they were evaluated, key service parameters and constraints for implementation, and evaluation benchmarks for potential microtransit service following its launch.

2. Existing Conditions Analysis and Needs Assessment

The consulting project team undertook an existing conditions analysis and needs assessment to evaluate the current conditions in which public transportation operates in Fresno County as a means of setting a foundation for the study's subsequent development and evaluation of service alternatives. The team began by synthesizing key findings from a wide range of previous plans and studies conducted by Fresno COG as well as the county's three transit agencies. These previous studies highlight unmet transit needs throughout the county and illustrate local mobility challenges that Fresno County residents and workers face in their communities as well as the regional challenges that transit agencies face in delivering service cost-effectively against strong, structural headwinds. Several of these previous plans have examined whether and how microtransit could address these mobility challenges.

Section 2.2 Demographic Analysis identifies communities with significant public transit needs based on population, employment, socioeconomic data, and regional activity centers likely to generate and attract ridership. This section is intended to identify the communities where public transit needs, in various socioeconomic dimensions, are concentrated within Fresno County. It also serves to highlight particular unmet mobility needs and communities where public transit is limited or unavailable, indicating that microtransit may be a suitable service delivery method.

The project team also evaluated the current performance of the region's three transit agencies across several key performance indicators, such as ridership activity, frequency, coverage, productivity of service, and cost-effectiveness. This analysis illustrates the portions of the transit network that excel at moving riders efficiently and cost-effectively throughout the region, and where services underperform, based on industry benchmarks.

The existing conditions analysis and needs assessment highlights the importance of providing context-sensitive service models adapted to community transportation needs and built environment constraints. For example, while frequent fixed-route service may be the most cost-effective service model for arterial corridors of urbanized areas, it is not necessarily suitable for connecting smaller, rural municipalities or unincorporated communities, where destinations are widely dispersed and pedestrian facilities are limited. Likewise, ridership may be too low to justify the extension of frequent fixed-route service to outer-suburban areas; a more cost-effective approach could involve a small microtransit zone that operates locally within a new-development area and provides connections to the nearest frequent transit corridors, where riders can transfer to fast, frequent, and direct bus service for regional trips. Potential use-cases and configurations of microtransit service are documented in Section 3.4 Service Parameters and Simulation Setup.

2.1 Key Findings from Previous Studies

The project team conducted an extensive review of previous plans and studies completed by transit agencies in Fresno County to ensure that the recommendations and analyses in this study are aligned with other initiatives and project recommendations in the area. The following documents, grouped by agency and listed in descending order from most recent to least recent, were evaluated:

- **Fresno COG**
  - FY 2022/2023 Unmet Transit Needs Assessment (2023)
  - Transit Productivity Evaluation Fiscal Year 2022 (2022)
  - Fresno County Regional Long-Range Transit Plan 2019-2050 (2019)
- **FCRTA**
  - EV Micro Transit Service Expansion Analysis (2023)
  - Request for Proposal for Fresno County Rural Transit Agency Transit Feasibility Study (2023)
  - Short-Range Transit Plan for the Rural Fresno County Area, 2022-2026 (2021)
  - Clean Mobility Voucher Pilot Program (CMO) (2021)
  - FCRTA Electric Vehicle Rideshare/Carshare/Rural Transit Expansion Plan (2020)
  - Short Range Transit Plan for the Fresno County Area 2020-2024 (2019)
- **FAX / City of Fresno**
  - South Central Specific Plan (2023-ongoing)
  - FAX-GO Application to USDOT ATTAIN Program (2023)
  - 2022 Handy Ride Passenger Satisfaction Report (2022)
  - 2022 FAX Passenger Satisfaction Report (2022)
  - Southwest Community Connector (SWCC) Route Options (2022)
  - Fresno-Clovis Metropolitan Area (FCMA) Short-Range Transit Plan (SRTP) (2021)
  - Community Needs Assessment and Community Action Plan (2021)
  - Clean Transportation Needs Assessment for Three Palms Mobile Home Park and RV Park (2020-2021)
  - FAX Route Restructuring (2018)
  - Title VI Service Equity Analysis: 2016 FAX Network to Faster FAX (2016)
- **Clovis Transit**
  - Fresno-Clovis Metropolitan Area (FCMA) Short-Range Plan (SRTP) (2021)
  - Transit Productivity Evaluation FY 2022
  - Fresno County Regional Long-Range Transit Plan 2019-2050 (2019)
  - Proposed changes to Clovis Transit System (2023-ongoing)
- **California Department of Community Services and Development**
  - Community Needs Assessment and Community Action Plan (2021)

Many of the studies assess current transit performance in Fresno County, while others investigate the possibility of introducing microtransit and electric vehicle (EV) solutions to the area or focus more broadly on transportation improvements throughout the county. Methodologies of the studies and reports vary significantly as well; some include socio-demographic analyses of Fresno County, others prioritize local stakeholder engagement and interviews, while still others analyze ridership and productivity of existing routes to prioritize regional transit investments.

Analysis of current transit coverage and service offerings reveals that the three Fresno County transit agencies continue a healthy recovery of ridership following the COVID-19 pandemic. As the largest and most urbanized of the three agencies, FAX's fixed-route system reports, by far, the highest levels of ridership and productivity.[2] Compared to Fresno and most other incorporated cities in Fresno County, the City of Clovis has a more affluent population with higher rates of private car ownership (see Table 2), characteristics which result in relatively lower rates of transit ridership.[3] Due in part to these factors, Clovis Transit's locally oriented, fixed-route services (Routes 10 and 50) operate at low productivity and high cost per passenger trip for service within an urbanized area. FCRTA's rural fixed-route and demand-response services operate with relatively low productivity given the low levels of ridership and long travel distances required to operate across large rural areas. As a result of these challenges, FCRTA services operate with an average farebox recovery ratio (the ratio of fare revenues to operating expenses) of 5%, and as a result, most of its subsystems require additional Measure C augmentation funds (about $300,000 in FY 2022) to be sustained at the 10% minimum farebox recovery ratio mandated by California's Transportation Development Act (TDA).[4] This challenge is primarily the result of lower ridership levels due to the sparsely populated rural service area, rather than unusually high operating expenses; the average hourly cost of bus operations in FCRTA's services was $91 in FY 2022, compared to $129 for FAX fixed-route service.[5]

FAX riders report high levels of satisfaction with service in general in recent onboard surveys. FAX customer satisfaction is largely driven by on-time performance, bus frequency, and time to complete a trip. These surveys also show that FAX customers are predominantly low-income, with 62% of customers earning a household income of under $20,000. 70% do not have access to a personal vehicle. Among the 30% who do have access to a vehicle, 27% use FAX instead of their vehicle to save gas, noting that the bus is less expensive than using their vehicle.

However, multiple studies highlight the limited service coverage, challenges in the pedestrian environment limiting access to bus stops, and long wait times of some routes as their primary areas of dissatisfaction with existing service. As part of the County's Long-Range Transportation Plan (LRTP) conducted in 2019, on average, Fresno County residents prioritized the extension of routes to additional areas of Fresno County as the most important service improvement to the region's transportation system, followed by more bus stop amenities, discounted Uber and Lyft services, more routes with night service, and additional routes with 15-minute service frequency.[6]

Given these findings, many of the reports recommend general improvements to the transit system as a whole, such as extended service hours,[7] expanded service in previously unserved and

[2] Fresno COG. 2023. Transit Productivity Evaluation Fiscal Year 2022, Table 1.
[3] About 4% of Clovis households are car-free, compared to 9% in Fresno; likewise, the share of Clovis residents living in poverty is 8%, compared to 23% in Fresno. As detailed in the FAX Bus Passenger Satisfaction Report, most FAX riders (62%) live in households earning less than $20,000 per year, while 70% live in car-free households.
[4] Fresno COG. 2023. Transit Productivity Evaluation Fiscal Year 2022, p. 65.
[5] Ibid., Table 1.
[6] Fresno COG. 2019. Fresno County Regional Long-Range Transit Plan (2019-2050)
[7] Fresno COG. 2022. FY 2022/2023 Unmet Transit Needs Assessment. P. 16.

underserved areas,[8] route efficiency improvements,[9] more multimodal connectivity,[10] increased service to downtown Fresno and Clovis,[11] and continued compliance with accessibility requirements like ADA and Title VI.[12] Taken as a whole, the studies suggest the important role that transit can play in improving urban development, accessibility, public safety, and equity in the community. The studies also recommend increased efforts to improve sustainability efforts and further improve the climate and air quality impact of Fresno County's transit services, repeatedly proposing that clean vehicle technology and carbon emissions reduction initiatives be undertaken with increased vigor.[13] This is of particular concern for the region given Fresno County's current and long-term air quality and climate change mitigation challenges.

The County has eagerly explored microtransit and EV solutions in recent years. FCRTA, for instance, is committed to long-term investment in EV technology to support intra-city and intercity microtransit services, as indicated in its Short Range Transit Plan and EV Microtransit Expansion Analysis. Additionally, as of October 2022, FCRTA launched a pilot EV microtransit service in the unincorporated community of Biola. Since Biola has particularly high unemployment rates, low per capita income, high levels of air pollution, and high poverty rates, it was selected for the initial pilot service. FCRTA's EV Microtransit Expansion Analysis concluded that EV microtransit service should expand across three service zones—Laton, Riverdale-Lanare, and Cantua Creek-Three Rocks-El Porvenir-San Joaquin—since residents of these areas tend to lack multiple public transportation options; most fixed routes in the area offer limited coverage and schedules. The Biola pilot service has been initially successful in expanding demand-response service to a previously unserved community, suggesting a larger appetite for microtransit in the surrounding area.

Above: Chevy Bolt vehicle used in FCRTA's Biola Rideshare/Microtransit service.

[8] FCRTA. 2023. Short-Range Transit Plan for the Rural Fresno County Area, 2022-2026, p. 100.
[9] FAX. 2018. FAX Route Restructuring Study. P. 16.
[10] City of Fresno. 2021. Central Southeast Area Specific Plan.
[11] Ibid.
[12] FAX. 2016. Title VI Service Equity Analysis: 2016 FAX Network to Faster FAX.
[13] FAX/Clovis Transit. 2021. Fresno-Clovis Metropolitan Area (FCMA) Short-Range Transit Plan (SRTP)

Similarly, FAX and Clovis Transit have each expressed interest in pursuing microtransit solutions to "provide additional coverage in areas with less frequent fixed-route service and/or night service or paratransit service, and enhance system performance," as well as additional Mobility-as-a-Service (MaaS) technologies offering real-time, multimodal transit information and trip planning functions.[14, 15] FAX applied for a USDOT grant to deploy a three-year microtransit pilot program in West Fresno, a high-need area that is generally inaccessible via other forms of public transportation. The initiative aimed to expand mobility for West Fresno residents, particularly in the Three Palms Mobile Home & RV Park, who are frequently required to travel up to a mile out of their way by foot to get to nearby public transit stops and general amenities. Although the grant was ultimately not awarded, the service area remains a potential area for microtransit.

Despite the many studies and reports completed in Fresno County and continuous efforts from the area's transit agencies to address shortcomings in area transportation options, the county faces unique constraints for funding transit improvements. Large portions of Fresno County lack the developmental density and supportive pedestrian infrastructure, such as sidewalks, curb space, and gutters needed to support transit.[16] Specific areas of need identified in the Fresno COG 2022/23 Unmet Transit Needs Assessment include the Fresno Yosemite International Airport, service to Fancher Creek Elementary and Clovis East High School, service in residential areas west of 99 and north of Clinton, and service to Island Waterpark and its surrounding areas. However, such transit improvements are often deemed unreasonable to meet given the high cost and local constraints of the built environment.

2.2 Demographic Analysis

The project team performed a demographic analysis of Fresno County to identify areas with significant public transit needs based on the demographic characteristics of local residents and workers. To perform this analysis, the project team analyzed regional population and employment density, as well as the quantity and spatial distribution of select demographic groups known to ride transit at higher rates than the average of the general population. These demographic groups include zero-vehicle households, areas with significant socioeconomic disadvantage (as identified by Cal OEHHA or the USDOT's Areas of Persistent Poverty criteria), older adults, youth, communities of color (residents who identify with a race/ethnicity other than non-Hispanic White), people with disabilities, and people with limited English proficiency. Analysis also included key activity centers throughout the County that typically generate and attract significant transit ridership, such as shopping centers, affordable and senior housing communities, medical centers, schools, large employers, social services agencies, senior centers, and community recreation areas. The project team evaluated all of Fresno County, including unincorporated communities. Findings from this demographic analysis informed the selection of opportunity areas, further detailed in Section 3. Service Alternative Development, ensuring that opportunity areas targeted high-need groups, and many of the demographic indicators outlined below were used to evaluate these opportunity areas in Section 4. Prioritization Analysis, assessing the extent to which each of the opportunity areas increases access to transit services and key destinations for high-need groups. Key findings of the distribution and intensity of each demographic group are included

[14] FAX. 2023. USDOT ATTAIN grant application.
[15] FAX/Clovis Transit. 2021. Fresno-Clovis Metropolitan Area (FCMA) Short-Range Transit Plan (SRTP)
[16] Fresno COG FY 2022/2023 Unmet Transit Needs Assessment

below, and several summaries refer to maps included in Appendix 2 of the Existing Conditions Report.

Population and Population Density

As of 2021, the population of Fresno County is estimated to be about 1 million people. As shown in Figure 2, the cities of Fresno and Clovis are the most heavily populated cities in the county, with populations of around 545,000 and 123,000, respectively, followed by cities like Sanger (27,000), Reedley (25,000), and Selma (25,000).

Population density is an important metric of travel demand. Transit industry research has found that local, fixed-route bus corridors operating with at least hourly frequency require population densities of at least 3,000 people per square mile to achieve acceptable productivity levels. The average population density of Fresno County as a whole is 168 people per square mile (see Figure 3). Parlier is the most densely populated city in the county (6,061 people per square mile), followed closely by the cities of Orange Cove (5,357 people per square mile) and Clovis (5,163 people per square mile). Fresno, Kerman, Sanger, Reedley, Kingsburg, Huron, and Mendota contain somewhat lower levels of population density, ranging from about 3,700 to 4,900 people per square mile. Rural, unincorporated areas of the County have much lower population densities of less than 500 people per square mile, and about 26 people per square mile on average.

Figure 2. Population distribution within Fresno County

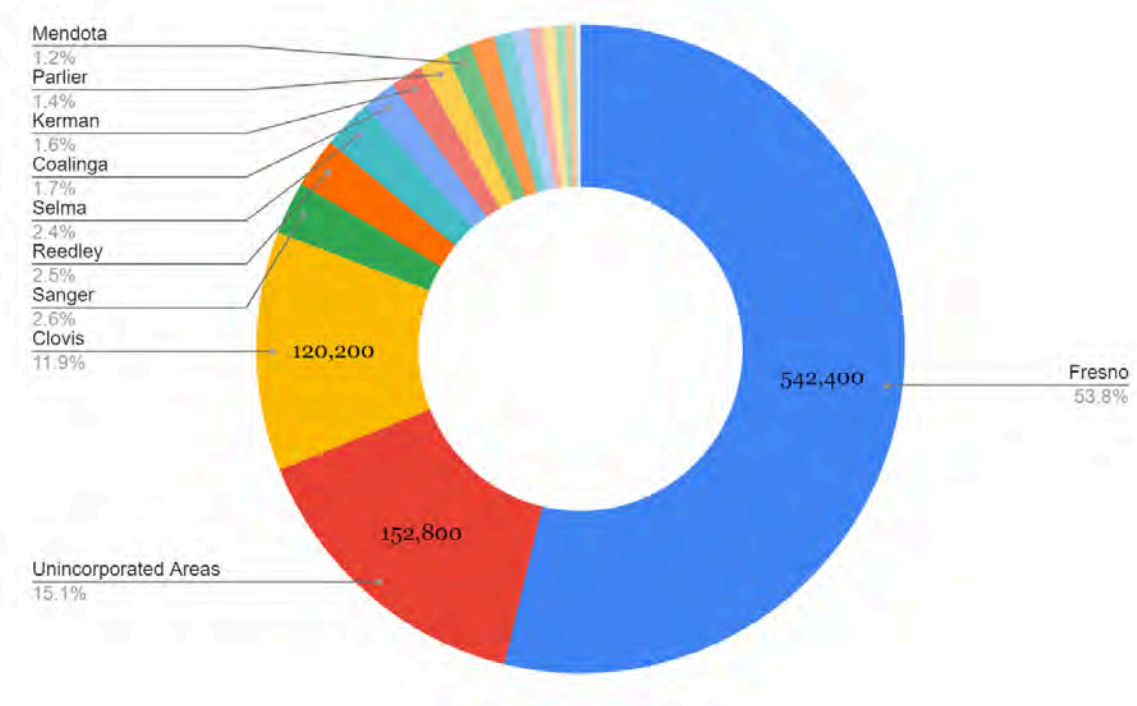
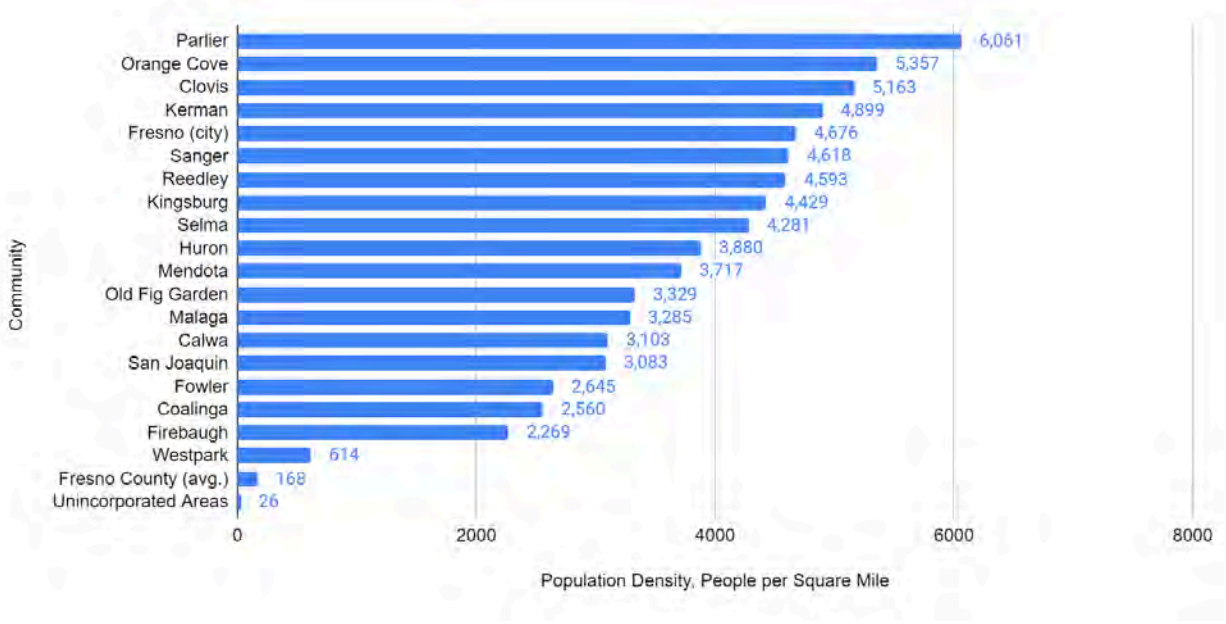


Figure 3. Population Density of Fresno County Communities



Employment Density and Major Employers

Employment density is a strong indicator of daily travel patterns; even after the COVID-19 pandemic, people are more likely to use transit for commuting than for non-work-related trips due to the regularity of travel, for many riders, between home and work. As of 2020, roughly 375,000 jobs were available in Fresno County. Closely aligned with population density in Fresno County, jobs are heavily concentrated in the cities of Fresno and Clovis, followed by mid-sized cities in the southeastern region of the county, such as Sanger, Reedley, and Selma (see Table 2).

The most common industries in Fresno County by total employment include healthcare, education, and agriculture. Primary employers include medical centers such as Fresno Community Medical Center, Saint Agnes Medical Center, and Kaiser Permanente. Other major employers include agricultural and manufacturing facilities such as Sun-Maid, Fowler Packing Company, Cargill Meat Solutions, and Amazon (particularly the FAT1 fulfillment center).[17] The recently completed T-Mobile Central Valley Experience Center in Kingsburg is expected to become another of Fresno County's largest employers.

Zero-Vehicle Households

Vehicle ownership is one of the strongest predictors of transit ridership in the United States, as people in zero-vehicle households tend to rely on public transportation at much higher rates than the general population. About 7% of Fresno County households, or 26,000 households, do not have access to a personal vehicle. Areas in western and southwestern Fresno (e.g. West Park and Edison, West Area, Calwa, Malaga, and Sunnyside), in particular, have relatively high densities of zero-vehicle households. The distribution of car-free households is strongly correlated with the distribution of residents below the poverty line (see Existing Conditions Report, Figures 23 and

[17] State of California, Employment Development Department. 2023. "Major Employers in Fresno County." https://labormarketinfo.edd.ca.gov/majorer/countymajorer.asp?CountyCode=000019

24). This suggests that most households without a private vehicle are also low-income, a finding validated by FAX's recent onboard rider survey.[18]

Cal OEHHA Disadvantaged Communities

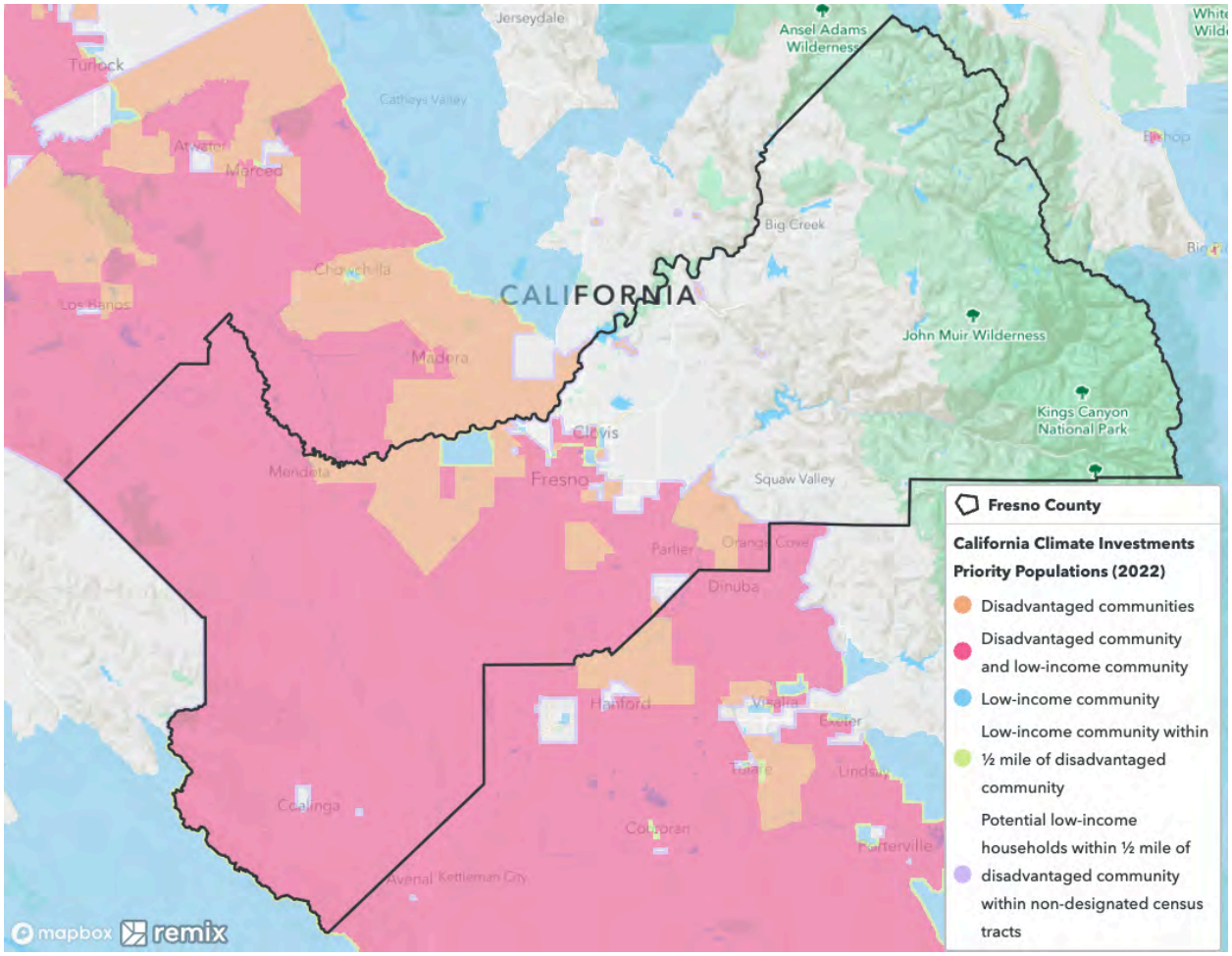
Transit access is both reflective of and a potential remedy to socioeconomic and environmental disadvantage in California communities. The California Office of Environmental Health Hazard Assessment (Cal OEHHA) developed the CalEnviroScreen index to measure rates of socioeconomic disadvantage and exposure to pollution, pursuant to SB 535.[19] CalEnviroScreen disadvantaged communities are defined as communities that are disproportionately burdened by and vulnerable to multiple sources of pollution. In the Existing Conditions Report, Figures 29 and 35 demonstrate the intersection of Cal OEHHA disadvantaged communities and low-income communities, reflecting the close relationship between a community's income levels and exposure to environmental hazards.

The western half of Fresno County and the majority of the urbanized areas within the county are identified as both disadvantaged and low-income communities (see **Figure 4**). Large tracts within downtown Fresno and southern and southwestern Fresno County fall within the category of being both disadvantaged and low-income communities. The western half of the city of Kerman is one of few incorporated areas in the county identified only as a disadvantaged community, due to its exposure to pollution from local agriculture and industry, and not as a low-income community.

[18] 2022 FAX Passenger Satisfaction Report

[19] August, Laura. 2021. "CalEnviroScreen 4.0." Text. OEHHA. September 20, 2021. https://oehha.ca.gov/calenviroscreen/report/calenviroscreen-40.

Figure 4: Cal OEHHA Disadvantaged Communities: Fresno County



Areas of Persistent Poverty

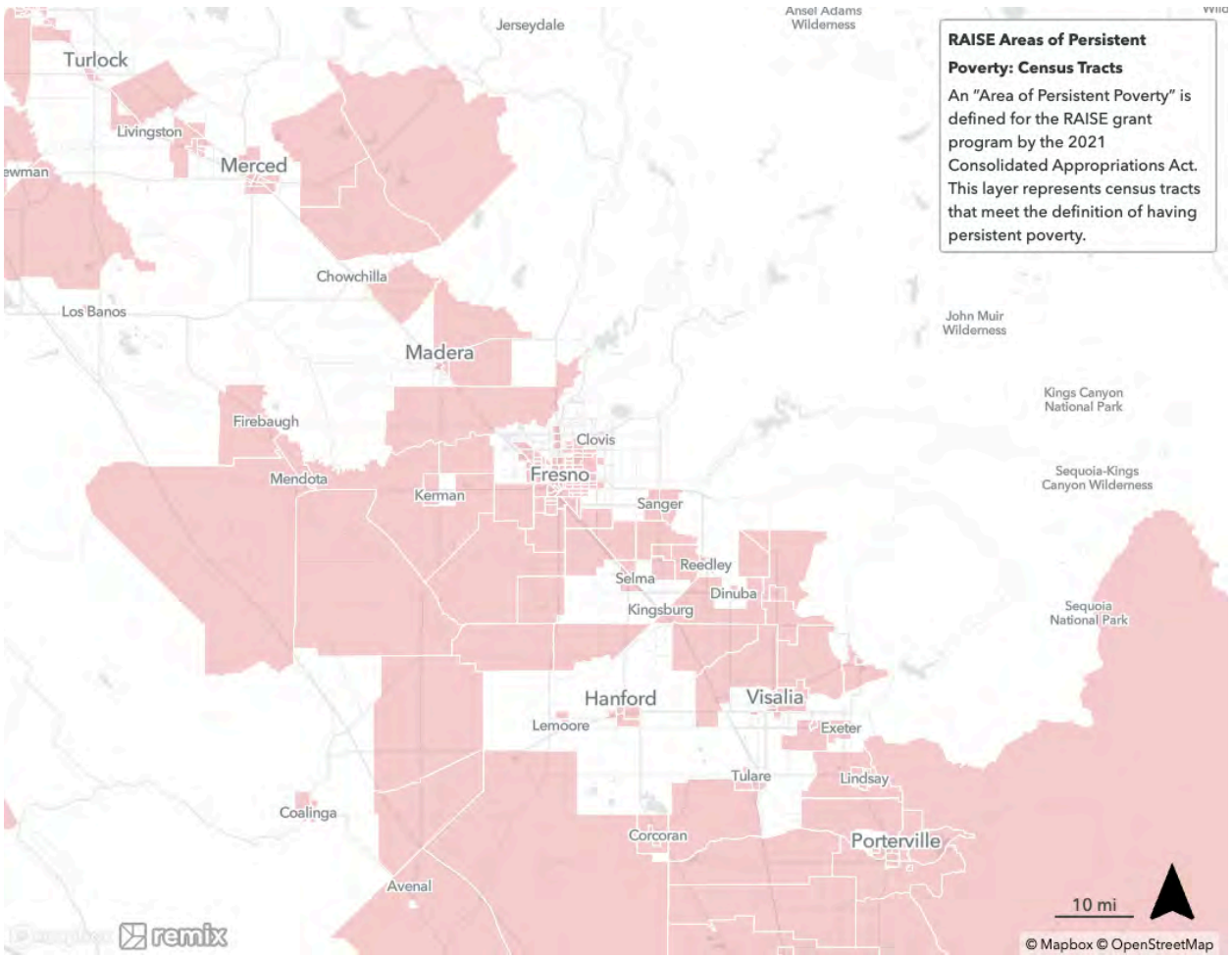
High-income households are more likely to own vehicles and less likely to use transit than the general public on average, while low-income households, particularly those below the poverty threshold, are more likely to use public transit, which is usually cheaper than driving or using taxis or rideshares like Uber and Lyft. The cost of owning and operating a vehicle, averaging $12,000 per year or $1,000 a month according to AAA,[20] can constitute a significant portion of a household's budget.

USDOT defines areas of persistent poverty as those with poverty rates of 20 percent or higher that persist across three successive decennial censuses (1990, 2000, and 2020).[21] Around 20.6% of Fresno County residents live in poverty, more than 150 percent of the statewide rate in California (11.8%) and the national poverty rate (12.3%). In 2021, median household income in the

[20] Carrns, Ann. 2023. "The Rising Costs of Owning a Car." The New York Times, September 22, 2023, sec. Your Money. https://www.nytimes.com/2023/09/22/your-money/car-ownership-costs-increase.html.
[21] "Areas of Persistent Poverty & Historically Disadvantaged Communities | US Department of Transportation." Accessed September 28, 2023. https://www.transportation.gov/RAISEgrants/raise-app-hdc.

county was estimated at around $61,000, or 27% lower than the state of California ($84,000). As shown in Figure 35 of the Existing Conditions Report, areas of persistent poverty are clustered in the western and southwestern regions of the county, covering most of Fresno County's incorporated cities. Relatively few urbanized and/or incorporated areas are located outside areas of persistent poverty: these relatively affluent areas include portions of Coalinga, most of Clovis, northwestern Fresno (e.g., Herndon) and Old Fig Garden, the eastern half of Kerman, and the southwestern portion of Reedley. In contrast, poverty rates are highest and exceed 30% in the communities of Calwa, Firebaugh, Huron, Mendota, Orange Cove, and San Joaquin (see Table 2).

Figure 5: *Areas of Persistent Poverty: Fresno County*



Older Adults (65+)

Older adults aged 65 and older tend to rely on public transit at higher rates for multiple reasons, including, on average, lower household incomes (many are retired) and higher rates of disability (see the People with Disabilities maps in Appendix 2 of the Existing Conditions Report). Across Fresno County, around 12% of the population (roughly 130,000 people) is over 65. As shown in Figures 41-46 of the Existing Conditions Report, the cities of Fresno, Clovis, Sanger, Selma, and Reedley have the county's greatest concentrations of older adults by total number and density. As

a proportion of the local population, the communities of Clovis, Old Fig Garden, Malaga, Westpark, Fowler, and Kingsburg feature higher shares of older adults compared to the countywide average (see Table 2). Relatively few senior citizens reside in rural and unincorporated communities within Fresno County, which have more limited access to public transit.

Youth Under 18

Youth, particularly those between the ages of 14 and 18, are often frequent public transit users, as many are either too young to have a driver's license or do not have access to a private vehicle of their own. Nearly one third (29%) of the study area population is under the age of 18, or roughly 294,000 people. The maps in Figures 47 to 52 of the Existing Conditions Report indicate clusters in population of youth under 18 that largely mirror clusters of older adults in the county; the cities of Fresno, Clovis, Sanger, Selma, Parlier, and Reedley, areas that are relatively well-served by existing fixed-route and demand-response services, have relatively high densities of youth under the age of 18. Communities with above-average shares of youth under 18 (30% of the population or greater) include Calwa, Firebaugh, Kerman, Mendota, Orange Cove, Parlier, Reedley, Sanger, and San Joaquin (see Table 2). Each of these communities, with the exceptions of Calwa and San Joaquin, have access to same-day, intracity demand-response services operated by FCRTA. Unlike most other FCRTA intracity services, the City of San Joaquin's demand-response service requires 24-hour advance reservations. The unincorporated community of Calwa, meanwhile, lies largely within a 10-minute walk of frequent fixed-route service along FAX's Route 38-Cedar corridor.

Communities of Color

Communities of color (including people who identify with a race/ethnicity other than non-Hispanic White) are more likely to use public transit on average, as in most cities they have lower incomes and vehicle ownership rates compared to White residents in the US. A majority of the population of Fresno County (73%, or roughly 740,000 people) identify as a race/ethnicity other than non-Hispanic White.

As indicated by the maps shown in Figures 53 to 58 of the Existing Conditions Report, communities of color are clustered in the central portion of Fresno County, in more populous cities such as the cities of Fresno, Clovis, Sanger, Selma, and Reedley. Cities in the western half of Fresno County such as Firebaugh, Mendota, and Kerman also contain dense populations of nonwhite and/or Hispanic/Latino residents. As a percentage of the local population, most incorporated cities in Fresno County feature higher shares of non-White and/or Hispanic/Latino residents compared to the countywide average, with notable exceptions of Clovis, Kingsburg, and Coalinga (see Table 2).

People with Disabilities

Many people with disabilities are unable to drive themselves for medical or legal reasons and/or cannot afford a private vehicle, therefore making them more likely to rely on public transit and paratransit services. More than one in ten (13%) of Fresno County residents identify as people living with a disability.[22] As shown in Figures 59 to 64 of the Existing Conditions Report, residents of Fresno County with disabilities tend to be heavily concentrated in downtown Fresno and Clovis, with smaller concentrations in southeastern cities such as Selma and Reedley. People with

[22] American Community Survey (ACS) 2021 5-Year Estimates, Table S1810.

disabilities form an above-average share of the local population in Fresno, Calwa, Malaga, Westpark, and Coalinga (see Table 2).

Residents with disabilities are more likely to require transportation to and from doctor appointments and other medical services, many of which are clustered in downtown Fresno, Clovis, and southeastern cities like Selma, Reedley, and Parlier. Importantly, these areas currently contain fixed-route, intracity demand-response services, and complementary ADA paratransit or accommodations (e.g., FAX Handy Ride, Clovis Round Up, or FCRTA's service deviations for passengers with disabilities) but limited frequencies and lack of service connections between different areas within the county may make on-time arrivals at medical appointments difficult for people with disabilities in Fresno County. For example, passengers with disabilities traveling between Fresno and Clovis must transfer between Handy Ride and Round Up services to complete their trips.

Limited English Proficiency

English language proficiency is an important indicator of disadvantage in the US, and residents with limited English proficiency ride public transportation at higher rates than the general population. Limited English proficiency can make accessing public transportation particularly difficult, as riders may have more difficulty understanding routes, fares, or schedules of fixed-route service or, likewise, the process for reserving paratransit or demand-response services. These challenges can pose significant barriers to using public transit, especially if a rider speaks a language other than English or Spanish, as transit agency materials are not always readily available in less commonly spoken languages. 18% of residents in Fresno County identify as speaking English less than very well. As indicated by Figures 65 to 70 of the Existing Conditions Report, clusters of residents of Fresno County with limited English proficiency closely align with populations that identify as nonwhite and/or of Hispanic/Latino origin. Fresno County residents with limited English proficiency tend to be clustered around Fresno, Clovis, Sanger, Selma, and Reedley, as with a significant portion of the population of the cities of Mendota and Kerman.

Activity Centers

Key activity centers are community destinations likely to generate and attract significant transit ridership, such as large employers, shopping centers, medical centers, schools, low-income housing communities, and community centers. The project team reviewed multiple data sources to identify Fresno County's key activity centers, including the following:

- Stop-level ridership on FAX and Clovis Transit's fixed-route services[23]
- Origin-destination patterns on complementary ADA paratransit services such as FAX Handy Ride and Clovis Round Up[24]
- Major employers indicated by the California Employment Development Department[25]
- SNAP-authorized groceries and retailers indicated by the USDA[26]

[23] April 2023 boardings/alightings provided by FAX and Clovis Transit to the project team.
[24] FY 2021 origins and destinations provided by FAX and Clovis Transit to the project team.
[25] State of California, Employment Development Department. 2023. "Major Employers in Fresno County." https://labormarketinfo.edd.ca.gov/majorer/countymajorer.asp?CountyCode=000019
[26] USDA. 2023 July 27. "SNAP Retailer Data | Food and Nutrition Service." https://www.fns.usda.gov/snap/retailer/data.

- Public housing communities indicated by the HUD Office of Policy Development and Research[27]
- Secondary schools and colleges/universities indicated by the Homeland Infrastructure Foundation-Level dataset[28]
- Qualitative evaluations of other key destinations (e.g., community and recreation centers, retail and shopping centers)

This assessment was supplemented with detailed input from transit agency staff serving on the Project Committee. In Fresno County, key destinations are generally located where people live. Most of the region's significant activity centers are located in/around the City of Fresno, which attracts residents from across the County for work, school, recreation, and other essential errands. Most activity centers in Fresno are accessible via fixed-route transit, but some destinations in peripheral neighborhoods are located further than walking distance from bus stops. In particular, Sanger West High School, in southeastern Fresno, and Central High School, between Fresno and Kerman, also do not have public transit service, which may complicate travel for students who participate in after-school programs. Outside of Fresno, activity centers are generally clustered within incorporated cities accessible either by FCRTA's demand-response or fixed-route services. However, several large agricultural employment centers are inaccessible to transit due to their rural locations, such as Fowler Packing Company (Fowler), Harris Beef (Kingsburg and Coalinga), Paramount Farms (Coalinga), Stamoule's Produce (Mendota), and Zacky Farms (Kerman). In the far eastern Sierra foothills near Huntington Lake, China Peak Mountain Resort is another employment center lacking transit access.

[27] US Department of Housing and Urban Development (HUD). "DATASETS | HUD USER." https://www.huduser.gov/portal/pdrdatas_landing.html.
[28] US Department of Homeland Security. 2022. "HIFLD Open Data." 2022. https://hifld-geoplatform.opendata.arcgis.com/search?collection=Dataset.

Table 2. *Population, Employment, and Socioeconomic Data of Fresno County Communities (Totals)*[29]

	Daytime/Nighttime Population		Socioeconomic Conditions (# of residents)					
	Population	Jobs	Zero-Vehicle Households (#)	Individuals Living in Poverty (#)	Older Adults 65+ (#)	Youth Under 18 (#)	Race/Ethnicity other than Non-Hispanic White (#)	People with Disabilities (#)
Fresno County Municipalities								
Fresno	542,400	232,999	14,177	124,752	65,088	151,872	412,224	81,360
Clovis	120,200	34,788	1,507	9,616	16,828	34,858	62,504	13,222
Coalinga	17,600	3,660	171	3,520	2,112	5,104	12,320	2,640
Firebaugh	8,100	1,490	205	2,754	810	3,078	7,614	567
Fowler	6,700	2,618	17	1,541	1,273	1,876	5,561	871
Huron	6,200	286	2	2,356	186	1,736	6,076	806
Kerman	16,000	7,067	77	2,720	1,280	5,120	14,080	1,600
Kingsburg	12,400	4,762	108	1,240	1,612	3,472	7,068	1,488
Mendota	12,600	1,503	42	4,410	1,134	4,284	12,474	630
Orange Cove	9,600	846	37	4,320	672	3,648	9,408	672
Parlier	14,600	2,543	49	4,234	1,314	4,964	14,454	1,314
Reedley	25,200	8,645	343	5,040	2,268	8,064	21,924	2,268
Sanger	26,600	8,231	339	5,586	2,926	8,246	22,610	3,458
San Joaquin	3,700	630	0	1,184	148	1,406	3,700	185
Selma	24,700	6,496	302	5,928	2,470	7,163	21,983	2,717
Unincorporated Areas	152,800	55,623	5,740	20,879	19,573	44,961	85,637	16,039
Fresno County Total	**1,008,700**	**374,478**	**23,205**	**201,740**	**121,044**	**292,523**	**726,264**	**131,131**

[29] This table uses a tricolor scale: red-shaded cells indicate the highest totals, followed by the next-highest totals in yellow/orange, and the lowest totals in green.

Table 3. *Population, Employment, and Socioeconomic Data of Fresno County Communities (Percentages)*[30]

Socioeconomic Conditions (% of residents)						
	Zero-Vehicle Households (%)	**Individuals Living in Poverty (%)**	**Older Adults 65+ (%)**	**Youth Under 18 (%)**	**Race/Ethnicity other than Non-Hispanic White (%)**	**People with Disabilities (%)**
Fresno County Municipalities						
Fresno	9%	23%	12%	28%	76%	15%
Clovis	4%	8%	14%	29%	52%	11%
Coalinga	9%	20%	12%	29%	70%	15%
Firebaugh	15%	34%	10%	38%	94%	7%
Fowler	8%	23%	19%	28%	83%	13%
Huron	19%	38%	3%	28%	98%	13%
Kerman	7%	17%	8%	32%	88%	10%
Kingsburg	8%	10%	13%	28%	57%	12%
Mendota	19%	35%	9%	34%	99%	5%
Orange Cove	16%	45%	7%	38%	98%	7%
Parlier	4%	29%	9%	34%	99%	9%
Reedley	7%	20%	9%	32%	87%	9%
Sanger	8%	21%	11%	31%	85%	13%
San Joaquin	4%	32%	4%	38%	100%	5%
Selma	8%	24%	10%	29%	89%	11%
Unincorporated Areas	4%	13%	13%	29%	56%	10%
Fresno County Total	**7%**	**20%**	**12%**	**29%**	**72%**	**13%**

[30] This table uses a red-green color scale. Red-shaded cells indicate percentages below the Fresno County average, while green-shaded cells have percentages that exceed the County average.

2.3 Transit Network Assessment

As part of the Existing Conditions Analysis and Needs Assessment, the project team evaluated the quality and performance of selected FAX, Clovis Transit, and FCRTA transit services. The analysis assesses fixed-route and demand response services and considers the overall efficiency of Fresno County's existing transit network.

Fresno and Clovis are well-served by the existing fixed-route transit network, with multiple routes and frequencies of 15 minutes or less on four primary corridors. However, mid-sized cities like Sanger, Reedley, and Selma are only serviced by one to two fixed-route lines, with frequencies ranging from 60 minutes at the most frequent (the Dinuba Connection, operated by the Tulare County Regional Transit Agency) to other, more limited services that operate one to three daily round-trips on weekdays only. Given the lack of fixed-route options within the smaller incorporated cities and their smaller bases of population, FCRTA offers demand-response services within and between several of these cities. However, rural unincorporated communities frequently lack a fixed-route or microtransit option, particularly west of SR-99 or in the Sierra foothills (see **Figure 6**).

Transportation Development Act Farebox Recovery Requirements

From its enactment in 1971 until a recent legislative amendment in July 2021, the state's Transportation Development Act (TDA) required large urban transit agencies to meet a farebox recovery ratio of 20% on fixed-route services and 10% on transit services limited to seniors and people with disabilities (e.g. ADA paratransit). For rural transit agencies, the required farebox recovery ratio was 10% for both fixed-route and demand-response service (with the exception of the Biola Rideshare/Microtransit program). If transit agencies did not meet this threshold, they were required to use locally generated funds (e.g. Measure C) to fill the gap or risk facing penalties, including not receiving the full share of their TDA funding allocation. The farebox recovery requirement significantly discouraged transit agencies from introducing new service in areas with low ridership that would reduce the agency's overall farebox recovery ratio. It also had the effect of limiting potential network expansion, particularly in transit agencies with unionized workforces with above-average labor costs.

As a result of AB 149, TDA was amended and its farebox recovery requirements for transit agencies were temporarily suspended for all public transportation services due to the COVID-19 pandemic. Among fixed-route services, the requirement will resume in FY 26-27 beginning in July 2026. However, another of AB 149's provisions is expected to significantly improve California transit agencies' ability to implement microtransit while remaining in compliance with the TDA. **AB 149 permanently exempts operating expenses of microtransit** and other demand-response and paratransit services, as well as expenditures related to fare payment systems and zero-emissions vehicles, from the farebox recovery ratio calculation under the TDA.[31] This change gives transit agencies considerably greater freedom to plan and operate new services and pilot programs, particularly in the demand-response/microtransit category, without the risk of these programs throwing the agencies' fare recovery ratios out of compliance.

[31] Committee on Budget, Transportation. 2021. Bill Text - AB-149 Transportation. Public Utilities Code, Section 99268.17. https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=202120220AB149.

Fixed-Route Services in Fresno County

There are 34 fixed-route bus services in Fresno County. Fixed-route services are clustered in the Fresno and Clovis urbanized area, where FAX provides service in Fresno and Clovis Transit provides service in Clovis. Outside of the urbanized area, FCRTA and other regional operators provide intercity fixed-route services for connections between Fresno and rural communities. The County's fixed-route services are summarized by frequency below.

Over 60 Minutes	31-60 Minutes	16-30 Minutes	15 Minutes or Less
14 Routes	2 Routes	14 Routes	4 Routes

Demand-Response Services in Fresno County

There are 16 demand-response services in Fresno County, most of which are located in rural communities. Rides must be booked by calling a dispatcher; there is no mobile app available. Most services can be booked on-demand, but some require 24 hours advance booking.[32] Many demand-response services provide coverage in areas with no fixed-routes, and several connect with regional fixed-routes to facilitate longer-distance regional trips.

Despite the challenges of meeting the TDA's farebox recovery requirements, Fresno County Rural Transportation Agency (FCRTA), in particular, has distinguished itself as a pioneer in transit solutions in recent years. There are currently 17 demand-response services operating in rural communities in Fresno County. Most of these demand-response services, 14 of the 17, are "intra-city" and operate within the smaller incorporated cities of Fresno County; trips must begin and end within the city limits. These services operate with between one and four vehicles in each city and can be booked for same-day/on-demand service, with wait times of generally less than 30 minutes, depending on demand and drivers available.

However, these services operate without recent customer-focused technological advancements, such as rider-facing smartphone apps with real-time vehicle tracking or mobile fare payment; rather, rides must be booked by calling a 1-800 number with a dispatcher, and only cash fares or agency-issued tickets/passes are accepted onboard. Three other FCRTA demand-response services serve larger areas, largely in

[32] Demand-response services that require 24-hour advance reservations include Rural Transit (countywide, lifeline service for unincorporated communities) San Joaquin Transit, Biola Rideshare/Microtransit, and Auberry Transit's intercity service to Fresno.

unincorporated communities. Due to the longer trips served, they require 24 hour advance booking. These services include:

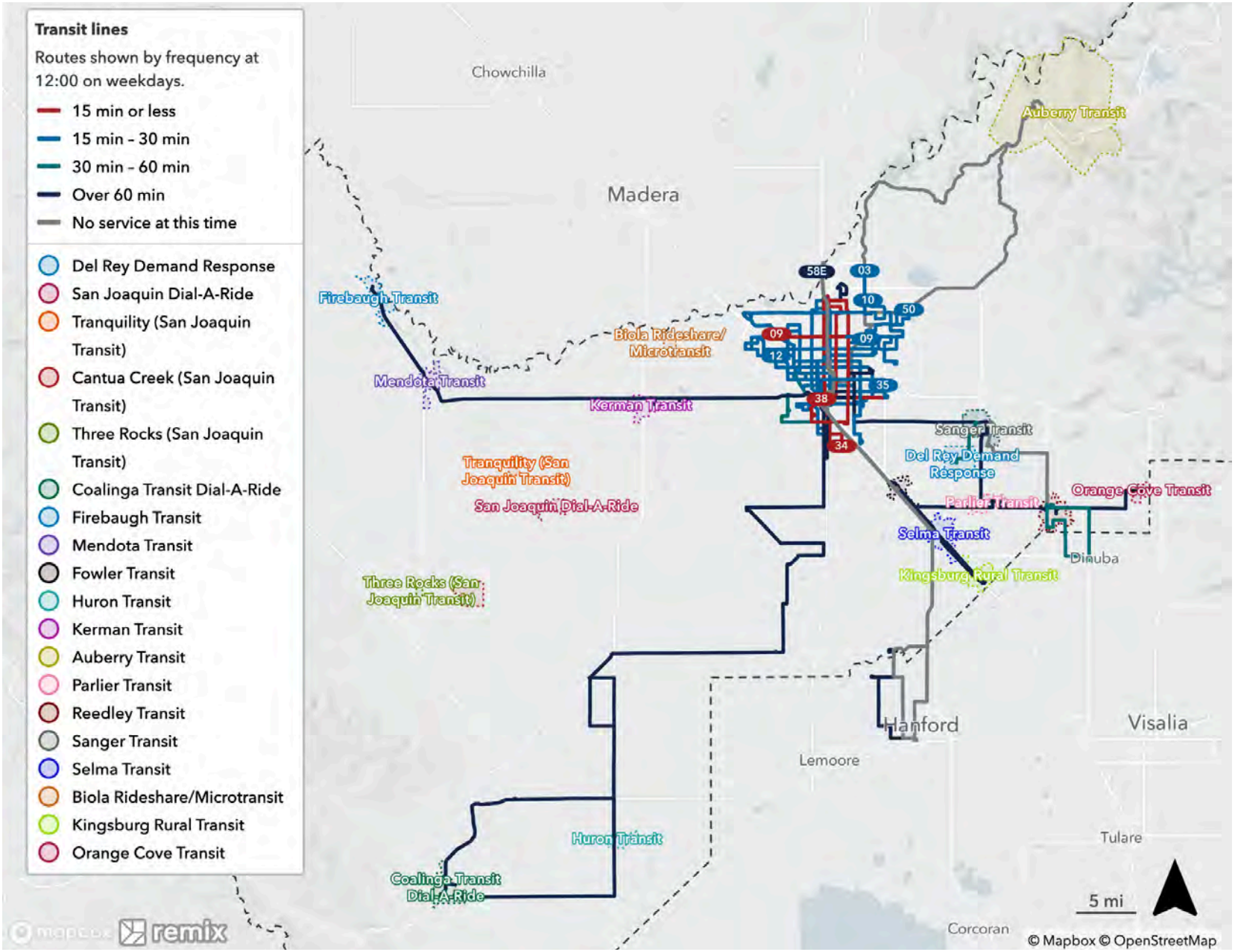
1. Biola Rideshare/Microtransit, an electric vehicle-powered microtransit service adapted to the rural, unincorporated community of Biola. This service connects Biola residents to the cities of Fresno and Clovis. Unlike larger microtransit services, it does not feature a rider-facing mobile app or modern routing software; rides must be booked by calling a dispatcher, and only cash fares are accepted onboard the vehicle. Due to its low-ridership context, the service uses independent contractor drivers and a partial-shift plan to improve efficiency.
2. Rural Transit, a countywide, lifeline service for unincorporated communities that serves limited ridership with four vehicles.
3. San Joaquin Transit, a one-vehicle service that operates between the communities of San Joaquin, Tranquility, Three Rocks, Cantua Creek, and El Porvenir. Service is also available between any of these communities and the city of Kerman.

To conserve FCRTA's limited operating resources, none of the proposed microtransit service alternatives discussed in Section 3. Service Alternative Development replaces or duplicates any of the existing intra-city, demand-response services which offer same-day/on-demand booking, with the exception of the San Joaquin service alternative, described in the San Joaquin / Tranquility Opportunity Area section, which is a modification of existing San Joaquin Transit services. A comprehensive list of current demand-response services in Fresno County is included in **Table 4** below:

Table 4. *FCRTA Demand-Response Services*

Booking Type	FCRTA Demand-Response Services
Same-Day / On-Demand Demand-Response Services	• FCRTA's intra-city services: Auberry Transit, Coalinga Dial-a-Ride, Del Rey-Sanger Transit, Firebaugh Transit, Fowler Transit, Huron Transit, Kerman Transit, Kingsburg Transit, Mendota Transit, Orange Cove In-City Transit, Parlier Transit, Reedley Transit, Sanger Transit, Selma Transit
24-Hour Pre-Booked Demand-Response Services	• Biola Rideshare/Microtransit • Rural Transit (serving unincorporated communities) • San Joaquin Transit

Figure 6. *Existing Fresno County Fixed-Route and Demand-Response Services*



Fixed-Route Assessment

Fresno County is served by three fixed-route bus providers: FAX, Clovis Transit, and FCRTA. This analysis considered detailed route-level data from each of the County's providers, along with stop-level data for FAX and Clovis Transit and origin-destination patterns from ADA paratransit ridership (Handy Ride and Round Up, respectively).

Frequency and Coverage

Transit frequency and coverage are two key measures of transit service quality in Fresno County. These measures are most applicable to fixed-route bus services that operate on a schedule.

- **Frequency** measures how often buses come, or the maximum amount of time a customer has to wait at a stop.
- **Coverage** describes the geographic area served by routes, or the distance a customer has to travel to access service.

Together, these two criteria paint a general picture of service quality across the County. High-quality transit networks offer high frequency, so customers do not have to wait very long, and broad coverage, so customers can travel where they need. Service frequency for fixed-route services in Fresno County is shown in **Table 5** below. Key findings include:

- Service is most frequent along N/S and E/W axes in central Fresno. The most frequent fixed-route services in Fresno County offer 15 minute service frequency, or "headways." These are routes 1 *Q*, 9 *Shaw*, 34 *First Street*, and 38 *Cedar*. These routes form the spine of FAX's system and serve corridors with the highest volumes of stop-level ridership (see **Figure 8**). Community demographics along these corridors range from relatively affluent neighborhoods in North Fresno, particularly north of Shaw Avenue, to areas of persistent poverty particularly south of Shaw Avenue and east of SR-99. Some of the highest-ridership locations along these corridors include stops along the FAX Q line, such as Courthouse Park/Van Ness Station, Olive Station, Manchester Transit Center, Shaw Station, and Chestnut Station.
- Much of Fresno and Clovis is covered by moderately frequent service. Most locations in the cities of Fresno and Clovis are located within ¼ mi of a bus stop, a distance typically considered accessible for most transit customers. Service operates with 20-30 minute headways on most arterial streets.
- Some urbanized areas have limited coverage. While most urban areas are located close to a bus stop, some neighborhoods are beyond convenient walking distance of service. Areas with limited coverage include relatively affluent communities such as northern and eastern Clovis, Sunnyside, Fig Garden, and Fort Washington, as well as areas of persistent poverty such as Southwest Fresno (west of Walnut Avenue) and Fresno's West Area (east of Brawley Avenue and west of SR-99).

- Fixed-route service becomes less available further from urban areas. Service is widely available in Fresno and Clovis. Immediately outside of these core cities, service is available but less frequent. In less dense areas of the County, FCRTA fixed-routes offer intercity connections between incorporated city pairs on less frequent schedules (60-85 minutes at the most frequent, but more commonly 1-3 daily round-trips), and are generally unsuitable for local service. With lower residential density and fewer potential customers, local coverage within most incorporated cities is typically provided using an intracity, demand-response (rather than a fixed-route) service model. In unincorporated areas not served by FCRTA's intracity demand-response services, lifeline service is available from the countywide Rural Transit subsystem, which operates three vehicles to serve passengers living outside of the other subsystems' sphere of influence; this service requires 24-hour advance reservation.

Balancing Frequency and Coverage

While successful transit networks aim to provide both high frequency of service and broad geographic coverage, there are trade-offs between these two service measures. Increasing frequency or expanding coverage likely requires more buses and drivers, leading to increased costs. With a fixed-budget, a transit agency may decide to invest in a high level of frequency for core routes at the expense of coverage for outlying areas. Alternatively, a transit agency may invest in extensive coverage across a region at the expense of service frequency on all routes. Most transit agencies seek to achieve a balance between the two.

It should be noted that Fresno County's transit agencies have led a wide range of pilot and demonstration projects over the years to address unmet transit needs. The history of these pilot and demonstration programs illustrate the inherent trade-off between providing broad coverage to underserved areas while also serving sufficient ridership and fare recovery to be sustainable. These challenges are particularly magnified in rural areas, where many communities are sparsely populated and require long travel distances to operate useful service between key destinations.

Some of these pilot projects have resulted in ongoing services operating as part of today's transit network, while others have been suspended due to low ridership, low productivity, or failure to achieve the minimum farebox recovery ratios required of services funded by California's Transportation Development Act (TDA), prior to its amendment in July 2021 (see Transportation Development Act Farebox Recovery Requirements).[33] Examples of active FCRTA pilot programs that continue to operate as full-fledged portions of the network

[33] These minimum farebox recovery ratio thresholds are 10% for rural fixed-route or demand-response services and 20% for fixed-route services in urbanized areas for agencies that use TDA funding. With AB 149, the requirement for demand-response services has been permanently suspended.

include Auberry Transit's fixed-route and demand-response services, the Biola Rideshare/Microtransit service, and fixed-route intercity services such as Firebaugh-Mendota Transit and Kingsburg-Reedley Transit. In addition, FAX provides vehicles used to operate the Fresno EOC Shuttle, which serves the Three Palms mobile home community, West Park, Cal Veterans Home, and other destinations where fixed-route service was previously unavailable. However, several other previous, inactive pilot programs did not generate enough ridership or fare recovery to be sustained, such as FCRTA Friant Transit (fixed-route and demand-response between Friant and Fresno) and Lanare Transit (Intra- and inter-community demand-response service within Lanare, to Five Points, Riverdale, and Laton).

Average Weekday Ridership by Stop

This analysis evaluated average weekday ridership at fixed-route stops in the FAX and Clovis Transit networks. The analysis allowed the project team to understand areas with relatively high and low ridership, and to develop an understanding of key activity centers in Fresno and Clovis, the two cities with highest transit service levels. Average weekday ridership in April 2023 is mapped in **Figure 8** below. Key findings include:

- Fresno's four most popular stops are located at the Downtown Transit Center. FAX's downtown transit center is composed of several stops surrounding Courthouse Park. With seven routes converging in the City's central business district, these stops provide access to key travel generators and allow customers to transfer between services. Nearly 1,700 passengers board buses daily at the Transit Center.
- Secondary transit centers at the Manchester Mall, Riverpark Shopping Center, and in Clovis drive significant ridership. Co-located with the Manchester Mall, the Manchester Transit Center is served by the Q BRT,Route 28, and Route 41. Other shopping centers in the Riverpark area of North Fresno and Old Town Clovis also generate significant ridership.
- High-ridership stops are concentrated along high-frequency routes. Many of FAX's highest-ridership stops (including *Peach, Clovis, Van Ness, and Ashlan*) are served by the Q BRT. Beyond this route, ridership is generally higher on higher-frequency fixed-routes. On Route 9 *Shaw*, Walmart at Shaw/Brawley, Shaw/Blackstone, Fashion Fair Mall, and Fresno State University are major activity centers.
- Stop-level ridership is lowest in lower-density residential areas. In largely residential areas with few activity centers, stop-level ridership is generally low. Residential areas are generally lower in density than travel centers, and neighborhood stops serve as collectors for bringing customers to more central destinations.

ADA Paratransit Assessment

Each of the County's transit providers offer demand-response service. In Fresno and Clovis, FAX and Clovis Transit provide complementary ADA paratransit. In Fresno, FAX provides ADA paratransit service called "Handy Ride" throughout the city of Fresno, exceeding the federal requirement to provide service within a ¾ mi corridor of its fixed-routes. Handy Ride trips must be booked at least 24 hours in advance. In Clovis, Clovis Transit provides ADA paratransit service called "Round Up" throughout the City and in a portion of Fresno, again exceeding the statutory minimum service area. A mobile app is available for paratransit ride bookings and fare payment, and same-day service is available. In rural areas and smaller incorporated cities of Fresno County, FCRTA provides local, intracity and intercity demand-response services that offer trips around various smaller communities. Unlike FAX or Clovis Transit and in lieu of a complementary ADA paratransit service, FCRTA complies with ADA requirements by using its intracity demand-response systems to provide accessible, curb-to-curb service to disabled passengers by deviating up to ¾ mile from intercity fixed-route corridors.[34]

Demand-Response Dropoff Intensity

Detailed dropoff location data was made available for FAX and Clovis Transit demand-response services and is mapped in **Figure 9** below. Similar to fixed-route ridership by stop, this data displays areas of concentrated ridership to develop an understanding of key activity centers important for paratransit customers.

- Dropoffs are concentrated at medical, shopping, and community centers. Demand-response travel generators are concentrated in similar areas of Fresno and Clovis with high ridership per stop on fixed-route services. However, there are several additional categories of activity centers particularly important to seniors and people with disabilities:
    - Medical Centers. Many ADA paratransit customers use service to access medical care, sometimes for chronic healthcare needs that require frequent travel to medical facilities. In Fresno and Clovis, key medical travel generators include the

[34] Fresno COG. 2022. "Transit Productivity Evaluation Fiscal Year 2022 Section C." p. 57.

Kaiser Permanente Fresno Medical Center, St. Agnes Medical Center, Fresno V.A. Medical Center, the Community Regional Medical Center, and DaVita Dialysis on Shaw in Herndon.

- Shopping Centers. Similar to fixed-routes, shopping centers are key travel destinations for demand-response customers. Particularly, Walmart locations at Shaw/Peach, Herndon/Sunnyside, and on Kings Canyon Road are significant destinations in the Handy Ride and Roundup systems.
- Community and Service Centers. Many paratransit customers use service to access community centers (e.g. senior centers and social services organizations) where they participate in day programs, see friends, and access a variety of services (e.g., Senior Nutrition, food banks, housing assistance, or job placement). Both the Fresno and Clovis Senior Centers are key paratransit destinations, along with *Heritage Adult Daycare* and the Adult Transition Program.

Network Efficiency Assessment

FAX, Clovis Transit, and FCRTA provided data to evaluate two key measures of service efficiency: productivity and cost per passenger trip.

Service Productivity

Productivity is defined as passenger boardings per revenue-hour (or per revenue-mile) on a given fixed-route service. Highly-productive services move lots of people with each vehicle, and transit providers generally try to maximize the productivity of their fixed-route services. Fixed-route bus services typically have higher productivity than demand-response services, because they serve relatively dense corridors with lots of activity centers, while demand-response services are typically used to provide coverage in less dense areas with lower levels of demand. Demand-response services generally operate with notably lower productivity levels as a result.

Service productivity for each fixed-route service is shown as "Passengers per revenue-hour, weekdays" in **Table 5** and is mapped in **Figure 10**. Productivity for rural demand-response services is summarized in **Table 6** and mapped in **Figure 11**.

Key findings for fixed-route service include:

- Service productivity is highest on FAX's most frequent fixed-route services. In Fresno County, more frequent bus services typically have higher productivity – generally indicating that service providers have successfully invested in frequency along corridors with the highest demand for travel. Fresno's most utilized service is the *FAX Q*, which has a

productivity of over 20 customers per hour on weekdays. FAX's other high-frequency services (9 *Shaw*, 34 *First Street*, and *38 Cedar*) have productivities of 14-18.

- Productivity varies on other FAX fixed routes. Several FAX routes with moderate 30 minute frequencies (22 *West Ave / Tulare*, 26 *Palm / Butler*, 33 *Belmont,* 41 *Malaga*) achieve relatively high productivity of ~15 passengers/revenue-hour. Most FAX routes have a productivity of over 10, but some routes (03 *Herndon*, 45 *Ashlan*, and 58E *Children's Hospital*) transport under 10 passengers per revenue-hour.
- Clovis fixed routes are relatively less productive. Both regularly-scheduled Clovis Transit routes (Routes 10 and 50)[35] transport under 5 passengers per vehicle hour. These routes provide service over large residential areas, and have long routes with significant deviations. Some of the key activity centers served by Route 10 include Clovis Library and Senior Center, Cedar & Shaw (transfer point to FAX Route 9-Shaw), and Walmart/Sprouts Market on Herndon Avenue. On Route 50, key activity centers served include Clovis Community Medical Center, Clovis High School, Sierra Vista Shopping Center, and Winco Foods at Peach & Dakota (transfer point for FAX Route 28-Manchester/DSS).
- Less-frequent routes in rural areas have generally lower productivity per hour. Outside of the cities of Fresno and Clovis, fixed-route service is significantly less productive on both a revenue-hour and revenue-mile basis. Rural routes are less productive because they serve lower-density areas (meaning they serve fewer potential customers) and are required to cover longer distances (meaning average journey times are longer than routes in urban areas).

Key findings for demand-response services include:

- Rural demand-response services are less productive, but are likely served by the most efficient mode. Rural areas are less suitable for fixed-routes, as travel generators are less likely to be concentrated along easy-to-serve corridors. With more dispersed origins and destinations over relatively large areas, demand-response services are likely to offer the best coverage for areas where potential ridership is limited. FCRTA's demand-response services typically achieve utilizations of 2-4 customers per vehicle hour, considered adequate according to transit industry benchmarks for demand-response service.
- In cities, paratransit service has comparable productivity to rural demand-response programs. Though operating in more densely populated areas, FAX's Handy Ride and Clovis' Round Up programs have similar productivities of 2-4 customers per vehicle hour. Paratransit trips may take longer to complete than general public demand-response service, and schedulers may plan for extra dwell time at pickups and drop-offs to ensure on-time performance, potentially limiting the overall productivity of service.

[35] Two additional Clovis Transit routes, Routes 70 and 80, provide high school service. These routes' schedules correspond with high school bell times, with only one morning and afternoon trips, and have been excluded from this analysis.

Cost per Passenger Trip

Cost per passenger trip is closely-related to productivity, and is calculated using hourly cost and ridership data. Costs vary between provider and mode (fixed-route or demand response), but generally, services with higher productivity have lower costs per passenger trip. Average costs per passenger trip for fixed-route services are detailed in **Table 5**, and rural demand-response services are summarized in **Table 8**.

- Costs per trip are highest on rural fixed routes. Most FCRTA services have a cost per passenger trip of over $40, as trips are typically longer and the fixed costs of operating service are spread among significantly fewer customers.
- Rural demand-response services have lower costs per trip than Clovis Transit. Costs per trip on FCRTA subsystems are typically $20-$40. In the rural areas served by FCRTA demand-response vehicles are typically less expensive to operate than fixed-route buses, and in rural areas with limited ridership, demand-response service is likely the most cost-efficient mode.
- Clovis Transit routes have relatively high costs per passenger trip. Clovis Transit averages about $42 per passenger trip, according to the COG's FY22 Transit Productivity Evaluation Report (Table B-1), considered high for fixed-route service in suburban areas.
- FAX fixed routes have low costs per trip. With higher productivity of these services, costs are spread between many customers, resulting in low costs per trip of $3-$6 on most FAX fixed routes.

***Table 5**. Fixed-Route Service Summary Statistics, Weekdays*

	Transit Agency	Hours of Operation, weekdays	Vehicles in Service, weekdays	Typical service frequency, weekdays (mins.)	Passengers per revenue-hour, weekdays	Passengers per revenue-mile, weekdays	Cost per passenger trip, weekdays ($)
01 Fax Q	FAX	5:30am - 11:15pm	17	12	20.38	2.06	3.66
03 Herndon	FAX	5:45am - 8:45pm	6	30	5.65	0.59	13.11
09 Shaw	FAX	5:45am - 11:30pm	7	15	17.46	1.93	4.21
10 Fresno State University-Northwest Clovis [36]	Clovis Transit	6am - 6:15pm	5	20	3.63	0.33	41.96
12 Brawley / Inspiration Park	FAX	6am - 9:45pm	3	30	9.81	1.00	7.59
14 Laton	KART[37]	8:55am - 3pm	1	1 daily round-trip	3.50	0.10	38.05
17 Hanford - Selma - Fresno	KART	9am - 2pm	1	1 daily round-trip	3.54	0.10	38.05
20 Hughes / Mckinley	FAX	5:45am - 9:30pm	4	30	8.83	0.95	8.36
22 West Ave / Tulare	FAX	5:45am - 9:15pm	6	30	14.27	1.21	5.38
26 Palm / Butler	FAX	6am - 9:30pm	7	30	15.13	1.23	5.11
28 Dss / Manchester / West Fresno	FAX	5:45am - 11pm	8	20	12.49	1.19	6.03
32 Fresno St	FAX	5:45am - 11pm	6	30	15.27	1.53	4.89
33 Belmont	FAX	6am - 7pm	2	30	12.24	1.13	6.18
34 First Street	FAX	5:45am - 9:30pm	14	15	14.34	1.59	5.13

[36] Annualized statistics derived from the Fresno COG's FY2022 Transit Productivity Evaluation, Table B-1. These statistics were not cross-tabulated between weekdays and Saturdays.
[37] Kings Area Regional Transit

	Transit Agency	Hours of Operation, weekdays	Vehicles in Service, weekdays	Typical service frequency, weekdays (mins.)	Passengers per revenue-hour, weekdays	Passengers per revenue-mile, weekdays	Cost per passenger trip, weekdays ($)
35 Olive	FAX	5:45am - 9:15pm	4	15-30	12.85	1.16	5.91
38 Cedar	FAX	5:45am - 11:30pm	12	15	16.56	1.39	4.64
39 Fyi / Clinton	FAX	6:45am - 8:45pm	4	30	13.02	1.34	5.71
41 Malaga / Shields / Chestnut	FAX	5:45am - 9:15pm	7	30	16.30	1.36	4.73
45 Ashlan	FAX	6am - 8:15pm	5	30	7.50	0.70	10.06
50 Northeast/ Northwest Clovis [38]	Clovis Transit	6:15am - 6:30pm	7	20	3.63	0.30	41.96
58 NE Fresno	FAX	7am - 6:15pm	1	60	8.84	0.68	8.84
58E Children's Hospital	FAX	6:30am - 6pm	1	60	5.20	0.25	16.74
Auberry Transit[39]	FCRTA	8am - 5pm Tues. only, by reservation	2	2	1.25	0.06	71.08
Coalinga Transit	FCRTA	8am - 5:45pm	1	1 daily round-trip	1.33	0.09	74.21
Dinuba Connection	TCRTA[40]	7am - 9pm	2	60	3.04	0.15	0.58
Firebaugh-Mendota Transit	FCRTA	7am - 5pm	1	1 daily round-trip	2.11	0.27	49.63
Huron Transit	FCRTA	9am - 5:04pm	1	3 daily round-trips	2.07	0.19	36.97
Kingsburg-Reedley	FCRTA	7am - 4:35pm	1	3 daily round-trips	0.56	0.12	144.73
Orange Cove	FCRTA	6:35am - 5:15pm	1	1 daily round-trip	3.92	6.88	20.67

[38] Annualized statistics derived from the Fresno COG's FY2022 Transit Productivity Evaluation, Table B-1. These statistics were not cross-tabulated between weekdays and Saturdays.
[39] Includes both fixed-route and demand-response operations.
[40] Tulare County Regional Transit Agency

	Transit Agency	Hours of Operation, weekdays	Vehicles in Service, weekdays	Typical service frequency, weekdays (mins.)	Passengers per revenue-hour, weekdays	Passengers per revenue-mile, weekdays	Cost per passenger trip, weekdays ($)
Express (inactive)							
Orange Cove Transit	FCRTA	7am - 5:28pm	1	2 daily round-trips			
Sanger Express	FCRTA	6:45am - 4:05pm	1	80 - 85	2.62	0.24	33.44
Southeast Transit	FCRTA	7am - 5:30pm	1	3 daily round-trips	2.46	0.12	23.11
Westside Transit	FCRTA	7am - 5:30pm	1	2 daily round-trips	3.35	0.16	22.81

***Table 6**. Fixed-Route Service Summary Statistics, Saturdays*

	Transit Agency	Hours of Operation, Saturdays	Vehicles in Service, Saturdays	Typical service frequency, Saturdays	Passengers per revenue-hour, Saturdays	Passengers per revenue-mile, Saturdays	Cost per passenger trip, Saturdays ($)
01 Fax Q	FAX	6:30am - 11:15pm	10	14	23.0	2.0	3.3
03 Herndon	FAX	6:45am - 6pm	6	30	7.4	0.7	10.2
09 Shaw	FAX	7am - 11:30pm	4	30	22.2	2.2	3.4
10 Fresno State University-Northwest Clovis [41]	Clovis Transit	7:45am - 3:15pm	2	30	3.63	0.33	41.96
12 Brawley / Inspiration Park	FAX	7am - 7pm	3	30	11.9	1.1	6.4
20 Hughes / Mckinley	FAX	6:45am - 6pm	4	30	8.7	0.8	8.7
22 West Ave / Tulare	FAX	6:45am - 5:30pm	5	30	11.8	1.0	6.6
26 Palm / Butler	FAX	7:15am - 6:30pm	6	30	12.6	0.9	6.3
28 Dss / Manchester / West Fresno	FAX	6:45am - 11pm	5	30	11.1	1.1	6.8
32 Fresno St	FAX	6:45am - 11pm	5	30	14.2	1.3	5.4
33 Belmont	FAX	7:30am - 6:30pm	1	60	13.8	0.2	9.6
34 First Street	FAX	7am - 6:30pm	7	30	15.7	7.8	4.2
35 Olive	FAX	6:45am - 6:15pm	4	30	13.2	0.8	6.2
38 Cedar	FAX	6:45am - 11:30pm	6	30	18.6	2.7	3.8
39 Fyi / Clinton	FAX	7:45am - 6:45pm	4	30	10.9	0.4	9.0
41 Malaga / Shields / Chestnut	FAX	7:15am - 6:15pm	6	30	14.1	2.1	5.0

[41] Annualized statistics derived from the Fresno COG's FY2022 Transit Productivity Evaluation, Table B-1. These statistics were not cross-tabulated between weekdays and Saturdays.

	Transit Agency	Hours of Operation, Saturdays	Vehicles in Service, Saturdays	Typical service frequency, Saturdays	Passengers per revenue-hour, Saturdays	Passengers per revenue-mile, Saturdays	Cost per passenger trip, Saturdays ($)
45 Ashlan	FAX	6am - 8:15pm	5	30	7.9	0.4	11.2
50 Northeast/Northwest Clovis [42]	Clovis Transit	7:45am - 3pm	3	30	3.63	0.30	41.96
58 NE Fresno	FAX	11am - 6pm	1	60	8.6	0.1	22.0
58E Children's Hospital	FAX	11:45am - 5:45pm	1	60	5.1	0.3	15.8
Coalinga Transit[43]	FCRTA	8am - 2:50pm	1	1 daily round-trip	1.33	0.09	74.21

[42] Annualized statistics derived from the Fresno COG's FY2022 Transit Productivity Evaluation, Table B-1. These statistics were not cross-tabulated between weekdays and Saturdays.

[43] Annualized statistics derived from the Fresno COG's FY2022 Transit Productivity Evaluation. These statistics were not cross-tabulated between weekdays and Saturdays.

Table 7. *Fixed-Route Service Summary Statistics, Sundays*

	Transit Agency	Hours of Operation, Sundays	Vehicles in Service, Sundays	Typical service frequency, Sundays	Passengers per revenue-hour, Sundays	Passengers per revenue-mile, Sundays	Cost per passenger trip, Sundays ($)
01 Fax Q	FAX	6:30am - 6:30pm	10	15	17.6	1.6	4.3
03 Herndon	FAX	6:45am - 6pm	6	30	5.5	0.5	13.7
09 Shaw	FAX	7am - 6:30pm	4	30	3.2	0.3	23.3
12 Brawley / Inspiration Park	FAX	7am - 7pm	3	30	25.7	2.4	3.0
20 Hughes / Mckinley	FAX	6:45am - 6pm	4	30	7.0	0.7	10.7
22 West Ave / Tulare	FAX	6:45am - 5:30pm	5	30	3.9	0.3	20.1
26 Palm / Butler	FAX	7:15am - 6:30pm	6	30	10.2	0.7	7.7
28 Dss / Manchester / West Fresno	FAX	6:45am - 7pm	5	30	12.0	1.1	6.3
32 Fresno St	FAX	6:45am - 6:30pm	5	30	10.1	0.9	7.5
33 Belmont	FAX	7:30am - 6:30pm	1	60	58.6	4.8	1.3
34 First Street	FAX	7am - 6:30pm	7	30	1.9	0.2	38.5
35 Olive	FAX	6:45am - 6:15pm	4	30	19.6	1.6	3.9
38 Cedar	FAX	6:45am - 6:15pm	6	30	6.1	0.5	12.7
39 Fyi / Clinton	FAX	7:45am - 6:45pm	4	30	32.3	2.8	2.4
41 Malaga / Shields / Chestnut	FAX	7:15am - 6:15pm	6	30	5.2	0.4	15.2
45 Ashlan	FAX	6am - 8:15pm	5	30	17.7	1.5	4.4
58 NE Fresno	FAX	11am - 6pm	1	60	55.0	4.0	1.4
58E Children's Hospital	FAX	11:45am - 5:45pm	1	60	4.1	0.2	21.1

***Table 8**. Demand-Response Service Summary Statistics*

	Transit Agency	Hours of Operation	Vehicles in Service	Passengers per revenue-hour	Passengers per revenue-mile	Cost per passenger trip ($)
Auberry Transit	FCRTA	8am - 2:30pm M-F intra-community	2	1.25	0.06	71.08
Biola Rideshare/ Microtransit	FCRTA	7am - 7pm, Mon-Sat.	N/A	0.1	0.05	123.07
Coalinga Transit	FCRTA	8:30am - 4:15pm M-F	1	1.33	0.09	74.21
Del Rey Transit	FCRTA	8am - 5pm M-F	1	1.95	0.15	39.03
Firebaugh Transit	FCRTA	7am - 5:30pm M-F	1	2.11	0.27	49.63
Fowler Transit	FCRTA	7am - 5:30pm M-F	1	1.82	0.21	55.08
Huron Transit	FCRTA	7am - 5:45pm M-F	2	2.07	0.19	36.97
Kerman Transit	FCRTA	7am - 4pm M-F	1	1.76	0.21	67.34
Kingsburg Transit	FCRTA	7am - 5:30pm M-Sat.	2	2.91	0.49	32.36
Mendota Transit	FCRTA	7am - 5:30pm M-F	1	2.94	0.45	35.24
Orange Cove Transit	FCRTA	7am - 5:30pm M-F	1	3.92	0.33	20.67
Parlier Transit	FCRTA	7am - 4pm M-F	1	3.54	0.42	25.89
Reedley Transit	FCRTA	7am - 4:30pm M-F, 8am - 4:30pm Sat	3	4.23	0.47	27.88
Rural Transit	FCRTA	8am - 5pm M-F	4	0.47	0.02	857.74
Sanger Transit	FCRTA	7am - 5:30pm M-F, 8am - 5pm Sat.	4	2.62	0.24	33.44
San Joaquin Transit	FCRTA	6:30am - 5:30pm	1	1.13	0.04	427.95
Selma Transit	FCRTA	7am - 5:30pm M-F, 8am - 5pm Sat.	4	3.61	0.44	26.3
West Park Rideshare (inactive)	FCRTA	11am - 6pm M-Sat.	N/A	0.25	0.09	149.99

***Figure 7**. Transit frequency and coverage*

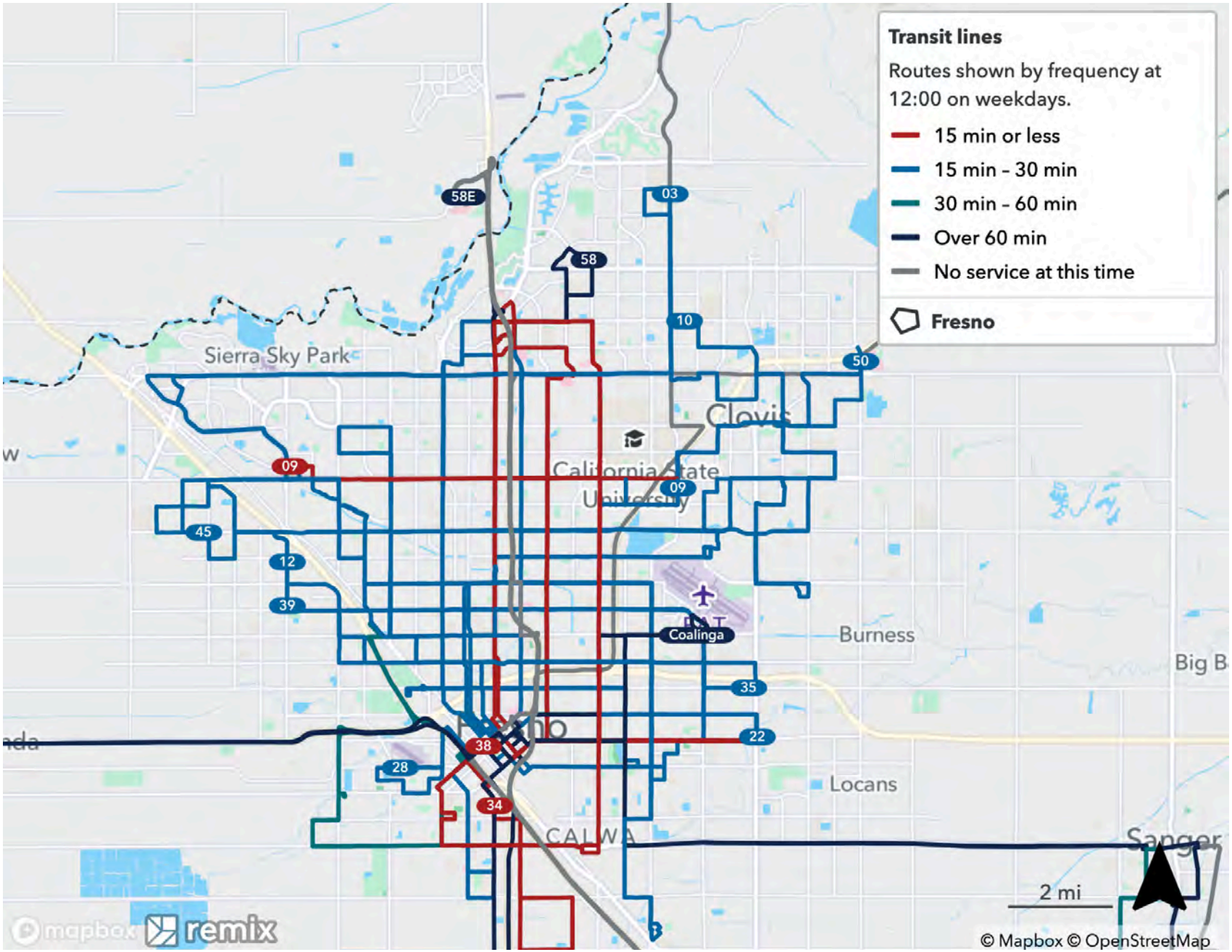


***Figure 8**. Ridership by stop*

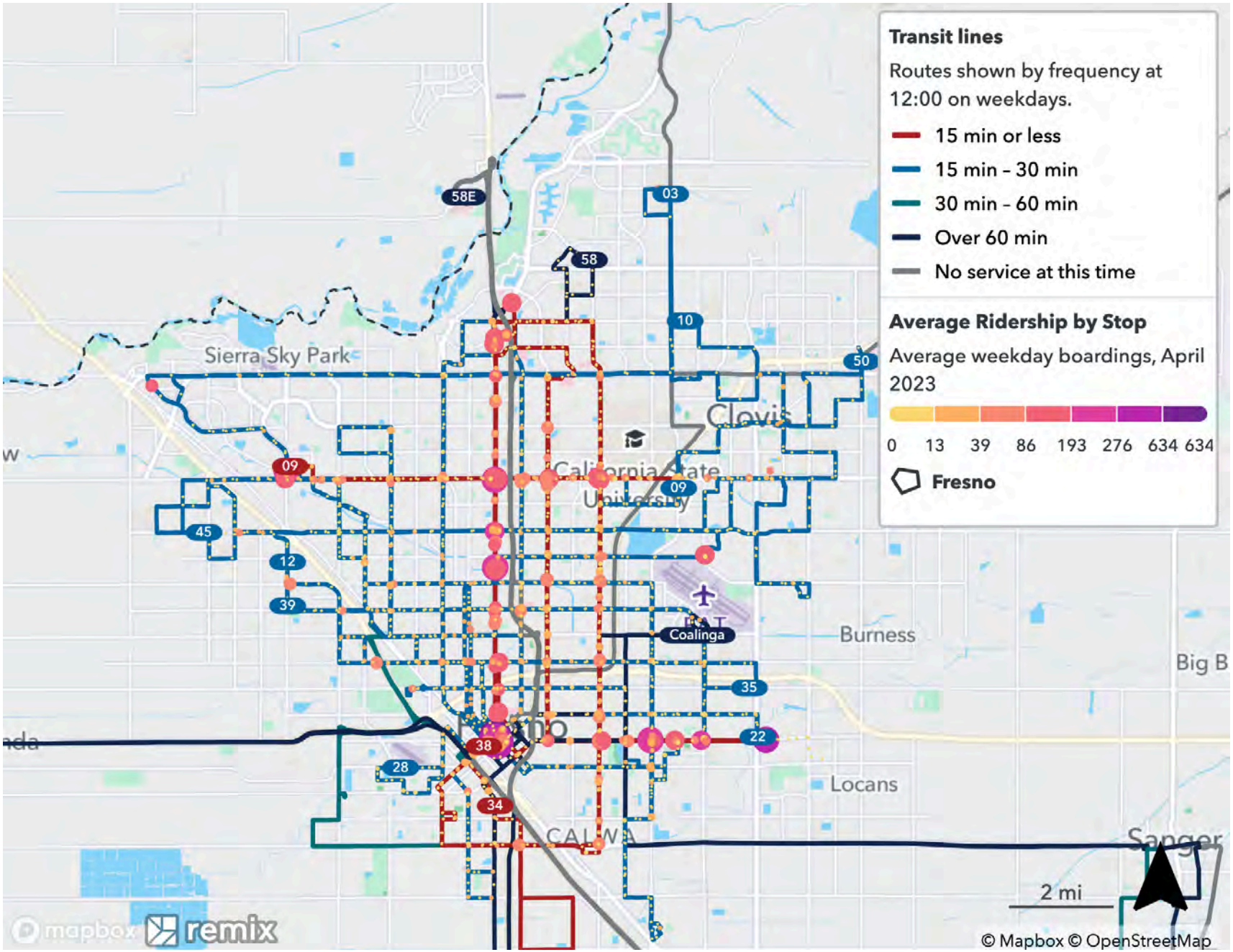


***Figure 9**. ADA Paratransit Ridership Intensity (Dropoffs)*

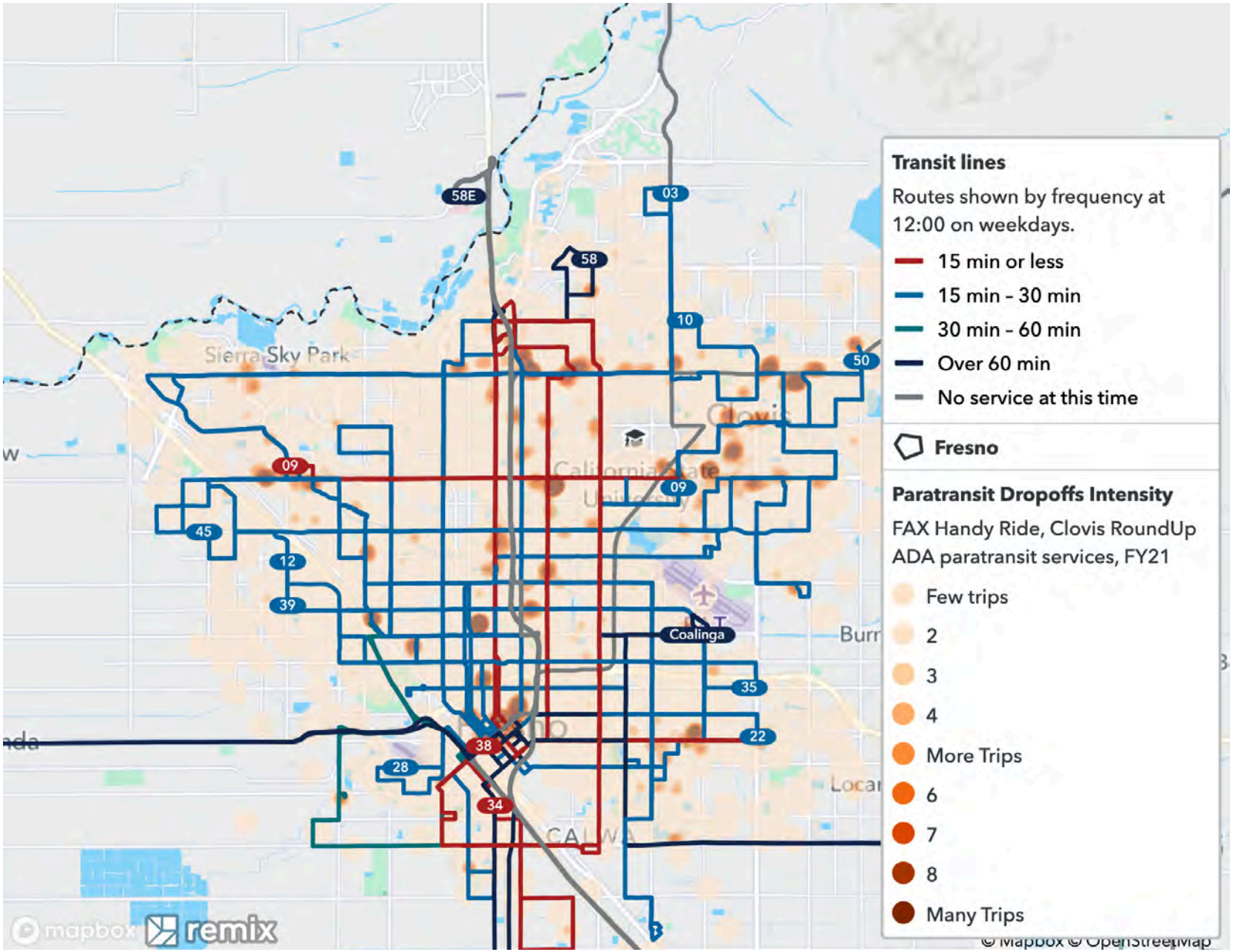


Figure 10. *Productivity of service, fixed-route*

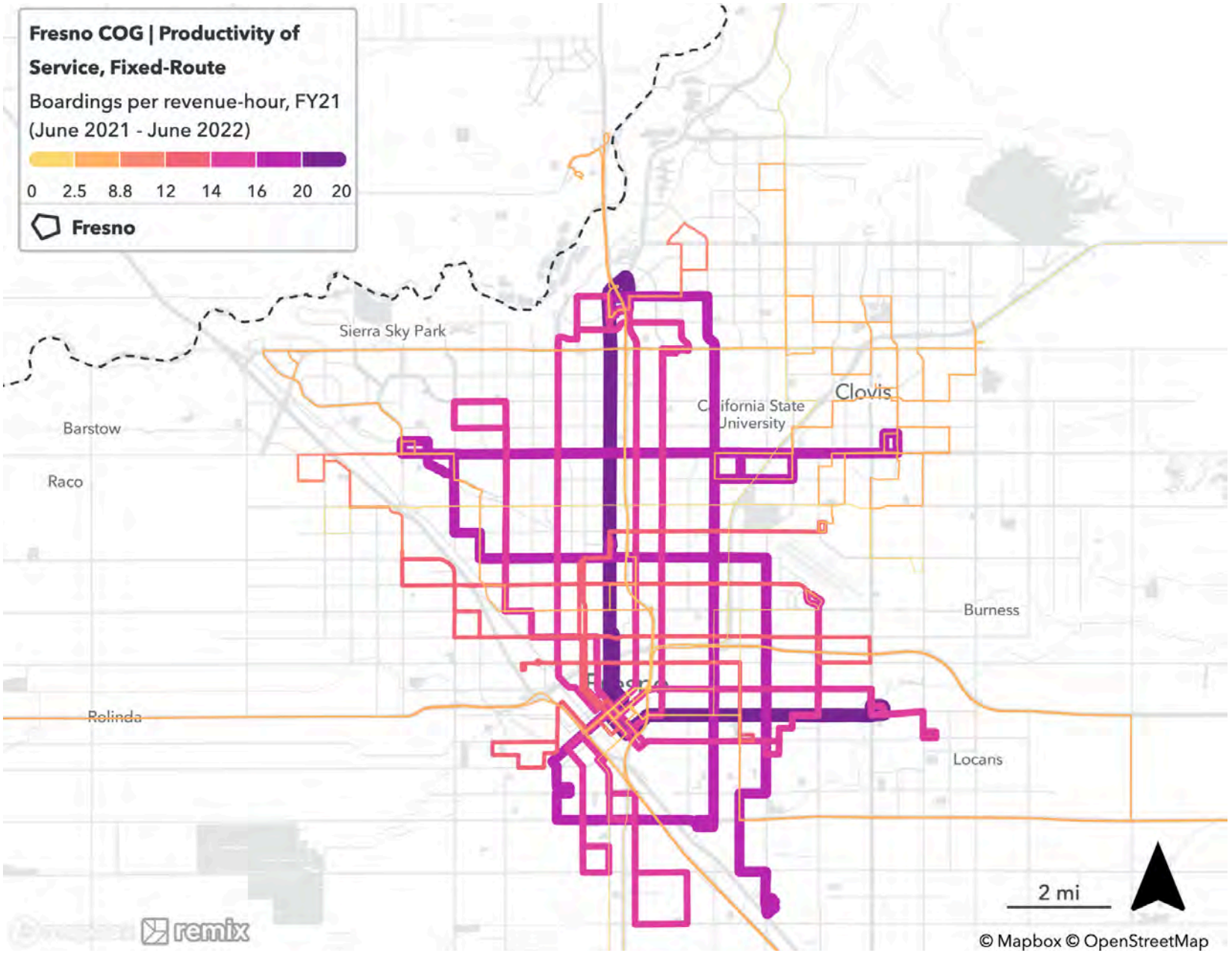


Figure 11. *Productivity of service, demand-response*

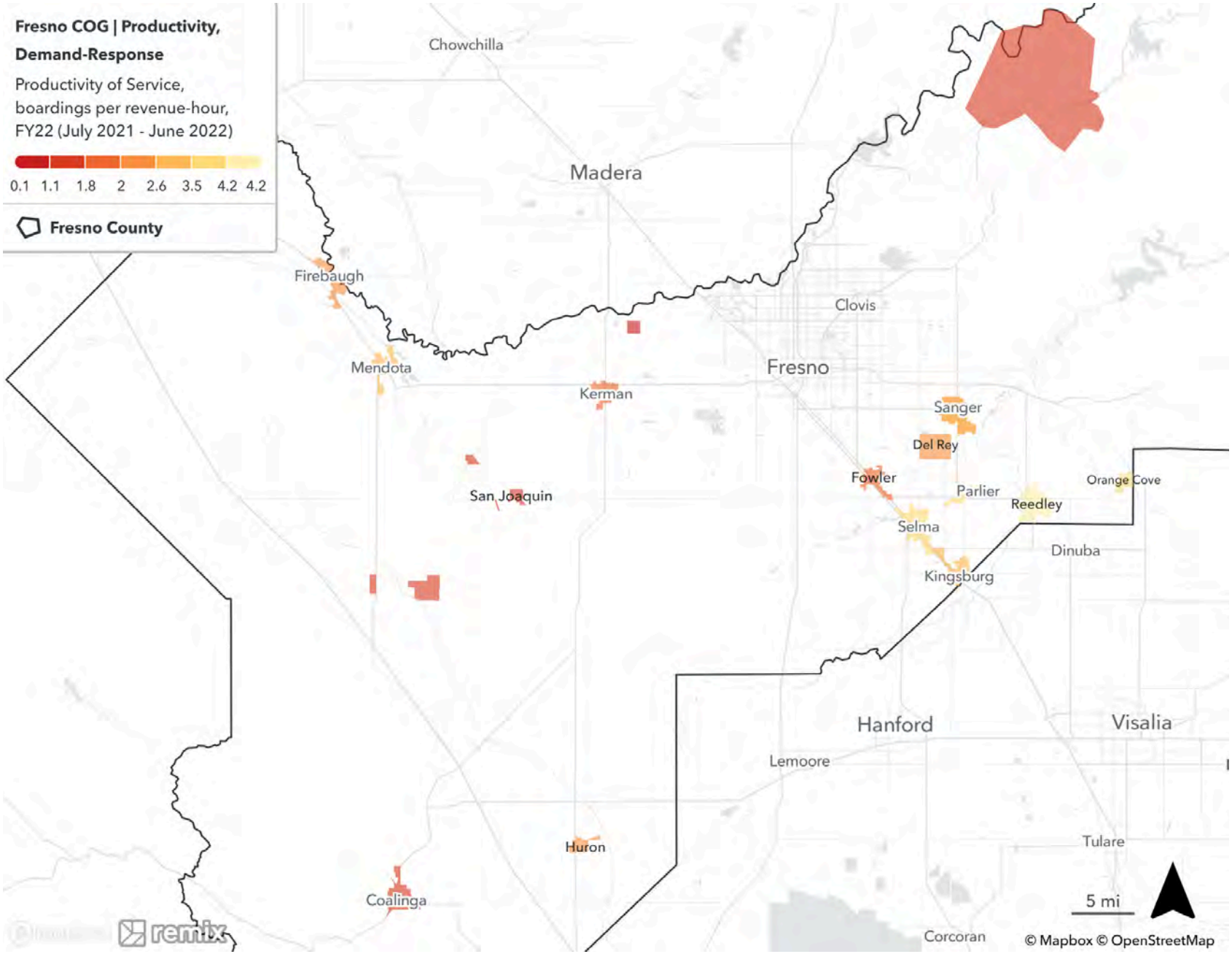


***Figure 12**. Cost per passenger trip, fixed-route*

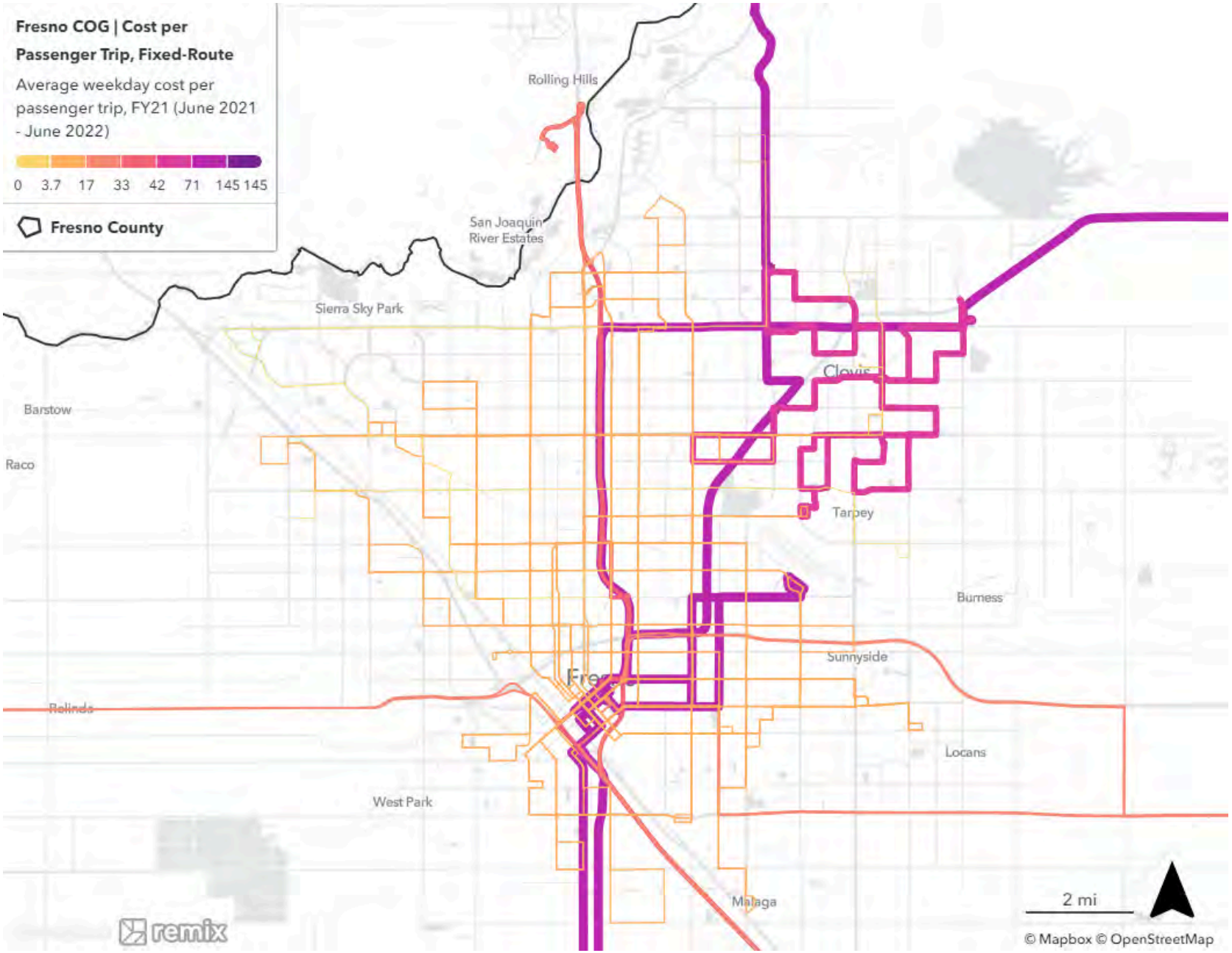
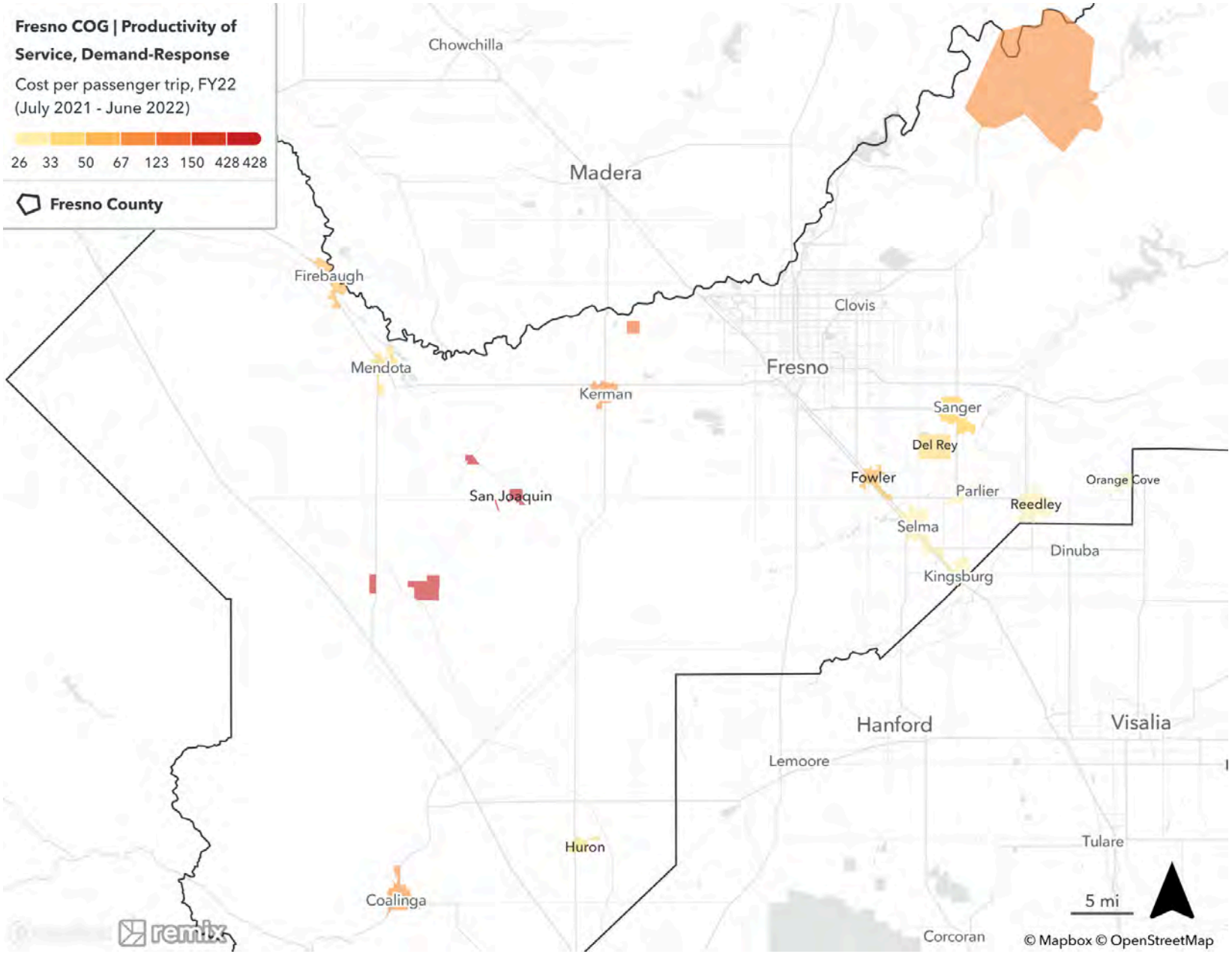


***Figure 13**. Cost per passenger trip, demand-response*



3. Public and Stakeholder Engagement

3.1 Summary of Activities

Fresno COG designed this study with robust processes for public and stakeholder engagement to ensure its findings are responsive to the community's transportation needs. Engagement activities for this Study were organized into two phases:

- Phase 1 – this phase collected community and stakeholder input regarding existing public transit conditions and needs, clarified the study's purpose and approach, evaluated community transportation values and preferences, and introduced preliminary microtransit concepts.
- Phase 2 – this phase collected community input on draft microtransit service alternatives and recommendations, including proposed opportunity areas and key service parameters.

The study's initial public engagement activities kicked off with the development of a Public Engagement Plan (PEP) that outlined the steps that would be taken to enable Fresno County community members to have meaningful opportunities to be involved in and help shape the study planning process. The PEP sought to engage current public transit riders, other residents, commuters, and interested stakeholders.

Outreach strategies during Phase 1 of the Study included:

- Convening the **Stakeholder Committee** of community-based organizations, advocates for seniors and people with disabilities, municipalities, medical providers, educational institutions, and other interested stakeholders. The group met twice during Phase 1 of the study to provide input to the project team. Members of the Stakeholder Committee also reviewed and provided comments on materials to be used for public engagement activities, including the surveys, flyers, posters, and Virtual Workshop materials referenced below.
- Preparation of an **Online Survey** for use on Fresno COG's PublicInput platform. The survey was open from August 3, 2023 through November 30, 2023.
- Hosting a **Virtual Workshop via Zoom,** including live polling and open discussion with the project team.
- Preparation and distribution of an **Outreach Flyer and Poster** including information for the online survey and the virtual workshop for noticing e-blasts, posting at local agencies and organizations, and distribution to the Stakeholder Committee members for noticing to their internal stakeholder listings.
- Creation of **Social Media Content** for posting to Fresno COG's social media sites and distribution to Steering Committee members for posting to their social media sites.
- Participation in four (4) local community **Pop-up Events,** in-person workshops where project staff collected feedback on the study in informal, conversational settings.

Outreach strategies identified and implemented during Phase 2 of the study included:

- Convening the **Stakeholder Committee**, described above, twice more during Phase 2 of the study to provide input on proposed microtransit service alternatives and the study's

prioritization analysis. Members of the Steering Committee also reviewed and provided comments on materials to be used for Phase 2 public engagement activities.

- Preparation of a second **Online Survey Instrument** for use on Fresno COG's PublicInput platform.
- Preparation and distribution of a second **Outreach Flyer and Poster** (at right) including information for the online survey and the virtual workshop for noticing e-blasts, posting at local agencies and organizations, and distribution to Steering Committee members for noticing to their internal stakeholder listings.
- Participation in an additional five (5) local community **Pop-up Events.**

3.2 Public Engagement Activities – Phase 1

Stakeholder Committee Meetings #1 and #2

Public engagement activities for Phase 1 kicked off on August 3, 2023, with the initial meeting of the Stakeholder Committee. This meeting focused on introducing the project team and Stakeholder Committee members, sharing study goals and timeline, providing an overview of microtransit, answering Committee members' questions regarding the study, and outlining how stakeholders and the public can stay involved in the study process. The second Stakeholder Committee meeting was held on November 16, 2023, focusing on fundamentals of microtransit service design and selection criteria for the development of microtransit opportunity areas. The Stakeholder Committee was also presented with key findings from the Existing Conditions Analysis.

Key discussion themes from these two Stakeholder Committee meetings included:

1. Rural areas have distinct mobility needs from urban and suburban areas, and the service design of microtransit should reflect this. Providing pre-scheduled, as opposed to on-demand service, and curb-to-curb service is likely to be important in rural areas.
2. Improved access to medical appointments, healthy food shopping, and education are highly important benefits a microtransit service could offer various communities.
3. There are significant gaps in existing ADA paratransit services which microtransit could address (e.g., the absence of on-demand service in most ADA services).
4. There may be potential to share vehicles and drivers between any microtransit service and the Fresno Economic Opportunities Commission (EOC), which currently operates fixed-route transit for limited-eligibility groups.

5. Avoiding the duplication of existing fixed-route and demand-response services by microtransit is highly important to many stakeholders as well as the County's transit agencies. As a result, the study focuses on areas with limited existing transit service.
6. While there is significant need in many areas for inter-community and longer-distance trips, microtransit may not be the best solution compared to fixed-route services. A high priority is to design microtransit so that it serves the communities with greatest unmet transit needs equitably and provides connections to essential destinations without exceeding the limited resources of transit operators.
7. There is concern from some stakeholders that microtransit may end up supporting fast-growing, low-density development patterns in some areas such that older, more slowly-growing and urbanized areas are deprioritized in the prioritization analysis. Such an outcome would be seen as deeply inequitable.
8. The study should leverage findings from the annual Unmet Transit Needs Assessment conducted by Fresno COG.

Phase 1 Pop-Up Events

Between August and October 2023, the Project Team hosted one virtual workshop and participated in five (5) pop-up events throughout Fresno County. Incorporating the use of pop-up events allowed the Project Team to engage stakeholders at popular locations and events, such as the Big Fresno Fair and Firebaugh's Annual Cantaloupe Roundup. A bilingual public engagement specialist was available at the Firebaugh pop-up to ensure that the Project Team was able to reach Spanish-speaking attendees. Materials prepared and major comments received during this phase of engagement activities can be found in this study's **Public and Stakeholder Engagement Appendix**, including the Stakeholder Committee Meeting #1 and #2 – PowerPoint Presentations, and Phase 1 Outreach Flyer (English and Spanish), Outreach Poster (English and Spanish), Survey Instrument (English and Spanish), Social Media Content, and Workshop PowerPoint Presentation. A summary of the number of attendees during each Phase 1 pop-up event is provided in **Table 9** below.

Table 9. *Phase 1 Pop-Up Event Information*

Event Location, Date, and Time	Number of Attendees
Old Town Clovis Farmers Market 433 Pollasky Avenue Clovis, CA Friday, August 4, 2023 5:30 - 8:30pm	60-70
Reedley College Farmers Market 1235 Manning Avenue, Reedley, CA Thursday, August 31, 2023 5-8pm	30-40
Firebaugh Annual Cantaloupe Roundup (bilingual English/Spanish) Dunkle Park — 1538 Q Street, Firebaugh, CA Saturday, September 30, 2023 5-8pm	50-60
Big Fresno Fair Fresno Fairgrounds — 1121 S. Chance Avenue, Fresno, CA Thursday, October 12 - Sunday, October 15, 2023 4-10pm daily	250-350

Virtual Workshop

The Virtual Workshop was held on August 16, 2023, with eight (8) project staff and 13 Zoom participants who live in Fresno County (11 via platform, 2 via phone). The workshop was held in English with simultaneous Spanish translation offered by an interpreter. The project team started with polling questions to engage with participants and gather some initial study information. Following the polling questions, the team moved through the prepared PowerPoint Presentation, including a review of the study's timeline and goals, an introduction of microtransit, and then moved into a series of facilitated discussion questions. Participants were able to ask additional questions or provide input via the Q&A function or by raising their hands.

Eight of 13 attendees responded to Zoom-polls in the Virtual Workshop. Key findings from these polls include:

- Most attendees (five of eight) lived in large cities of Fresno (e.g., Fresno, Clovis, or its immediate surrounding communities like Calwa, Malaga, Fig Garden, etc.). Two attendees lived in smaller, rural incorporated cities (e.g., Coalinga, Firebaugh, Fowler), and one lived in another, unspecified rural unincorporated area.
- Attendees reported that they typically get around their community by driving alone (75%). Bus and paratransit options were second- and third-most commonly selected options (38% and 25% of attendees, respectively), followed by walking and bike/scooter (13% each).
- Attendees were asked to report any challenges they had with using existing public transportation options. Half of attendees (four of eight) responded that they have no issues using existing public transportation, while the remaining half reported that their greatest challenge was with long wait times for infrequent bus service and service that doesn't run early enough in the morning or late enough in the evening (four of eight each). Other, less commonly reported challenges included bus stop locations that are too far away from where they are trying to go and travel times that are too long relative to driving (three of eight attendees each).

The project team received and answered a range of follow-up questions about the study from attendees, including the following:

- What will determine whether Fresno COG [and its transit agencies] decide to proceed with microtransit services?
- Can the services accommodate electric wheelchairs?
- Is a mobile app or call-in number available?
- Will microtransit service be able to cross municipal boundaries (e.g. Clovis to Fresno)?
- Would service be available late evenings and weekends, to combat impaired driving?

Phase 1 Survey

During Phase 1, an **Online Survey** for use on Fresno COG's PublicInput platform was prepared to receive input from the general public that attended the virtual workshop or pop-up events, received email blasts with a link to the online survey, or used links to the survey from information included in the flyer and posters. PublicInput allows for the development of a project-specific email address as well as a unique project-specific phone number. The direct phone number allows those

respondents who are not comfortable with computers an alternative way to provide direct feedback to the Project Team. The email address allowed the Project Team an opportunity to open a dialogue with the respondent and establish open lines of communication and trust. Results of the online survey are provided in Appendix C.

Key Findings from Phase 1 Survey

The Phase 1 survey received 353 responses from Fresno County residents, a significant response rate comparable to previous Fresno COG studies. Key findings from Phase 1 survey responses include:

- A clear majority of respondents (63%) reported that they use fixed-route bus service (e.g., FAX, Clovis Transit, or FCRTA) to get around, while 13% reported that they use ADA paratransit services (Handy Ride or Roundup). Likewise, 56% of respondents reported using either fixed-route buses or paratransit at least twice per week while just 10% reported that they never ride transit, suggesting the surveyed population is significantly more reliant on transit than the general population. In contrast, the average public transit mode share for commute trips in Fresno County is about 1%.[44]
- For those who ride public transit, the most significant motivations cited by respondents were that they find transit is sometimes a good alternative to walking or biking (17%), it is convenient for where they are going (16%), that they are doing their part to help the environment (14%), or that they do not own a car (10%).
- Among those who do not use public transit (n=38), the most significant motivations cited were not feeling comfortable or safe at bus stops or onboard the bus (n=17), bus stops are too far from where they are trying to travel (n=14), and travel times are too long (n=14).
- A strong majority (87%) of respondents indicated that they would use microtransit service if it were available in their community and priced the same as local bus service. Additionally, 42% of respondents indicated that they would be willing to pay a premium fare ($3-10) to ride microtransit. However, a significant minority (32%) of respondents also indicated that they do not feel safe or comfortable sharing a ride with others; this indicates the importance of pre-launch marketing and public outreach strategies to ensure expectations of the service are clear and that riders understand that rides would be shared with others.
- Respondents were asked to indicate which categories of service quality they valued most when taking public transit. The most commonly selected categories included short wait times (17%), short walking distances to pickup points (15%), low fares (12%), and short travel times to destinations (11%).
- Respondents also reported potential concerns about microtransit service, which can be at least partially addressed through accessibility and equity policies. About 40% of respondents reported that they are unable to walk to meet a vehicle (19%) or that they do not feel safe or comfortable doing so (21%). Another significant minority (15%) indicated that it is difficult for them to call to request a ride or use a smartphone app.
- The survey also asked respondents to indicate their preferences for ride booking and fare payment. Most respondents would feel comfortable booking rides using a smartphone app (82%); however, 16% of respondents would prefer to book their rides by speaking with a dispatcher and an additional 3% would need a caregiver to book on their behalf. Nearly six

[44] American Community Survey. Means Of Transportation To Work (Universe: Workers 16+). From table B08301 in the American Community Survey 5-year; 2018-2022, using Census Block Groups.

in ten respondents felt comfortable paying with a credit/debit card linked to the smartphone app (57%), while 22% would prefer to pay with a transit agency-issued ticket or pass and 19% preferred to pay a cash fare.
- Respondents reported home origins throughout Fresno County. The most commonly reported origins included Fresno (42%), Clovis (14%), Biola (4%), and the following communities with less than 1% of respondents each: Auberry, Calwa, Cantua Creek, Coalinga, Easton, Fig Garden, Friant, Helm, Malaga, Reedley,

3.3 Public Engagement Activities – Phase 2

Stakeholder Committee Meetings #3 and #4

Public engagement activities for Phase 2 kicked off in early January 2024, with the third meeting of the Stakeholder Committee. This meeting focused on reviewing the study timeline, sharing the changes to the microtransit opportunity areas since they were first introduced during the second Stakeholder Committee meeting in November 2023, outlining the microtransit simulation methodology and results, answering Committee members' questions regarding the study, and explaining how stakeholders and the public can continue to stay involved in the study process. The fourth Stakeholder Committee meeting was held in March 2024, focusing on the Stakeholder Committee review of the **Prioritization Analysis**.

Key discussion themes from the 3rd and 4th Stakeholder Committee meetings included:

- It is important for the study to conduct public outreach activities in the more rural communities of Fresno County [in addition to suburban/urban areas covered through other previous activities]. As a result of this recommendation, the outreach team scheduled an additional pop-up event at the Cherry Auction in Easton, referenced below.
- The estimated cost-per-ride for the Fresno County EOC's Taxi Scrip service, operated with Uber/Lyft, is about $16-20 with average ride distances of 5-6 miles, comparable to several of the microtransit service alternatives explored in this study.
- The cost-per-ride of operating microtransit service in rural areas is likely to be very high, due to very long trips and low ridership; this aligns with what stakeholders have observed in previous FCRTA pilots.

Phase 2 Pop-Up Events

Between February and March 2024, the Project Team participated in four (4) pop-up events throughout Fresno County. Incorporating the use of pop-up events again allowed the project team to engage community members in locations that they frequent, such as the Clovis Farmers' Market, FoodMaxx grocery store in West Fresno, and the Cherry Avenue Auction in Easton. A bilingual public engagement specialist was available at the FoodMaxx pop-up event in West Fresno to ensure that the project team was able to reach a broader group of event attendees. Materials prepared and major comments received during this phase of engagement activities can be found in the **Public and Stakeholder Engagement Appendix**, including the Steering Committee Meetings #3 and #4 – PowerPoint Presentations, and Phase 2 Outreach Flyer (English and Spanish), Outreach Poster (English and Spanish), Survey Instrument (English and Spanish), and Social Media Content. A summary of the number of attendees during each Phase 1 pop-up event is provided in **Table 10** below.

Table 10. *Phase 2 Pop-Up Event Information*

Event Location, Date, and Time	Number of Attendees
Old Town Clovis Farmers Market 433 Pollasky Avenue Clovis, CA Saturday, February 17, 2024 9am - 12pm	25-35
Cherry Auction 4640 S. Cherry Avenue, Fresno, CA Saturday, February 24, 2024 9am - 2pm	80-90
River Park Farmers Market 71 E. Via la Plata, Fresno, CA Tuesday, February 27, 2024 5-9pm	65-75
FoodMaxx Supermarket 1177 Fresno Street, Fresno, CA Sunday, March 3, 2024 1-4pm	25-35

Phase 2 Survey

During Phase 2, a second **Online Survey Instrument** for use on Fresno COG's PublicInput platform was prepared to receive vital input from the general public who attended pop-up events, received emails blasts with a link to the on-line survey, or using links to the survey from information included in the flyer and posters. The Phase 2 survey was open from February 10, 2024, to March 9, 2024. Results of the on-line survey are provided in the **Public and Stakeholder Engagement Appendix**.

Key Findings from Phase 2 Survey

The Phase 2 survey evaluated residents' preferences for the proposed microtransit opportunity areas and requested input on any important community destinations not covered by the service alternatives. It received 93 responses, with key findings described below:

- Compared to the Phase 1 survey respondents, Phase 2 survey respondents were somewhat less likely to rely on public transit: 44% reported riding at least twice a week, compared to 56% in Phase 1.
- Most respondents (70%) reported a home zip code within the city of Fresno. The next-most commonly reported home zip codes included those in Cantua Creek (93608) at 9% of respondents, Clovis (93611 and 93619) at 5%, Firebaugh (93622) at 4%, and Southwest Fresno/Easton/Rolinda (93706) at 3%.
- Survey respondents represented a wide age range, with 39% between the ages of 19 and 34, 51% between the ages of 35 and 64, and 9% over the age of 65. There were no respondents who reported being age 18 or younger.
- Respondents were asked which of the proposed microtransit opportunity areas would be most useful to them or others in their household. Only about half (52%) of respondents answered this question, meaning that each service alternative received only a handful of votes. That said, the San Joaquin zone was most frequently selected (9 responses), followed by Fort Washington (8 responses), and Wolf Lakes/Far East Clovis (7 responses).

- A majority (51%) of respondents said that if the microtransit service alternative most useful to them were available, they would use it "regularly" (2-4 times per week) or "very often" (5 or more times per week).
- Respondents were asked to indicate any community destinations not included in the proposed microtransit opportunity areas. This question received 38 unique responses. The most commonly indicated destinations were all located in Fresno: Fresno State University (including the main campus and Valley Children's Stadium), Fresno International Airport, Chukchansi Park, the Salvation Army at 804 Parallel Avenue, Courthouse Park, and Fig Garden Village Shopping Center (Shaw Avenue & Palm Avenue).

Figure 14. *Project staff at a Phase 1 community pop-up event held at the Clovis Old Town Farmers Market in August 2023.*

4. Service Alternative Development

This **Service Alternative Development** section builds off of the **Existing Conditions Analysis and Needs Assessment** section**,** which evaluated the current performance of the county's transit network, assessed demographics linked to transit ridership, and identified unmet mobility needs in Fresno County. Key learnings from the Existing Conditions Analysis were applied to select opportunity areas that meet the needs of Fresno County residents and satisfy the goals of the COG. The Service Alternative Development Report explores the feasibility of implementing microtransit in opportunity areas throughout Fresno County by developing a set of potential service alternatives and simulating how each potential service may perform.

The Service Alternative Development section is structured in the following subsections:

1. **Opportunity Area Selection Criteria:** This section details the qualitative and quantitative criteria that were used for selecting the microtransit opportunity areas, several of which were informed by findings from the Existing Conditions Analysis.
2. **Opportunity Area Profiles:** This section evaluates each of the potential microtransit opportunity areas, providing an overview of the use case(s) that each opportunity area would serve along with summary statistics and a map of the opportunity area.
3. **Ridership Estimation:** The project team adopted a methodology that estimates ridership based on the number of residents living in each opportunity area, the number of jobs located in each opportunity area, and the expected microtransit mode share (the percentage of individuals who live or work in the opportunity area that are likely to use the service). This section also provides the ridership estimates used for each microtransit opportunity area, with low, medium, and high demand scenarios for each opportunity area to illustrate the most likely range of ridership outcomes.
4. **Service Parameters and Simulation Setup:** This section explains the key service parameters selected for the microtransit simulations, intended to balance tradeoffs between supply, demand, and quality of service considerations. These parameters were input into Via's proprietary simulation tool to simulate how a service may perform under real-world conditions. Distinct parameters were used for rural and urban/suburban opportunity areas, detailed in this section with explanations for why each parameter was selected. This can inform future service design decisions, enabling the transit agencies to better understand how changing the service design may impact demand and cost-effectiveness of a future service.
5. **Simulation Results:** This section provides detailed simulation results for low, medium, and high demand scenarios for each of the opportunity areas. These results indicate the number of vehicles required to operate each zone under the specified service parameters at peak times, the most important driver of the cost to operate microtransit. Also provided are essential quality-of-service metrics that affect the rider experience, such as average wait times at pickup, ride durations, and utilization, to name a few. These key performance indicators describe the quality of service that would be provided to passengers and the operational performance of the service if one of the County's public transit operators were to launch a microtransit service.

4.1 Opportunity Area Selection Criteria

Microtransit services typically operate in predefined zones, referred to as **opportunity areas** for the purposes of this feasibility study. Riders can only request trips with pickup and dropoff points within a given opportunity area. However, some opportunity areas offer service to selected activity centers or hubs just outside the primary service zone, provided that rides begin or end within the primary microtransit opportunity area. The COG's goals for microtransit service, identified in Section 1.4 Objectives for Microtransit Service, as well as several qualitative and quantitative considerations listed below, informed the initial selection of potential opportunity areas for microtransit service in Fresno County.

Qualitative Considerations

1. **Online survey responses:** Through an online survey conducted from August to November 2023, the project team gathered feedback from Fresno County residents on their current transit ridership patterns and general perception of transit service in their communities. Respondents were also asked to identify areas in the county that they currently have difficulty accessing with public transit. Areas mentioned in the survey were then considered when selecting potential opportunity areas for further evaluation, with preference given to those mentioned in the survey. None of the rural opportunity areas were cited in survey responses, so this metric is omitted from **Table 10**.
2. **Pilot programs:** Given Fresno County's extensive history of introducing pilot programs and testing innovative transit service delivery approaches, the project team leveraged key insights from previous programs to consider where a new microtransit service may be suitable and what potential challenges may arise based on previous difficulties faced in service implementation. For example, FAX has explored grant funding programs for microtransit in the West Area and Sunnyside sections of Fresno. FCRTA, meanwhile, previously identified Lanare/Riverdale and the San Joaquin Transit service areas as potentially suitable for microtransit. The project team evaluated areas with a history of previous pilot programs favorably for microtransit, as this history is an indicator that transit agencies have identified the area as one where there are significant unmet transit needs.
3. **Previous plans and studies:** Transit agencies in Fresno County have also identified, in previous plans and studies, various communities and destinations within the county that have unmet transit needs, without subsequently developing a pilot or demonstration program to address them. Opportunity areas that contain communities or locations indicated in previous COG or transit agency studies are indicated in **Tables 9 and 10** below.
4. **Key activity centers:** Activity centers are locations likely to generate and attract significant travel demand, such as shopping centers, schools, recreation areas, medical centers, and other important community destinations. In collaboration with Fresno COG and transit agency staff, the project team evaluated a wide range of activity centers most likely to drive transit (and microtransit) ridership within an opportunity area. Opportunity area boundaries are drawn to ensure that each includes a range of key activity centers. This will ensure the opportunity area can serve a reasonable number of community destinations that riders need to access.
5. **Land-use mix:** Opportunity areas should also feature a mix of employment, residential and commercial/retail land uses. Opportunity areas with a mix of residential and commercial areas are more likely to provide a broader range of useful trips to riders. A mix of different

types of destinations within each area facilitates a wider range of use-cases (e.g., commuting, shopping, school transportation, and local discretionary travel), as well as more evenly distributed demand for trips throughout the day. An even distribution of demand throughout the day enables microtransit to offer a more reliable quality of service for riders regardless of when they need to travel.

6. **Duplication of existing fixed-route corridors[45] and demand-response services:** Opportunity areas should connect a wide range of community destinations while enabling riders to complete multiple types of trips without duplicating fixed-route service corridors and cannibalizing ridership from those routes. To avoid inefficiencies and potential fixed-route service duplication, microtransit zones studied here are designed to enable onward travel to central Fresno by encouraging transfers between microtransit and fixed-route bus at key transfer points. Microtransit zone boundaries are drawn to facilitate shorter, locally oriented trips, while longer, regional trips are more cost-effectively served by existing fixed-route services. Likewise, microtransit zones avoid duplication of FCRTA's existing, intracity demand-response services operating within smaller incorporated cities of Fresno County.
7. **Legible zone boundaries (e.g., city limits, major roadways, or natural features):** To the extent possible, microtransit opportunity areas should be easy for potential riders to understand, using natural boundaries such as city limits, major roadways, or natural features like mountains or rivers as the boundaries of opportunity areas. For the purposes of this study, all potential microtransit opportunity areas are contained within the bounds of Fresno County to avoid the potential complications of negotiating service, financial, or operational policies of a microtransit program involving adjacent counties.

Quantitative Considerations

1. **Community demographics:** In selecting microtransit opportunity areas, the project team also considered several key demographic factors and socioeconomic conditions that are closely correlated with transit ridership. This entailed assessing how the share of each of the following demographic factors compared to the countywide average in each opportunity area: zero-vehicle households, individuals living in poverty, older adults age 65 or over, youth under the age of 18, race/ethnicity other than non-Hispanic white, and people with disabilities.[46] As these groups generally rely on transit at higher rates than the general population, distribution of these high-need populations can indicate the relative likelihood that a community will use microtransit service in the future.
2. **Transit connections:** Opportunity areas with connections to multiple frequent bus routes are more likely to support regional multimodal trips and increase overall transit usage. The quality of these transfers significantly affects the rider experience; riders are more likely to

[45] Should transit agencies in Fresno County decide to introduce a microtransit service, additional measures during the implementation phase can be taken to avoid displacement of ridership from existing fixed-route service to microtransit. Introducing distance-based fares to discourage longer trips better served by fixed-route is one approach that Golden Empire Transit (GET) in Bakersfield, CA, has taken. Another is to set software parameters to adopt "modal filtering" that limits microtransit rides service within a larger zone to only those ride requests that cannot be reasonably served by a nearby, comparable fixed-route option which offers comparable wait times. King County Metro in Seattle, WA, is one example of a transit agency using this approach within its microtransit services.

[46] These six groups were weighted equally.

transfer between microtransit and fixed-route service (or the reverse) if the fixed-route service offers a relatively short wait time comparable to those offered by microtransit. For example, a fixed-route corridor operating with 30-minute frequency or better offers riders average wait times of 15 minutes at the bus stop, while a 20-minute corridor would offer riders average wait times of 10 minutes. Less frequent services, such as those operating hourly or with a handful of daily trips, effectively force riders to adjust their travel around the fixed-route timetable, something many riders are unwilling or unable to do. Therefore, first/last-mile connections to these less frequent fixed-route services are considered less viable as a potential use-case for microtransit. The quality of first/last-mile connections is indicated in **Tables 9 and 10** by the number of weekday bus trips in both directions that occur on routes with stops within the microtransit zone. A zone with greater fixed-route service frequency from nearby routes — indicated by a larger number of fixed-route trips occurring at stops within its boundaries — will offer stronger first/last-mile connections compared to a microtransit zone with fewer fixed-route trips occurring within its borders.

3. **Net coverage expansion:** The project team assessed opportunity areas based on the additional access to public transit that they would provide given their specified boundaries. Net coverage expansion was calculated as the number of additional residents and workers in the area that are currently living or working outside of walking distance from existing fixed-route bus stops (one quarter-mile) but would be served by the new microtransit opportunity area. This criterion aims to promote the study's goal to expand transit coverage to unserved or underserved communities, particularly those that currently have limited or no access to fixed-route bus service (see Section 1.4 Objectives for Microtransit Service).

Summary tables that were used to evaluate each of the potential opportunity areas across the various qualitative and quantitative considerations above are included in **Table 11** (urban/suburban opportunity areas) and **Table 12** (rural opportunity areas) below. Each microtransit opportunity area was evaluated across the following criteria:

- **Net expansion of transit service coverage:** Total population and jobs located beyond one-quarter mile of existing fixed-route transit that would be served with each microtransit opportunity area.
- **Number of high-need groups:** Number of high-need demographic groups in which the opportunity area has a greater share than the Fresno County average. Shares of each of the six demographic groups represented in each opportunity area, relative to county average, are shown in **Tables 9 and 10**.
- **Quality of first/last-mile connections to fixed-route service:** Number of weekday fixed-route bus trips occur within the opportunity area.
- **Alignment with previous studies and public engagement efforts**: Whether a significant unmet transit need was mentioned in previous studies or the online survey (yes/no).
- **History of pilot programs in the area**: Whether previous pilot programs were completed in the area (yes/no).

Table 11. *Urban/Suburban Opportunity Area Comparison* [47]

Urban/Suburban Opportunity Area Comparison	East Clovis	North Clovis	Fort Washington	Southwest Fresno	West Area / North of Shields	West Area / South of Shields	Calwa / Malaga	Sunnyside
Coverage Expansion to Unserved Areas *Pop & jobs unserved by existing routes*	39,800	27,900	36,700	6,500	12,100	22,400	8,200	22,800
High-Need Groups *Number of demographic categories in which opportunity area has higher share than Fresno County average*	2 of 6	2 of 6	1 of 6	5 of 6	2 of 6	2 of 6	4 of 6	4 of 6
Quality of First/Last-Mile Connection *Number of weekday fixed-route bus trips within the opportunity area*	132	222	626	398	257	175	247	357
Significant Unmet Transit Need Documented in Previous Studies *Yes/No*	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes
Unmet Transit Need Documented in Online Survey *Yes/No*	Yes	Yes	Yes	No	No	No	Yes	Yes
History of Previous Pilot / Demonstration Programs *Yes/No*	No	No	No	Yes	Yes	Yes	No	No

[47] Cells highlighted in blue are considered the best performing of the microtransit opportunity areas.

Table 12. *Rural Opportunity Area Comparison* [48]

Rural Opportunity Area Comparison	Easton / Raisin City / Caruthers	Wolf Lakes / Far East Clovis	Lanare / Riverdale	San Joaquin / Tranquility
Coverage Expansion to Unserved Areas *Pop & jobs unserved by existing routes*	14,100	15,700	7,400	7,100
High-Need Groups *Number of demographic categories in which zone has higher share than Fresno County average*	3 of 6	2 of 6	2 of 6	3 of 6
Quality of First/Last-Mile Connection *Number of weekday fixed-route bus trips within the zone*	117	346	2	4
Significant Unmet Transit Need Documented in Previous Studies *Yes/No*	No	No	Yes	Yes
History of Previous Pilot / Demonstration Programs[49] *Yes/No*	No	No	Yes	Yes

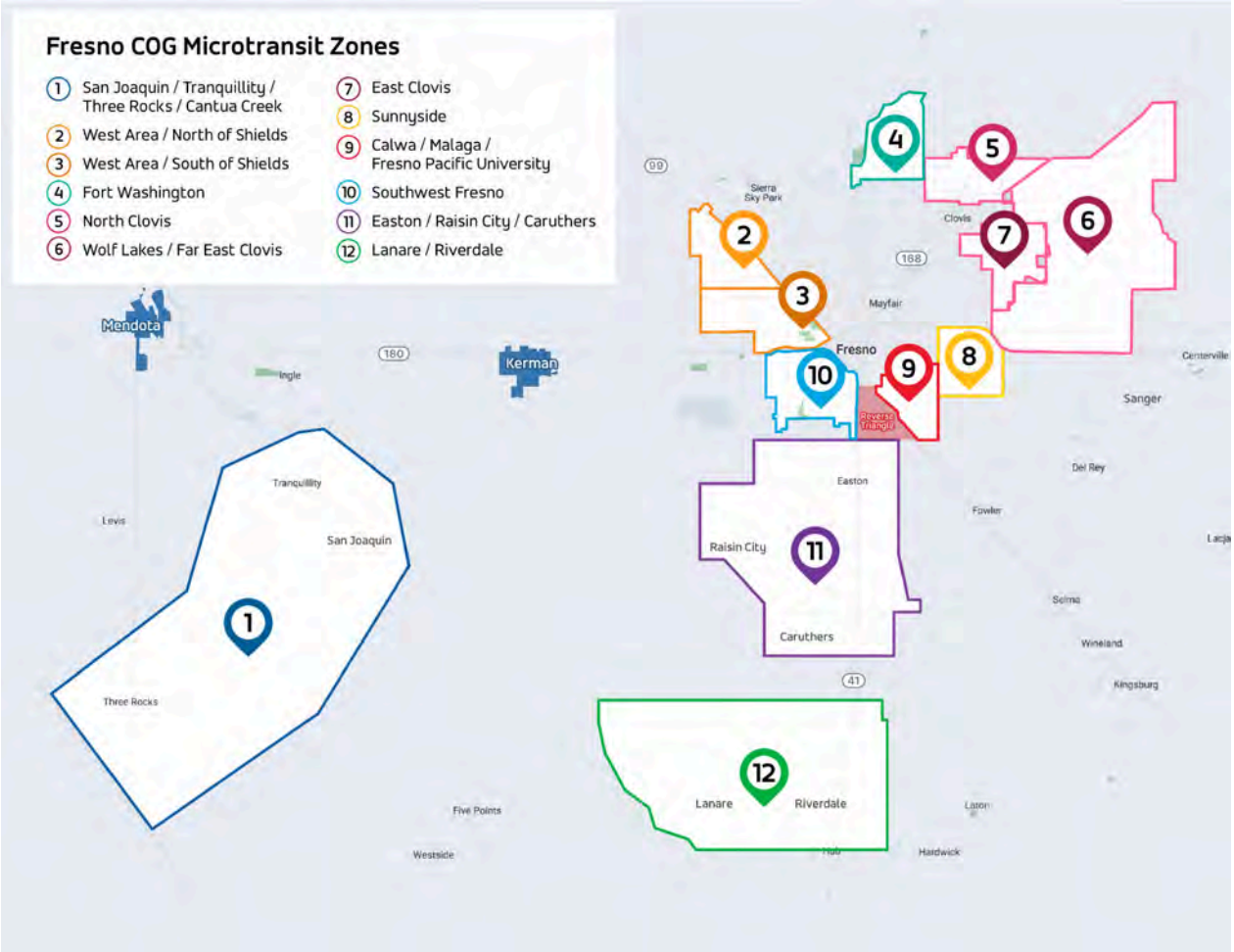
[48] Cells highlighted in blue are considered the best performing of the microtransit opportunity areas.

[49] Previous pilot programs have largely failed due to low ridership and the failure to meet the TDA's 10% farebox recovery requirement for rural transit agencies.

4.2 Opportunity Area Profiles

Summaries of each of the eight urban/suburban microtransit opportunity areas and four rural opportunity areas is provided in the section below. These summaries include key use-cases and activity centers served, geographic boundaries, and transfer points to fixed-route service. A map of the twelve microtransit opportunity areas evaluated in this study is provided in **Figure 15** below.

Figure 15. *Microtransit Opportunity Areas*



Urban/Suburban Opportunity Areas

The project team developed a range of eight potential urban/suburban opportunity areas for microtransit. Compared to the rural opportunity areas, they are relatively higher-density and more populated areas within Fresno County, on the periphery of the cities of Fresno and Clovis. Each of the opportunity area profiles below includes a table with the following key considerations used to evaluate each of the opportunity areas:

- **Baseline statistics,** such as population and employment, geographic area served.
- **Key destinations**, such as large employers, schools, recreational centers, medical facilities, grocery stores, and shopping centers.
- **Previous studies** that reference unmet needs in each opportunity area.
- **Demographic groups** whose shares of population within the opportunity area are above the County average. A cross-tabulation of six high-need groups and their respective shares of the population, relative to the Fresno County average, is shown in **Table 13.**
- **Currently unserved population and jobs** that will gain access to transit through the opportunity area.
- **Number of weekday fixed-route bus trips** that serve the opportunity area, serving as a measure of how high-quality the first- and last-mile connection is in terms of frequency.
- **Key transfer points** and connecting fixed-route services.

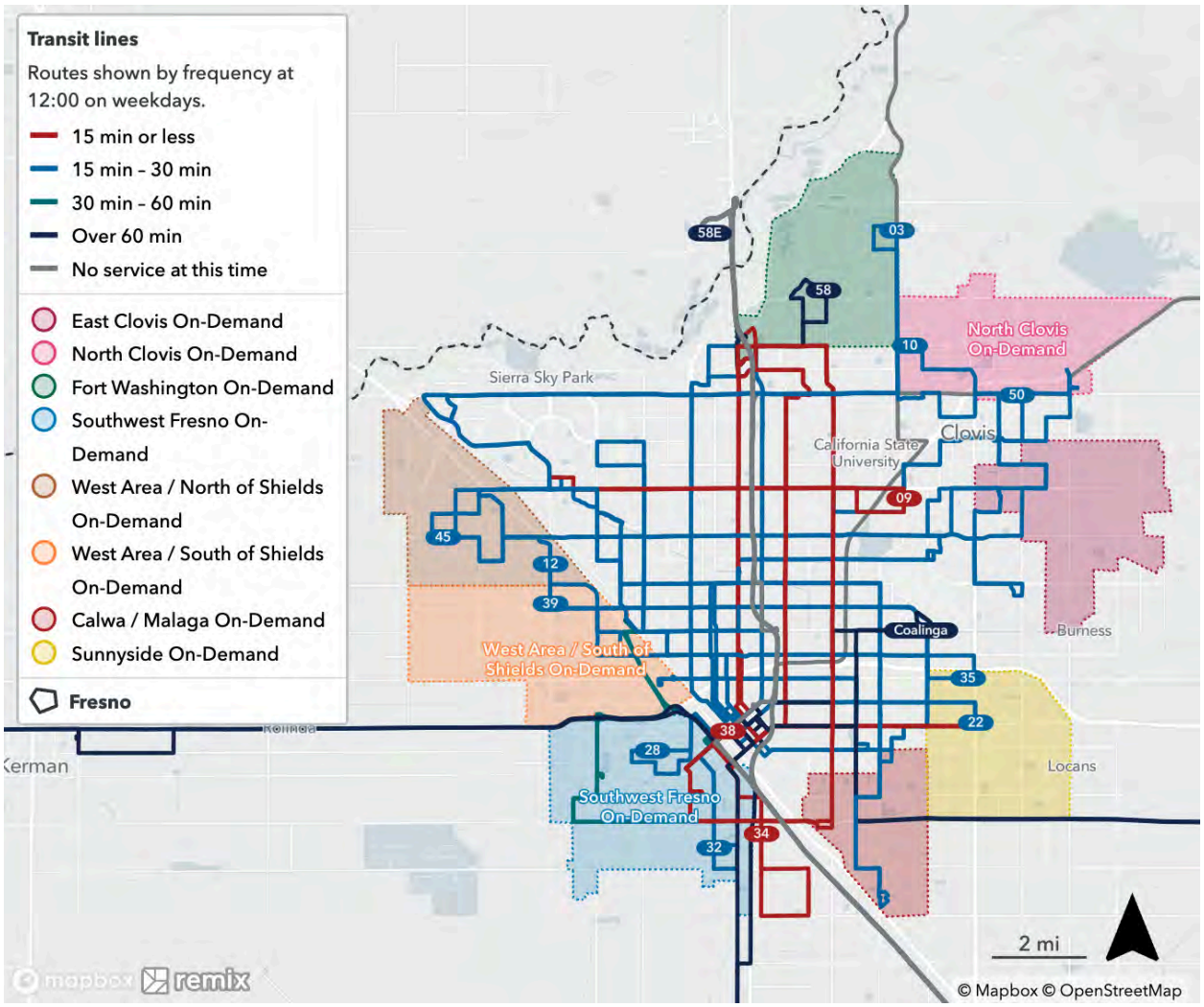
Table 13. *Urban/Suburban Opportunity Area Shares of High-Need Groups* [50]

Urban/Suburban Opportunity Area Comparison	Fresno County Average	East Clovis	North Clovis	Fort Washington	Southwest Fresno	West Area / North of Shields	West Area / South of Shields	Calwa / Malaga	Sunnyside
Zero-Vehicle Households *Percent of households*	7%	2%	3%	2%	15%	3%	4%	8%	7%
Residents below Poverty line *Percent of residents*	21%	6%	3%	5%	44%	17%	22%	20%	18%
Older Adults (65+) *Percent of residents*	12%	12%	14%	16%	11%	9%	9%	12%	11%
Youth (17-) *Percent of residents*	29%	30%	31%	24%	35%	31%	29%	31%	31%
Race/Ethnicity other than Non-hispanic white *Percent of residents*	73%	56%	43%	48%	95%	83%	85%	93%	79%
People living with disabilities *Percent of residents*	13%	10%	9%	10%	17%	12%	13%	17%	12%

[50] Cells highlighted in blue indicate above-average shares of high-need groups relative to the Fresno County average.

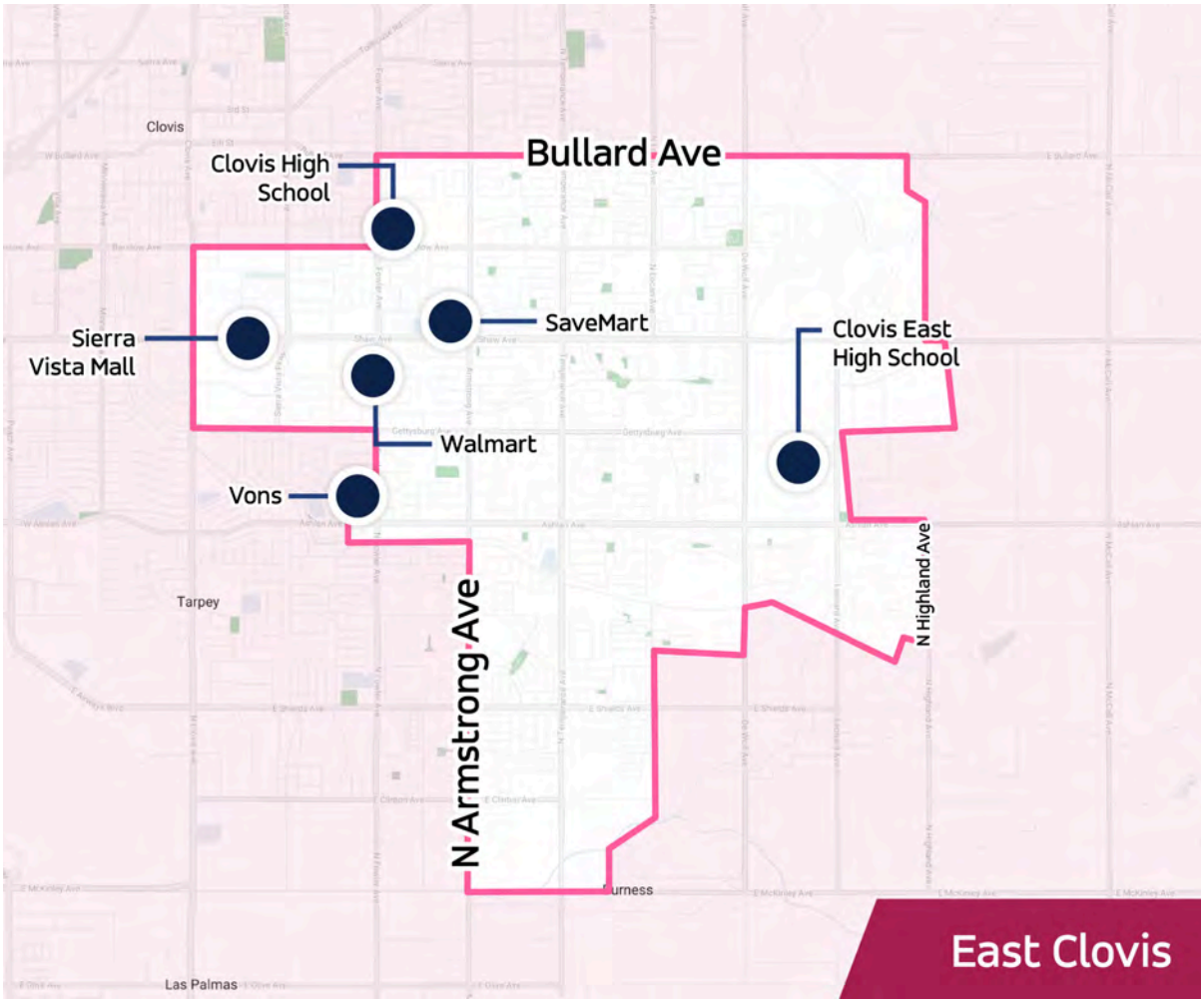
A map of the eight urban/suburban, on-demand microtransit opportunity areas evaluated in this study is provided in **Figure 16** below.

Figure 16. *Urban/Suburban Opportunity Areas*



East Clovis

Figure 17. *East Clovis Opportunity Area*



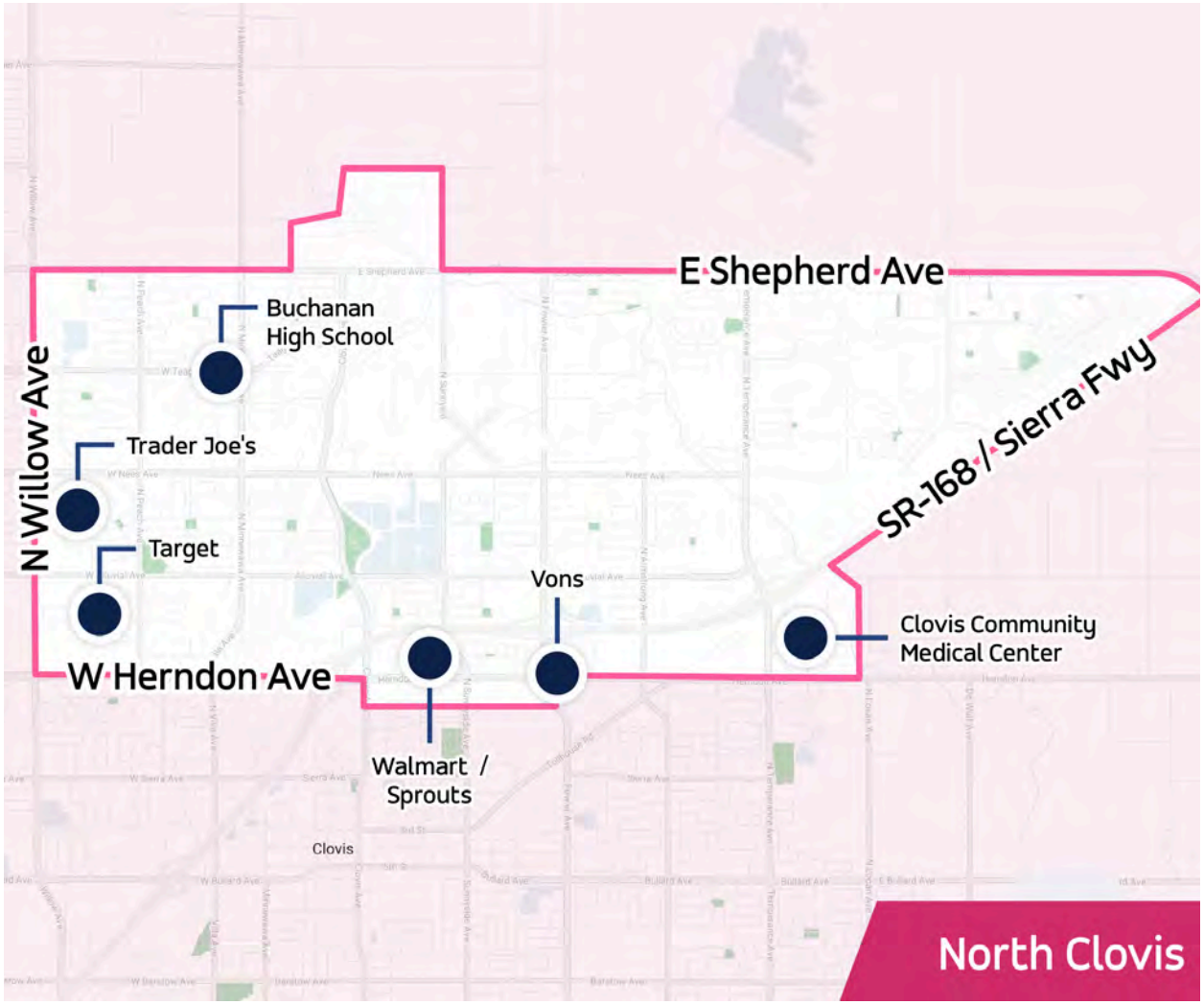
The East Clovis Opportunity Area is bounded by Bullard Avenue to the north, Highland Avenue to the east, McKinley Avenue in the south, and Fowler Avenue to the west. The opportunity area extends service coverage to unserved areas east of Armstrong Avenue and south of Shaw Avenue. It also provides a key first- and last-mile connection to FAX Route 9-Shaw at Sierra Vista Shopping Center, which offers 30-minute frequency east of CSU-Fresno. Expected use cases include travel to shopping centers and schools. The opportunity area also provides first- and last-mile connections to Clovis Transit Route 50, facilitating multimodal transportation throughout the city. Relative to the other suburban opportunity areas, the East Clovis zone provides the greatest service expansion to the currently unserved population and jobs in the region, aligning closely with a key objective of the study. Figure 17 above shows the boundaries of the opportunity area, including key destinations, while Table 14 below summarizes key information of the opportunity area.

Table 14. *East Clovis Opportunity Area Summary*

Baseline Statistics	**Population:** 48,500 (4,850 per mi^2) **Jobs:** 4,500 (450 per mi^2) **Area:** 10 mi^2
Key Destinations	Clovis East High School, Reyburn Intermediate School, Clovis High School, Walmart (Shaw & Fowler), Save Mart (Shaw & Armstrong), Sierra Vista Shopping Center
Previous Studies Indicating Unmet Transit Needs	• Fresno COG FY 2022/2023 Unmet Transit Needs Assessment • Clovis Transit Network Redesign
Above- Average Shares of High-Need Groups	• Older adults (65+) • Youth under 18
Service Expansion to Unserved Population + Jobs	39,800
Connecting Bus Routes	• Clovis Transit Route 50 • FAX Route 9-Shaw
Number of Fixed-Route Bus Trips per Weekday	132
Key Transfer Points	• Sierra Vista Shopping Center to FAX Route 9-Shaw

North Clovis

Figure 18. *North Clovis Opportunity Area*



The North Clovis Opportunity Area is bounded by Shepherd Avenue to the north, the Sierra Freeway to the east, Herndon Avenue to the south, and Willow Avenue to the west. The opportunity area is primarily suburban, extending service coverage to areas east of Willow Avenue between Herndon Avenue and Shepherd Avenue that are mostly unserved by existing fixed routes (Clovis Transit Route 10 currently serves the southwest corner of the zone). The opportunity area also provides key first- and last-mile connections to FAX Route 3-Herndon at multiple stops on Willow Avenue. Given the mix of schools, retail centers, employers, and medical facilities, the North Clovis opportunity area would serve potential use cases that include shopping, transporting students to and from schools, and medical appointments. With three connecting bus routes (Clovis Transit Route 10, Clovis Transit Route 50, and FAX Route 3-Herndon), the opportunity area offers moderately frequent connections to downtown Clovis, with headways of 20-30 minutes on these

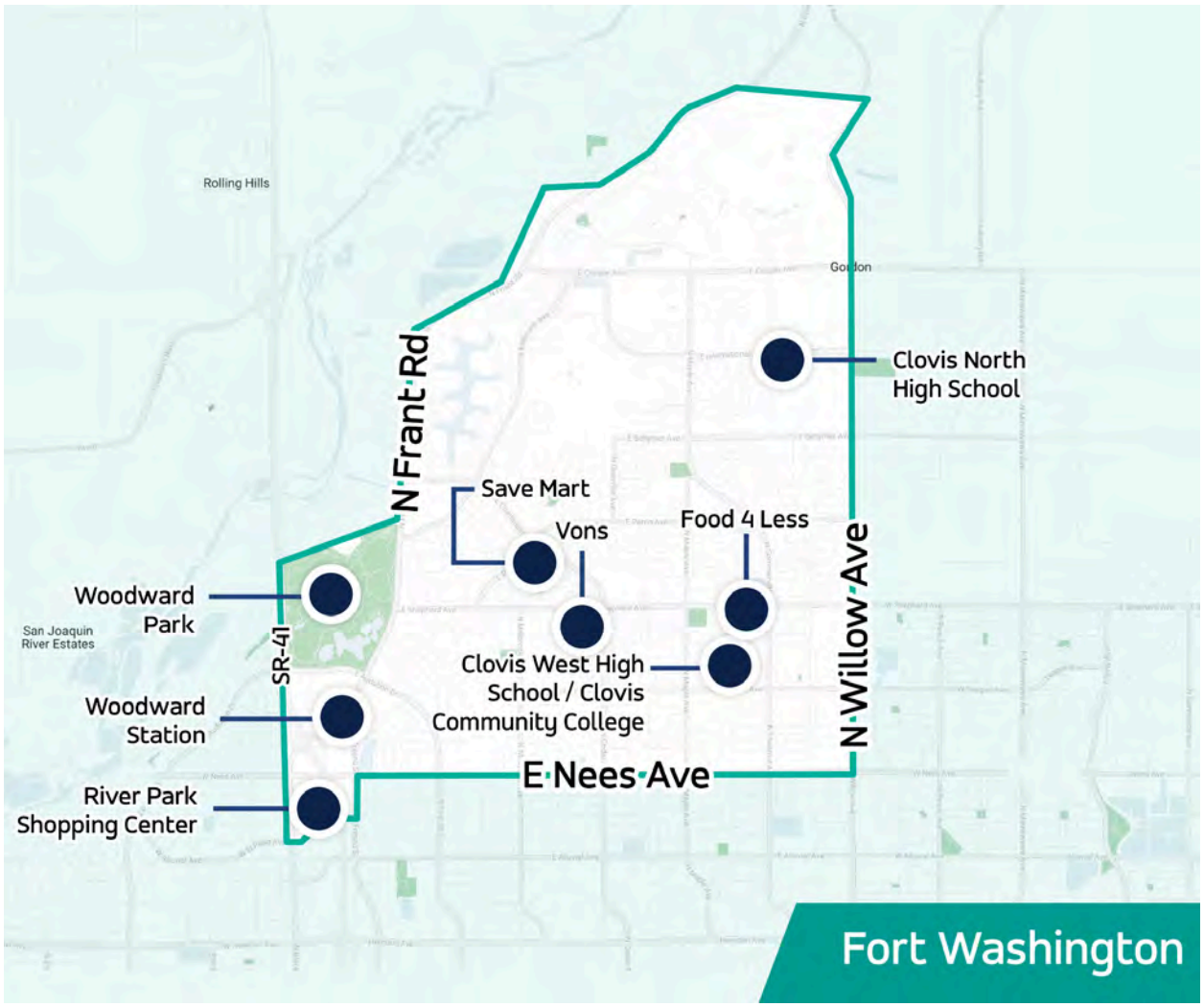
routes. **Figure 18** above shows the boundaries of the opportunity area, including key destinations. **Table 15** below summarizes key information of the opportunity area.

Table 15. *North Clovis Opportunity Area Summary*

Baseline Statistics	**Population:** 39,600 (3,960 per mi^2) **Jobs:** 6,600 (600 per mi^2) **Area:** 10 mi^2
Key Destinations	Clovis Community Medical Center, Harlan Ranch Community Recreation Center, Buchanan High School/Alta Sierra Intermediate School, Clovis Crossing/Walmart, Sprouts, Clovis Commons and Target, Trader Joe's, and Wawona Frozen Foods (large employer)
Previous Studies Indicating Unmet Transit Needs	• Clovis Transit Network Redesign
Above- Average Shares of High-Need Groups	• Older adults (65+) • Youth under 18
Service Expansion to Unserved Population + Jobs	27,900
Connecting Bus Routes	• Clovis Transit Route 10 • Clovis Transit Route 50 • FAX Route 3-Herndon
Number of Fixed-Route Bus Trips per Weekday	222
Key Transfer Points	• Clovis Community Medical Center (Clovis Transit Route 50) • Willow & Herndon (FAX Route 3-Herndon)

Fort Washington

Figure 19. *Fort Washington Opportunity Area*



The Fort Washington opportunity area fills several gaps in existing service, primarily to unserved areas north of Nees Avenue and west of Willow Avenue. The opportunity area also provides first- and last-mile connections to the FAX Q BRT at Woodward Station and Route 38-Cedar at Blackstone & El Paso, at River Park Shopping Center. Similar to other suburban opportunity areas, the Fort Washington opportunity area supports a variety of use cases, primarily aimed at providing transportation to schools, shopping centers, and medical centers. This opportunity area contains significant first/last-mile connections indicated by the relatively high number of weekday fixed-route bus trips within the opportunity area. It would offer the second-greatest expansion to population and jobs currently unserved by existing routes of the suburban opportunity areas explored in this study. However this opportunity area is among the least disadvantaged of those evaluated by the study. Compared to other opportunity areas, it is home to relatively low shares of high-need groups, with just one of the six disadvantaged groups represented above the Fresno County average (older adults aged 65 and above).

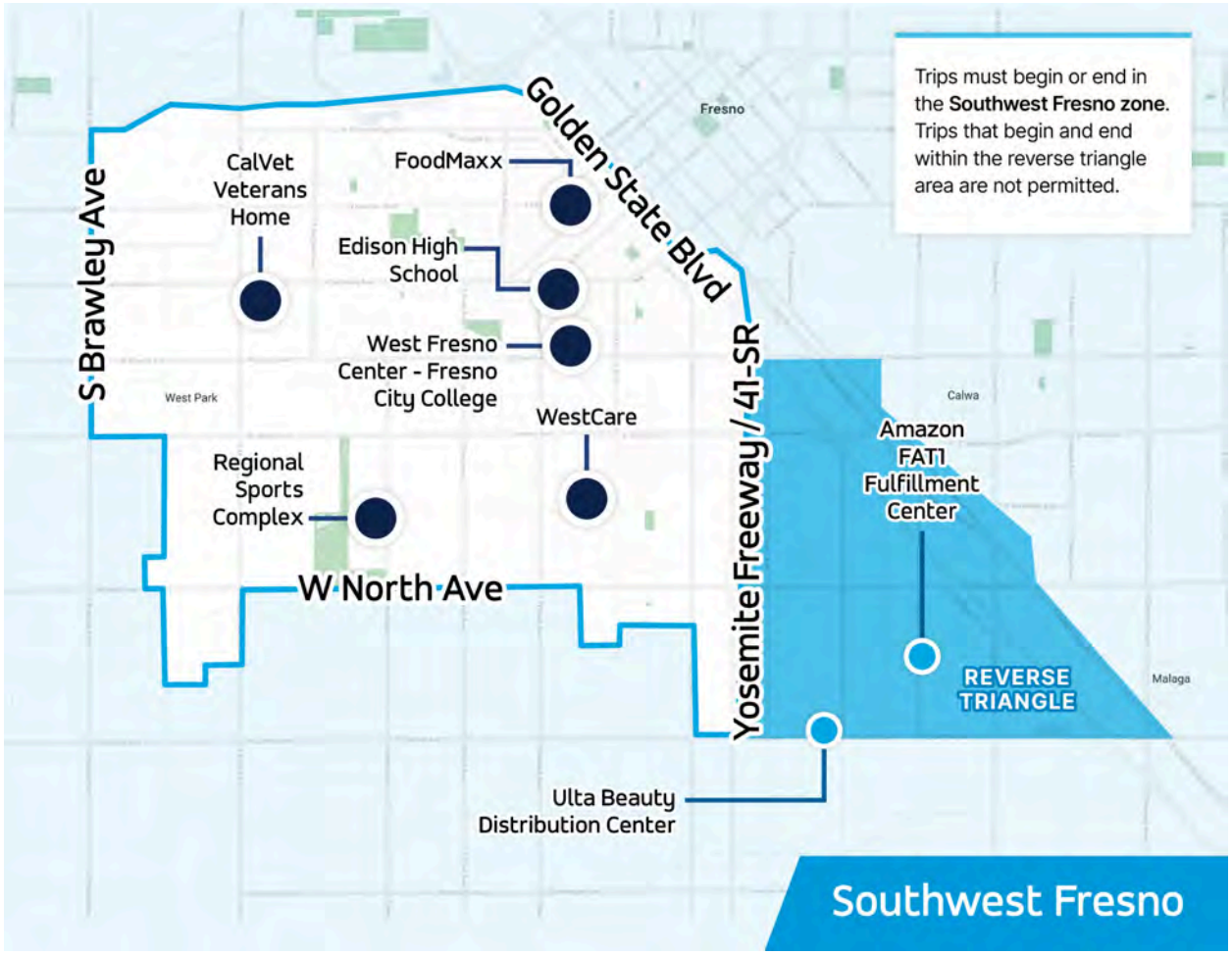
Figure 19 above shows the boundaries of the opportunity area, including key destinations. **Table 16** below summarizes key information by which the Fort Washington opportunity area has been evaluated.

Table 16. *Fort Washington Opportunity Area Summary*

Baseline Statistics	**Population:** 46,200 (4,200 per mi^2) **Jobs:** 6,900 (630 per mi^2) **Area:** 11 mi^2
Key Destinations	Woodward Station (FAX Q BRT), Clovis North High School, Clovis West High School, Clovis Community College, River Park Shopping Center, Trader Joe's (Friant Road), Fresno Heart & Surgical Hospital, Woodward Park, Save Mart (Champlain Drive), Food 4 Less (Shepherd & Chestnut)
Previous Studies Indicating Unmet Transit Needs	• None
Above- Average Shares of High-Need Groups	• Older adults (65+)
Service Expansion to Unserved Population + Jobs	36,700
Connecting Bus Routes	• FAX Q BRT • FAX Route 3-Herndon • FAX Route 26 - Palm • FAX Route 32 - Fresno • FAX Route 34 - First • FAX Route 38-Cedar • FAX Route 58-NE Fresno • FAX Route 58E - Children's Hospital
Number of Fixed-Route Bus Trips per Weekday	626
Key Transfer Points	• Woodward Station (FAX Q BRT) • Blackstone & El Paso (38-Cedar, 58-NE Fresno)

Southwest Fresno

Figure 20. *Southwest Fresno Opportunity Area*



The Southwest Fresno opportunity area includes the area southwest of Downtown Fresno, with a northern boundary along SR-180, eastern boundary along SR-41, southernmost boundaries along Central Avenue, and a western border along Brawley Avenue. The West Park community, in FCRTA's service area in the southwest corner of the zone, has proven difficult to serve with previous FCRTA pilot programs such as West Park Transit and West Park Rideshare each suspended due to low ridership. The area encompasses above-average shares of five of the six identified high-need groups that tend to be transit-dependent, suggesting a higher demand for public transit. Relative to other suburban opportunity areas, the Southwest Fresno opportunity area does not offer as large an expansion in service to currently unserved groups in the region, as most residents live within walking distance of a FAX bus stop. The opportunity area was not mentioned in the community engagement survey conducted during this study.

Similar to other suburban opportunity areas, the opportunity area aims to provide first- and last-mile connections to FAX routes, particularly Route 38-Cedar at Fresno City College (West Fresno Center) and Route 34 at FoodMaxx (Fresno & C). By including connections to the SR-41/SR-99 "Reverse Triangle," the opportunity area connects riders to Amazon, Ulta Beauty, and

other job centers. In 2018, the City of Fresno and the Fresno Metro Black Chamber of Commerce were awarded a Transformative Climate Communities (see State Funding) grant of $67 million to improve mobility and public health in Southwest Fresno. One key outcome of this funding has been the deployment of the Biz-Werx Innovation and Mobility Hub, the Black Chamber's community resource center for Black residents and entrepreneurs. Biz-Werx launched three new mobility services, including bike share (Biz-Bikes), electric car share (EV-Werx), and van share (Van-Werx), which launched in the Southwest Fresno area in early 2024.[51] These services offer area residents 200 pedal-assist bikes, 40 Chevrolet Bolt electrified vehicles, and three ride-share vans, respectively.[52]

Figure 20 above shows the boundaries of the opportunity area, including key destinations. **Table 17** below summarizes the key strengths and weaknesses of the Southwest Fresno suburban opportunity area.

***Table 17**. Southwest Fresno Opportunity Area Summary*

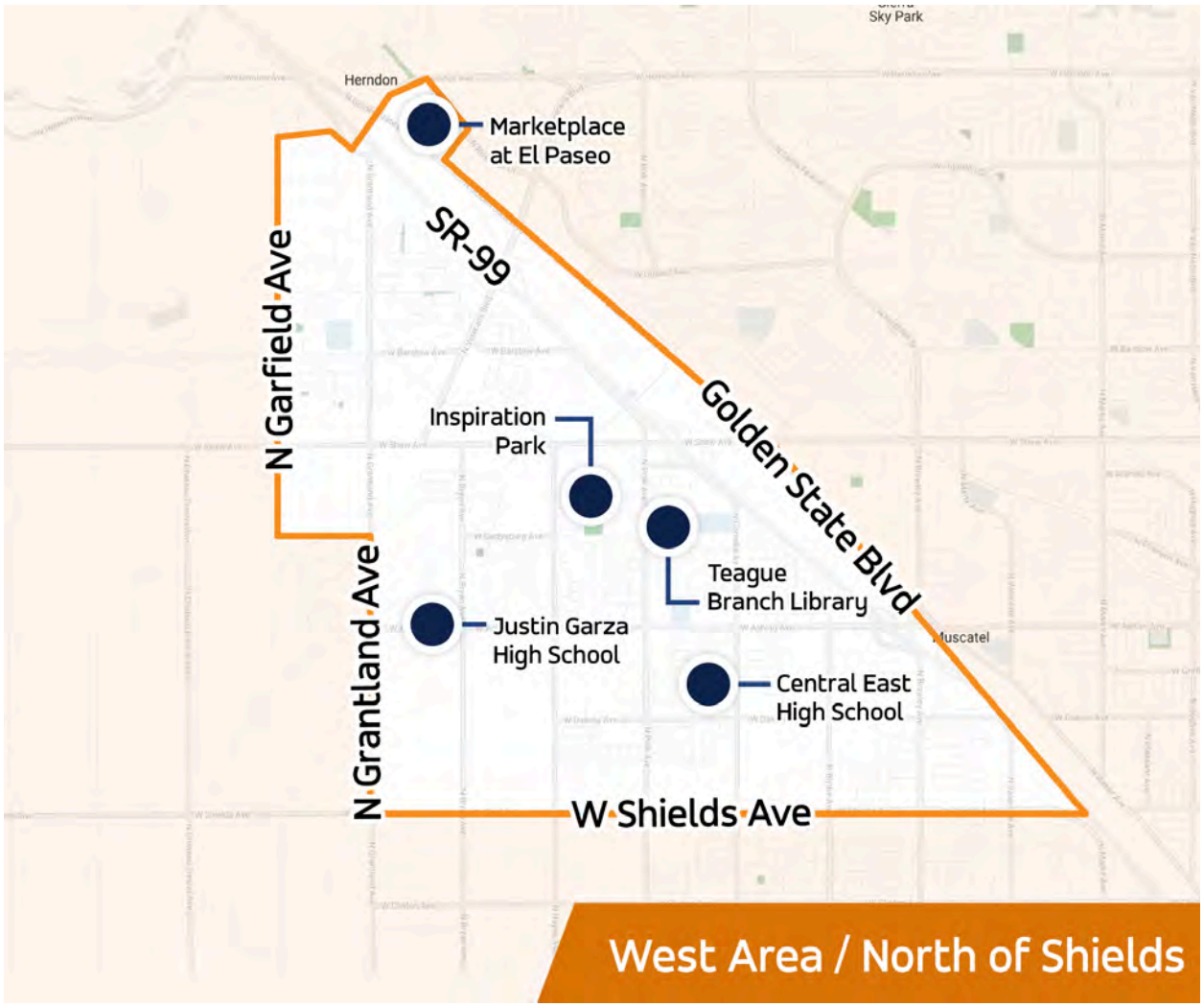
Baseline Statistics	**Population:** 24,700 (1,800 per mi^2) **Jobs:** 4,700 (650 per mi^2) **Area:** 13 mi^2
Key Destinations	**Community / recreation centers:** Sunset Community Center, Regional Sports Complex, West Fresno Branch Library, Fink White Neighborhood Center, West Fresno Boys & Girls Club, Frank H Ball Neighborhood Center, West Fresno Family Resource Center **Fresno Housing Authority communities:** Yosemite Village Apartments, Fairview Heights Terrace, Del Soto Gardens, Housing Authorities of Fresno, Sierra Plaza, Sequoia Courts Terrace, Kirk Neighborhood, CalVet Veterans Home **Schools:** Fresno City College - West Fresno Center, Edison High School, Rutherford B. Gaston Middle School, West Fresno Middle School **Workplaces:** Cargill, WestCare California MLK
Previous Studies Indicating Unmet Transit Needs	• Clean Mobility Options Voucher Pilot Program (2021)
Above- Average Shares of High-Need Groups	• Youth under 18 • Zero-vehicle households • Individuals living in poverty • Communities of color • People with disabilities
Service Expansion to Unserved Population + Jobs	6,500
Connecting Bus Routes	• FAX Route 38-Cedar • FAX Route 28-DSS/Manchester

[51] California, State of. 2024. "Transformative Climate Communities (TCC) - Strategic Growth Council." 2024. https://sgc.ca.gov/grant-programs/tcc/.
[52] Alexander, Oscar. 2023. "Clean Share Mobility Program Offers Electric Cars, Bikes in Fresno." Fresnoland. October 26, 2023. http://fresnoland.org/2023/10/26/clean-share-mobility/.

	• FAX Route 34-First Street • FAX Route 32-Fresno Street
Number of Fixed-Route Bus Trips per Weekday	398
Key Transfer Points	• Fresno City College-West Fresno Center • FoodMaxx/Fresno & B (Route 38-Cedar)

West Area / North of Shields

Figure 21. *West Area / North of Shields Opportunity Area*



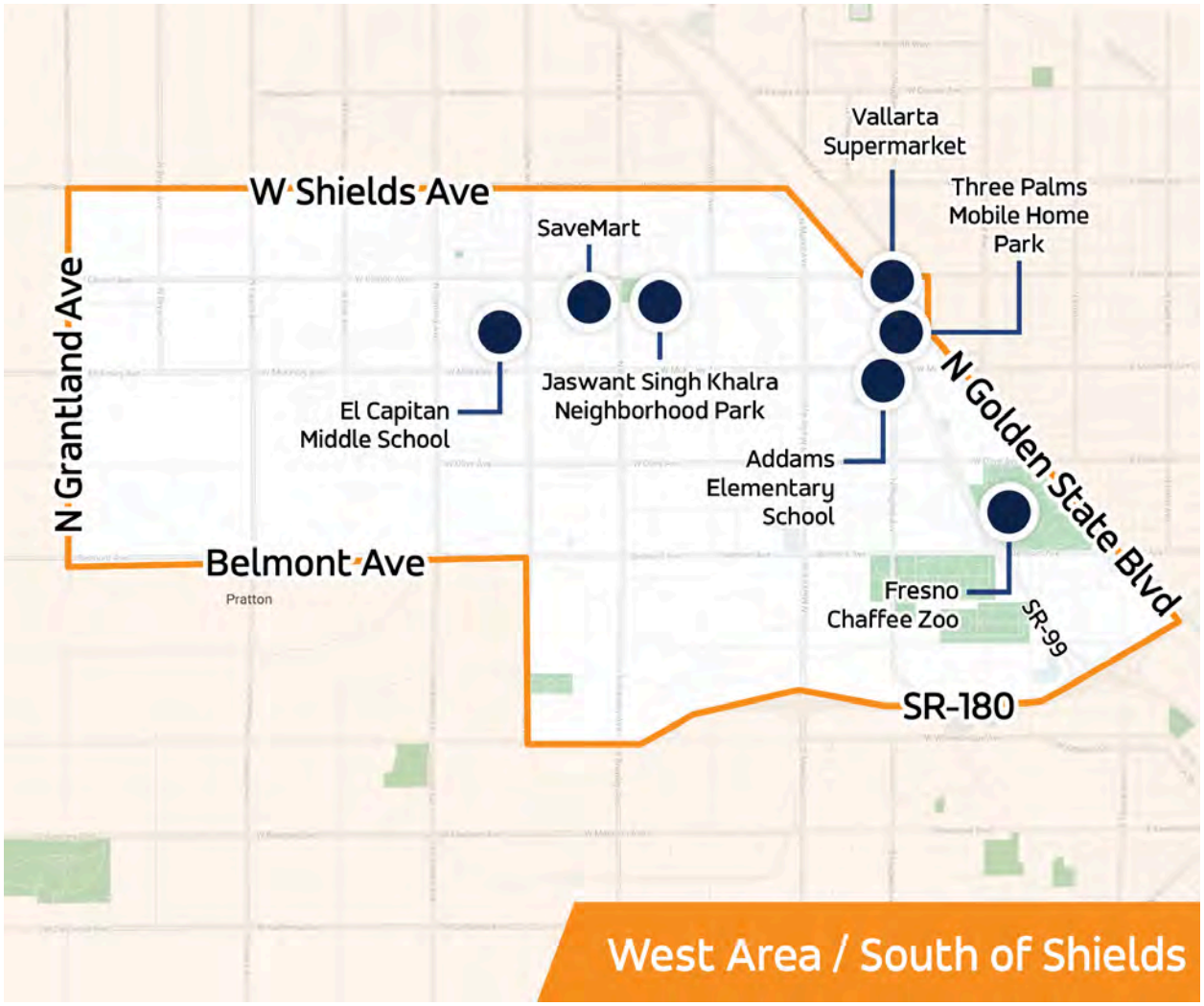
The West Area / North of Shields opportunity area is bordered by Golden State Boulevard in the east, Shields Avenue to the south, and Grantland Avenue to the west. The opportunity area expands service coverage to unserved areas west of Golden State Boulevard and SR-99, providing first- and last-mile connections to FAX Routes 12-Brawley and 45-Ashlan. **Figure 21** above shows the boundaries of the opportunity area, including key destinations. **Table 18** below summarizes the key information of the West Area / North of Shields suburban opportunity area.

Table 18. *West Area / North of Shields Opportunity Area Summary*

Baseline Statistics	**Population:** 29,600 (2,960 per mi^2) **Jobs:** 4,300 (430 per mi^2) **Area:** 10 mi^2
Key Destinations / Mobility Hubs	Marketplace at El Paseo, Justin Garza High School, Central East High School, Inspiration Park, and Teague Branch Library
Previous Studies Indicating Unmet Transit Needs	• Clean Mobility Options Voucher Pilot Program (2021) for Three Palms Mobile Home Park • Fresno EOC FY 2022/2023 Unmet Transit Needs Assessment
Above- Average Shares of High-Need Groups	• Youth under 18 • Communities of color
Service Expansion to Unserved Population + Jobs	6,500
Connecting Bus Routes	• FAX Route 45-Ashlan • FAX Route 12-Brawley/Inspiration Park • FAX Route 20-Hughes • FAX Route 3-Herndon • Fresno EOC Shuttle
Number of Fixed-Route Bus Trips per Weekday	257
Key Transfer Points	• Marketplace at El Paseo to FAX Routes 3-Herndon or 20-HughesFresno City College-West Fresno Center • FoodMaxx/Fresno & B (Route 38-Cedar) • Cornelia & Ashlan to FAX Routes 12-Brawley and 45-Ashlan

West Area / South of Shields

Figure 22. *West Area / South of Shields Opportunity Area*



The West Area / South of Shields opportunity area's northern boundary is Shields Avenue, while it is bounded by Motel Drive and the CAHSR tracks to the east, SR-180 to the south, and Grantland Avenue to the west. As with the West Area / North of Shields opportunity area, the opportunity area expands service coverage to unserved areas west of Golden State Boulevard and SR-99. The West Area is also the subject of two ongoing pilot projects, including a microtransit service aimed at serving the Three Palms mobile home park through CARB's Sustainable Transportation Equity Project (STEP) grant and the Fresno EOC Shuttle service, funded by a state Clean Mobility Options (CMO) grant.

The opportunity area also provides first- and last-mile connections to FAX Routes 35-Olive, 39-FYI/Clinton. Encompassing notable disadvantaged communities such as the Three Palms mobile home park, the opportunity area increases coverage to people living in poverty as well as communities of color, which are both over-represented in the area compared to the Fresno County average. **Figure 22** above shows the boundaries of the opportunity area, including key

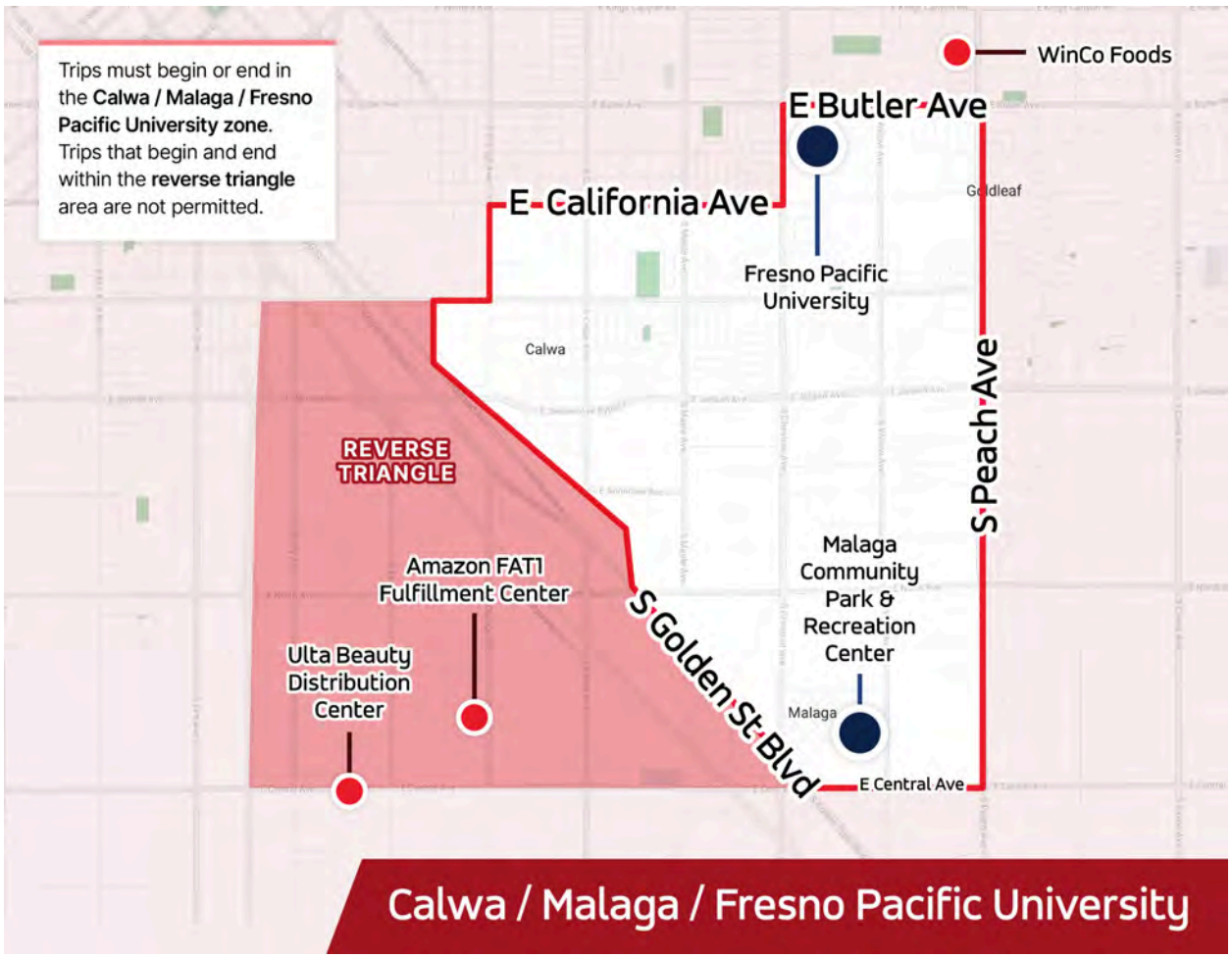
destinations, while **Table 19** below summarizes the key information of the West Area / South of Shields suburban opportunity area.

***Table 19**. West Area / South of Shields Opportunity Area Summary*

Baseline Statistics	**Population:** 30,000 (2,500 per mi^2) **Jobs:** 6,400 (530 per mi^2) **Area:** 12 mi^2
Key Destinations / Mobility Hubs	El Capitan Middle School, Save Mart, Jaswant Singh Khalra Neighborhood Park, Vallarta Supermarkets, and the Fresno Chaffee Zoo
Previous Studies Indicating Unmet Transit Needs	• Clean Mobility Options Voucher Pilot Program (2021) for Three Palms Mobile Home Park • Fresno EOC FY 2022/2023 Unmet Transit Needs Assessment
Above- Average Shares of High-Need Groups	• Individuals living in poverty • Communities of color
Service Expansion to Unserved Population + Jobs	22,400
Connecting Bus Routes	• FAX Route 33-Belmont • FAX Route 35-Olive • FAX Route 39-FYI/Clinton • Fresno EOC Shuttle
Number of Fixed-Route Bus Trips per Weekday	175
Key Transfer Points	• Freshco (Shields & Brawley) to FAX Routes 12-Brawley and 39-FYI/Clinton

Calwa / Malaga

Figure 23. *Calwa / Malaga Opportunity Area*



The Calwa / Malaga Opportunity Area is bordered by Butler Avenue to the north, Peach Avenue to the east, Central Avenue to the south, and Golden State Boulevard to the west. The opportunity area primarily serves to expand coverage to Calwa and Malaga and areas south of SR-180 with limited fixed-route service. The opportunity area would serve the SR-41/SR-99 "Reverse Triangle," a key employment hub in the region. Given the variety of key destinations located within the opportunity area, particularly the concentration of senior living facilities, the opportunity area would successfully incorporate multiple key use-cases, increasing the utility of service in the area.

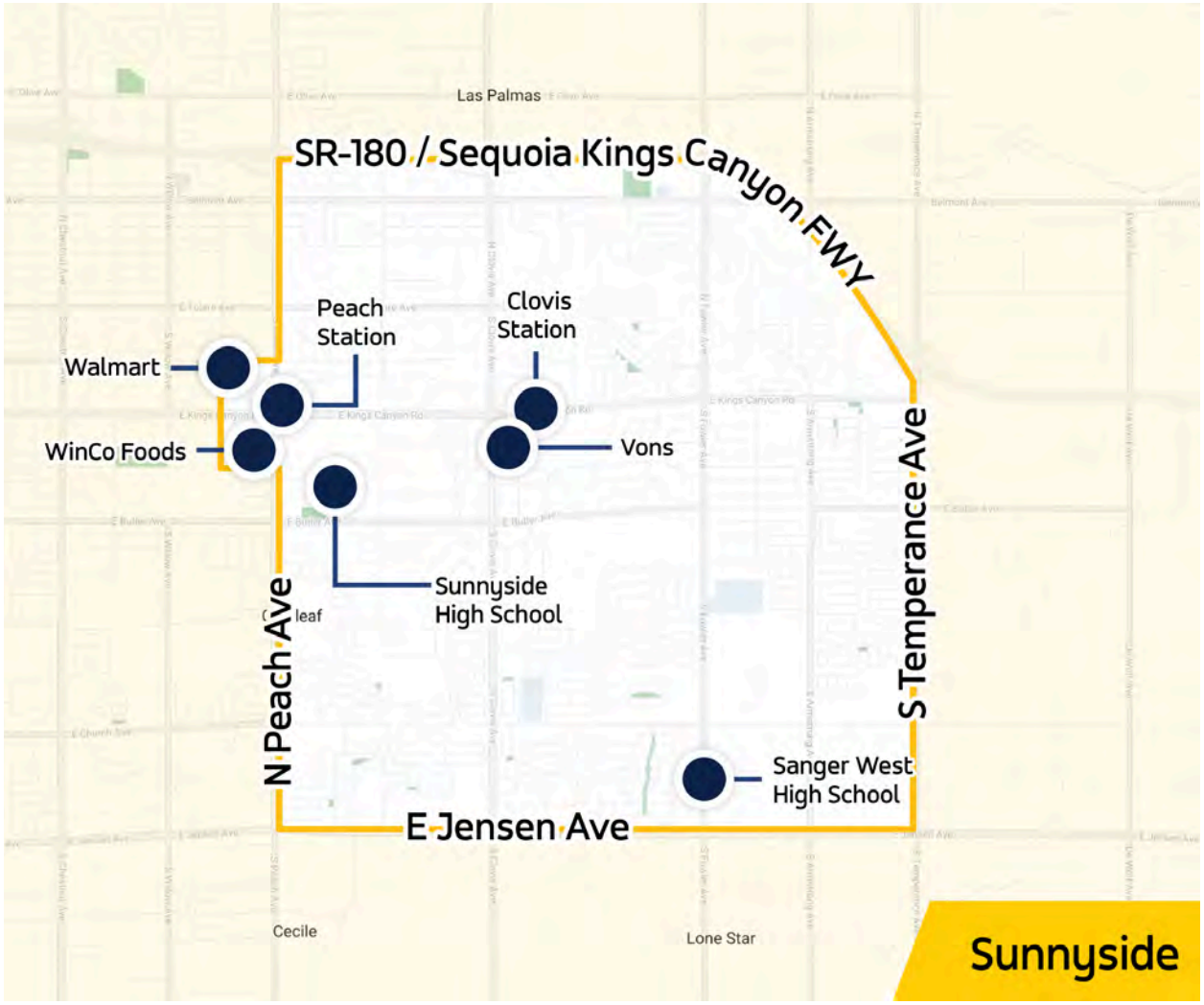
Figure 23 above shows the boundaries of the opportunity area, including key destinations, while **Table 20** below summarizes the key qualitative and quantitative considerations for the Calwa / Malaga suburban opportunity area.

Table 20. *Calwa / Malaga Opportunity Area Summary*

Baseline Statistics	**Population:** 19,700 (2,800 per mi^2) **Jobs:** 5,600 (800 per mi^2) **Area:** 7 mi^2
Key Destinations / Mobility Hubs	Fresno Pacific University, the Senior Citizens Village, Willow Court Retirement Community, Oak Park Senior Villas, Calwa Recreation & Park District, Wawona Frozen Foods Inc., Konkel Junior High School, and Malaga Community Park & Recreation Center
Previous Studies Indicating Unmet Transit Needs	• Fresno COG FY 2022/2023 Unmet Transit Needs Assessment • Fresno-Clovis Metropolitan Area (FCMA) Short-Range Transit Plan (SRTP) • RFP for FCRTA Transit Feasibility Study (2023)
Above- Average Shares of High-Need Groups	• Zero-vehicle households • Youth under 18 • Communities of color • People with disabilities
Service Expansion to Unserved Population + Jobs	8,200
Connecting Bus Routes	• FAX Route 33-Belmont • FAX Route 35-Olive • FAX Route 39-FYI/Clinton • Fresno EOC Shuttle
Number of Fixed-Route Bus Trips per Weekday	247
Key Transfer Points	• Cedar & Jensen (FAX Route 38)

Sunnyside

Figure 24. *Sunnyside Opportunity Area*



The Sunnyside Opportunity Area is bounded by SR-180 to the north, Temperance Avenue to the east, Jensen Avenue to the south, and Peach Avenue to the west. The opportunity area is intended to expand transit coverage to unserved areas east of Peach Avenue and south of SR-180. **Figure 24** above shows the boundaries of the opportunity area, including key destinations, and **Table 21** below summarizes the key information of the Sunnyside opportunity area.

Table 21. *Sunnyside Opportunity Area Summary*

Baseline Statistics	**Population:** 34,100 (3,800 per mi^2) **Jobs:** 3,800 (420 per mi^2) **Area:** 9 mi^2
Key Destinations / Mobility Hubs	Sunnyside High School, Vons, FoodMaxx, Walmart, Winco Foods, Sanger West High School
Previous Studies Indicating Unmet Transit Needs	• Fresno COG FY 2022/2023 Unmet Transit Needs Assessment • Fresno-Clovis Metropolitan Area (FCMA) Short-Range Transit Plan (SRTP) • RFP for FCRTA Transit Feasibility Study (2023)
Above- Average Shares of High-Need Groups	• Zero-vehicle households • Youth under 18 • Communities of color • People with disabilities
Service Expansion to Unserved Population + Jobs	22,800
Connecting Bus Routes	• FAX Q BRT • FAX Route 22-West Ave/Tulare • FAX Route 26-Palm/Butler • FAX Route 35-Olive • Orange Cove Transit
Number of Fixed-Route Bus Trips per Weekday	357
Key Transfer Points	• Clovis Station (FAX Q BRT and FAX Route 22) • Peach Station (FAX Q BRT and FAX Route 26)

Rural Opportunity Areas

Rural areas of Fresno County face unique challenges in providing transit service, as residential communities and key destinations tend to be much more widely distributed than in denser urban and suburban areas, resulting in multiple challenges to rural transit operators: long trip distances between destinations, high operating costs, and low ridership, which can make service investments difficult to justify and sustain. Low ridership is a particular challenge that often results in insufficient farebox recovery, with respect to TDA funding requirements. Failure to meet the TDA's required farebox recovery ratio of 10% for rural transit agencies has made it difficult for FCRTA to sustain past pilot or demonstration programs beyond the trial period.

As a result of these challenges, the fixed-route transit service between rural communities is relatively limited, with FCRTA's routes operating just a handful of trips per day during limited hours of operation. To serve local mobility needs, FCRTA provides an extensive range of intracity demand-response services (see Section 2.3 Transit Network Assessment) within each of the smaller, incorporated cities in rural portions of the county. However, there remains a significant number of rural, unincorporated communities that have little-to-no fixed-route service and only limited demand-response service (the pre-scheduled Rural Transit service, which has only four vehicles serving the entire county). Many of these areas with limited service also feature higher rates of disadvantaged populations compared to the County average.

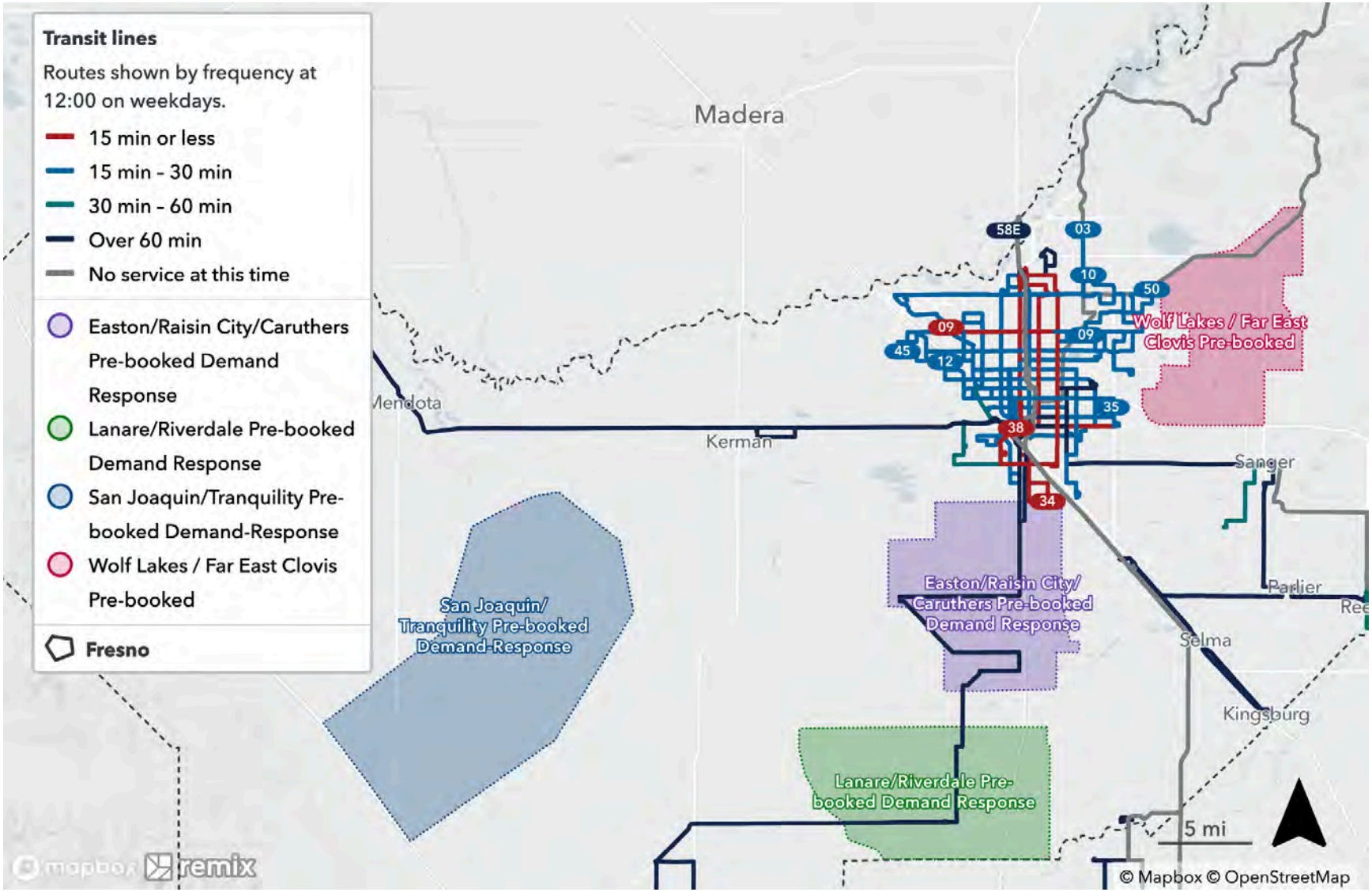
Because they have unique operating challenges compared to urban and suburban areas, rural microtransit opportunity areas were selected and evaluated separately from urban/suburban opportunity areas. This enabled more accurate benchmarking for rural opportunity areas, which tend to see lower ridership relative to urban/suburban areas. Key destinations generally include schools, grocery stores, community centers, health centers, and workplaces. The goal of microtransit is to provide transit service to areas that have limited FCRTA service, are home to significant disadvantaged communities, or both. A cross-tabulation of six demographic factors correlated with transit ridership across each of the four rural microtransit opportunity areas is shown in **Table 22**. A map of the four rural microtransit opportunity areas evaluated in this study is provided in **Figure 25** below, followed by in-depth analysis of each of the rural opportunity areas.

Table 22. *Rural Opportunity Area Comparison*[53]

Rural Opportunity Area Comparison	Fresno County Average	Easton / Raisin City / Caruthers	Wolf Lakes / Far East Clovis	Lanare / Riverdale	San Joaquin / Tranquility
Zero-Vehicle Households *Percent of households*	7%	5%	2%	3%	5%
Residents below Poverty line *Percent of residents*	21%	21%	7%	21%	29%
Older Adults (65+) *Percent of residents*	12%	12%	16%	11%	8%
Youth (18-) *Percent of residents*	29%	26%	28%	26%	38%
Race/Ethnicity other than Non-hispanic white *Percent of residents*	73%	75%	50%	75%	97%
People living with disabilities *Percent of residents*	13%	13%	11%	12%	5%

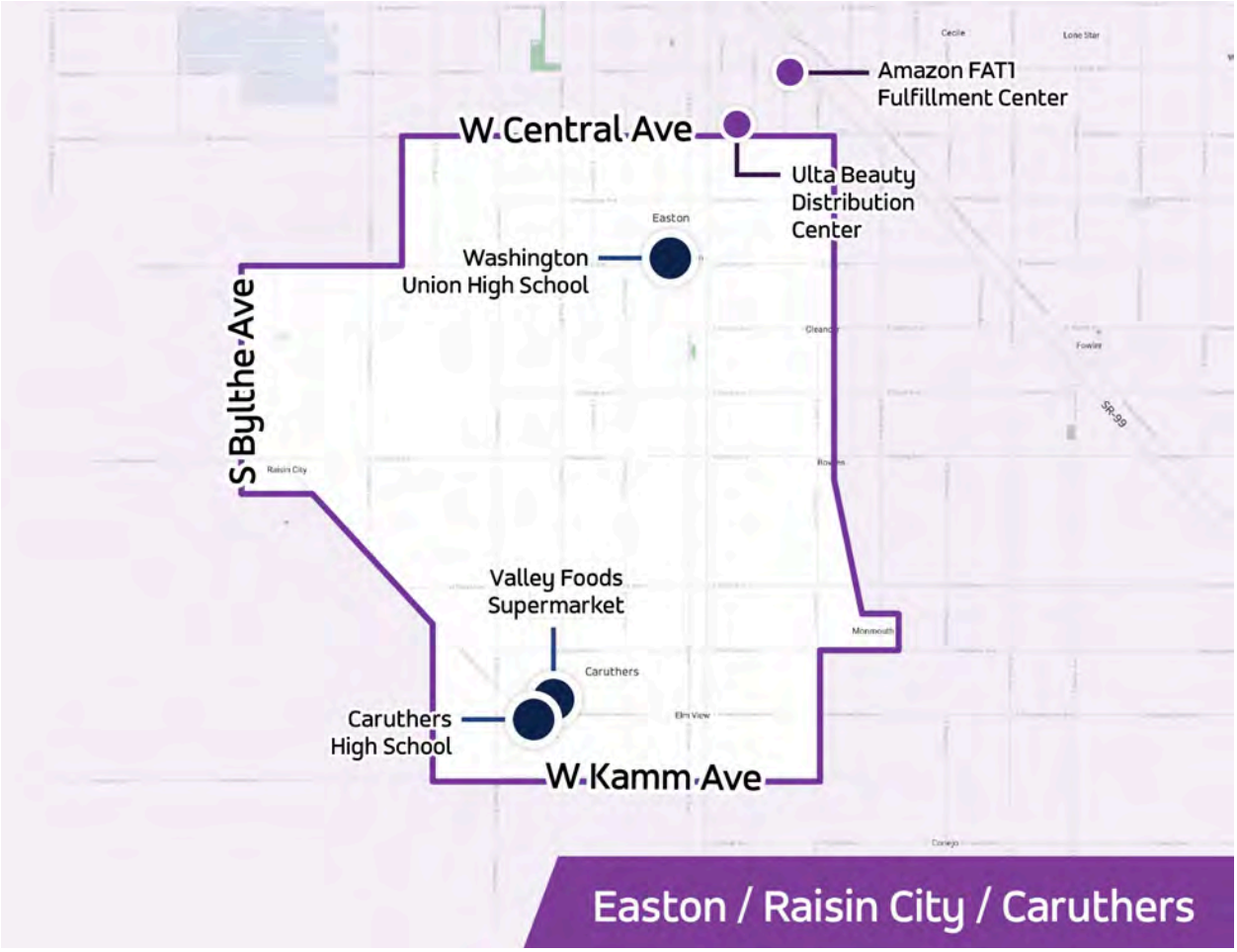
[53] Cells highlighted in blue indicate above-average shares of high-need groups relative to the Fresno County average.

***Figure 25**. Rural Opportunity Areas*



Easton / Raisin City / Caruthers

Figure 26. *Easton / Raisin City / Caruthers Opportunity Area*



The Easton / Raisin City / Caruthers Opportunity Area is a rural microtransit opportunity area that includes the communities of Oleander, Bowles, Monmouth, Caruthers, and Raisin City. In addition to these communities, connections are also available to the SR-41/SR-99 "Reverse Triangle" area. The opportunity area is bounded in the north by Central Avenue, to the east by the CAHSR corridor, to the south by Kamm and Mountain View Avenues, and to the west along Grantland Avenue. The zone's primary use cases are focused on enhancing service for local travel between the unincorporated, rural communities with limited fixed-route service (FCRTA's Coalinga Transit corridor) and key employment centers in the city of Fresno. The opportunity area would also provide first- and last-mile connections to the frequent FAX service in the region in the Reverse Triangle area (Route 34-First Street), which operates at 15-minute headways. The opportunity area would provide connections to the Reverse Triangle with larger employers such as the Amazon and Ulta warehousing facilities. Transfer points at the Ulta Beauty Warehouse or Amazon are anticipated to be important connection points for connecting riders to the warehousing district as well as for providing access to central Fresno via FAX Route 34.

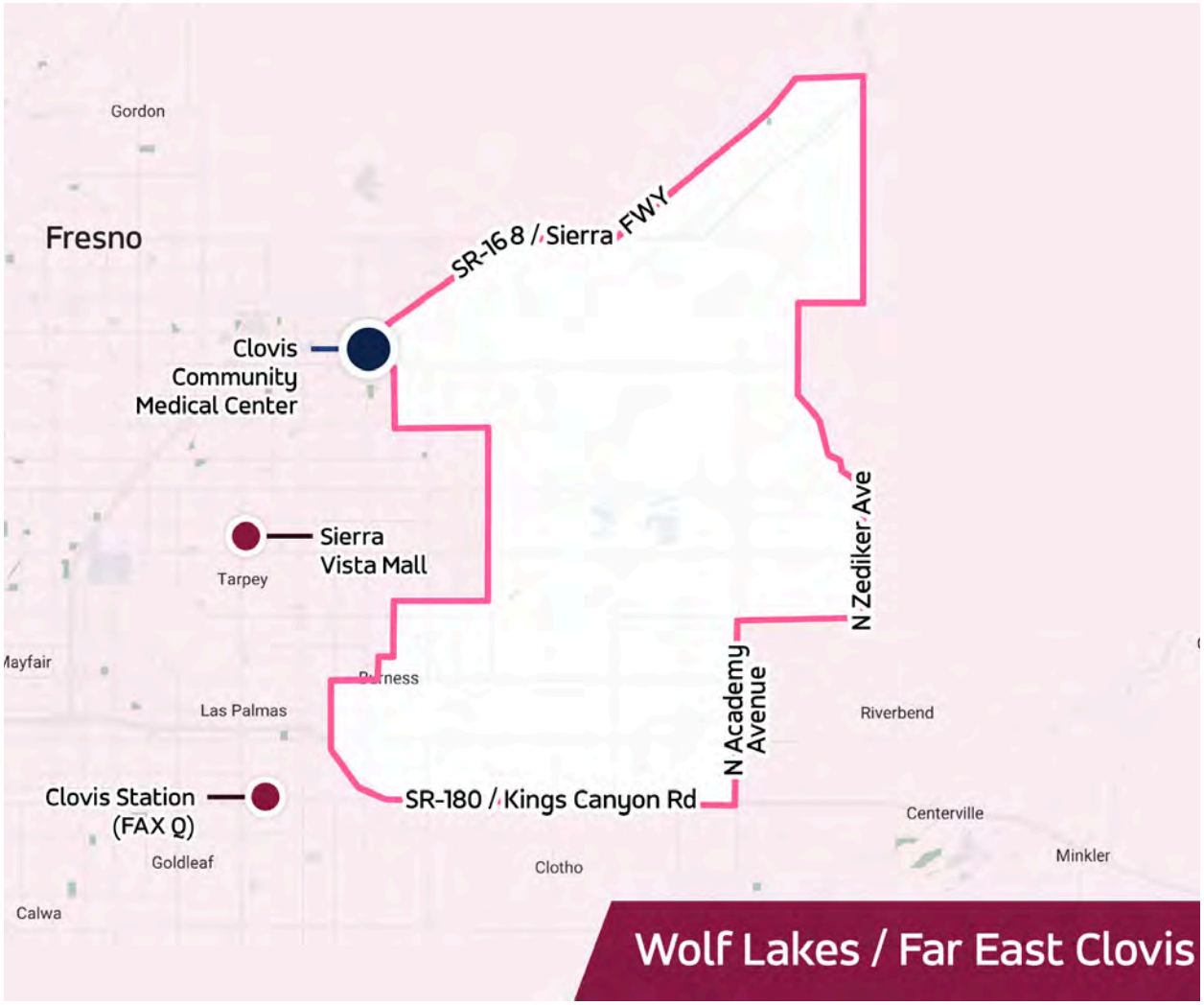
Figure 26 above shows the boundaries of the opportunity area, including key destinations, while **Table 23** below summarizes the key strengths and weaknesses of the Easton / Raisin City / Caruthers opportunity area.

***Table 23**. Easton / Raisin City / Caruthers Opportunity Area Summary*

Baseline Statistics	**Population:** 12,100 (157 per mi^2) **Jobs:** 4,100 (53 per mi^2) **Area:** 77 mi^2
Key Destinations	Valley Supermarket in Caruthers, Washington Union High School in Easton, and Caruthers High School
Previous Studies Indicating Unmet Transit Needs	• None
Above- Average Shares of High-Need Groups	• Youth under 18 • People with disabilities • Individuals living in poverty
Service Expansion to Unserved Population + Jobs	14,100
Connecting Bus Routes	• FAX Route 34-First Street • FCRTA Coalinga Transit (fixed-route) • FCRTA Fowler Transit (demand-response) • FCRTA Selma Transit (demand-response)
Number of Fixed-Route Bus Trips per Weekday	117
Key Transfer Points	• Ulta Beauty Warehouse or Amazon (Central Avenue & East Avenue)

Wolf Lakes / Far East Clovis

Figure 27. *Wolf Lakes / Far East Clovis Opportunity Area*



Adjacent to the proposed North Clovis and East Clovis suburban microtransit opportunity areas, the Wolf Lakes / Far East Clovis opportunity area lies farther east of downtown Clovis, with boundaries along the Sierra Freeway/SR-168 to the north, Academy Avenue to the east, Kings Canyon Road/SR-180 to the south, and Highland Avenue in the west. The area has, by far, the highest ratio of residents to jobs of all opportunity areas evaluated in this study. Unlike all other opportunity areas, there is nearly zero nonresidential land use within the zone, and as a result residents must travel long distances of at least 3-5 miles to access basic services in Clovis.

To mitigate this challenge, this opportunity area would provide first- and last-mile connections to two key transit hubs located outside the primary service zone. To avoid duplication of FAX and Clovis Transit service, microtransit rides to these hubs must begin or end within the opportunity area described above. The two transit hub connections include the moderately frequent FAX service hub (30-minute headways on FAX Route 9-Shaw, east of CSU Fresno) at Sierra Vista Mall as well as the FAX Q BRT service at Clovis Station, which offers 10-15 minute headways throughout the day. Both of these destinations feature significant shopping centers nearby (e.g.,

Target, Kohl's, FoodMaxx near Sierra Vista Mall; Vons and FoodMaxx near Clovis Station). Service would also extend coverage to unincorporated communities east of Clovis, currently served only by FCRTA's lifeline Rural Transit demand-response service, and fulfilling the study's goals to extend transit coverage to communities with limited transit service in the county.

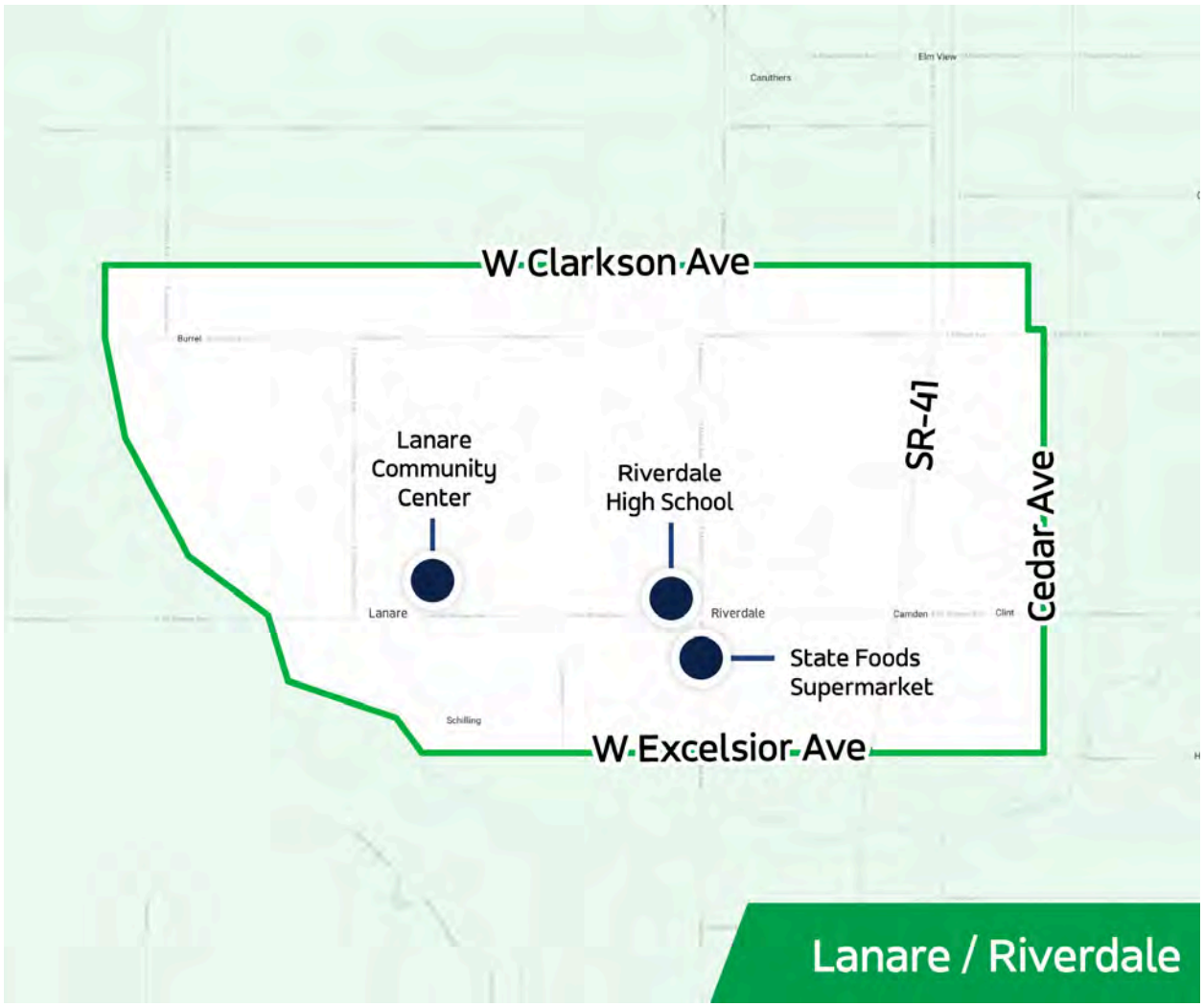
Figure 27 above indicates the boundaries of the opportunity area. **Table 24** below summarizes the key considerations in evaluating the Wolf Lakes / Far East Clovis opportunity area.

Table 24. *Wolf Lakes / Far East Clovis Opportunity Area Summary*

Baseline Statistics	**Population:** 20,600 (330 per mi^2) **Jobs:** 1,700 (27 per mi^2) **Area:** 62 mi^2
Key Destinations	Clovis Community Medical Center, Sierra Vista Mall, Clovis Station (FAX Q)
Previous Studies Indicating Unmet Transit Needs	• None
Above- Average Shares of High-Need Groups	• Older adults 65+
Service Expansion to Unserved Population + Jobs	14,100
Connecting Bus Routes	• Clovis Transit Route 50 • FAX Route 9-Shaw • FAX Q BRT • FAX Route 22-West Ave/Tulare
Number of Fixed-Route Bus Trips per Weekday	346
Key Transfer Points	• Clovis Station • Sierra Vista Shopping Center (FAX Route 9-Shaw) • Clovis Community Medical Center (Clovis Transit Route 50)

Lanare / Riverdale

Figure 28. *Lanare / Riverdale Opportunity Area*



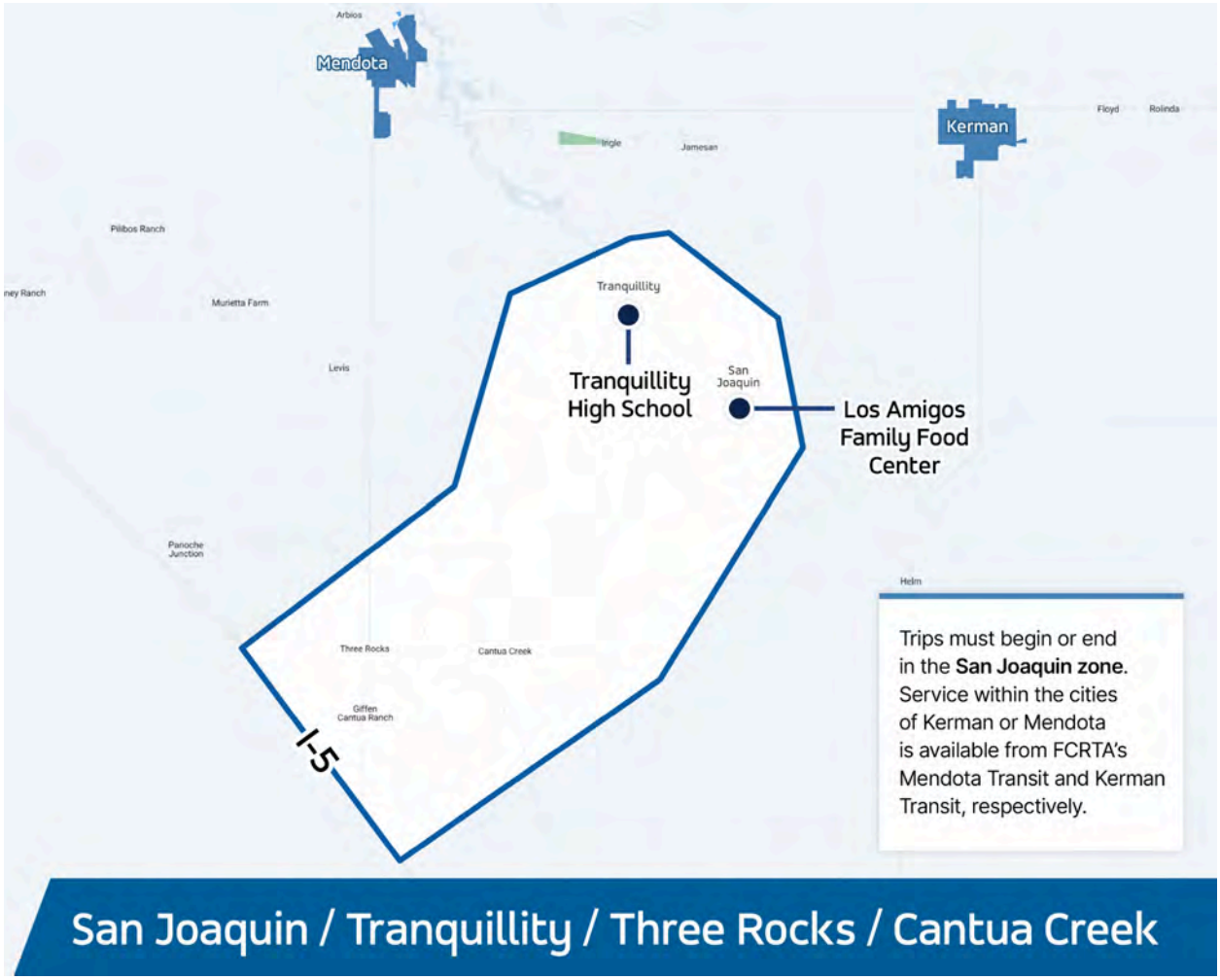
The Lanare / Riverdale opportunity area is located on the southern edge of Fresno County. The opportunity area is bordered by Clarkson Avenue to the north, Cedar Street to the east, Excelsior Avenue to the south, and is bounded by the Fresno Slough in the west. It is one of the least dense opportunity areas evaluated in this study. However, the opportunity area enhances service for trips between Lanare and Riverdale, an area with limited transit service. The sole fixed-route corridor in the area (FCRTA's Coalinga Transit) offers only two trips per weekday. The only demand-response service available in the area is the FCRTA's lifeline Rural Transit service, which has only four vehicles to serve all of the county's unincorporated communities. There are limited opportunities for fixed-route transfers in the opportunity area; with two weekday trips, riders traveling to Fresno would need to coordinate their rides to arrive at Riverdale or Lanare bus stops in coordination with FCRTA timetables. **Figure 28** above indicates the boundaries of the opportunity area. **Table 25** below summarizes the key considerations in evaluating the Lanare / Riverdale opportunity area.

Table 25. *Lanare / Riverdale Opportunity Area Summary*

Baseline Statistics	**Population:** 6,700 (80 per mi^2) **Jobs:** 1,800 (20 per mi^2) **Area:** 85 mi^2
Key Destinations	Lanare Community Center, Riverdale High School, State Foods Supermarket
Previous Studies Indicating Unmet Transit Needs	• EV Micro Transit Service Expansion Analysis (2023) • Clean Mobility Voucher Pilot Program (CMO) (2021) • EV Rideshare/Carshare/Rural Transit Expansion Plan (2020)
Above- Average Shares of High-Need Groups	• Individuals living in poverty • Communities of color
Service Expansion to Unserved Population + Jobs	7,400
Connecting Bus Routes	• FCRTA Coalinga Transit (fixed-route)
Number of Fixed-Route Bus Trips per Weekday	2
Key Transfer Points	• Riverdale (Bank of the West) • Lanare (Mt. Whitney Minimart)

San Joaquin / Tranquility / Three Rocks / Cantua Creek / El Porvenir

Figure 29. *San Joaquin / Tranquility Opportunity Area*



The largest of all microtransit opportunity areas in consideration, the San Joaquin / Tranquility opportunity area covers 154 square miles. Located southwest of Fresno, the opportunity area encompasses the city of San Joaquin and the unincorporated communities of Tranquility, Cantua Creek, Three Rocks, and El Porvenir. It is bordered by the James Bypass and I-5. Service would also be available between these communities, currently served by San Joaquin Transit's demand-response service, and the nearby cities of Kerman and Mendota. However, rides must begin or end in the opportunity area specified in this section, to avoid duplicating the current FCRTA Kerman Transit and Mendota Transit intracity demand-response services. The Walmart in Kerman and United Health Center clinics in Kerman and Mendota are likely to be significant destinations in these respective cities.

The opportunity area enhances service for current San Joaquin Dial-a-Ride riders while also providing coverage between San Joaquin, Cantua Creek, Three Rocks, and El Porvenir.

Similar to the Lanare / Riverdale Opportunity Area, transit need in San Joaquin is high, with significant populations of people living in poverty, youth, and communities of color each exceeding

the County averages. Due to its very low density, isolation from larger population centers, and long travel distances between communities, serving the area with fixed-route buses has long been especially challenging: the high cost per passenger trip and low productivity of previous fixed-route services in the area caused FCRTA to switch to its current demand-response service orientation.

The opportunity area is shown in **Figure 29** above. **Table 26** below summarizes key characteristics of the San Joaquin / Tranquility opportunity area.

Table 26. *San Joaquin / Tranquility Opportunity Area Summary*

Baseline Statistics	**Population:** 6,000 (40 per mi^2) **Jobs:** 1,100 (7 per mi^2) **Area:** 154 mi^2
Key Destinations / Mobility Hubs	Tranquility Branch Library, Valley Family Market, Tranquility High School, Los Amigos Family Food Center
Previous Studies Indicating Unmet Transit Needs	• EV Micro Transit Service Expansion Analysis (2023) • Clean Mobility Voucher Pilot Program (CMO) (2021) • FCRTA Electric Vehicle Rideshare/Carshare/Rural Transit Expansion Plan (Dec 2020)
Above- Average Shares of High-Need Groups	• Individuals living in poverty • Youth under 18 • Communities of color
Service Expansion to Unserved Population + Jobs	7,100
Connecting Bus Routes	• FCRTA Westside Transit
Number of Fixed-Route Bus Trips per Weekday	4
Key Transfer Points	• Walmart (Kerman) • 6th Street & Oller Street (Mendota)

4.3 Service Parameters and Simulation Setup

Designing a microtransit service entails trade-offs between supply, demand, and service quality within a specific opportunity area. Simulations allowed the project team to evaluate these tradeoffs and make service design recommendations including wait times, service hours, and vehicle sizes. Supply, demand, and quality of service are generally measured as follows:

- **Supply:** Measured by vehicle hours, fleet size, or total budget for the service. An increase in supply can allow for more trips to be served but typically increases the overall cost of the service.
- **Demand:** Typically refers to the ridership of a service, and is a function of the opportunity area size, demographics, and key destinations. The estimated demand for each zone is outlined in Ridership Estimates.
- **Quality of Service:** Includes multiple metrics that impact rider experience, including average walking distance to pick up locations and from dropoff locations, wait times, and journey times. Increasing quality of service can increase demand, and therefore, supply. Conversely, reducing quality of service can make the service more efficient but may reduce demand and negatively impact riders' perception of the service.

Adjusting any of these three factors will require corresponding adjustments to the other two factors, reflecting a fundamental tradeoff. For example, if demand increases within an opportunity area, either the supply will need to increase to keep the quality of service constant, or the quality of service must degrade somewhat to avoid an increase in supply.

For each microtransit alternative, simulations were conducted to understand the average wait times, walking distances, service efficiency, vehicle and driver requirements, and estimated operating costs. **Table 27** indicates the recommended service parameters used to simulate the microtransit alternatives. These service parameters were developed in coordination with Fresno COG, FCRTA, FAX, and Clovis Transit staff and vary between urban/suburban opportunity areas and rural opportunity areas, given the differences in demographic characteristics, travel behavior, and existing transit service guidelines of these areas.

Table 27. *Recommended microtransit service parameters*

Service Parameter	Description	Urban/ Suburban Opportunity Areas	Rural Opportunity Areas
Booking Model	Booking model refers to the different ways that riders can book microtransit trips and how far in advance they can book a ride: • **On-Demand Microtransit:** Passengers can request a journey in real-time. Passengers receive several proposals for a ride with a range of pickup times. • **Pre-Booked Microtransit:** Passengers can request a journey in advance. Ride requests must be scheduled from the day before (e.g., by 5pm on Monday for a ride booked on Tuesday morning) or up to several weeks ahead of time. The exact pickup time is confirmed before travel.	On-demand	Pre-booked
Service Hours	Service hours are the times when a customer can request a ride and should, at a minimum, be set to match the existing fixed-route service hours. They may also be extended to provide service during times when there currently is no fixed-route service, such as later in the evenings or weekends. While longer service hours are useful for many people, they also make the service less cost-effective to operate, especially during low-ridership hours.	Mon - Fri: 6am - 8pm Sat - Sun: 8am - 6pm	Mon - Fri: 7am - 6pm Sat: 8am - 5pm
Pickup / Dropoff Model	The most common microtransit pickup / dropoff models are curb-to-curb and corner-to-corner service. Curb-to-curb picks up and drops off passengers as close to their requested origins and destinations as possible, matching the standard of service used by ADA paratransit providers. Corner-to-corner services typically require a short walk to meet the vehicle, often at the nearest intersection. The corner-to-corner model offers many pickup and dropoff points throughout the opportunity area by allowing vehicles to stop near most intersections and major destinations. Pickup and dropoff locations in this model may be manually adjusted or removed to address potential pedestrian safety issues or avoid congested locations. Compared to a curb-to-curb model, corner-to-corner services typically have shorter wait times and higher rates of ride-sharing between multiple passengers. Corner-to-corner services are also useful in reducing the operator's vehicle miles traveled (VMT) by avoiding the detours required to provide curb-to-curb service.	Corner-to-corner	Curb-to-curb

Service Parameter	Description	Urban/ Suburban Opportunity Areas	Rural Opportunity Areas
	Note: *Under all models, riders with disabilities may request a curb-to-curb service either through the mobile app or by notifying the dispatcher at the time of booking.*		
Maximum Walking Distance	This parameter applies to corner-to-corner services. It controls the maximum distance a passenger must walk from their requested origin address to their vehicle and from their vehicle to their requested destination address. Allowing longer maximum walking distances means a passenger may be asked to walk further than their closest pickup location to minimize the distance a vehicle must detour to pick them up. Longer walking distances will increase the efficiency of the service and improve the rate of shared-ride occupancy by reducing vehicle detours on the way to pick up passengers, but they may also result in lower ridership as some passengers may choose another mode of travel (or not to travel) if they are asked to walk too far. Average walking distance will vary in each scenario depending on the street grid, distribution of trip requests, and level of demand.	Average: 400 - 600 ft Maximum: 1,320 ft (one quarter- mile) (total walking distance is ~twice the distance shown as passengers walk at both ends of the trip)	N/A
Maximum Wait Time	Maximum wait time is the maximum number of minutes between when a rider books an on-demand microtransit ride to the time that the vehicle arrives at the designated pickup location. If no vehicles can complete the requested pickup within the maximum wait time, the ride request is declined and service is considered "unavailable." On-demand microtransit service scenarios in this study are calibrated with sufficient vehicles to avoid this outcome. This parameter is not applicable to pre-booked microtransit services, in which a longer reservation window (typically +/- 60 minutes before or after the requested pickup time) enables the dispatcher to adjust the sequence of pickups and dropoffs in advance before communicating an estimated pickup time on the day of travel.	Average: 15 minutes Maximum: 25 minutes	N/A
Detour Allowance	This parameter refers to the allowable detour a passenger can experience (measured in both time and distance) compared to the base route (quickest route) between a rider's pickup and dropoff. Microtransit does not have fixed-routes and the exact routing of a vehicle is based on the trip requests received in real-time. When the software is determining a vehicle's route, the detour threshold gives the vehicles the flexibility to aggregate rides. Large detour thresholds can lead to longer journey	10 minutes or 1.5x direct trip journey length/duration, whichever is shorter	30 minutes or 2x trip duration, whichever is shorter

Service Parameter	Description	Urban/ Suburban Opportunity Areas	Rural Opportunity Areas
	times for passengers, rendering the service less useful to some, especially those with access to a private vehicle.		
Vehicle Capacity	This is the number of seats and wheelchair spaces per vehicle. A larger vehicle is often useful when a family or large group chooses to travel together. However, it is usually the number of vehicles, rather than the number of seats in the vehicles, that tends to limit the number of trips a microtransit service can complete in a given time period. Smaller vehicles, such as minivans or vans in the 6-12 seat range may also be less costly to operate, both in terms of vehicle purchasing/leasing and ongoing operating costs (a Commercial Driver's License is not required for these vehicle classes).	At least 6+ regular seats including 1 wheelchair space	At least 6+ regular seats including 1 wheelchair space[54]

[54] While this study simulated rural microtransit service alternatives assuming 6-passenger vehicles, in practice smaller sedans can be used and may reduce cost due to Class C or B requirement for drivers.

4.4 Ridership Estimates and Simulation Results

Ridership estimates inform key service design decisions, such as the fleet size required to operate the service and thus, the level of funding required for each microtransit alternative. It can take six to twelve months, and sometimes even longer, for the ridership of a zone to mature and reach these estimates. The methodology for how the project team developed ridership estimates, followed by the ridership estimates themselves, are outlined below.

Ridership Estimation Methodology

As travel demand is difficult to predict and is influenced by many factors, providing a range of demand estimates can be helpful for estimating the upper and lower bounds for the total cost to operate each opportunity area. Demand estimates for Fresno County's opportunity areas accounted for the following:

1. The number of residents living in each opportunity area,
2. The number of jobs located in each opportunity area, and
3. The expected microtransit mode share (the percentage of individuals who live or work in the opportunity area that are likely to use the service).

For microtransit alternatives, the "opportunity area" was considered to be the boundary within which customers can travel. Expected microtransit mode share is based upon observed microtransit ridership patterns from selected peer transit agencies as well as other Via-powered services in Western states with similar characteristics to Fresno County. Peer microtransit services include those that provide first- and last-mile connections to fixed-route networks, provide service to disadvantaged communities, and operate in similarly sized metro areas to Fresno County. The peer microtransit services also included a selection operating in lower-density rural areas to estimate ridership for the Rural Opportunity Areas, as well as a distinct selection of higher-density suburban areas to estimate ridership for the Urban/Suburban Opportunity Areas. Ridership estimates also incorporate various assumptions about fare policy to match the policies of transit agencies in Fresno County. These assumptions include:

- Clovis Transit-operated microtransit service is assumed to be fare-free, matching other Clovis Transit services.
- FAX-operated service is assumed to charge riders $2 per ride (pegged to double its current $1 one-way, non-discounted fare for local bus service).
- Rural microtransit services operated by FCRTA are assumed to be between $5 - 10 per ride based on the ride distance, similar to the agency's Biola Rideshare/Microtransit service.

Ridership estimates shared here are based on comparable suburban and rural communities. However, they carry some degree of uncertainty: **actual ridership levels may vary** based on a wide range of factors such as marketing efforts, community support, vehicle and driver quality, rider app functionality, booking requirements, and more. A low, medium, and high-ridership estimate was calculated for each zone. The three ridership scenarios are described below:

- **Low.** This scenario assumes the service does not perform as well as comparable peer microtransit services. Common reasons for lower ridership outcomes could include poor

marketing, lack of community support, poor stakeholder relationships (e.g., with major employers), or unforeseen technological or operational challenges that affect the quality of service.

- **Medium.** The medium scenario represents the project team's best estimate of ridership within 6-12 months of launch based on the performance of similar services.
- **High.** This scenario assumes the service is more popular than most of its peers. Common reasons for an especially high-ridership microtransit service include strong community support, strong stakeholder and employer relationships (often employers are strong advocates of the service), fare-free service, or highly effective marketing campaigns.

Simulation Methodology

The project team used an agent-based microsimulation software to run a series of iterative simulations to evaluate the trade-offs between supply, demand, and quality of service in each microtransit opportunity area under various operating conditions. Simulating each alternative allowed the project team to understand how different service parameters, route alignments, zone boundaries, and fleet configurations may impact important service performance indicators and quality of service metrics such as service utilization (passengers per vehicle-hour), average wait times for the service, and average trip duration. Specifically, the results below include the following for each zone and simulation:

- **Fleet size:** The number of vehicles required to meet the level of passenger demand at the set quality of service parameters during peak hours. The simulations may suggest fewer vehicles are needed during off-peak hours. In on-demand microtransit operations, a minimum of two vehicles in addition to any spares are recommended to be used at all times to ensure reliable quality of service. With just a single vehicle in operation, quality of service will have significant variation for different riders throughout the day depending on their requested pickup location in relation to the vehicle (e.g., one rider has a five-minute pickup wait time, while the other has a 24-minute wait time). However, in pre-scheduled microtransit operations in the rural opportunity areas, this is less of a concern, as dispatchers and software tools can efficiently sequence pickups and dropoffs to mitigate variability in wait times at pickup. FCRTA has observed very low demand in previous demand-response pilot services. Likewise, FCRTA's fleet used to operate its intracity services may be redirected to serve microtransit rides in the event the microtransit vehicle experiences a crash or vehicle breakdown. As a result, the project team has recommended that some of the rural services below begin with one vehicle if FCRTA or another transit agency decides to launch a rural microtransit service.
- **Weekday ridership:** The number of expected boardings per weekday and annually. The low, medium, and high demand estimates referenced in Ridership Estimation Methodology are provided for each zone.
- **Weekday average utilization:** Utilization is a measure of how efficient a service is and is measured by the number of passenger boardings per vehicle-hour.[55]

[55] In practice, this figure differs only slightly from the more commonly used productivity of service metric (boardings per revenue-hour); whereas utilization figures use vehicle-hours as the denominator, including some deadhead hours at the beginning and end of driver shifts that would typically be excluded from the productivity calculation which uses revenue-hours as its denominator. Productivity of service, as reported to FTA, is as a result typically 10-15% higher than the utilization figures shown here.

- **Average wait times (peak period):** The average time a passenger is asked to wait from when they request a ride and are assigned a trip to when they are asked to meet the vehicle during peak periods.
- **Average shared-ride duration (peak period):** Average shared ride duration is the percentage of time that a passenger is sharing their ride with someone else. As ride requests increase, the likelihood of sharing a ride with another passenger also increases.
- **Annual ridership:** Annual ridership estimates are based on the demand estimates created using the Ridership Estimation Methodology outlined in the section above.
- **Annual vehicle hours:** The total vehicle hours required to operate the service. Vehicle hours are defined as the hours that a vehicle is in-service and available to complete trip requests or actively driving to pick up passengers and drop them off.
- **Total estimated annual operating cost:** For urban/suburban services, cost estimates were created based for operating a turnkey service in Fresno ($110/vehicle-hour)[56] and a directly-operated service in Clovis ($135/vehicle-hour).[57] Rural operating cost estimates assumed a cost per hour of $52, per the current FCRTA contract with MV Transportation, its intracity demand-response operator.
- **Average estimated operating cost per ride:** This figure is the ratio of annual operating cost to annual ridership, both indicated above.

Simulation results for each of the microtransit opportunity area alternatives, distinguished by urban/suburban opportunity areas and rural opportunity areas, are included in the tables below. Each alternative includes estimates for each of the low, medium, and high ridership scenarios outlined in the Ridership Estimation Methodology section above.

[56] Hourly cost of turnkey microtransit service assumes that the contractor operates with W2-employees rather than independent contractor drivers, resulting in above-average costs for this operating mode.
[57] Hourly cost of demand-response service reported in Fresno COG's Transit Productivity Evaluation, FY22., p. 2.

Urban/Suburban Opportunity Areas

East Clovis

The East Clovis microtransit service would require around two to four vehicles during peak hours, depending on the level of ridership. Of the urban/suburban service alternatives, ridership is estimated to be the second-highest behind the Sunnyside zone, with above-average utilization. However, of the urban/suburban alternatives, the East Clovis service is predicted to be one of the more expensive to operate due to Clovis Transit's higher hourly costs of directly-operated service.

Table 28. *Simulation results for the East Clovis microtransit service*

Ridership	Low	Medium	High
Fleet Size *Vehicles required at peak (excl. spares)*	2	3	4
Weekday Ridership *Boardings*	97	193	290
Weekday Avg. Microtransit Utilization *Boardings / Vehicle Hour*	3.1 - 3.7	4.8 - 5.4	5.2 - 5.7
Typical Microtransit Wait (Peak Period) *Minutes*	8 - 11	12 - 15	11 - 14
Typical Microtransit Ride Duration (Peak Period) *Minutes*	10 - 12	11 - 14	15 - 17
Shared-Ride Duration (Peak Period) *Percentage of Ride Time with Multiple Passengers*	35%	51%	71%
Annual Ridership *Passenger Boardings*	31,000	61,000	92,000
Annual Vehicle-Hours *Hours*	8,800	12,000	16,400
Total Estimated Annual Operating Cost *Dollars*	$1,190,000	$1,620,000	$2,220,000
Average Estimated Operating Cost Per Ride *Dollars / Ride (rounded to nearest dollar)*	$39	$26	$24

North Clovis

The North Clovis service alternative would require between two to four vehicles to operate the service during peak hours. This alternative would see somewhat lower ridership and utilization compared to several other urban/suburban microtransit opportunity areas (e.g., Sunnyside, Southwest Fresno). It is also estimated to be the most costly suburban service alternative to operate on a per-ride basis due to its lower ridership and Clovis Transit's relatively high hourly operating costs for demand-response service.

Table 29. *Simulation results for the North Clovis microtransit service*

Ridership	Low	Medium	High
Fleet Size *Vehicles required at peak (excl. spares)*	2	3	4
Weekday Ridership *Boardings*	72	145	217
Weekday Avg. Microtransit Utilization *Boardings / Vehicle Hour*	2.3 - 2.9	3.5 - 4.1	4.3 - 4.9
Typical Microtransit Wait (Peak Period) *Minutes*	7 - 9	8 - 10	10 - 12
Typical Microtransit Ride Duration (Peak Period) *Minutes*	8 - 10	11 - 13	9 - 12
Shared-Ride Duration (Peak Period) *Percentage of Ride Time with Multiple Passengers*	34%	44%	49%
Annual Ridership *Passenger Boardings*	23,000	46,000	69,000
Annual Vehicle-Hours *Hours*	8,800	12,000	14,800
Total Estimated Annual Operating Cost *Dollars*	$1,190,000	$1,620,000	$2,000,000
Average Estimated Operating Cost Per Ride *Dollars / Ride (rounded to nearest dollar)*	$52	$35	$29

Fort Washington

The Fort Washington service alternative would require two to four vehicles to operate during peak hours, according to estimates. This service alternative is predicted to perform average to above-average relative to other urban/suburban opportunity areas in terms of ridership, but slightly below-average in terms of utilization.

Table 30. *Simulation results for the Fort Washington microtransit service*

Ridership	Low	Medium	High
Fleet Size *Vehicles required at peak (excl. spares)*	2	3	4
Weekday Ridership *Boardings*	81	163	244
Weekday Avg. Microtransit Utilization *Boardings / Vehicle Hour*	3.1 - 3.7	4.0 - 4.6	4.6 - 5.2
Typical Microtransit Wait (Peak Period) *Minutes*	5 - 9	8 - 12	8 - 12
Typical Microtransit Ride Duration (Peak Period) *Minutes*	9 - 11	12 - 14	10 - 12
Shared-Ride Duration (Peak Period) *Percentage of Ride Time with Multiple Passengers*	22%	52%	53%
Annual Ridership *Passenger Boardings*	26,000	51,000	77,000
Annual Vehicle-Hours *Hours*	7,800	12,000	15,600
Total Estimated Annual Operating Cost *Dollars*	$830,000	$1,280,000	$1,670,000
Average Estimated Operating Cost Per Ride *Dollars / Ride (rounded to nearest dollar)*	$32	$25	$22

Southwest Fresno

With three to five vehicles required to operate the service during peak periods, the Southwest Fresno opportunity area has the same vehicle requirements as the Sunnyside opportunity area, though with significantly lower-ridership and utilization, particularly in its low-demand scenario. Predicted utilization and ridership are both moderate, with performance predicted to be largely similar to the Fort Washington opportunity area.

Table 31. *Simulation results for the Southwest Fresno microtransit service*

Ridership	Low	Medium	High
Fleet Size *Vehicles required at peak (excl. spares)*	3	3	5
Weekday Ridership *Boardings*	87	174	261
Weekday Avg. Microtransit Utilization *Boardings / Vehicle Hour*	2.1 - 2.7	4.2 - 4.8	4.0 - 4.6
Typical Microtransit Wait (Peak Period) *Minutes*	7 - 11	10 - 14	9 - 13
Typical Microtransit Ride Duration (Peak Period) *Minutes*	11 - 13	12 - 14	11 - 13
Shared-Ride Duration (Peak Period) *Percentage of Ride Time with Multiple Passengers*	22%	52%	46%
Annual Ridership *Passenger Boardings*	28,000	55,000	83,000
Annual Vehicle-Hours *Hours*	11,400	12,000	19,000
Total Estimated Annual Operating Cost *Dollars*	$1,200,000	$1,300,000	$2,030,000
Average Estimated Operating Cost Per Ride *Dollars / Ride (rounded to nearest dollar)*	$44	$24	$25

West Area/North of Shields

The West Area/North of Shields microtransit service would require two to three vehicles to operate during peak periods, a smaller range compared to the other urban/suburban opportunity areas explored in this study. It is predicted to be one of the most cost-effective potential urban/suburban microtransit services to operate, with the fewest annual vehicle hours of all of the urban/suburban opportunity areas in the medium-demand scenario. Ridership is predicted to be below-average, but still high enough relative to the lower vehicle hours to maintain an above-average productivity in comparison to similar urban-suburban microtransit services.

Table 32. *Simulation results for the West Area/North of Shields microtransit service*

Ridership	Low	Medium	High
Fleet Size *Vehicles required at peak (excl. spares)*	2	2	3
Weekday Ridership *Boardings*	64	129	193
Weekday Avg. Microtransit Utilization *Boardings / Vehicle Hour*	2.9 - 3.5	4.7 - 5.3	4.8 - 5.4
Typical Microtransit Wait (Peak Period) *Minutes*	8 - 12	11 - 15	7 - 11
Typical Microtransit Ride Duration (Peak Period) *Minutes*	9 - 11	8 - 10	11 - 13
Shared-Ride Duration (Peak Period) *Percentage of Ride Time with Multiple Passengers*	25%	36%	54%
Annual Ridership *Passenger Boardings*	20,000	41,000	61,000
Annual Vehicle-Hours *Hours*	6,800	8,300	12,000
Total Estimated Annual Operating Cost *Dollars*	$730,000	$890,000	$1,280,000
Average Estimated Operating Cost Per Ride *Dollars / Ride (rounded to nearest dollar)*	$36	$22	$21

West Area/South of Shields

Similar to the West Area/North of Shields opportunity area, the West Area/South of Shields opportunity area would require two to three vehicles to meet demand during peak hours. However, slightly greater anticipated ridership for the medium-demand scenario means that this scenario would require three vehicles as opposed to the two required for the medium-demand scenario in the West Area/North of Shields opportunity area. Productivity, then, is expected to be one of the lowest of the other urban/suburban opportunity areas, with relatively high predicted cost per ride compared to other service alternatives.

Table 33. *Simulation results for the West Area/South of Shields microtransit service*

Ridership	Low	Medium	High
Fleet Size *Vehicles required at peak (excl. spares)*	2	3	3
Weekday Ridership *Boardings*	69	138	207
Weekday Avg. Microtransit Utilization *Boardings / Vehicle Hour*	2.5 - 2.9	3.4 - 3.8	5.3 - 5.7
Typical Microtransit Wait (Peak Period) *Minutes*	4 - 8	6 - 10	13 - 17
Typical Microtransit Ride Duration (Peak Period) *Minutes*	7 - 9	8 - 10	8 - 10
Shared-Ride Duration (Peak Period) *Percentage of Ride Time with Multiple Passengers*	8%	35%	42%
Annual Ridership *Passenger Boardings*	22,000	44,000	66,000
Annual Vehicle-Hours *Hours*	8,300	12,000	12,000
Total Estimated Annual Operating Cost *Dollars*	$996,000	$1,440,000	$1,440,000
Average Estimated Operating Cost Per Ride *Dollars / Ride (rounded to nearest dollar)*	$46	$33	$22

Calwa/Malaga

The Calwa/Malaga opportunity area would also require two to three vehicles during peak hours. With relatively low projected ridership, utilization is also low relative to other urban/suburban opportunity areas, while costs are predicted to be relatively high.

***Table 34**. Simulation results for the Calwa/Malaga microtransit service*

Ridership	Low	Medium	High
Fleet Size *Vehicles required at peak (excl. spares)*	2	3	3
Weekday Ridership *Boardings*	64	128	193
Weekday Avg. Microtransit Utilization *Boardings / Vehicle Hour*	3.3 - 3.9	3.1 - 3.7	4.8 - 5.4
Typical Microtransit Wait (Peak Period) *Minutes*	6 - 10	9 - 13	11 - 15
Typical Microtransit Ride Duration (Peak Period) *Minutes*	8 - 10	9 - 11	11 - 13
Shared-Ride Duration (Peak Period) *Percentage of Ride Time with Multiple Passengers*	15%	40%	53%
Annual Ridership *Passenger Boardings*	20,000	41,000	61,000
Annual Vehicle-Hours *Hours*	6,200	12,000	12,000
Total Estimated Annual Operating Cost *Dollars*	$745,000	$1,441,000	$1,441,000
Average Estimated Operating Cost Per Ride *Dollars / Ride (rounded to nearest dollar)*	$37	$36	$23

Sunnyside

The Sunnyside opportunity area would require between two and five vehicles to serve ridership estimates during peak hours. Relative to other urban/suburban microtransit opportunity areas, the medium demand Sunnyside scenario has the highest projected ridership and utilization, with the lowest estimated operating cost per ride. Longer expected average ride durations mean that there are more opportunities to group riders together in the same vehicle at the same time. In the medium-demand scenario, the Sunnyside zone features the highest shared-ride duration percentage of all service alternatives.

Table 35. *Simulation results for the Sunnyside microtransit service*

Ridership	Low	Medium	High
Fleet Size *Vehicles required at peak (excl. spares)*	2	3	5
Weekday Ridership *Boardings*	122	244	366
Weekday Avg. Microtransit Utilization *Boardings / Vehicle Hour*	4.4 - 5.0	6.1 - 6.7	5.8 - 6.4
Typical Microtransit Wait (Peak Period) *Minutes*	5 - 9	13 - 17	8 - 12
Typical Microtransit Ride Duration (Peak Period) *Minutes*	7 - 9	10 - 12	10 - 12
Shared-Ride Duration (Peak Period) *Percentage of Ride Time with Multiple Passengers*	27%	61%	60%
Annual Ridership *Passenger Boardings*	38,000	77,000	116,000
Annual Vehicle-Hours *Hours*	8,300	12,000	18,700
Total Estimated Annual Operating Cost *Dollars*	$888,000	$1,280,000	$2,000,000
Average Estimated Operating Cost Per Ride *Dollars / Ride (rounded to nearest dollar)*	$23	$17	$17

Rural Opportunity Areas

Easton/Raisin City/Caruthers

The Easton/Raisin City/Caruthers opportunity area calls for one to two vehicles to serve demand during peak hours. Relative to the other rural microtransit opportunity areas in consideration in this study, the service is predicted to have the highest ridership and utilization and the lowest cost per ride. While the zone may be operable with one vehicle in the first 6 months to one year, a second vehicle will likely be required to support continued ridership growth.

Table 36. *Simulation results for the Easton/Raisin City/Caruthers microtransit service*

Ridership	Low	Medium	High
Fleet Size *Vehicles required at peak (excl. spares)*	1	2	2
Weekday Ridership *Boardings*	26	52	78
Weekday Avg. Microtransit Utilization *Boardings / Vehicle Hour*	2.1 - 2.7	2.7 - 3.3	3.2 - 3.8
Typical Microtransit Ride Duration (Peak Period) *Minutes*	23 - 27	26 - 30	21 - 24
Shared-Ride Duration (Peak Period) *Percentage of Ride Time with Multiple Passengers*	44%	59%	63%
Annual Ridership *Passenger Boardings*	8,000	15,000	23,000
Annual Vehicle-Hours *Hours*	3,800	5,800	7,100
Total Estimated Annual Operating Cost *Dollars*	$460,000	$700,000	$850,000
Average Estimated Operating Cost Per Ride *Dollars / Ride (rounded to nearest dollar)*	$59	$46	$37

Wolf Lakes / Far East Clovis

The Wolf Lakes / Far East Clovis opportunity area is anticipated to require one to two vehicles to meet demand during peak periods, depending on the level of ridership. Of the potential rural microtransit opportunity areas, Wolf Lakes / Far East Clovis is the second-most cost-effective, in terms of cost per ride. It also has the second-highest ridership and utilization, after the Easton/Raisin City/Caruthers opportunity area.

Table 37. *Simulation results for the Wolf Lakes / Far East Clovis microtransit service*

Ridership	Low	Medium	High
Fleet Size *Vehicles required at peak (excl. spares)*	1	1	2
Weekday Ridership *Boardings*	14	29	43
Weekday Avg. Microtransit Utilization *Boardings / Vehicle Hour*	1.0 - 1.6	2.3 - 2.9	2.2 - 2.8
Typical Microtransit Ride Duration (Peak Period) *Minutes*	17 - 21	27 - 31	22 - 26
Shared-Ride Duration (Peak Period) *Percentage of Ride Time with Multiple Passengers*	0%	47%	64%
Annual Ridership *Passenger Boardings*	5,000	9,000	14,000
Annual Vehicle-Hours *Hours*	3,800	3,800	5,800
Total Estimated Annual Operating Cost *Dollars*	$460,000	$460,000	$700,000
Average Estimated Operating Cost Per Ride *Dollars / Ride (rounded to nearest dollar)*	$98	$49	$52

Lanare/Riverdale

As with the Easton/Raisin City/Caruthers zone, the Lanare/Riverdale opportunity area would require one to two vehicles to meet peak period demand. The low ridership in this area, relative to Easton/Raisin City/Caruthers and Wolf Lakes / Far East Clovis opportunity areas, result in relatively low utilization and high operating costs per ride.

***Table 38**. Simulation results for the Lanare/Riverdale microtransit service*

Ridership	Low	Medium	High
Fleet Size *Vehicles required at peak (excl. spares)*	1	1	2
Weekday Ridership *Boardings*	11	22	33
Weekday Avg. Microtransit Utilization *Boardings / Vehicle Hour*	0.7 - 1.3	1.7 - 2.3	1.5 - 2.1
Typical Microtransit Ride Duration (Peak Period) *Minutes*	17 - 21	21 - 25	23 - 27
Shared-Ride Duration (Peak Period) *Percentage of Ride Time with Multiple Passengers*	0%	32%	61%
Annual Ridership *Passenger Boardings*	3,000	6,000	10,000
Annual Vehicle-Hours *Hours*	3,800	3,800	6,100
Total Estimated Annual Operating Cost *Dollars*	$460,000	$460,000	$730,000
Average Estimated Operating Cost Per Ride *Dollars / Ride (rounded to nearest dollar)*	$146	$73	$74

San Joaquin/Tranquility/Three Rocks/Cantua Creek/El Porvenir

The San Joaquin/Tranquility opportunity area would require a supply of two vehicles to meet demand during peak periods, meaning utilization increases with increased demand between the three low, medium, and high demand scenarios for this opportunity area. The opportunity area is very large, leading to long ride durations. However, demand is so low that despite the long ride durations, predicted shared-ride duration is still very low relative to other rural opportunity areas. The opportunity area has the lowest ridership and utilization and the highest vehicle hours and costs of the rural opportunity areas being considered in this study.

Table 39. *Simulation results for the San Joaquin/Tranquility microtransit service*

Ridership	Low	Medium	High
Fleet Size *Vehicles required at peak (excl. spares)*	2	2	2
Weekday Ridership *Boardings*	9	18	28
Weekday Avg. Microtransit Utilization *Boardings / Vehicle Hour*	0.2 - 0.8	0.5 - 1.1	1.0 - 1.6
Typical Microtransit Ride Duration (Peak Period) *Minutes*	33 - 37	34 - 38	38 - 42
Shared-Ride Duration (Peak Period) *Percentage of Ride Time with Multiple Passengers*	0%	9%	21%
Annual Ridership *Passenger Boardings*	3,000	5,000	8,000
Annual Vehicle-Hours *Hours*	6,100	7,100	7,100
Total Estimated Annual Operating Cost *Dollars*	$730,000	$850,000	$850,000
Average Estimated Operating Cost Per Ride *Dollars / Ride (rounded to nearest dollar)*	$282	$164	$102

5. Prioritization Analysis

The **Prioritization Analysis** builds upon this study's **Existing Conditions Analysis and Needs Assessment** and **Service Alternative Development** sections. The former evaluated current performance of the county's transit network, demographics related to transit ridership, and unmet mobility needs in Fresno County, while the latter investigated the feasibility of implementing microtransit in opportunity areas throughout Fresno County by developing microtransit service alternatives and simulating their expected performance. The Prioritization Analysis is informed by the study's goals as well as key findings from the Existing Conditions Analysis and Service Alternative Development Report. It prioritizes each of the microtransit service alternatives according to three categories of evaluation metrics:

- **Demographic and socioeconomic characteristics** of areas served by proposed microtransit alternatives, with a preference towards alternatives that serve the County's most disadvantaged communities;
- **Estimated service performance** of proposed microtransit alternatives such as ridership, productivity of service, and operating cost per ride;
- **Expanded access to transit** that proposed microtransit alternatives would offer, measured in two ways: first, the number of additional residents and jobs that are currently beyond walking distance from the nearest fixed-route bus stop. Next, the change in the number of jobs accessible via the transit network, within specified travel-time thresholds, that the proposed microtransit alternatives would provide from designated underserved locations within each service zone were evaluated.

These metrics are summarized in tables that will serve as a simple and transparent resource for Fresno COG and its stakeholders to compare different service alternatives and support decision-making regarding the prioritization and implementation of selected microtransit service alternatives.

5.1 Demographic and Socioeconomic Comparison

Serving disadvantaged communities who rely on public transportation at higher rates is an important goal for microtransit service in Fresno County. This prioritization analysis considers the following demographic categories of disadvantage in evaluating proposed microtransit service alternatives:

- Residents living in households with incomes below the federal poverty level
- Zero-vehicle households
- Residents who identify as a racial/ethnic group other than non-Hispanic White
- Older adults age 65 or older
- Youth age 17 and under
- People with disabilities

Opportunity areas with higher shares of high-need demographic groups are likely to serve higher ridership for a potential microtransit service. In comparing microtransit opportunity areas, the project team used the Fresno County average as a benchmark from which to evaluate the microtransit opportunity areas across demographic groups (see **Table 40** and **Table 41**). Areas

with above-average proportions of multiple high-need groups may see relatively higher demand for a microtransit service and are therefore evaluated more favorably compared to other opportunity areas. Key findings related to the demographic characteristics of each microtransit service alternative are below:

- **Zero-vehicle households:** As indicated in Section 2.2, vehicle ownership can be predictive of transit usage. Of the urban/suburban opportunity areas, the Southwest Fresno (15%), Calwa/Malaga (8%), and Sunnyside (7%) zones all have above-average shares of zero-vehicle households, suggesting that residents of these areas may be more likely to rely on public transit on average. Of rural opportunity areas, none of the opportunity areas have rates of zero-vehicle households above the Fresno County average. Rural areas have fewer public transit options in general, increasing dependence on personal vehicles and serving as a potential explanation for the lower rates of zero-vehicle households. However, the Easton/Raisin City/Caruthers and San Joaquin opportunity areas feature the highest rates of zero-vehicle households among rural microtransit service alternatives, each at 5%.
- **Residents below the poverty line:** Low-income households, particularly those living below the poverty threshold, are more likely to use public transit. Of the urban/suburban opportunity areas evaluated in this study, the West Area/South of Shields opportunity area's share of residents above the poverty line is just above the Fresno County average (22%), while the share of residents above the poverty line in the Southwest Fresno opportunity area (44%) is more than double the Fresno County average. Of rural opportunity areas, 29% of residents in the San Joaquin/Tranquility opportunity area are considered below the poverty line, greater than the county average.
- **Older adults age 65 and above:** Older adults aged 65 and older tend to rely on public transit at higher rates on average. Across Fresno County, around 12% of the population (roughly 130,000 people) is over 65. Both the North Clovis opportunity area (14%) and the Fort Washington opportunity area (16%) have above average shares of older adults aged 65 and above. The Wolf Lakes / Far East Clovis opportunity area, with 16% of its population composed of older adults aged 65 and up, also has above-average shares of older adults.
- **Youth under the age of 18:** Youth, particularly those between the ages of 13 and 18, are often frequent public transit users. Nearly one third (29%) of the study area population is under the age of 18, or roughly 294,000 people. Residents of Fresno County under the age of 18 tend to be densely clustered around the cities of Fresno, Clovis, Sanger, Selma, Parlier, and Reedley. Urban/suburban microtransit opportunity areas generally see slightly above average shares of youth aged 17 and below, including East Clovis (30%), North Clovis (31%), Southwest Fresno (35%), West Area/North of Shields (31%), Calwa/Malaga (31%), and Sunnyside (31%). Of rural opportunity areas, the San Joaquin/Tranquility opportunity area has above-average shares of youth under the age of 18 (38%).
- **Race/ethnicity other than non-Hispanic white:** As noted in Communities of Color, people who identify with a race/ethnicity other than non-Hispanic white are more likely to use public transit on average. A majority of the population of Fresno County (73%, or roughly 740,000 people) identify as a race/ethnicity other than non-Hispanic White. Several of the urban/suburban opportunity areas consist of relatively high shares of people identifying as a race/ethnicity other than non-Hispanic white, including Southwest Fresno (95%) and Calwa/Malaga (93%), both of which are almost entirely comprised of residents that identify as a race/ethnicity other than non-Hispanic White. West Area/South of Shields (85%), West

Area/North of Shields (83%), and Sunnyside (79%), each also see above-average rates of individuals identifying with a race/ethnicity other than non-Hispanic White. Similarly, several rural opportunity areas see above average rates of individuals identifying with a race/ethnicity other than non-Hispanic White, namely San Joaquin/Tranquility (97%), Lanare/Riverdale (75%), and Easton/Raisin City/Caruthers (75%).

- **People living with disabilities:** Many people with disabilities are more likely to rely on public transit and paratransit services. More than one in ten (13%) of Fresno County residents identify as people living with a disability. Of urban/suburban opportunity areas, both the Southwest Fresno opportunity area (17%) and the Calwa/Malaga opportunity area (17%) have above average shares of people living with disabilities, while all rural opportunity areas consist of average or below-average shares of individuals with disabilities.

Conclusions

The urban/suburban microtransit opportunity area with above-average shares of the highest number of transit-dependent groups is Southwest Fresno, with above-average shares of five of the six high-need demographics considered in the study. The Calwa/Malaga opportunity area, which has above-average shares of four of the six high-need groups, and Sunnyside area, with above-average shares of three of the six high-need groups, also represent areas that are likely to see significant demand for microtransit on the basis of their residents' socioeconomic disadvantage. Of the rural opportunity areas, San Joaquin/Tranquility is the highest-need opportunity area, with above-average shares of three of the six high-need demographic groups evaluated in the study.

Table 40. *Urban/Suburban Opportunity Area Shares of High-Need Groups* [58]

Urban/Suburban Opportunity Area Comparison	Fresno County Average	East Clovis	North Clovis	Fort Washington	Southwest Fresno	West Area / North of Shields	West Area / South of Shields	Calwa / Malaga	Sunnyside
Zero-Vehicle Households *Percent of households*	7%	2%	3%	2%	15%	3%	4%	8%	7%
Residents below Poverty line *Percent of residents*	21%	6%	3%	5%	44%	17%	22%	20%	18%
Older Adults (65+) *Percent of residents*	12%	12%	14%	16%	11%	9%	9%	12%	11%
Youth (17-) *Percent of residents*	29%	30%	31%	24%	35%	31%	29%	31%	31%
Race/Ethnicity other than Non-hispanic white *Percent of residents*	73%	56%	43%	48%	95%	83%	85%	93%	79%
People living with disabilities *Percent of residents*	13%	10%	9%	10%	17%	12%	13%	17%	12%

[58] Cells highlighted in blue indicate above-average shares of high-need groups relative to the Fresno County average.

Table 41. *Rural Opportunity Area Shares of High-Need Groups* [59]

Rural Opportunity Area Comparison	Fresno County Average	Easton / Raisin City / Caruthers	Wolf Lakes / Far East Clovis	Lanare / Riverdale	San Joaquin / Tranquility
Zero-Vehicle Households *Percent of households*	7%	5%	2%	3%	5%
Residents below Poverty line *Percent of residents*	21%	21%	7%	21%	29%
Older Adults (65+) *Percent of residents*	12%	12%	16%	11%	8%
Youth (17-) *Percent of residents*	29%	26%	28%	26%	38%
Race/Ethnicity other than Non-hispanic white *Percent of residents*	73%	75%	50%	75%	97%
People living with disabilities *Percent of residents*	13%	13%	11%	12%	5%

[59] Cells highlighted in blue indicate above-average shares of high-need groups relative to the Fresno County average.

5.2 Simulated Microtransit Service Performance

This study's microtransit opportunity areas are also evaluated by their anticipated cost-effectiveness, based upon performance metrics detailed in the **Service Alternative Development** report. Each of these metrics are based on the medium-demand scenario, the most likely ridership outcome, and they include:

- **Fleet Size at Peak:** Number of vehicles required to operate the service (excluding spares) given the weekday ridership volume below, based upon the microtransit simulations completed for each opportunity area.
- **Average Weekday Ridership:** Average weekday passenger boardings. These estimates are derived from observed ridership patterns of peer microtransit services in suburban and rural areas of the western United States, respectively, with similar transit network and built-environment characteristics. The estimates are also influenced by the fare policies of the three Fresno County transit agencies in their respective opportunity areas, as described on the following page.
- **Average Weekday Utilization:** Number of passenger boardings per vehicle-hour of service, an important measure of the service's productivity.[60] Most successful urban/suburban microtransit services achieve a utilization of between three and eight passengers per vehicle-hour, while many rural services achieve between two and four passengers per vehicle-hour.
- **Annual Ridership:** Passenger boardings per year, rounded to the nearest thousand.
- **Annual Vehicle Hours:** Number of vehicle-hours per year in which a service is operating, based upon assumed service spans in suburban and rural areas. These assumed service spans are Monday through Friday 6am - 8pm and Saturdays/Sundays 8am - 6pm, in Fresno and Clovis, and Monday through Friday 7am - 6pm and Saturdays 8am - 5pm in rural areas. As noted below, this figure is distinct from revenue-hours, as it includes a small portion of zero-passenger time at the beginning and end of driver shifts, in which drivers are traveling to/from depots that transit agencies typically classify as deadhead/non-revenue-hours. Annual vehicle-hours are rounded to the nearest hundred.
- **Total Estimated Annual Operating Cost:** The project team estimated annual operating expenditures required for each opportunity area. This calculation is the product of annual-vehicle hours and hourly cost assumptions provided by Fresno County transit agencies. These assumptions include $108/vehicle-hour for FAX (assumes a turnkey service model with W2-employee contracted drivers), $135/vehicle-hour for Clovis (average hourly operating cost for existing RoundUp paratransit service), and $52/vehicle-hour for FCRTA (average hourly operating cost through existing demand-response contractor MV Transportation).[61] Total costs are rounded to the nearest $10,000.

[60] The utilization metric is distinct from service productivity as reported by transit agencies to the FTA. Whereas the utilization ratio uses vehicle-hours as its denominator, service productivity uses revenue-hours. Estimated utilization figures count additional time at the beginning and end of driver-shifts as vehicle-hours that a revenue-hours analysis would categorize as deadhead. Due to this discrepancy, utilization figures are typically 10-15% lower, in practice, compared to service productivity figures for a given microtransit service.
[61] $52/hour is the reimbursable rate that FCRTA pays to MV Transportation, but this figure does not include other costs such as maintenance and insurance. FCRTA's overall hourly cost reported to the FTA in FY 2022 was $120/revenue-hour for demand-response service.

- **Cost per Ride:** This figure is the ratio of the annual operating cost and annual ridership figures described above. It is rounded to the nearest dollar.
- **Fare Revenues:** For microtransit opportunity areas in the city of Fresno, the assumed fare is $2 one-way, assuming that 60% of passengers pay the full fare and the remainder continue to ride fare-free under the FAX partnership with Kaiser Permanente. FCRTA is assumed to have fares between $5 and $10 depending on trip distance. An average fare per passenger of $7.50 is assumed here. Microtransit service in Clovis is assumed to be fare-free, matching the rest of the Clovis Transit network. Fare revenues are rounded to the nearest $10,000.
- **Net Subsidy per Passenger:** Difference of the annual operating cost less annual fare revenues, normalized by annual ridership. This figure is rounded to the nearest dollar.

Urban/Suburban Opportunity Areas

The number of vehicles required to operate a service is an important factor to consider when deciding whether to launch a microtransit service, as it is a primary driver of cost in vehicle leases/purchases and maintenance/fuel/repairs. The eight potential urban/suburban microtransit opportunity areas would serve geographic areas that are roughly similar in size and would each likely require between two to three vehicles to operate in a medium-demand scenario.

High-demand scenarios for each opportunity area show slightly more differentiation in the number of vehicles required to operate the service, with the North Clovis, West Area/North of Shields, West Area/South of Shields, and Calwa/Malaga opportunity areas each requiring three vehicles to operate in a high-demand scenario. High-demand scenarios in the East Clovis and Fort Washington opportunity areas would require four vehicles, while the Southwest Fresno and Sunnyside opportunity areas would each require five vehicles in a high-demand scenario; however, the Fresno COG may consider other factors along which to compare the eight suburban opportunity areas.

Annual operating costs are another key factor in determining the feasibility of both launching and operating a potential service for a sustained period of time. Estimated annual operating costs for the medium-demand scenarios for each opportunity area range from around $900,000 to $1.6 million, with the North Clovis and East Clovis service alternatives estimated to be the most costly urban/suburban service to operate. This is primarily because of the higher assumed hourly operating costs for Clovis Transit ($135/hour) relative to FAX ($108/hour). While the West Area/North of Shields zone would require only two vehicles in a medium-demand scenario, its range of potential outcomes between low- and high-demand scenarios is the same as the West Area/South of Shields zone: both would require between two and three vehicles to operate, as they would serve similarly sized areas and similar estimated ridership volumes.

Cost per ride is another important cost-effective metric for microtransit services. The North Clovis opportunity area would result in the highest cost per ride in a medium-demand scenario ($35), while the Sunnyside opportunity area is predicted to have the lowest cost per ride ($15). These costs per ride are considered typical with respect to peer microtransit services in suburban areas of the western U.S., where costs-per-ride of $10-25 are considered medium and costs above $25 are considered high.

As shown in **Table 40** below, The West Area/South of Shields opportunity area and Calwa/Malaga opportunity area both have some of the lowest anticipated ridership as well as the lowest anticipated utilizations of the urban/suburban service alternatives, between three and four passengers per vehicle-hour.

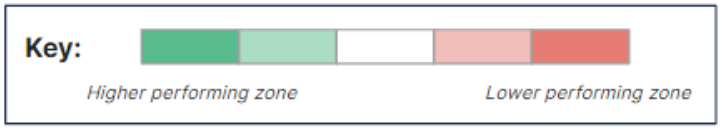
Conclusions

The evaluation of the urban/suburban microtransit opportunity areas by their simulated performance, shown in **Table 42**, indicates the following:

- The Sunnyside zone would perform best in terms of ridership, utilization, and cost per ride. The Sunnyside opportunity area would serve the highest estimated weekday and annual ridership of the urban/suburban opportunity areas, resulting in the highest utilization of more than six passengers per vehicle-hour.
- The East Clovis and West Area/North of Shields opportunity areas are each estimated to have the second-highest ridership, with a utilization of five passengers per vehicle-hour. The West Area/North of Shields zone has the unique advantage of requiring the fewest vehicles to operate: two vehicles in a medium-demand scenario, versus three vehicles in each of the other opportunity areas.
- The Southwest Fresno and Fort Washington opportunity areas would offer slightly lower levels of utilization compared to the alternatives described above, between four and five passengers per vehicle hour, and average cost per ride of about $25.
- The North Clovis, West Area/South of Shields, and Calwa/Malaga zones would serve somewhat lower ridership and utilization compared to other service alternatives, between three and four passengers per vehicle-hour. Due to their lower forecast ridership, they would require higher operating cost per ride ($30-35). These costs are considered relatively high for microtransit in urban/suburban areas and therefore may be difficult for transit agencies to justify or sustain.

Table 42. *Urban/Suburban Opportunity Area Medium-Demand Simulation Result Comparison*

Performance	East Clovis	North Clovis	Fort Washington	Southwest Fresno	West Area / North of Shields	West Area / South of Shields	Calwa / Malaga	Sunnyside
Fleet Size at Peak *Vehicles required at peak (excl. spares)*	3	3	3	3	2	3	3	3
Avg. Weekday Ridership *Boardings*	193	145	163	174	129	138	128	244
Avg. Weekday Utilization *Boardings / Vehicle Hour*	5.1	3.8	4.3	4.5	5.0	3.7	3.4	6.4
Annual Ridership *Boardings*	61,000	46,000	51,000	55,000	41,000	44,000	41,000	77,000
Annual Vehicle Hours *Hours*	12,000	12,000	12,000	12,000	8,300	12,000	12,000	12,000
Total Estimated Annual Operating Cost[62] *Dollars*	$1,600,000	$1,600,000	$1,300,000	$1,300,000	$890,000	$1,300,000	$1,300,000	$1,300,000
Cost per Ride *Dollars*	$26	$35	$25	$24	$22	$29	$32	$15
Estimated Fare Revenues[63] *Dollars*	N/A	N/A	$60,000	$70,000	$50,000	$50,000	$50,000	$90,000
Net Subsidy per Passenger *Dollars*	N/A	N/A	$245	$2325	$20	$2830	$30	$15



[62] Cost estimates based on estimates for turnkey service in Fresno and directly operated service in Clovis.
[63] Assumes zero-fare service in Clovis and $2 fares in the City of Fresno, with 60% of passengers paying the full fare and 40% receiving free fares through the agency's partnership with Kaiser Permanente.

Rural Opportunity Areas

In contrast to the urban/suburban opportunity areas, which are relatively similar in geographic size, the larger, rural opportunity areas range from 62 square miles to 154 square miles and would serve smaller ridership volumes, making them more difficult to serve cost-effectively via microtransit. Results comparing simulated service performance across opportunity areas are shown in **Table 43**. Both low-demand and medium-demand scenarios call for between one vehicle (Wolf Lakes / Far East Clovis and Lanare/Riverdale) and two vehicles (San Joaquin/Tranquility and Easton/Raisin City/Caruthers) for each of the four rural opportunity areas, while high-demand scenarios each call for two vehicles in three of the four alternatives. However, the Easton/Raisin City/Caruthers opportunity area would require three vehicles to meet peak demand in a high-demand scenario.

As the largest and least densely-populated of the rural opportunity areas, the San Joaquin/Tranquility service alternative is anticipated to have the highest average cost per ride and estimated annual operating costs. The Easton/Raisin City/Caruthers opportunity area is estimated to have the second highest annual operating costs, while Wolf Lakes / Far East Clovis and Lanare/Riverdale had similar estimated annual operating costs and the lowest of the four opportunity areas. Costs per ride for the Lanare/Riverdale opportunity area are estimated to be less than half the cost of the San Joaquin/Tranquility opportunity area, demonstrating that service in the San Joaquin/Tranquility area would be anomalously expensive to operate. For reference, FCRTA's existing fixed-route and intracity demand-response services typically average $34 per ride.[64]

Ridership and utilization, other critical performance indicators for a microtransit service, are expected to be highest in the Easton/Raisin City/Caruthers opportunity area at 52 average weekday boardings and two to three boardings per vehicle hour, respectively, followed by the Wolf Lakes/Far East Clovis opportunity area and Lanare/Riverdale opportunity area. The San Joaquin/Tranquility opportunity area is expected to have the lowest ridership and utilization, at an estimated 18 average weekday boardings and one boarding per vehicle hour, respectively.

Conclusions

Among the rural microtransit opportunity areas evaluated in this study, the Lanare/Riverdale and San Joaquin zones are forecast to serve insufficient ridership to justify their operating expenses. With estimated costs per ride in a medium-demand scenario of $75 and $165, respectively, these

[64] Fresno COG. 2023. FY22 Transit Productivity Evaluation Report. Exhibit C-1, FCRTA Performance Characteristics.

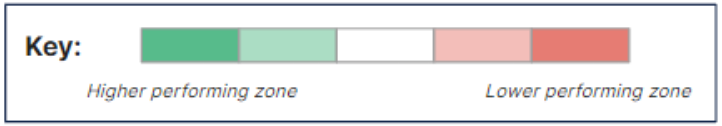
zones would require very large subsidies relative to other microtransit alternatives and are unlikely to be sustainable for transit operators like FCRTA without additional cost-sharing from other organizations. Therefore, these zones are considered not suitable for implementation by County transit agencies. However, other lower-cost modes (e.g. ride-share or volunteer driver programs) may be suitable for these very low-density communities.

The Easton/Raisin City/Caruthers and Wolf Lakes/Far East Clovis zones, however, would feature greater ridership and utilization as well as lower cost per ride, at about $50, respectively. With more ridership and greater fare revenues compared to the other rural alternatives, these opportunity areas would require net subsidies per passenger trip of $40 and $45, respectively. However, these costs per ride are still greater than most of FCRTA's intracity demand-response services, with several exceptions such as Fowler Transit, Kerman Transit, the countywide Rural Transit lifeline service, and the Biola Rideshare/Microtransit service.[65] One potential implementation approach for the Easton/Raisin City/Caruthers service, which features the lowest cost per ride, would be to operate the service with a single vehicle as ridership matures during the initial pilot period to reduce annual operating costs and therefore make the service easier for FCRTA to sustain.

[65] Fresno COG. 2023. FY22 Transit Productivity Evaluation Report. Table C-7, FCRTA Performance Characteristics Summary - FY 2022.

Table 43. *Rural Opportunity Area Simulation Result Comparison*

Performance	Easton/Raisin City/Caruthers	Wolf Lakes / Far East Clovis	Lanare/Riverdale	San Joaquin/ Tranquility
Fleet Size at Peak *Vehicles required at peak (excl. spares)*	2	1	1	2
Avg. Weekday Ridership [1] *Boardings*	52	29	22	18
Avg. Weekday Utilization *Boardings / Vehicle Hour*	2.7 - 3.3	2.3 - 2.9	1.7 - 2.3	0.5 - 1.1
Annual Ridership *Boardings*	15,000	9,000	6,000	5,000
Annual Vehicle Hours *Hours*	5,800	3,800	3,800	7,100
Total Estimated Annual Operating Cost [2] *Dollars*	$700,000	$460,000	$460,000	$850,000
Cost per Ride *Dollars*	$46	$49	$73	$164
Estimated Fare Revenues [66] *Dollars*	$113,000	$70,000	$50,000	$40,000
Net Subsidy per Passenger *Dollars*	$39	$43	$69	$163



[66] Assumes FCRTA fares of $5-10 per ride, with average fare payment per passenger of $7.50 per ride.

5.3 Expanded Access to Transit

Net Coverage Expansion to Additional Residents and Jobs

From discussions with the Fresno COG, Fresno County transit agencies, and key stakeholders, an important criterion has emerged for the selection of a preferred microtransit alternative: the expansion of service coverage to areas that are currently unserved or underserved by public transit in the region. Here, microtransit opportunity areas are evaluated by the total population and employment they would serve in areas located beyond a quarter-mile of existing Fresno County transit bus stops.[67] This distance threshold is found in transit industry research to be the maximum that most passengers will walk to access local bus service.[68] Expansion to additional residents and jobs is especially important given Fresno COG's goals to expand transit coverage to unserved or underserved communities and enhance service in disadvantaged communities.

Of the urban/suburban opportunity areas, the East Clovis microtransit opportunity area would offer the greatest coverage expansion to unserved areas beyond walking distance from a Clovis Transit fixed-route bus stop. East Clovis is followed closely by Fort Washington and North Clovis, which are also predicted to expand coverage significantly with the introduction of microtransit to the area, with increases in coverage of 36,700 population and jobs and 27,900 population and jobs, respectively.

Of the rural opportunity areas, the Wolf Lakes / Far East Clovis opportunity area is predicted to expand coverage to 15,700 population and jobs currently unserved by transit in the region, while Easton/Raisin City/Caruthers opportunity area is also predicted to expand coverage to a significant portion of residents and jobs currently unserved by transit (14,100).

[67] Non-work destinations (e.g. medical centers, schools, shopping) were excluded from this analysis.
[68] Yang, Yong, and Ana V. Diez-Roux. 2012. "Walking Distance by Trip Purpose and Population Subgroups." American Journal of Preventive Medicine 43 (1): 11–19. https://doi.org/10.1016/j.amepre.2012.03.015.

Table 44. *Urban/Suburban Opportunity Area Net Coverage Expansion*

Microtransit Opportunity Area	**Coverage Expansion to Unserved Areas** *Population & jobs unserved by existing routes*
Urban/Suburban Opportunity Areas	*Listed in descending order of additional population-and-jobs served*
East Clovis	39,800
Fort Washington	36,700
North Clovis	27,900
West Area / South of Shields	22,400
Sunnyside	15,100
West Area / North of Shields	12,100
Southwest Fresno	6,500
Calwa / Malaga	6,100
Rural Opportunity Areas	*Listed in descending order of additional population-and-jobs served*
Wolf Lakes / Far East Clovis	15,700
Easton / Raisin City / Caruthers	14,100
Lanare / Riverdale	7,400
San Joaquin / Tranquility / Three Rocks / Cantua Creek / El Porvenir	7,100

Access to Jobs

A third primary goal of microtransit service in Fresno County, as articulated by Fresno COG, is to provide first- and-last mile connections to fixed-route bus service and increase the convenience and accessibility of region-wide multimodal trips (i.e. trips utilizing both microtransit and fixed-route bus options). In this study's **Service Alternative Development** phase, each of the proposed microtransit opportunity areas were evaluated by the quality of connecting bus service within the service zone. This evaluation was represented by the total number of weekday fixed-route bus trips occurring at existing stops within the zone. Zones with a greater number of fixed-route bus trips have access to more frequent bus service and, therefore, shorter wait times needed to complete intermodal transfers from fixed-route to microtransit options, or vice versa.

However, this metric does not entirely capture the impacts of improved connectivity between fixed-route bus, microtransit, and the communities served by each mode. An important means of understanding the benefits of microtransit opportunity areas to their communities is to evaluate

the extent to which microtransit improves access to jobs from a given point of origin. Microtransit can provide faster connections to fixed-route bus services and employment in lower-density environments, given its flexible operations and broad extension of service coverage.

To perform this analysis, the project team used network analysis software to create transit travel-time isochrones, which measures the area accessible via the public transit network (and walking) by a hypothetical transit rider starting from a designated point of origin within a specified travel-time threshold. This tool processes both fixed-route timetables from transit agencies' GTFS feeds and travel times via microtransit within the service zone. The team then measured the difference in the number of jobs accessible via public transit between two scenarios: one scenario with the current, fixed-route transit network and a second scenario with the fixed-route network *plus* the additional microtransit opportunity area under evaluation. Microtransit opportunity areas were then ranked by the net increase in jobs accessible via transit; that is to say, the difference in jobs reachable via transit between present-day conditions and a scenario with microtransit service. Zones with larger increases in access to jobs can be said to be fulfilling the COG's goals of improving first/last-mile connections to the greatest extent.

Key assumptions in this analysis included:

- Access to jobs is measured from points of origin within the microtransit opportunity area, specified in **Table 45** and **Table 46** below. These locations were selected because they represent important community destinations identified in the Existing Conditions Report with limited or no fixed-route service.
- Transit service levels assume the rider departs at 5pm on a weekday.
- In urban/suburban microtransit opportunity areas, the specified travel-time threshold is 30 minutes; in rural microtransit opportunity areas, the travel-time threshold is 60 minutes.
- Assumes the most recent transit agency GTFS feeds, updated September 2023. The network also includes an additional cross-town route on Church Avenue, scheduled to operate beginning 2025 in southeast Fresno, operating every 30 minutes between Edison High School (Walnut Avenue) and Sanger West High School (Armstrong Avenue).
- Jobs location data is provided by Census LODES data from 2019, processed by Remix Transit Planning software.
- On microtransit segments of the rider's intermodal journey, an average wait time of 15 minutes is assumed.
- Total jobs reachable are rounded to the nearest hundred.

The outputs of this isochrone analysis include "coverage area" maps such as **Figure 30** and **Figure 31** below, which show an example of the difference in employment accessible within one hour from El Capitan Middle School, located in the West Area / South of Shields microtransit zone. In these maps, the area accessible via transit within one hour is colored red. Further transit travel-time isochrone maps for the other microtransit opportunity areas are provided in this report's **Prioritization Analysis appendix.**

Figure 30. *Travel-Time Isochrone Analysis: Jobs Reachable via Transit within 60 Minutes from El Capitan Middle School (West Area) with Existing Network.*

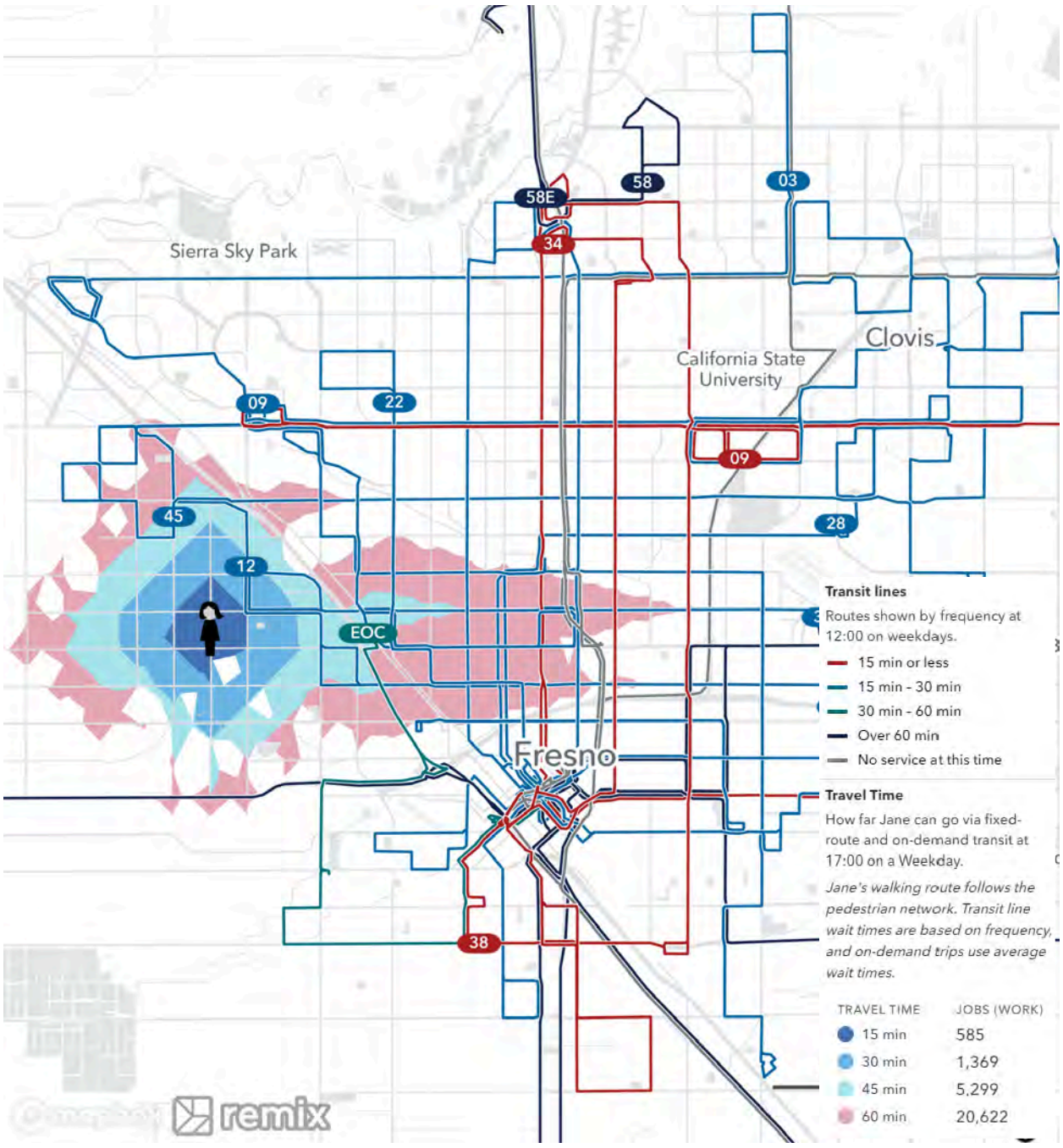
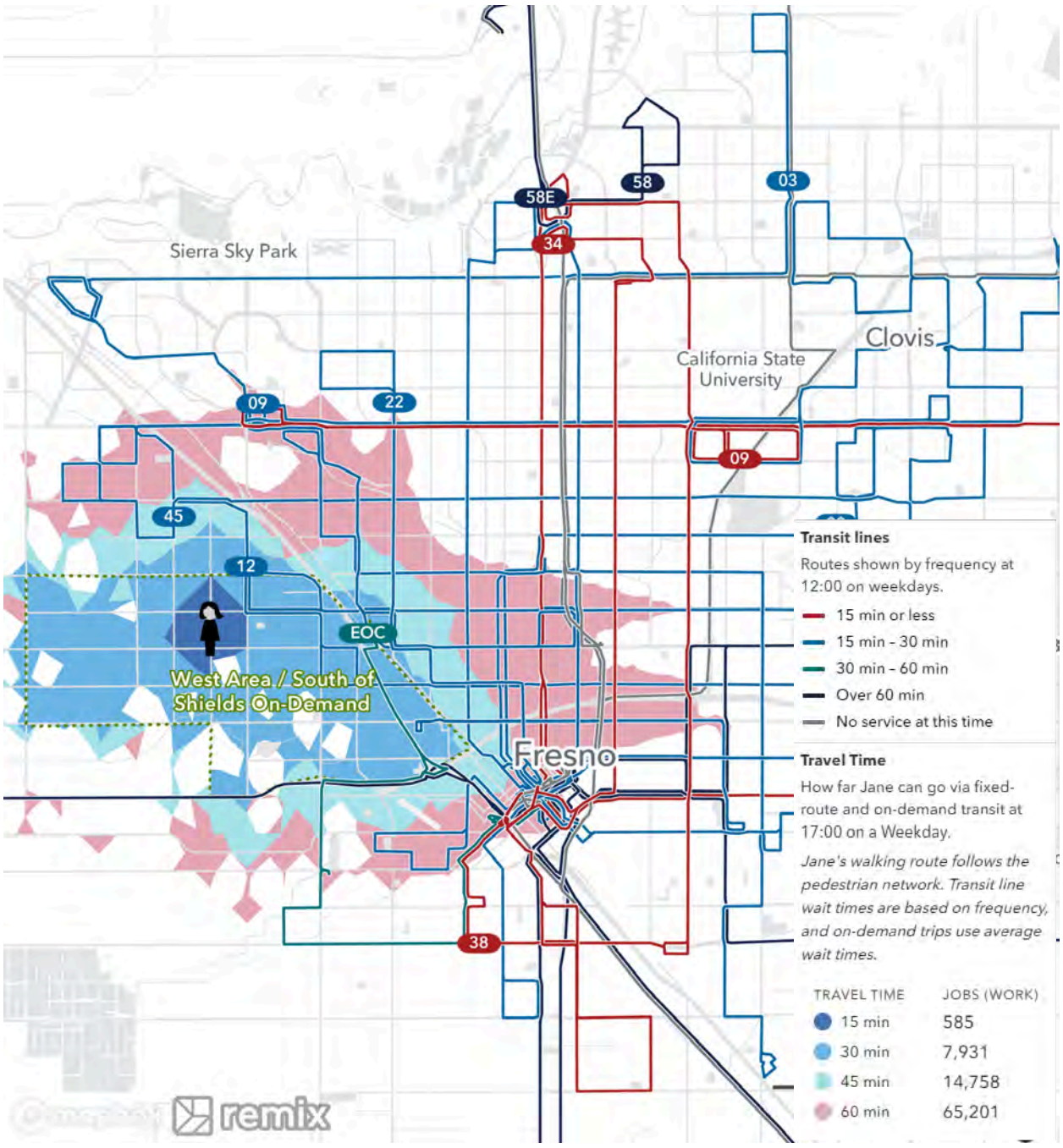


Figure 31. *Travel-Time Isochrone Analysis: Jobs Reachable via Transit within 60 Minutes from El Capitan Middle School (West Area) with West Area / South of Shields Microtransit Service.*



Conclusions:

This analysis shows that the Fort Washington zone offers the largest numerical increase in jobs accessible within 30 minutes, among the urban/suburban microtransit opportunity areas, adding nearly 15,000 new jobs accessible, primarily by offering connections with transit corridors such as the FAX Q, Route 34, and Route 38 at Woodward Station and River Park Shopping Center. The

Calwa / Malaga zone offers the second-largest numerical increase in jobs access, of more than 10,000 new jobs, by providing better connectivity between Calwa, Malaga, and the "Reverse Triangle" warehousing district across the SR-41 barrier that currently divides transit service in the area. Among rural microtransit opportunity areas, the largest increase in jobs access via transit is found in the Wolf Lakes/Far East Clovis zone, through its connection to job centers and transfer points in central Clovis and eastern Fresno. The Easton / Raisin City / Caruthers zone also offers significant improvement in jobs access via transit by connecting with the Reverse Triangle and enabling transfers to FAX Route 34. These findings are summarized in **Figures 32 and 33**.

The outputs of this isochrone analysis include "coverage area" maps included in Appendix 1, which show a pair of maps for each opportunity area. These maps show the total employment accessible within 30 minutes (for urban/suburban opportunity areas) or 60 minutes (for rural opportunity areas) from points of origin specified in **Tables 43 and 44**. The first map of the pair shows the employment accessible under the current transit network under the specified travel-time threshold, while the second map shows the employment accessible in a transit network with the corresponding microtransit zone available. In these maps, the area accessible via transit within 30 minutes, for urban/suburban opportunity areas, and within one hour, for rural areas, is colored red.

Figure 32: *Change in Transit Access to Jobs within 30 minutes in Urban/Suburban Microtransit Opportunity Areas*

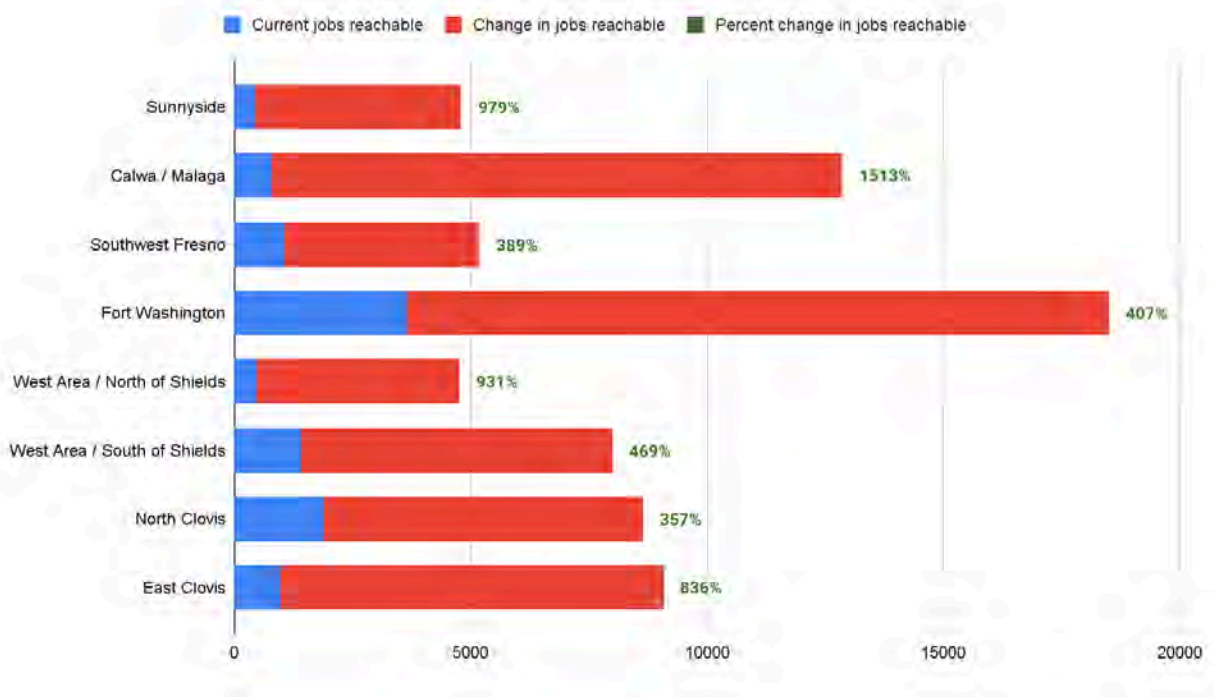


Figure 33: *Change in Transit Access to Jobs within 60 minutes in Rural Microtransit Opportunity Areas*

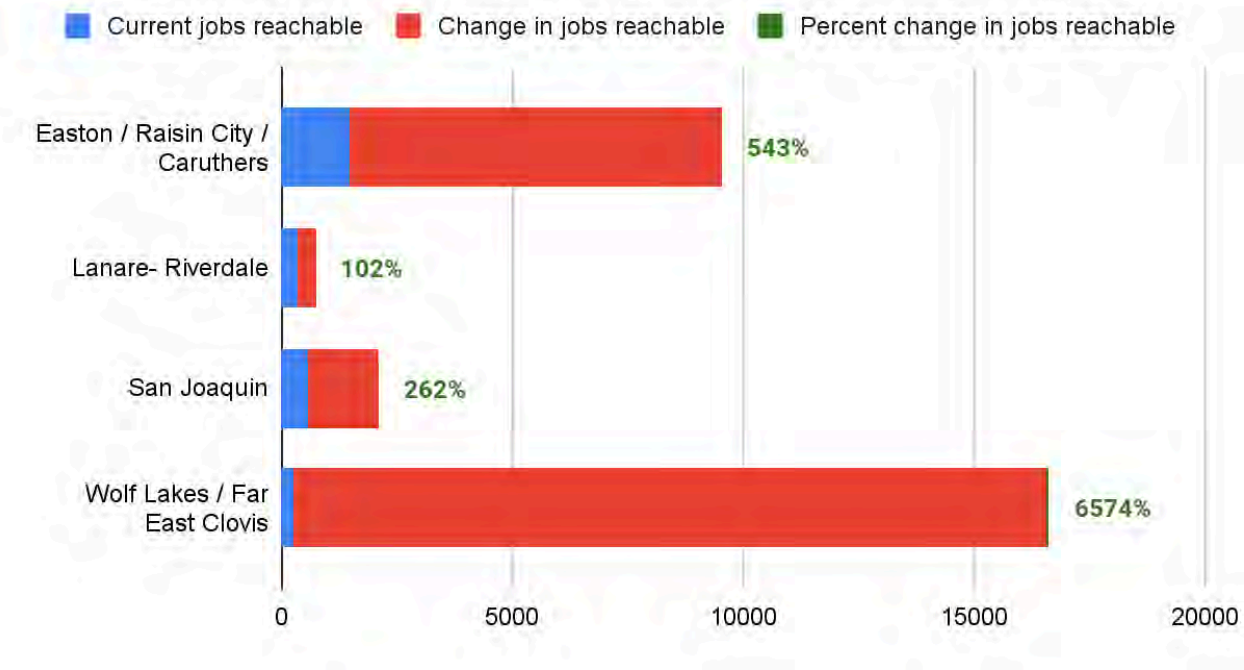


Table 45: *Change in Transit Access to Jobs within 30 minutes in Urban/Suburban Microtransit Opportunity Areas*

Microtransit Opportunity Area	Rider Origin	Jobs Reachable: Existing Network	Jobs Reachable with Microtransit	Change in Jobs Reachable	Percent Change in Jobs Reachable
Sunnyside	Sanger West High School	400	4,400	4,000	979%
Calwa / Malaga	Konkel Junior High School	800	12,900	12,100	1513%
Southwest Fresno	CalVet Veterans Home	1,100	5,200	4,100	389%
Fort Washington	Woodward Park Regional Library	3,600	18,500	14,900	450%
West Area / North of Shields	Justin Garza High School	500	4,800	4,300	931%
West Area / South of Shields	El Capitan Middle School	1,400	8,000	6,600	469%
North Clovis	Buchanan High School	1,900	8,600	6,800	357%
East Clovis	Reagan Education Centre	1,000	9,100	8,100	836%

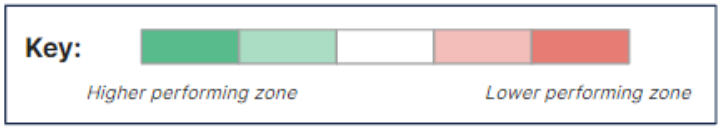
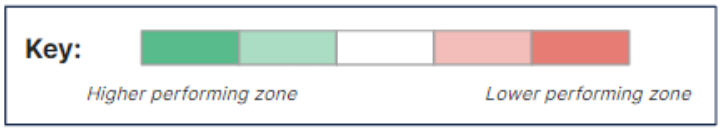


Table 46: *Change in Transit Access to Jobs within 60 minutes in Rural Microtransit Opportunity Areas*

Microtransit Opportunity Area	Rider Origin	Jobs Reachable: Existing Network	Jobs Reachable with Microtransit	Change in Jobs Reachable	Percent Change in Jobs Reachable
Easton / Raisin City / Caruthers	Washington Union High School	1,500	9,500	8,000	543%
Lanare / Riverdale	Riverdale High School	400	700	300	102%
San Joaquin / Tranquility / Three Rocks / Cantua Creek / El Porvenir	San Joaquin City Park	600	2,100	1,500	262%
Wolf Lakes / Far East Clovis	County Fire Station	200	16,600	16,400	6,574%



6. Implementation Plan

This section provides an overview of key actions that each of Fresno County's transit agencies (FAX, Clovis Transit, and FCRTA) can take to implement the microtransit service alternatives described above, should they elect to do so. It bears repeating that at this time, none of the Fresno County transit agencies or other local governments have agreed to implement microtransit or committed funding for its operation. Rather, this is a study to identify whether this type of service is realistic and sustainable for certain areas of Fresno County.

Fresno COG is responsible for project planning and programming of state and federal transportation funds, including formula funds dedicated to public transit and transit projects funded by Measure C, the county's ½-cent sales tax that was approved in 1986 and again in 2006. Unlike the county's transit agencies, the Fresno COG is not a direct FTA recipient for FTA or state formula funding, nor is it an experienced operator of public transportation services. Rather, the COG will assume an advisory and planning role in any microtransit service, leaving oversight and/or operations of microtransit to the county's transit operators. This approach will enable the transit agency operator(s) to continue to use dedicated transit funding sources, existing vehicle fleets and drivers, and operational expertise to manage and/or operate the microtransit service.

Transit agencies interested in implementing microtransit must first select their preferred microtransit opportunity area(s) which are determined to be most suitable for its fiscal constraints, stakeholder and customer preferences, and the agencies' goals/objectives for microtransit service.

To launch a successful service, Fresno County's transit agencies would then need to select an operating model, secure funding, procure software and/or vehicles, recruit and train drivers, and market the new service to potential riders, among other key steps. This section includes recommendations on these topics as well as actions that transit agencies can take following a microtransit service launch to ensure ongoing success as they monitor service performance and calibrate operations on an ongoing basis.

6.1 Operating Model

Below is an overview of operating models commonly adopted by North American transit agencies, including the preferred operating model under consideration by each Fresno County transit agency.

Overview of Operating Models

Directly-operated service and turnkey purchased transportation (vendor-operated) service can be considered two ends of a spectrum of microtransit operating models. While they are the most common, the transit agency may choose a unique configuration with aspects of each of these models, such as the hybrid model discussed below, as well as supplemental service provided by non-dedicated transportation providers (e.g., taxis or Uber/Lyft) to offer rides during times when the primary microtransit operator is oversubscribed or unavailable.

- **Directly-operated service.** In this model, the transit agency would procure a software platform to support microtransit operations, while operating the service using its own drivers, vehicles, and operations team (e.g., administrators, dispatchers, customer support agents, and vehicle maintenance technicians). These software contracts may also include ongoing customer support (e.g., for ride requests booked by phone) and marketing services, depending on the software provider. A directly-operated service has the advantages of allowing the designated transit agency to utilize existing vehicle and driver resources and assume a high level of control over service delivery. Using a single, consolidated contract agreement for a directly operated microtransit zone may also result in lower unit costs for software due to the potential for economies of scale with the software vendor.[69] However, transit agencies may need to recruit and train additional employees (e.g., drivers, dispatchers, and/or customer support agents to operate a new microtransit service. A directly-operated service is the operating model under consideration by Clovis Transit if the agency opts to implement microtransit in the future, based on discussions with agency staff.
- **Turnkey purchased transportation (vendor-operated).** In this model, a vendor provides a bundled solution which includes a microtransit software platform, along with the vehicles, drivers, and operations management that services need to operate microtransit service. Turnkey services sometimes have lower operating costs compared to the direct-operations approach above, particularly in high-cost states such as California. Turnkey services are typically easier to scale quickly when compared to directly-operated alternatives, as third-party vendors can typically adjust vehicle supply or extend operating hours more flexibly than transit agencies. Turnkey models also ensure the operations manager and dispatchers are experienced in using the microtransit software platform. Turnkey models are often used in cases where a transit agency does not have sufficient vehicles or employees available to operate the service directly. Disadvantages of using a turnkey model include the reliance on an outsourced vendor for all aspects of service delivery as well as less direct agency control over operational decisions. In turnkey services, transit agencies may have less influence over important service parameters such as vehicle make/model, driver recruitment strategies and pay/benefits, and maintenance processes. However, a well-designed contract can address many of these concerns. Turnkey purchased transportation is the model under consideration by FAX, should the agency elect to implement microtransit, according to discussions with agency staff.
- **Hybrid.** A hybrid model could combine some aspects of a directly-operated model, and some elements of turnkey purchased transportation operating model. For example, a transit agency could opt to use a third-party to provide software and drivers for a microtransit service, but use its own vehicles to operate its service. FCRTA's intracity demand-response services operate in this fashion, using FCRTA's vehicles, while drivers are provided by MV Transportation and software is provided by a second vendor, Ecolane. Another option for a hybrid operating model would be to use a third-party provider for software and customer support while using transit agency-provided vehicles and drivers, as a modification of the direct-operations model. This would enable the transit agency to

[69] Software license fees typically consist of two primary expense categories: 1) one-time fees to support initial development of the driver- and rider-facing smartphone applications and hardware onboard the vehicles; and 2) ongoing, monthly or annual fees based on the fleet size or vehicle-hours of the service to support web hosting and data storage, with ongoing customer support.

directly operate the service without the need to hire a new team of customer support agents or retrain current employees.

- **Non-dedicated transportation providers.** Microtransit typically requires dedicated vehicles and drivers to operate within specified hours within a service zone. As an alternative to microtransit, transit agencies may consider contracting with one or more local taxi/Transportation Network Companies (TNCs) on a non-dedicated, or trip-by-trip basis. Under this model, TNCs would deliver agency-subsidized trips within specified zones and hours of operation alongside unsubsidized trips for other customers. The Fresno Senior Scrip Program[70] is a Measure C-funded program that serves as one example of a non-dedicated service model. The service provides alternative transportation to Fresno County residents who are 70 years of age and older. Eligible adults can receive discounted rides by purchasing taxi scrip in advance with participating taxi companies or pay Lyft/Uber fares through GoGoGrandparent. A non-dedicated transportation provider model may be appropriate for similar services with a small, limited-eligibility rider cohort or notably low levels of forecast ridership, where a single dedicated vehicle would not serve enough ridership to remain busy throughout the shift. However, there are significant potential disadvantages of the non-dedicated operating model, particularly in areas where service is offered on-demand, rather than pre-booked. Its principal disadvantages include limited oversight of operations, limited vehicle availability (wheelchair-accessible vehicles are especially limited), high variability of wait times, higher costs per trip, and the inability of providers to group passengers into shared rides, making the services ineligible for FTA funding.[71] Because every ride serves only one passenger, costs increase linearly as demand grows (as compared to a shared-ride model, where cost per trip decreases as more customers are aggregated into shared-rides). Finally, it is likely that multiple vendors would be required to participate in such a model in order to meet FTA's requirements for driver drug/alcohol screening and compliance with other regulations such as ADA and Title VI, contributing to a more administratively complex service.[72] This is because Uber/Lyft have shown limited capacity to comply with the regulations of FTA-funded service, while many taxi companies do not provide on-demand service. In practice, transit agencies with non-dedicated service partnerships have often contracted with both Uber/Lyft and traditional taxi companies to ensure that customers can reliably request on-demand rides, book rides by calling a dispatcher, request wheelchair-accessible vehicles, and/or pay for rides in cash, depending on their needs.

[70] Scrip refers to a certificate or credit. In this case, senior citizens can purchase credit with participating taxi companies.
[71] Shared-ride taxi services such as Uber are not available in Fresno County.
[72] In the past, Uber and Lyft have shown limited ability to comply with FTA drug/alcohol screening requirements outside of a few highly regulated markets (e.g. New York City). Likewise, they have limited ability to guarantee equivalent quality-of-service for passengers with disabilities, as the more expensive wheelchair-accessible vehicles are often unavailable. They also do not offer an alternative to credit/debit card payment, violating Title VI rules. To work around these constraints, transit agencies that have partnered with TNCs must offer riders the choice between Uber/Lyft and a traditional taxi company that does provide wheelchair-accessible vehicles and offers a cash payment option. This is known as the FTA's "taxicab exemption."
https://www.transit.dot.gov/sites/fta.dot.gov/files/docs/research-innovation/134611/compliance-fta-requirements-transit-shared-mobility-partnerships-ppt.pdf

6.2 Funding

Like other modes of public transit, microtransit services are typically funded by a combination of federal, state, and local dollars. Fresno COG is responsible for programming of state and federal transportation funds, including formula funds dedicated to public transit. The agency is also responsible for programming of transit projects by Measure C, the county's ½-cent sales tax approved in 1986 and again in 2006. FAX, Clovis Transit, and FCRTA may be eligible for additional, competitive state and federal funding grants. Since Fresno County is composed of urban, suburban, and rural areas, the funding for which future service is eligible depends on which transit agency is elected to operate service and which opportunity area is selected for service. The following section provides an overview of funding sources that Fresno County transit agencies can use to fund the capital and operating costs of microtransit.

Federal Funding

Federal Formula Funding

The federal government provides funding for transit primarily through the Federal Transit Administration (FTA)'s formula funding programs.

Fresno County transit may be eligible for FTA formula funding from the following categories:

- **Section 5307 Urbanized Area Grants.** The 5307 program provides transit capital and operating assistance to urbanized areas, defined as incorporated areas with a population of 50,000 or more residents. Section 5307 funding is directed to transit agencies and other local government agencies designated as direct recipients. FAX currently uses these funds to support their current bus capital costs and would be able to use them for microtransit capital costs as well.[73]
- **Section 5310 Enhanced Mobility of Seniors and Individuals with Disabilities.**[74] This program provides formula-based funding for the purpose of assisting transit agencies and nonprofit organizations in meeting the transportation needs of older adults and people with disabilities when existing transportation services are insufficient. Section 5310 may be used to fund transit agencies' ADA paratransit services as well as non-ADA, human services transportation programs or other demand-response service operated by municipalities or the nonprofit sector. Section 5310 supports transportation services planned, designed, and carried out to meet the transportation needs of older adults and people with disabilities in all areas – large urbanized (over 200,000), small urbanized (50,000-200,000), and rural (under 50,000). Therefore, all Fresno COG member transit agencies are eligible for Section 5310 formula funding.

[73] In its reporting, the FTA categorizes microtransit as demand-response service, as with ADA paratransit.
[74] FTA. "Enhanced Mobility of Seniors and Individuals with Disabilities - Section 5310." Accessed May 25, 2022. https://www.transit.dot.gov/funding/grants/enhanced-mobility-seniors-individuals-disabilities-section-5310.

Section 5310 allocations are based on Coordinated Human Service Mobility Plans. In the Fresno region, this plan is created centrally by Fresno COG and is updated every six years. The most recent Coordinated Human Service Mobility Plan was published in 2023.[75]

- **Section 5311 Formula Grants for Rural Areas.** Section 5311 provides formula-based funding for the capital, planning, and operating expenses for public transportation in rural areas, defined as incorporated or unincorporated communities with a population of less than 50,000. The federal share is 80 percent for capital projects, 50 percent for operating assistance, and 80 percent for Americans with Disabilities Act (ADA) non-fixed route paratransit service. Of the Fresno County transit agencies, only FCRTA is eligible for 5311 grant funding.

Both federal formula funding programs can be used to cover both capital and operating costs of microtransit services. Funding availability will be determined, in part, by which operating model the transit agency selects (as described in Section 6.1 Operating Model):

- **Capital costs (software and vehicles)**: If the transit agency chooses to directly-operate service and procure a microtransit software platform, licensing software is considered a capital cost and can be covered at up to an 80% match. Funds can also be used to purchase additional microtransit vehicles at up to an 80% match.
- **Operating costs (driver pay/benefits and fuel/maintenance/repairs)**: Large urban agencies serving populations over 200,000, such as FAX, cannot use FTA formula funds to cover operating costs. With a directly-operated model, operational expenses will not be covered by federal formula funds. Instead, the transit agencies may use California's Transportation Development Act (TDA) funding to cover operating expenses.
- **Capital cost of contracting (turnkey vendor-operated service).** If the transit agency opts to proceed with a turnkey purchased transportation model, the FTA's "capital cost of contracting" policy will apply. This policy considers 50% of the entire contract value as a capital expense. Contracting with a third-party vendor to operate a microtransit service is also known as a "turnkey" solution. Large urban agencies like FAX can apply an 80% federal match to up to a 50% capital portion of the turnkey service. In other words, FAX can cover **40% of the overall turnkey contract with FTA formula funds**.[76] In rural areas, transit agencies like FCRTA are eligible for an additional 50% match on the other half of the contract, which is considered operational costs. In other words, **FCRTA can cover up to 65% of the overall turnkey contract with FTA formula funds**.

Federal Discretionary Funding

Transit agencies are also eligible for a range of discretionary grant funding programs for microtransit. The primary challenge with each of these funding sources is that unlike formula funding, these grants are non-recurring and are typically only used to start up the service during the pilot period. A longer-term, more sustainable funding source must be secured by the time the grant funding ends. Fresno COG, and this study, can play a key role in providing advisory and planning support for transit agencies as they prepare grant applications for these programs:

[75] Fresno Council of Governments. 2023. "Fresno County Coordinated Public Transit – Human Services Transportation Plan." Fresno County Coordinated Public Transit – Human Services Transportation Plan. 2023. https://fresnogo.wordpress.com/.
[76] Clovis Transit is not currently a direct recipient of FTA funds.

- **Enhancing Mobility Innovation (EMI).** This program is funded by the Federal Transit Administration and formerly known as the Accelerating Innovative Mobility (AIM) Program, Integrated Mobility Innovation (IMI) Program, and the Mobility on Demand Sandbox (MOD) program. This competitive grant program funds forward-thinking approaches that improve transit financing, planning, system design and service. Eligible activities include all activities leading to the development and testing of innovative mobility, such as planning and developing business models, obtaining equipment and service, acquiring or developing software and hardware interfaces to implement the project, operating or implementing the new service model, and evaluating project results. In Richmond, California, the "Richmond Moves" microtransit program received $250,000 in EMI funding in FY 2021.[77]

Above: In the San Francisco Bay Area, the City of Richmond's "Richmond Moves" microtransit service was funded partially through the EMI grant program. Source: Via.

- **Section 5399(c) Low or No-Emissions Vehicle Program.** The FTA Low or No Emission (Low/No) competitive program provides funding to state and local governmental authorities for the purchase or lease of zero-emission and low-emission transit buses as well as acquisition, construction and leasing of required supporting facilities. Each of the Fresno County transit agencies are eligible for Low/No grants to support microtransit service provided the funding is used to acquire electric or low-emission vehicles.

- **Carbon Reduction Program.** USDOT will distribute roughly $1.3 billion per year, through 2027, to states and metropolitan planning organizations (MPOs) to reduce carbon emissions in the transportation sector. Fresno COG will receive $1.3 million in annual funding in FY 2024-2025, and should expect to receive a similar amount annually over the

[77] FTA. 2022. "FY21 Enhancing Mobility Innovation Projects | FTA." August 10, 2022. https://www.transit.dot.gov/research-innovation/fy21-enhancing-mobility-innovation-projects.

next several years. This funding can be allocated towards any project that will reduce emissions by helping users take transit; this includes technology-enabled services such as microtransit.

- **Congestion Mitigation and Air Quality Improvement Program (CMAQ).** The CMAQ grant program is administered by the Federal Highway Administration to support projects and programs that work to improve air quality and maintain or attain the requirements set forth by the Clean Air Act. This competitive program is administered regionally by Fresno COG. Funds may be used for capital costs of transportation programs that demonstrate a high level of effectiveness in reducing air pollution, and that are included in the COG's current transportation plan and transportation improvement program (TIP). CMAQ allocated about $24 million to Fresno COG in FY 2023-2024, with 19% of the funding dedicated to transit improvements.[78] A local match for CMAQ-funded projects of at least 11.47% is required. In Merced County, a local microtransit service ("The Micro Bus") has used CMAQ funding to purchase software.[79]

- **USDOT Strengthening Mobility and Revolutionizing Transportation (SMART) Program.** This program, established by the Bipartisan Infrastructure Law (IIJA), designates annually $100 million through FY 2026. It provides grants to eligible public sector agencies to conduct demonstration projects focused on advanced smart community technologies and systems in order to improve transportation efficiency and safety. Eligible applicants include states, public transit agencies, and MPOs. Eligible projects include automated and connected vehicles, ticketing systems integration, delivery/logistics, innovative aviation, smart grid and traffic signals. For example, in 2023, Chatham Area Transit (CAT) received $1.2 million in SMART funding to implement microtransit service in Savannah, Georgia.[80]

- **Congressional Earmarks.** U.S. Senators and Members of Congress are increasingly using the recently revived congressional earmark process to advance promising transportation projects in their communities, including microtransit. A Community Project Funding (previously referred to as an earmark) is a funding provision that is inserted into an appropriations bill in Congress that directs funds to a designated recipient for a specific project. For example, during FY 2023, 37 Members of Congress and 38 Senators submitted earmark requests to the House/Senate Appropriations Committees. In both chambers, more than half of earmark requests ultimately received funding. Unlike a competitive grant process, transit agencies must approach their Members of Congress directly to request support for their microtransit project through the annual appropriations process and see the request through to fruition. For example, the City of Valdosta, Georgia, received a $1

[78] Fresno Council of Governments. 2023. "Congestion Mitigation and Air Quality (CMAQ) Program." Fresno Council of Governments. May 24, 2023. https://www.fresnocog.org/project/congestion-mitigation-and-air-quality-cmaq-program/.
[79] Merced Transit Authority. 2024. "The Micro Bus - Official Website." https://www.mercedthebus.com/250/The-Micro-Bus.
[80] Fluke, Parker. 2023. "Chatham Area Transit Receiving $1.2 Million for Micro-Transit Project." WTGS. March 21, 2023. https://fox28savannah.com/news/local/chatham-area-transit-funding-micro-transit-electric-vehicle-senators-lawmakers-georgia-savannah-residents-community-warnock-ossoff.

million earmark through the FY 2022 appropriations process to fund its citywide microtransit service, Valdosta On Demand.[81]

In addition to the FTA and broader USDOT, federal funding may also be available through the Department of Education, Department of Labor, Department of Veteran Affairs, Department of Housing and Urban Development (Office of Community Planning and Development and Federal Housing Administration), and the Department of Health and Human Services.

State Funding

The state of California provides several categories of transit funding. California's formula grant programs include:

Transportation Development Act (TDA) Funding

The Transportation Development Act (TDA) allows each county in California to establish a quarter-cent sales tax to finance a wide range of transportation projects, including transit operations, bus and rail projects, special transit services for disabled riders, pedestrian and bicycle facilities, and transportation planning. The TDA provides two major sources of funding for transportation: the Local Transportation Fund (LTF), which is derived from ¼ cent of the general sales tax collected statewide, and the State Transit Assistance (STA) Fund, which is derived from the statewide sales tax on diesel fuel. Fresno COG is responsible for determining the amount of TDA funds available from the TDA Local Transportation Fund (LTF) for allocation to transit agencies within Fresno County. The COG must make allocations to bicycle and pedestrian facilities, social services transportation, regional transportation planning, and public transportation annually. Prior to allocating LTF funds for local streets and roads in individual jurisdictions, the Fresno COG must identify any unmet transit needs that may exist in that jurisdiction that are reasonable to meet. Therefore, the COG's Annual Unmet Transit Needs Assessment is conducted to identify any unmet transit needs and make any related findings.

To qualify for funding under TDA, Fresno COG transit agencies must claim no more than 50% of its operating budget from TDA and maintain a ratio of fare revenues to operating costs of at least 20% in urban areas or 10% in non-urban areas. However, recent legislation (AB 149) has temporarily suspended the TDA's farebox recovery requirements for transit agencies through the end of FY 2026. AB 149 also permanently exempts expenses from microtransit and other demand-response service expenses, such as complementary ADA paratransit, from being counted towards farebox recovery ratios. Per Section 99268.17 of the legislation,[82] the following costs are exempted:

1. Costs required to operate demand-response and microtransit services that expand access to transit service beyond fixed route corridors.
2. Costs of funding or improving payment and ticketing systems and services.
3. Costs of security services and public safety contracts.

[81] "Sen. Ossoff's Push to Expand Valdosta On-Demand Passes Congress." 2022, March 10. U.S. Senator for Georgia Jon Ossoff (blog). https://www.ossoff.senate.gov/press-releases/sen-ossoffs-push-to-expand-valdosta-on-demand-passes-congress/.

[82] Committee on Budget, Transportation. 2021. Bill Text - AB-149 Transportation. Public Utilities Code. https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=202120220AB149.

4. Any expense greater than the actuarially determined contribution associated with pensions and other post-employment benefits as required by Governmental Accounting Board Statement Numbers 68 and 75.
5. Costs of planning for improvements in transit operations, integration with other operators and agencies, transitioning to zero-emission operations, and for compliance with state and federal mandates.

Zero Emission Transit Capital Program (ZETCP)

ZETCP is a formula grant program created by a 2023 amendment to Caltrans' TIRCP program (see below) under AB 109/SB 125. The program appropriates over $5 billion of Caltrans General Fund to TIRCP, through FY 2027, to support zero-emissions transit capital costs. ZETCP grants will be awarded to the regional transportation planning agencies (RTPAs), including Fresno COG, for high-priority capital projects which increase ridership, integrate with intercity and future high-speed rail service, and reduce greenhouse gas emissions, matching other TIRCP requirements. The funds may also be used to fund transit operations to prevent service cuts and increase ridership, and the legislation directs the funding to prioritize the availability of transit service for riders who are transit-dependent as well as transit agencies representing a significant share of regional transit ridership. Microtransit services and large-scale zero-emissions vehicle purchases, including supportive EV charging facilities, are eligible expenses in this category. Fresno COG will receive $6.2 million in ZETCP funding allocated during FY 2023-2024 and $3.5 million annually in each of the following three fiscal years.[83]

State Discretionary Funding

- **Transit and Intercity Rail Capital Program (TIRCP) - Capital.** Issued by CalSTA, this program seeks to award transformative projects that will modernize California's intercity rail, bus, and ferry transit system. Competitive applications will address how the service maximizes benefits to disadvantaged and low-income communities and reduces overall vehicle miles traveled (VMT) in the region. Both fixed-route bus and microtransit capital projects are eligible. Of the 23 projects awarded in 2022, five applications (over 20%) received capital and operating dollars to launch and expand microtransit services in California. Another nine applications received capital funding to support bus vehicle purchases, electric-bus charging infrastructure.

- **CalTrans Low Carbon Transit Operations Program (LCTOP) - Operations.** LCTOP provides operating and capital assistance for transit agencies to reduce greenhouse gas emission and improve mobility, with a priority on serving disadvantaged communities. Approved projects in LCTOP will support new or expanded bus or rail services, expand intermodal transit facilities, and may include equipment acquisition, fueling, maintenance and other costs to operate those services or facilities, with each project reducing greenhouse gas emissions. For agencies whose service area includes disadvantaged communities, at least 50% of the money received shall be expended on projects that will benefit disadvantaged communities.

- **State-Local Partnership Program (1B/SLPP) - Capital.** The Highway Safety, Traffic Reduction, Air Quality, and Port Security Bond Act of 2006, approved by the voters as

[83] CalSTA. 2023, September 29. "BUDGET ACT OF 2023 SB 125 FORMULA-BASED TRANSIT AND INTERCITY RAIL CAPITAL PROGRAM & ZERO EMISSION TRANSIT CAPITAL PROGRAM: FINAL GUIDELINES." PP. 3-10.

Proposition 1B on November 7, 2006, authorized $1 billion to be deposited in the State-Local Partnership Program (SLPP) Account for allocation by the California Transportation Commission over a five-year period to eligible transportation projects that were nominated by an applicant transportation agency. The Bond Act required a dollar-for-dollar match of local funds for an applicant agency to receive state funds under the program.

- **Solutions for Congested Corridors Program (SCCP) - Capital Programs.** The Solutions for Congested Corridors Program (SCCP) is a statewide, competitive program that provides funding to achieve a balanced set of transportation, environmental, and community access improvements to reduce congestion throughout the state. The program was created by the Road Repair Accountability Act of 2017 (SB 1). The SCCP makes $250 million available annually to projects that implement specific transportation performance improvements and are part of a comprehensive corridor plan, by providing more transportation choices while preserving the character of local communities and creating opportunities for neighborhood enhancement. RTPAs such as Fresno COG, county transportation commissions, and the California Department of Transportation (Caltrans) are eligible to apply for program funds. Eligible agencies must nominate projects to apply for SCCP funds. All nominated projects must be identified in a currently adopted regional transportation plan and an existing comprehensive corridor plan.

- **Sustainable Transportation Equity Project (STEP).** Funded by the Greenhouse Gas Reduction Fund, STEP is a program under the California Air Resources Board (CARB) that funds a variety of clean transportation and supporting projects, such as public transit and shared mobility services, active transportation infrastructure, land use planning and housing policy, workforce development, and clean transportation planning and education. Funded projects work together within low-income and disadvantaged communities to increase transportation equity. Funded projects are designed and implemented with community residents to address community needs, reducing GHG emissions and vehicle miles traveled while increasing access to key destinations and services. Community-based organizations, local governments, and tribes that service priority populations throughout California are all eligible for funding through the program. As of February 2024, the program had allocated around $33 million for FY 2022-2023.[84]

- **Clean Mobility Options (CMO) - Operations.** The Clean Mobility Options (CMO) Program, issued by the California Air Resources Board (CARB), funds projects that assess and address the barriers and transportation needs of low-income residents and disadvantaged communities designated by SB 350. It provides funding for clean, shared transportation options, including zero-emission carsharing, vanpools, electric and regular bicycle sharing, scooter sharing, and ride-hailing services. The projects are designed to connect with current or future innovative mobility hub concepts that promote multimodal trips, including co-located passenger rail, bus/shuttle, ride-hailing, public charging, and first mile/last mile transit solutions. This program funds projects only in disadvantaged communities designated by SB 350, including much of southern and western Fresno and most of the rural cities and communities served by FCRTA.

[84] California Air Resources Board (CARB). 2024. "Sustainable Transportation Equity Project (STEP)." February 8, 2024. https://ww2.arb.ca.gov/our-work/programs/sustainable-transportation-equity-project

- **Transformative Climate Communities (TCC).** The Transformative Climate Communities (TCC) Program funds community-led development and infrastructure projects that achieve major environmental, health, and economic benefits in California's most disadvantaged communities. Since 2018, the California Strategic Growth Council (SGC) has awarded over $424 million in TCC grants to 37 of the most disadvantaged communities in California through a competitive process. TCC is funded through the State General Fund and cap-and-trade dollars at work through California Climate Investments. In 2018, the SGC awarded $66.5 million to Southwest Fresno for its Transform Fresno initiative, a community-driven initiative to transform public health and mobility in a 5-square mile project area closely overlapping with the Southwest Fresno microtransit opportunity area (see 4.2 Opportunity Area Profiles).[85] One of the outcomes of this grant award is the forthcoming BizWerx multimodal transportation service, which includes dock-based bike share and EV car share / van share.[86]

Local and Regional Funding

Several local and regional funding options are available for Fresno COG and County transit agencies to dedicate to capital and operating costs of a microtransit service.

Measure C Funding

Measure C is a half-cent sales tax aimed at improving the overall quality of Fresno County's transportation system. The tax was first introduced in 1986, resulting in more than $1 billion in improvements to state highways, county roadways, and city streets, as well as the construction of around 50 new lanes of freeway in the county over the course of 20 years. Given the success of the measure, in 2006, the measure was extended to 2027. Although the Fresno County Transportation Authority (FCTA) is responsible for overseeing the implementation of Measure C, much of the planning and implementation of the Measure C Program is executed by Fresno COG staff. Some historical Measure C programs include the Carpool Incentive Program, Commuter Vanpool Subsidy Program, Farmworker/Ag Vanpool Subsidy Program, New Technology Reserve Fund, Public Transportation Infrastructure Study, Regional Transportation Program, Regional Transportation Mitigation Fee, Senior (Taxi) Scrip Program, and Transit Oriented Development.

Advertising

Microtransit programs can also generate nominal revenue through advertisements. Potential revenue streams include:

- Rooftop screens - These are screens on top of vehicles that provide dynamic content that can be updated in real time.
- In-vehicle screens - These are screens, usually on the back of seats, that can display a mix of ads, trip information and entertainment from key partners.
- In-app - These are display banners, targeted content or real-time promotions that are seamlessly integrated into the app.
- Vehicle wraps - These are display ads that would cover a portion of the vehicle exterior.

[85] California, State of. 2024. "Transformative Climate Communities (TCC) - Strategic Growth Council." 2024. https://sgc.ca.gov/grant-programs/tcc/.
[86] https://www.gobizwerx.com/.

- Naming rights and sponsorship - These would be longer term partnerships in which a local or national organization would sponsor the entire or parts of the service.

Above: A microtransit service in Miami, Florida, uses customized vehicle wraps to support advertising. Revenues from advertising defray a small portion of the service's operating costs. Source: University of Miami.

Non-Emergency Medical Transportation (NEMT) Partnerships

Riders who are insured by Medicaid can be reimbursed for medical transportation (e.g., trips for doctors' appointments). FAX, Clovis Transit, or FCRTA could contract with the California Department of Health Care Services (DHCS), the state agency responsible for Medicaid administration for reimbursement of eligible non-emergency medical trips taken by their patients. Hospitals typically maintain recurring transportation budgets for patient transportation (e.g. post-discharge), and pay the microtransit operator (in this case, FAX, Clovis Transit, or FCRTA) a nominal fee (e.g. $5) per trip, saving significantly compared to the fares typically charged by alternatives like local taxis or Uber/Lyft for Medicaid trips.

In Bakersfield, the Golden Empire Transit system commingles NEMT trips with microtransit and ADA paratransit services, using a shared software platform and vehicle fleet while maintaining the distinct operating rules and user policies (e.g. reservations, eligibility, fare payment, service hours) for each service. The service's fleet features 10 vehicles dedicated to NEMT and serves more than 500 NEMT riders weekly.

Above: Example of a van used to operate Bakersfield's Golden Empire Transit (GET) On Demand service. This commingled service uses a shared vehicle fleet, drivers, and software platform to operate three distinct services for riders with different needs: On Demand microtransit (for general-public), NEMT (for Medicaid-eligible patients), and complementary ADA paratransit. Source: Golden Empire Transit.

Alternative Funding Sources

Local funding may also include less common, alternative funding strategies such as:

- **Private-sector support.** Microtransit services can attract support from organizations like local employers, transportation management associations, or nonprofit foundations with an interest in improving transportation. Several large microtransit services have been funded in part by private-sector support, including MAX On-Demand in Birmingham, Alabama, and Groove On-Demand in Memphis, Tennessee.
- **Other creative local revenue sources:**
    - Transient occupancy or hotel taxes (i.e. hotels and Airbnbs)
    - Parking meter revenues or permit-parking fees
    - Developer impact fees
    - Rental car or car registration fees

Above: Lake Link microtransit service in South Lake Tahoe, CA, is operated by a vendor, Downtowner, and managed by the South Shore Transportation Management Association (SSTMA). SSTMA is a nonprofit organization that manages local transportation and sustainability-related programming, funded by the area's tourism-sector businesses. Source: Tahoe Daily Tribune

6.3 Launch Planning

Fresno County transit agencies that decide to implement microtransit should take the following steps to prepare for launch, a process which can be divided into three phases, as shown in **Table 47**:

Table 47: *Launch Planning Phases*

	Procurement & Pre-Launch *(Months 1 - 3)*	**Launch Preparation** *(Months 4 - 6)*	**Post-Launch Evaluation & Marketing** *(Months 7 - 12)*
Goal	Finalize operating plan and service design	Prepare to operate the service, promote service visibility, and attract first-time riders	Ensure continued success of the service
Activities	• Select an operating model (see Section 6.1 operating model) • Finalize preferred preliminary service design (see Section 4.4 Ridership Estimates and Simulation Results), including key parameters such as: hours of operation, fare policy, vehicle and spare requirements, zone boundaries, and essential software requirements described in the following section	• Procure vehicles • Secure space in a vehicle maintenance facility • Recruit and train drivers, dispatchers, and customer support agents • Create and finalize a marketing and rider education plan to promote the service; potentially with support from Fresno COG, municipalities, and external vendors	• Continually evaluate the service against a set of recommended Key Performance Indicators (KPIs) and service standards established by the transit agency and Fresno COG (more information on recommended benchmarks is shared in Section 7. Post-Launch KPIs)

Procurement and pre-launch phase

The lead time to launch a new microtransit service will vary depending on the alternative selected. In general, budgeting between 6 and 12 months from issuing the procurement for any required service through to launch day is advised. If FAX, Clovis Transit, and/or FCRTA chooses to directly operate services and new vehicles are needed, vehicle procurement timelines are likely to be one of the critical factors for determining the time needed to launch the service.

Vehicle acquisition. The results in Section 4.4 Ridership Estimates and Simulation Results outline the estimated number of vehicles needed to serve each alternative during peak hours. The operator (whether a transit agency or a vendor) must also maintain spare vehicles in its fleet—at least 15% more vehicles than the minimum fleet size needed during peak hours (or a minimum of one spare vehicle if the fleet size is less than 6 vehicles). These additional vehicles may be necessary to cover shift changes or fill in for vehicles that are out for regularly scheduled cleaning or maintenance. Having spare vehicles available also ensures consistent and reliable service in case of a vehicle malfunction, crash, or other incident that requires long-term repairs.

Maintenance facility needs. If the microtransit service is directly operated, the transit agency must confirm there is adequate space for a microtransit fleet within existing maintenance facilities. If not, the agency may need to lease a new maintenance facility location. Alternatively, if the

microtransit service is vendor-operated, the vendor will be responsible for identifying and leasing a maintenance facility. A suitable depot for microtransit vehicles should have the following attributes:

- Be located in or near the service zone to minimize deadhead miles and operating costs.
- Consider safety measures for drivers, such as being well lit, secured by a fence and/or staffed by security personnel.
- Be large enough to store all vehicles and spares as well as additional space for drivers to park their personal vehicles.
- Have restrooms and other facilities for drivers to use before and after shifts and during breaks.
- Provide water and electricity onsite for vehicle cleaning and regular maintenance to achieve maximum efficiency.
- Offer some protection from the elements in case of inclement weather, which will minimize service interruptions.

Software technical requirements. Transit agencies will need to procure a software solution for either a directly operated microtransit service or a turnkey, software-plus-operations package. For microtransit software, the following capabilities are recommended:

- Dynamic vehicle routing.
- Passenger aggregation into shared rides.
- Ability to book rides in advance as well as on-demand; this capability is important for serving some high-need passenger groups such as ADA customers and people traveling to medical appointments.
- Customer mobile application (available for iOS and Android) providing trip booking and providing real-time estimated time to arrivals (ETAs) and other trip updates.
- Driver mobile application for real-time transmission of routing, rider manifests, and trip information.
- Ability for administrators/dispatchers to book trips on behalf of customers (so riders who do not have or prefer not to use smartphones can book trips by calling the dispatcher).
- Passengers should be able to indicate their disability status, either directly through the app or through notifying the customer service agent at the time of booking.
- Ongoing technical, operational, and marketing support.
- Ability to offer multimodal trip planning, including fixed-route as well as microtransit services. Software should be able to refer ride requests to nearby fixed-route service, if available within a reasonable quality of service.

Though they're considered by FTA to be capital costs, microtransit software contracts are typically subscription-based, priced either by vehicle-hour or by the number of vehicles used in a service per month. In other cases, invoicing is done on a per-passenger or per-trip basis. In some cases, per-unit costs may be lower for larger services, as there can be some economy of scale with administrative/overhead like software maintenance or data storage.

Fare Policy

Fare policy depends on various factors, including the area in which service is operated and general transit agency needs. Fares can be set as flat rates per trip or charged by distance or journey length. Fares can also be set as a combination of the two types. For example, a base fare of $2 plus a surcharge of an additional $0.50 for every mile, beyond 3 miles, could be charged to

discourage the longest microtransit trips within a larger zone. Fares can offset a small portion of operating expenses of the microtransit service, around 3 to 30% depending on ridership. For reference, service alternatives in Fresno are estimated to recover between five and seven percent of operating costs, while rural FCRTA alternatives are estimated to recover up to 16% of operating costs (see Table 41. Rural Opportunity Area Simulation Result Comparison). Fare policy options under consideration by Fresno County transit agencies include:

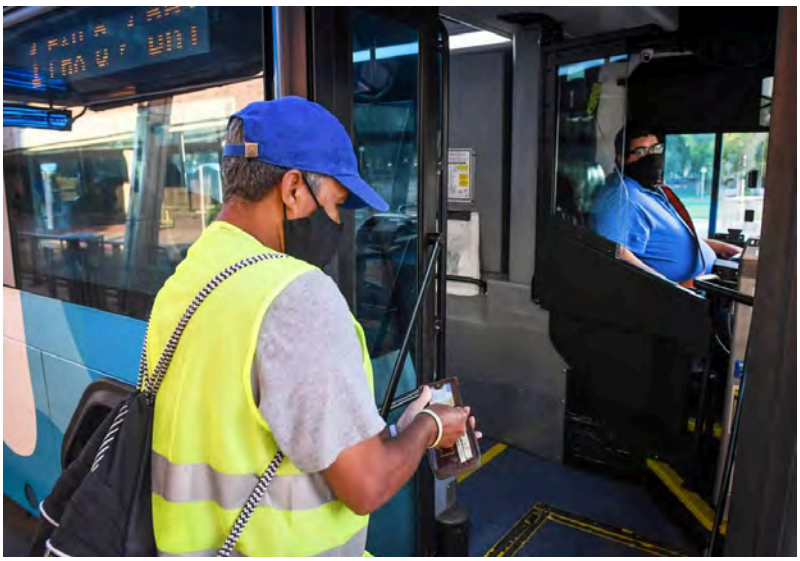
Flat Fares

Many transit agencies with flat fares for local bus service set equivalent fares for microtransit to encourage multimodal transit usage. Flat fares can be optimal for minimizing rider confusion and ensuring service accessibility. One option is to charge transit-equivalent fares, which encourages riders to view the service as a continuation of existing transit options. Another option is to charge a flat fare that is somewhat higher than the current public transit options to operate as a "premium" service. FAX, for example, is considering setting a flat fare of $2 per ride, or double its current fixed-route bus fares of $1 per ride, to discourage current fixed-route riders using the new microtransit service as a one-for-one replacement for fixed-route service and to reflect the higher subsidy required to provide microtransit service to hard-to-serve areas.

Distance-Based Fares

Distance-based pricing can be beneficial for large service areas, particularly in rural areas, where trip distances can be long and expensive for transit agencies to serve. Charging riders depending on the length of their trip can encourage riders to take shorter trips or connect to other fixed-route options, reducing costs for the transit agencies..

Zero-Fare



Zero-fare microtransit services typically achieve higher ridership intensity (i.e., boardings per unit population/employment served) compared with microtransit services that charge a fare. However, microtransit services that charge a fare also tend to see reduced rates of late cancellations and no-shows by riders, which can lead to improved service reliability and efficiency. As an extension of its current zero-fare fixed-route transit service, Clovis Transit is considering a zero-fare microtransit service, should it launch a microtransit service.

6.4 Launch Preparation

Once the procurement process is complete, transit agencies can prepare to operate service in the agreed-upon microtransit zone.

Driver Training. If the transit agency proceeds with a directly-operated service model where existing employee drivers will deliver service, drivers will need to be trained in delivering microtransit service, including how to use the software platform and operate in a demand-responsive service pattern. The transit agency may be able to adapt existing protocols and training materials developed for other services for the new microtransit service. Alternatively, in a turnkey service model, driver training would be managed by a vendor.

Administrator Training. The transit agency's administrative staff (including dispatchers, schedulers, and customer service representatives) will need to be trained in the use of its selected microtransit software platform. Depending on the selected operating model, administrative requirements may include supervision of live service and responding to issues when needed, booking trips for riders making reservations over the phone, and familiarity with microtransit performance indicators (in order to assess system performance over time). These functions would be managed by a vendor in a turnkey model. However, the project team recommends that agency staff receive training to review and evaluate data reports from the microtransit service to become comfortable with monitoring and calibrating the service (see **Section 7. Post-Launch KPIs**).

Marketing and Rider Education.

Marketing and community engagement are important steps to inform the public about the new service, particularly when new services and modes like microtransit are being introduced. Many potential riders will be unfamiliar with microtransit and will need to learn how to book and pay for rides as well as what to expect when boarding, riding, and alighting (e.g. a short walk at pickup and dropoff may be required for some rides in microtransit zones in Fresno or Clovis). The transit agency can partner with Fresno COG to carry out a joint marketing and rider education strategy, including creating a dedicated webpage for the service (linked to transit agency and COG websites), developing informational videos, sharing information on social media channels, and hosting informational meetings with local community-based organizations. Additional microtransit marketing best practices are described in **Section 8. Marketing and Rider Education**.

6.5 Electrification

FAX, FCRTA, and Clovis Transit have each explored and implemented multiple electric vehicle and clean mobility studies and pilot services in recent years.[87] [88] [89] [90] Likewise, Fresno County has prioritized fleet electrification as an emissions mitigation strategy in its Long Range Transit Plan.[91] To fulfill these policy goals, transit agencies may consider operating microtransit service with electric vehicles (EVs). Microtransit services are typically operated using one of three vehicle classes: minivans, transit vans, and cutaway buses. There are currently limited options for wheelchair-accessible, electric vehicles with sufficient battery range to serve the opportunity areas evaluated in this study. However, availability of these vehicles is expected to improve substantially in the coming 2-3 years.

As of early 2024, most wheelchair-accessible EVs operating microtransit are retrofitted transit vans or cutaways produced by OEMs such as Ford, Mercedes, Lightning Motors, and GreenPower Motor Company. For example, a retrofitted Mercedes eSprinter can accommodate up to 12 passengers and has a battery range of 230 miles. The EV Star is a wheelchair-accessible option that fits 12 passengers including 2 wheelchair spaces. The EV Star has a range of up to 150 miles (118 kWh battery capacity). However, a small number of services are also operated with electric SUVs or sedans (e.g. Tesla), though these models are not wheelchair-accessible. Alternatively, microtransit can be operated with more widely available hybrid-electric minivans, such as the Toyotta Sienna. Agencies also have the option of operating a mixed fleet. For example, electric SUVs or minivans (e.g. Volkswagen ID.Buzz or Kia Niro) could be used to complete most trips, while at least one ICE cutaway or retrofitted transit van is retained to handle wheelchair-accessible trips.[92]

As shown in **Table 48**, there is limited current availability of vehicles that are electric, wheelchair-accessible, and which offer sufficient battery range to be advisable for microtransit service. For example, the Ford eTransit and Lightning Motors' Ford E450 models each have limited battery range that makes them difficult to operate in microtransit services, where daily mileage may exceed its battery range, requiring midday charging. The limited battery range of these options may result in needing additional vehicles above and beyond the quantity recommended in Section 4.4 Ridership Estimates and Simulation Results due to charging requirements. Transit agencies must also allocate sufficient Level 2 EV chargers to charge vehicles overnight at depot locations. Installation of additional EV charging stations can significantly increase the costs of electrification, if needed.

Another potential challenge for electrification is compliance with FTA Buy America regulations. This regulation requires at least 70% of the cost of all vehicles and vehicle components purchased with FTA funds to be produced in the United States, and that final assembly must occur in the United

[87] EV Micro Transit Service Expansion Analysis (2023)
[88] Clean Mobility Voucher Pilot Program (CMO) (2021)
[89] FCRTA Electric Vehicle Rideshare/Carshare/Rural Transit Expansion Plan (2020)
[90] Clean Transportation Needs Assessment for Three Palms Mobile Home Park and RV Park (2020-2021)
[91] Fresno County Regional Long-Range Transit Plan 2019-2050 (2019)
[92] An equivalent quality of service must be provided to passengers requiring a wheelchair. In this scenario, enough cutaways must be maintained for there to be no appreciable difference in wait and journey times between standard and wheelchair-accessible trip requests.

States. While a partial Buy America Waiver was issued in October 2022 for non-ADA minivans and vans used in vanpool services, ADA-accessible vehicles (upfit with aftermarket manufacturing processes) are considered beyond the scope of this waiver.[93] As a result, transit agencies' ability to procure ADA-accessible, electric transit vans and/or minivans from non-domestic manufacturers using FTA funds is limited. Transit agencies that prioritize electrification should instead consider using state or local funding sources (e.g., Measure C or California TDA funds) to support purchases of non-Buy America-certified vehicles with more optimal battery range (e.g. Mercedes eSprinter).

We therefore recommend introducing partial microtransit fleet electrification as a longer-term strategy once microtransit services are mature and vehicle options (particularly in the minivan class) have improved. In the near-term, hybrid-electric, wheelchair-accessible vehicles (e.g. Toyota Sienna) are likely to provide more cost-effective emissions reductions without the performance and regulatory challenges of current vehicle models.

Table 48. Available Vehicle Types for Electrified Microtransit Service

	Toyota Sienna hybrid (minivan)	Kia Niro (crossover compact SUV)	Hyundai Ioniq 5 or Kia Niro (crossover SUV)	Ford eTransit (large passenger vehicle)	Mercedes eSprinter (large passenger vehicle)	Lightning Motors E-450 Shuttle Bus (cutaway)	GreenPower EV Star (cutaway)
							
WAV capability	Yes	No	No	Yes	Yes	Yes	Yes
Passenger capacity per vehicle (non WAV)	6	3	3	10-14 Ambulatory	Up to 12 Ambulatory	18-24 ambulatory	19-24 ambulatory
Passenger capacity per vehicle (WAV)	2 Ambulatory 1 Wheelchair	n/a	n/a	4 Ambulatory 1 Wheelchair	7 Ambulatory 1-2 Wheelchair	16 ambulatory 2 Wheelchair	14 ambulatory 2 wheelchair
WAV Ramp vs. Lift Capability	Ramp	n/a	n/a	Lift	Lift	Lift	Lift
Battery Range	n/a	230 miles	220 miles	140 miles	230 miles	80-120 miles	150 miles

[93] FTA. 2022. "Notice of Partial Buy America Waiver for Vans and Minivans." Federal Register. October 25, 2022.
https://www.federalregister.gov/d/2022-23198/p-17

7. Post-Launch Evaluation and Monitoring

After a service has been launched, consistent monitoring and additional community engagement activities can be used to inform necessary changes to the system. Service design adjustments can also be made to encourage further growth of the service. To assess the performance of microtransit, the project team recommends selecting several Key Performance Indicators (KPIs) to measure whether a service is meeting its goals and objectives. The microtransit software platform's reporting tools should be used to measure these KPIs on a recurring basis, such as weekly or monthly, to identify patterns in performance. As it can take 6-12 months for microtransit ridership to mature, actual performance metrics may fall below these benchmarks during the earliest months of the service's pilot period.

Included in **Table 49** below are suggested KPIs and recommended benchmarks that would be most applicable for an urban/suburban microtransit service, as well as those that would be most applicable in rural microtransit services.

Table 49. Post-Launch Key Performance Indicators

Key Performance Indicator (KPI)	Definition	Why is this important?	What objective does it encourage?	Urban/Suburban Microtransit Service Suggested Benchmarks	Rural Microtransit Service Suggested Benchmarks
Cost per passenger trip	The total operating cost divided by the total ridership	This figure indicates the cost-effectiveness of the service and therefore the ability for transit agencies to sustain the service in the long-term	Less costly vehicles, more efficient maintenance processes, and limited overhead / administration	Cost per passenger trip • Low: <$10/ passenger trip • Medium: $10-$25/ • passenger trip • High: >$25/ passenger trip	Cost per passenger trip • Low: <$20/ passenger trip • Medium: $20-$40/ passenger trip • High: >$40/ passenger trip
Productivity	The average number of passengers boardings per revenue-hour	Ensure that the service design and technology platform groups passengers as efficiently as possible to provide cost-effective service	Fewer vehicles, longer waiting times, longer detours, less customer-centric service design, more efficient balance of supply (vehicles) and demand (requests) can lead to higher productivity and lower cost per passenger trip.	Passenger boardings per revenue-hour • High: >5 • Medium: 2.5-5 • Low: <2.5	Passenger boardings per revenue-hour • High: >3 • Medium: 1.5-3 • Low: <1.5
Service availability	The percentage of trip requests where a vehicle was unavailable due to high demand.	Ensure that there are sufficient vehicles and drivers to provide a reliable service to passengers.	Services with high rates of denied trips often require more vehicles to meet demand.	Percentage of trips denied • Low: <5% • Medium: 5-10% • High: >10%	Pre-booked microtransit services operating in rural areas must have sufficient vehicle supply to accommodate ride requests. Tolerance for denied trip requests is typically very low (below 3%), as riders often will not have an

Key Performance Indicator (KPI)	Definition	Why is this important?	What objective does it encourage?	Urban/Suburban Microtransit Service Suggested Benchmarks	Rural Microtransit Service Suggested Benchmarks
					alternate means of transportation available (e.g. fixed-route).
Shared ride duration percentage (aggregation)	Share of passenger ride time in which the vehicle is occupied by more than one passenger	Ensures that the service is efficiently grouping passengers and limiting vehicle mileage	Longer vehicle detours, longer wait times, and more concentrated ridership patterns lead to more efficient trip sharing	Percentage of passenger ride time: • High: >70% • Medium: 40-70% • Low: <40%	Service in rural areas may de-prioritize this metric, as there is often insufficient ridership to allow for significant ride-sharing
Wait time	The average time a passenger waits between requesting a trip (or the communicated pickup time, in a pre-booked service) and being picked up	Ensures that sufficient vehicles are operating to meet customer demand while also ensuring the service does not have too many vehicles, leading to inefficient service.	More vehicles, shorter waiting times, longer detours, more customer-centric service design can create shorter wait times.	Minutes • Low: 5-15 min • Medium: 15-25 min • High: 25 min+	
On-time performance at pickup and dropoff	Percentage of passengers picked up or dropped off within their scheduled travel window.	Ensures that pre-booked trips are completed within the communicated window (e.g., “arrive by” or “depart at” windows of 30 minutes).	Additional vehicles, longer buffers between passenger trips can improve on-time performance in pre-booked services.		On-time performance: • High: >98% • Medium: 95-95% • Low: <95%
Customer satisfaction	The average rating provided by passengers, ranked from one to five stars (one being very unsatisfied, five being very satisfied)	An indicator of whether customer-facing aspects of the microtransit service are performing well.	More vehicles, shorter waiting times, shorter detours, more customer-centric service design, and improved customer support can lead to	Stars (out of five): • High: 4.8+ • Medium: 4.6+ • Low: <4.5	Stars (out of five): • High: 4.8+ • Medium: 4.6+ • Low: <4.5

Key Performance Indicator (KPI)	Definition	Why is this important?	What objective does it encourage?	Urban/Suburban Microtransit Service Suggested Benchmarks	Rural Microtransit Service Suggested Benchmarks
			higher customer satisfaction. However, these shifts operate against any potential gains in service productivity.		

8. Marketing and Rider Education

The ability to move conveniently and affordably around one's community is essential to residents' health and wellbeing. Transit service offered by FAX, Clovis Transit, and FCRTA plays a crucial role in enabling this movement in people's everyday lives, and any changes to these systems — even positive ones — can naturally be a source of apprehension. A proactive approach to community engagement not only helps mitigate concerns, but can turn those in the community who could potentially be opponents of change into advocates. When launching a microtransit service, support from the community is essential, both to ensure a smooth launch and to set the service up for continued success and growth.

Therefore, it is essential that transit agencies conduct community engagement and marketing activities in advance of launching new microtransit services. Since microtransit services lack the physical infrastructure of other public transit services, building awareness through marketing and rider education efforts is needed to increase support for the incoming service.

Pre-Launch. Community engagement should begin several months before launch, giving transit agency staff adequate opportunity to incorporate feedback from stakeholders, and potentially to adjust service design. Starting community engagement early in the launch process also helps preempt passenger and stakeholder concerns through thorough education about service offerings. Engagement can build off the survey and stakeholder outreach that was conducted as part of this study. To continue this process:

1. Identify subcommunities that may be sensitive to service changes, or might require personalized outreach in order to adapt service. Examples of communities that should play a central role in community engagement efforts are included in **Table 50**.

__Table 50__ Groups and stakeholders for targeted engagement.

Customers with High Barriers to Entry	Stakeholder Groups Sensitive to New Services or Service Changes
Seniors	Driver employee unions
People with limited English proficiency	Rider advocacy groups
Riders who do not have, or prefer not to use smartphones	Elected officials
Riders with disabilities	Civic and business leaders
ADA paratransit customers	Major local employers

Once key stakeholders have been identified, steps can be taken to preemptively address their concerns. For example, if accessibility is an expected concern, riders can be advised that wheelchair-accessible vehicles will be made available to those who need them.

2. Develop materials that engage with likely responses to the new service to proactively answer questions. These materials can include pamphlets, mailers, videos, or physical or digital advertisements. The materials should explain the mechanics of the new service, service zone/routes, how to book a ride, and fares and payment options. Be sure to address how passengers in high-barrier groups will be able to access the service such as including information around phone booking, voucher payment, and accessibility features.

3. Speak with advocacy groups, elected officials, civic and business leaders, and major local employers as part of the broader community outreach.

Launch. Leading up to the launch of new on-demand transit service, the transit agency can continue its community engagement strategy through three channels:

- **Stakeholder Organizations.** The transit agency should re-engage with key stakeholder groups, such as those represented by this study's Stakeholder Committee, to enlist their help in publicizing key information about the service. Helpful organizations may include libraries, health or recreational centers, middle and high schools, assisted living facilities, civic groups, and social services organizations. These organizations can help create informational materials that are relevant to the audiences they serve and can help distribute these materials.

- **Customers with high barriers to entry.** The operator can build a list of users who are likely to have trouble accessing service and conduct phone calls to help them create accounts (if applicable), and alleviate any concerns they may have. This may be their first interaction with public transit and can impact how much they promote the service to their peers, so it's important to keep the communication open and keep a detailed record of their feedback, both positive and negative.

- **The public.** The transit agency should make information available to the public by posting information about service changes as early as possible and in as many places as possible. Posting physical signage (e.g., at local bus stops, small businesses, libraries, or parks/recreation facilities) is recommended to explain the new service, along with posting information digitally on local websites and transit agency social media accounts.

Post Launch. After the service has been launched, community engagement activities can inform continuing improvements to the system. The transit agency can re-engage stakeholder communities to see how service is going, and identify opportunities for improvement. Stakeholder organizations can also play a central role in continuing to promote service to their constituent communities.

Marketing is an important step to ensure the public is aware of the new microtransit service, both to ensure existing riders are prepared for potential changes to service, and to attract new customers to the system. Creating sustained awareness of the microtransit service prior to launch is essential, and some of the following strategies may be useful:

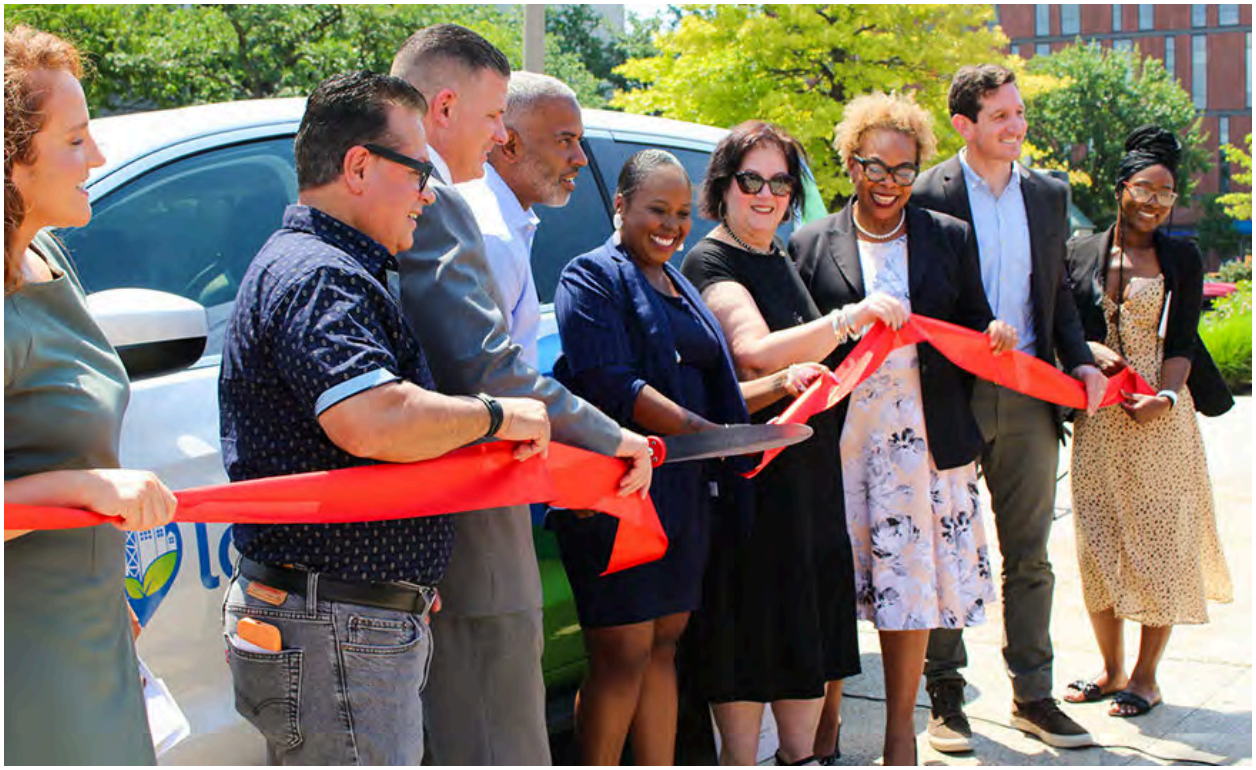
- **Webpage.** Create a dedicated website for the service with key service information.
- **Press release.** Develop a pre-launch press release for distribution in local media.
- **How-to video.** Create a short, informative video on how to use the service and share it on the service website and social media.
- **Targeted outreach.** Targeted emails or print and social media advertisements (see example at right). Targeted outreach, including "how-to" instructions, may be particularly useful for seniors and at assisted living communities.
- **Community announcements.** Announce the transit service in municipal communications, newsletters, school district, and community/recreation center communications
- **Street marketing.** Placing wrapped (branded) vehicles in high foot traffic areas throughout the county can increase awareness and encourage conversation about the service.

The transit agency can conduct marketing activities in phases to ensure success at each phase of the service's lifecycle, this is detailed in **Table 51**.

***Table 51**. Marketing activities timeline.*

	Pre-launch	Months 1-3	Months 4+
Focus	Establish marketing channels and develop materials	Promote service visibility and attract first-time riders	Continue attracting customers and retain customers with engagement promotions
Activities	• Design marketing materials • Begin pre-launch awareness: social media, local press, and local government outlets	• Digital (social media) and physical ads (flyers, direct mail, bus station signage). • Press releases • Events and direct public engagement	• Rider surveys and focus groups • Referral campaigns • Promotion of discounted tickets and referral campaigns • Outreach to specific communities

Above left to right, clockwise: 1) Direct mail flyers to area residents are a recommended strategy for improving awareness of microtransit in advance of a service's launch. These flyers can accompany municipal newsletters or even utility bills. 2) Mockup of a "how-to" brochure created to instruct riders how to create accounts in a microtransit smartphone app. These brochures are recommended for rider groups with a high barrier to entry, such as seniors. 3) and 4) Out-of-home (OOH) advertising such as billboards and signage at existing bus shelters can significantly drive awareness and adoption of microtransit.



Above: Hosting a press conference to celebrate the launch of microtransit service with local stakeholders is an excellent way to spread awareness in the community and increase local enrollment. Source: Via

9. Accessibility/Equity Policies

Fresno County's microtransit service zone(s) should be accessible so that all potential riders have access to the service, including passengers with disabilities, and those without smartphones and credit cards. The following accessibility measures are recommended:

- **Riders with limited mobility.** For a microtransit service, the entire fleet does not necessarily need to be wheelchair-accessible. This is because wheelchair-accessible vehicles (WAVs) can be strategically deployed for passengers who require them. If a mixed accessibility fleet is acquired, the service should include at least 20% WAV, with minimum one WAV. If the service only has 1-2 vehicles, such as in one of the rural microtransit opportunity areas outlined in Section 4.4 Ridership Estimates and Simulation Results, all vehicles should be WAVs. About two to five percent of trips are expected to require an accessible vehicle. A fleet in which one-fifth of the vehicles are WAVs will ensure an equivalent quality of service can be offered for riders using wheelchairs, thus complying with ADA policies.

  To make the microtransit booking process accessible to passengers with disabilities, the software platform should remember a passenger's need for a WAV and ensure that a WAV request is the default for their future bookings. It should then automatically assign those passengers to vehicles with an available wheelchair position. Some passengers may be unable to walk to meet a vehicle but do not require a WAV. In those cases, riders can be offered a curb-to-curb trip in any vehicle. It is important to decide who is eligible for curb-to-curb service. Some agencies choose to have riders self-identify as having limited mobility when creating an account. Others limit these door-to-door requests to eligible riders who have formally enrolled as ADA paratransit customers. To enroll as an ADA paratransit customer, FAX and Clovis Transit each require riders to complete an eligibility form and have their disability status verified through an in-person evaluation by their medical provider.
- **Riders with hearing, vision, or cognitive impairments.** Riders should be able to voluntarily indicate their disability status, either directly through the app or by notifying the customer support agent at the time of booking. This information can be used to modify the service to better adapt to their needs, whether it's through enabling curb-to-curb pick-up and drop-offs or notification to the driver to provide additional assistance. Voiceover (reads the text on the screen aloud for those with visual impairments), adaptive font size, and Switch Control app capabilities can also make the request process easier for some riders. For a fixed-route bus, information can be provided in multiple formats, for example, with voice announcements and on screens with large font text.
- **Microtransit Booking.** For a microtransit service, the public should have multiple options to request rides. In addition to the smartphone app for booking trips, offering phone booking options can ensure passengers without smartphones (or those who prefer not to use an app) can access the service. Dispatchers should be able to easily book on-demand microtransit rides for riders calling in. Those who do not book with a smartphone but have SMS capabilities (i.e., texting) should have the option to receive text updates about their rides.

- **Payment.** Passengers should be able to pay for services with several different options, which may include physical or digital vouchers (purchased in cash at community centers and other key locations), prepaid debit cards, or cash in fareboxes on board the vehicle. For riders that prefer paying with cash, there should be opportunities to purchase vouchers or passes at kiosks or key destinations such as recreation centers, libraries, or grocery stores. Some agencies choose to operate cashless services, as cash payments can slow down the boarding process, introduce additional logistics around collecting cash from vehicles, and be costly for the agency to collect.
- **Language.** To ensure the service is accessible to non-English speakers, signs, public information, and microtransit apps can be made available in multiple languages. Using clear and universal symbols in the rider app and in official communications can also make it easier for non-native English speakers to use the system.