



**KINGS-TULARE COUNTY
CROSS-VALLEY CORRIDOR
PHASE 1 OPERATIONS PLAN**

**EXISTING
CONDITIONS
AND MARKET
ASSESSMENT**



June 10, 2024

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EXECUTIVE SUMMARY



This Existing Conditions and Market Assessment presents the background information and existing travel conditions in the proposed Cross Valley Corridor.

Included is a summary of previous studies and policy documents, an analysis of current and forecast total travel, and an assessment of the services and usage of the current public transit systems in the corridor.

By 2030, more than 600,000 people will live in Kings and Tulare Counties. Total travel within reasonable catchments of the CVC stations currently exceeds 130,000 daily trips and will likely increase almost 10 percent by 2030.

Kings and Tulare Counties are connected to the statewide rail system at the San Joaquin Amtrak Station in Hanford. Pre-pandemic about 500 to 600 passengers boarded and alighted the trains daily at Hanford. The station is adjacent to the existing KART transit center, providing additional local access for train passengers. In addition, in pre-pandemic years, the dedicated Amtrak connecting Route 18 (Visalia to Santa Maria) was used by almost 15 percent of all Amtrak Hanford passengers. Current ridership on the Amtrak trains at Hanford is about half the 2019 total. Route 18 ridership is only 10 percent of the previous total.

Currently transit service is provided by three key intercommunity operators in the Corridor. Visalia Transit carries the most passengers annually and has a fleet of more than 50 buses. The Tulare County Regional Transit Authority has more than 62 buses operating in cities other than Visalia, and Kings Area Rural Transit uses about 25 buses to provide service in Hanford, Lemoore and to other Kings County locations. It should be noted that the Fresno County Rural Transit Agency provides service to Huron, but this is outside the initial corridor.

Most existing transit passengers (34 percent on average)¹ in the two counties lack a car and have low wages. The pandemic resulted in ridership losses of almost two-thirds on each of the three primary systems, however over the last fiscal year ridership is starting to rebound. Key impediments to using transit at the current time are infrequent service, the limited connections between services and travel times that are two to four times greater than an automobile trip.

Future ridership potential is a key consideration for the CVC study and the corridor. A key consideration is the schedule 2030 start of California High Speed Rail at a new station three miles east of Hanford. The new HSR service will not only be faster but will run more frequently than the current Amtrak San Joaquins.

A fast, frequent Cross Valley bus service with regular, clock schedules may be able to provide a service that attracts additional potential customers and better connects with the new high-speed rail service, leverages the state's investment in high-speed rail and positions the region to eventually upgrade a successful bus service to a high-quality rail service. Based on an initial review of other existing high-quality services and the study of existing and forecasted travel patterns, it is estimated future demand for the CVC initial bus service between Lindsay and Lemoore could range from about 700 passengers daily to about 6,500 daily riders by 2030.

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INTRODUCTION



This Existing Conditions and Market Assessment presents the background information and existing travel conditions in the proposed Cross Valley Corridor.

Included is a summary of previous studies and policy documents, a study of current and forecast total person trips, and an assessment of the service and usage of the current public transit systems in the corridor.

The report considers and analyzes the overall travel (total person trips) in the station catchments (areas that can reasonably expect people to access the CVC service) between and through each station to provide an understanding of the total current corridor travel. Demand elasticities related to transit service frequency and network coverage are then applied to this person trip demand to develop a range of ridership for the potential CVC Phase I bus service.

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PREVIOUS STUDIES



Studies concerning the reuse or re-envisioning of the San Joaquin Valley Railroad corridor from Porterville to Huron span almost 30 years

Recently adopted transit studies describe both short- and long-term recommendations for how to improve the management, operations, and quality of existing bus services operating in the CVC. The following summaries focus on the elements of each study most relevant to the CVC Phase 1 Operations Plan.

CROSS VALLEY CORRIDOR PLANS AND STUDIES

Cross Valley Rail Feasibility Study

Korve, 1995

This first study considering reestablishment of rail passenger service in the Huron to Hanford to Visalia to Porterville corridor occurred in 1995. No passenger rail service has operated along the corridor for almost 100 years. The study divided the corridor up into three implementation options (East Side, Central, and Full Corridor) and developed preliminary ridership estimates, along with operating and capital costs.

The full corridor ridership, with trains operating every 30 minutes in peak periods and hourly at other times, was estimated to range between 5,000 daily passengers at startup to more than 25,000 daily passengers by 2020. Operating costs ranged from \$8 million annually (\$16 million in 2023) to \$11 million (about \$25 million in current dollars). Farebox recovery ranged from 30 percent to about 60 percent. Capital costs were estimated at about \$57 million (about \$150 million in current construction dollars).

Cross Valley Rail Feasibility Study Phase II

Korve, 1997

The 1995 Korve study's rail plan was considered by Kings and Tulare stakeholders to be infeasible due to "the estimated cost of upgrading the rail corridor and the operating subsidy required, combined with the overall transportation funding shortage situation." As a result, the Phase II study focused on "preserving and acquiring the rail corridors for future public use and to plan for future passenger rail service by developing appropriate land use policies for implementation by local jurisdictions."

The Phase II study recommended an Action List of 12 items, with a focus on right-of-way preservation, consideration of active trail use along the right-of-way, and land use changes that would be supportive of an eventual rail corridor. In addition, the study identified four thresholds for consideration of rail transit implementation:

- Doubling of highway peak vehicular volumes
- Traffic triggering major highway investments
- New funding
- Air quality regulations that require changes in travel behavior

Cross Valley Rail Corridor Passenger Rail Study

RL Banks, 2004

Following up on the 1997 study, this study considered the costs and benefits of a revised service and capital plan. Under this plan, service would operate every 90 minutes throughout the day and have an annual operating cost of about \$4.7 million (\$7.7 million in current dollars). However, ridership was very low with only about 300 daily passengers projected to use the service. Total capital costs were estimated at \$65 million (about \$150 million today). Notable capital items included a new signaling system, and a flyover of the Union Pacific at Goshen Junction.

Cross Valley Corridor Plan

Mott MacDonald, 2018

The most recent detailed study of the Lemoore to Visalia/Porterville high-quality transit service, the effort considered six modes (bus rapid transit, light rail, heavy rail, diesel or electric multiple unit trains, commuter rail, as well as other more niche modes). Service was considered to operate from Huron to Porterville using the existing SJVR alignment with connections to the current Amtrak service in Hanford and the future high speed rail service east of Hanford. Notably, the plan used California Department of Finance population estimates that increased the service area population by almost 90 percent.

The study was comprehensive, and included considerations of economic and commercial development, impacts on real estate markets, financing options, and a comprehensive assessment of connecting transit services and improvements to the urban and street environment. As a result of this analysis the diesel rail multiple unit mode (DMU) was chosen for further study and development. The study found DMU service possessed the greatest potential to provide an

efficient and flexible transit service at moderate costs relative to the other modes considered. A key consideration was DMU compatibility with the existing rail infrastructure, future stop cadence, and existing and future freight operations.

The anticipated service plan called for 30-minute service in the peak periods and 60-minute service at other times, with trains operating from 6am to 11pm 7 days a week. Total annual operating costs were estimated at \$36 million. While a phasing plan was identified (with bus service as the initial phase), the total capital cost to implement a DMU rail service in the entire corridor ranged from \$350 to \$490 million.

The high priority next steps recommended:

- Right-of-way and station site preservation
- Enacting transit friendly land use changes near station locations
- Improving urban design and providing public realm improvements
- making street, bike, and pedestrian physical improvements

A phasing plan was developed: Phase 1 Bus Service plan recommended a coordinated bus service coincident with the opening of high speed rail, effectively extending the reach of HSR to Huron and Porterville via Hanford and Visalia.

After successful bus service implementation, rail service would begin between Lemoore and Visalia, with bus feeders on either end of the corridor, and the final phase would provide rail service from Huron to Porterville.

Final South of Merced Integration Study Report

SJJPA/AECOM, 2021

As part of the phased implementation of high-speed rail service into the Central Valley, the South of Merced Study identifies how rail services will be integrated and connected, and considers alternatives for communities that lose rail services when HSR begins. The study also considers connections to the new HSR stations, and for the Kings-Tulare Station summarizes the findings of the 2018 Cross Valley Study. The South of Merced Study makes the following recommendations related to the Cross Valley service:

- Execute an MOU to commit to work in partnership with TCAG and KCAG to plan, secure funding, and implement Cross Valley Rail.
- In the MOU, identify the following steps for the implementation of Cross Valley Rail:
 1. Phase 1 will secure environmental clearance and right-of-way protection, conduct site selection, negotiate with freight railroads, and begin transit stations in communities without existing transit centers.
 2. Phase 2 will implement passenger rail service between Lemoore and Visalia (with stations at Hanford and Kings/Tulare HSR Station).
 3. Phase 3 will extend passenger rail service to Huron and Porterville with additional intermediate stations at NAS Lemoore, Farmersville, Exeter, and Lindsey.
- In the MOU, identify SJJPA as a potential operating agency for Cross Valley Rail.
- Acknowledge that additional and more detailed agreements will be needed and that parties would agree to work together toward achieving common agreed upon goals.

It is noted that in 2021 the MOU was executed between TCAG, KCAG, KART, the City of Visalia (Transit Department), TCRTA and the SJJPA. A key takeaway from the MOU is the agreement that SJJPA intends to partner with the following existing local/regional transit operators: KCAPTA, Visalia Transit, and Tulare County Regional Transit Agency regarding feeder bus service to Hanford, Corcoran, and Visalia. SJJPA intends to request state funds to contribute to a larger, more frequent, and coordinated bus service that will coincide with the opening of Merced Bakersfield HSR Interim Service. This partnership to enhance bus service will be key towards the implementation of Phase 1 of 2018 TCAG Cross-Valley Corridor Plan.

San Joaquins Stations Connectivity/ Strategies & Recommendations Study

SJJPA/AECOM, 2022

The Stations Connectivity Study considered connectivity to San Joaquins stations, particularly focusing on improving access to disadvantaged communities. In reference to the existing Hanford station, the study recommended:

- Supporting the development of the Cross Valley Corridor (first for bus service and then rail) and the Corcoran-Hanford Bus Service.
- Requesting funding in the 2022 SJJPA Business Plan for additional Kings County Area Public Transit Agency and/or Visalia Transit bus service between Hanford and Visalia.

California State Rail Plan Draft

Caltrans, 2023

As an update to the previous 2018 SRP, the new 2023 draft identifies the Cross Valley Corridor bus phase implementation as a near-term project, with hourly service between Porterville and Lemoore. The text notes that the “Cross Valley is a vital link to the existing east-west rail corridor between the cities of Huron and Porterville in the Central San Joaquin Valley. With a proposed California High-Speed Rail Station located in the middle of the Corridor, there is an opportunity to improve connectivity and mobility throughout the communities and cities in Tulare, Kings, and southwest Fresno Counties.” In the long-term vision, the CVC is transitioned into a full rail service.

TRANSIT STUDIES

County of Tulare 2015-2020 Transit Development Plan

TCAG, 2015

The County of Tulare 2015-2020 Transit Development Plan (Tulare County TDP) presented service, capital, and financial recommendations for Tulare County Area Transit (TCAT). Prior to the formation of TCRTA, TCAT consisted of nine fixed routes (four intercity and five local circulator routes), paratransit, and a general public dial-a-ride service. The primary objectives of the Tulare County TDP were to evaluate TCAT operations, identify opportunities for service improvements, design a five-year service plan, and identify capital and financial requirements for the proposed service plan.

Fixed route recommendations included:

- Increase fares.
- Add additional weekend service on the County Route 30 (Northeast County).
- Increase weekday service frequencies on County Route 10 (North County).
- Increase weekday service frequencies on County Route 40 (South County).
- Procure and install electronic fare payment technology.
- Purchase new buses annually.

Tulare County Long Range Transit Plan

Nelson\Nygaard, 2017

The Tulare County LRTP was adopted in 2017 and presents a long-term vision for public transit that can be used to guide future investments. The LRTP identifies ten transit priorities to be implemented from 2019 to 2032.

These priorities are as follows:

- Implement a simplified countywide fare structure.
- Develop countywide transit materials, including a system map, interactive transit guide, and Google Transit information.
- Develop a multi-agency, 20-year vehicle acquisition plan that emphasizes low/no emissions buses.
- Simplify and expand intercity fixed routes.
- Improve headways of TCAT and Porterville Transit routes.
- Implement regional fare collection technology and mobile ticketing.
- Implement rapid transit along Mooney Boulevard.
- Offer real-time information for all fixed-route services using one app.
- Establish and/or expand the region's transit centers, including in Exeter and Lindsay.
- Work towards a JPA between Tulare County transit providers and eventual consolidation of providers.

Some of these priorities have since been implemented, such as the formation of the TCRTA JPA and the development of the TCRTA Zero-Emission Bus Rollout Plan (2023). Project recommendations from the Tulare County LRTP were incorporated into the 2022 RTP as well.

Tulare County Regional Transit Coordination Study

SBLB with Multimodal Solutions, 2019

In order to improve the provision of transit services in Tulare County, TCAG initiated the Tulare County Regional Transit Coordination Study (RTC Study) to assess how to best consolidate the multiple county transit systems into a single regional network. The resulting study served to advance one of the Tulare County LRTP's priority strategies of working towards a Joint Powers Agency (JPA) between the Tulare County transit providers.

The transit systems reviewed in the study were Tulare County Area Transit, Visalia Transit, Porterville Transit, Dinuba Area Regional Transit, Tulare Intermodal Express, and the Woodlake Dial-a-Ride. The RTC Study ultimately recommended a One Region model that would start with the formation of a JPA. The RTC Study then outlined key implementation steps to ensure fair governance, adequate funding, and streamlined operations under the new management structure. Since the completion of the RTC Study, all of the Tulare County transit systems have been consolidated into the Tulare County Regional Transit Authority (TCRTA) with the exception of Visalia Transit.

Kings County Transit Development Plan LSC, 2021

The Kings County TDP was adopted in 2021 and provides short-term service recommendations for KART. The study was initiated right at the beginning of the COVID-19 pandemic; therefore, the TDP presents options to either increase or to reduce service levels depending on the pace of ridership recovery.

KART service recommendations were as follows:

- Eliminate the Hanford Flex Route.
- Reinstate later Saturday service in Hanford and Lemoore (by one to two hours).
- Reinstate later weekday fixed route and complementary paratransit services (by one to two hours).
- Based on survey feedback generated by Fresno passengers, begin providing on-call service midday on the KART Fresno Route, and eliminate poorly performing off-peak one-way runs.
- Develop a pilot volunteer driver program with mileage reimbursement.
- Offer a Medi-Van service to bring passengers from Avenal and Kettleman City into Hanford and Lemoore for medical appointments.

Tulare County Regional Transportation Plan

TCAG, 2022

The most recent update of the Tulare County Regional Transportation Plan (RTP) was adopted in 2022 and identifies projects and strategies to be implemented through 2046. Countywide goals included in the RTP related to transit are to:

- Integrate transit into growth and development
- Identify transit-friendly corridors and arterials
- and continue to work towards implementing express bus service and bus rapid transit where feasible.

The RTP reiterates the recommendation included in the Tulare County Long Range Transit Plan (LRTP) to further coordinate transit services in the county. It also recommends that Tulare County stakeholders continue to promote transit services which improve connectivity along the CVC. Similar to the CVC Plan (2018), the RTP recommends first investing in increased bus service along the corridor before later initiating rail service. The objective of the CVC Phase 1 Operations Plan is to guide this first stage of transit service improvements.

Kings County Regional Transportation Plan

KCAG, 2022

KCAG adopted the most recent update of the Kings County RTP in 2022. The current RTP describes strategies and projects to be implemented through 2046. Three public transit operators are discussed within the plan: Kings Area Rural Transit (KART), Corcoran Area Transit (CAT), and Amtrak San Joaquins. Some of the transit projects recommended in the RTP are as follows:

- Install bus shelters across Kings County.
- Construction of the new KART Intermodal Station in Hanford. The Station will include a Transit Center, bus bays, electric vehicle (EV) chargers, a bike station, and solar panels.
- Convert KART fleet to zero-emissions buses (ZEBs) through new vehicle purchases.

The Kings County RTP also discusses the anticipated impacts of the California Central Valley HSR, the Cross Valley Rail, and eventual termination of the San Joaquin rail service in Merced. The RTP emphasizes KCAG's commitment to providing bus services which ensure connectivity to the region's rail network and maximize the benefits of the HSR (once available).

03

STUDY AREAS AND PHASE 1 COMMUNITY PROFILES

This Existing Conditions Report also includes a Market Assessment of the CVC Corridor.

To provide a reasonable consideration of actual travel in the corridor that could use an upgraded Cross Valley Bus Service, it was necessary to identify and review the proposed rail stops from the 2018 study and develop prudent updates.



RECOMMENDED CHANGES FROM THE 2018 CROSS VALLEY CORRIDOR PLAN

The Existing Conditions Report also includes a Market Assessment of the CVC Corridor. To provide a reasonable consideration of actual travel in the corridor that could use an upgraded Cross Valley Bus Service, it was necessary to identify and review the proposed rail stops from the 2018 study and develop prudent updates. As part of this process, the consultant team reviewed the bus routing and updated the stop locations. This process was reviewed by the Steering Committee. The purpose of these changes was to balance respecting the recommendations of 2018 Study on stops and routings while taking advantage of the bus route's greater flexibility to serve larger traffic generators not directly on the rail line. A further consideration was to develop the most potentially successful initial route – balancing operating cost with potential ridership and overall operability.

The expectation is that these routing changes would lead to successful implementation and relatively high passenger use, which, in turn, leads to greater momentum for the eventual rail service.

Phasing of the CVC service was identified in Task 4 of the CVC Phase 1 Implementation Study which specifically identified interim focused routings (and is consistent with the SJJPA-local agencies MOU). After discussions with TCAG and the stakeholders, the initial service focuses on service frequency improvements to the existing Hanford-Visalia route, while the most reasonable initial express bus routing coincident with HSR implementation considered spanned 62 miles from NAS Lemoore to Lindsay, serving limited numbers of stops. This routing was chosen as the best balance between demand, cost and operating feasibility and includes considerations on the ability to provide enroute charging at the NAS Lemoore and Lindsay terminals.

Most of the CVC rail stops were maintained, however there were some routing and stop alterations that were considered and reviewed by the stakeholders. These can generally be summarized as follows:

Downtown Visalia Routing

The CVC Rail service would use the existing tracks on Oak Street and serve the Visalia Transit Center. After some discussion, two changes were recommended and advanced:

- Due to conflicts between buses and freight trains, the bus route was removed from Oak Street;
- The bus route was changed based on feedback from the transit operators to service the College of the Sequoias and the Kaweah Health Medical Center.

Additional stops were added for the College of the Sequoias and the Medical Center, and also for the residential area centered on North Akers and West Goshen.

Hanford Routing

The Hanford routing initially uses the existing KART transit center adjacent to the Amtrak Station, and adds a stop at the new transit center on Brown and 8th Street, and then moves the Amtrak stop to the new HSR station in 2030.

NAS Lemoore

The CVC Rail Study recommended a stop midway between the NAS administrative area and the airfield. There is nothing in this location. The most optimal location for a terminal is within the administrative area and adjacent to a Navy electrical substation, allowing for an important enroute charging location. Since the bus service requires this charging location, it was reasonable to provide direct access through the base with a local stopping pattern as it does not impact any through passengers and provides good access for the Navy, an important stakeholder.

The 2018 Cross Valley Corridor Plan proposed 14 stop locations for bus and rail service along the Cross Valley Corridor. Error! Reference source not found. summarizes the consultant team's recommended changes from the CVC Plan for Phase 1 stop locations.

Table 1: Recommended Changes from the 2018 Cross Valley Corridor Plan

Jurisdiction	2018 Cross Valley Corridor Plan	Proposed Changes
Huron	Bus	Deferred during proposed Phase 1 Cross Valley Corridor
Naval Air Station Lemoore	Bus	Keep, propose 7 stop locations
Lemoore	Bus phased to future rail	Keep, propose 2 stop locations
Hanford	Bus phased to future rail	Keep, propose 2 stop locations
Kings-Tulare High Speed Rail Station	Bus phased to future rail	Keep, stop will be operational once HSR begins
Goshen	Bus	Keep, propose 1 stop location
Dinuba	Bus	Remove from proposed Phase 1 Cross Valley Corridor
Visalia	Bus phased to future rail	Keep, propose 4 stop locations
Tulare	Bus	Keep for consideration as a BRT extension
Farmersville	Bus	Keep
Exeter	Bus	Remove from proposed Phase 1 Cross Valley Corridor
Woodlake	Bus	Remove from proposed Phase 1 Cross Valley Corridor
Lindsay	Bus	Keep
Porterville	Bus	Deferred during proposed Phase 1 Cross Valley Corridor

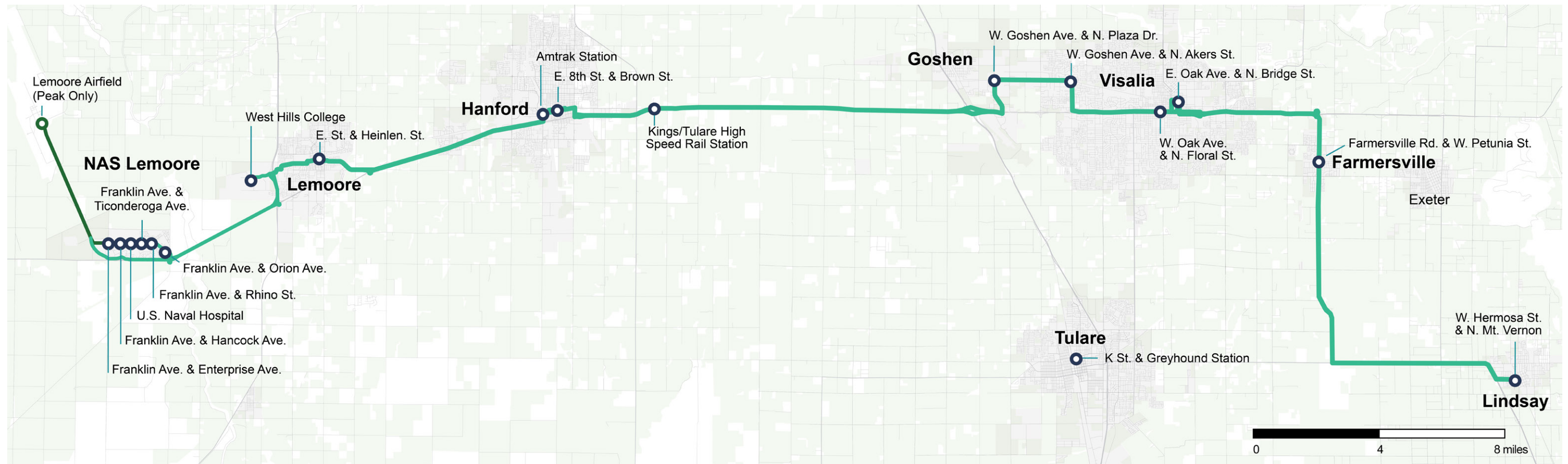
OVERVIEW OF THE PROPOSED PHASE 1 CROSS VALLEY CORRIDOR

The proposed Phase 1 Cross Valley Corridor Service includes a total of 19 stops between Lemoore and Lindsay in each direction, and additional local stops within NAS Lemoore as in Table 2 and Figure 1. These stops are preliminary recommendations based on the Existing Conditions and Market Assessment findings outlined in this report; stop locations will be finalized as part of the Task 5 Service and Operating Plan.

Table 2: Proposed Phase 1 Cross Valley Corridor Bus Stop Locations

Jurisdiction	Number of Proposed Stops	Stop Location(s):
Naval Air Station Lemoore	7	Lemoore Airfield Gate (peak only) Franklin Avenue & Enterprise Franklin Avenue & Hancock Avenue U.S. Naval Hospital (Franklin Medical Center) Franklin Avenue & Ticonderoga Avenue Franklin Avenue & Rhino Street Franklin Avenue & Orion Avenue
City of Lemoore	2	West Hills College Lemoore Train Station
City of Hanford	2	Hanford Amtrak Station at 7th Street (Until CAHSR) Hanford Transit Center at E 8th Street & N Harris Street
Unincorporated Kings County	1	Kings-Tulare High Speed Rail Station (upon initiation)
City of Visalia	4	W Goshen Avenue & Alta Avenue W Goshen Avenue & Akers Street W Oak Avenue & N Floral Street E Oak Avenue & N Bridge Street
City of Tulare	1	K Street at Greyhound Bus Stop
City of Farmersville	1	Transit Center
City of Lindsay	1	Transit Center

Figure 1: Proposed Cross Valley Corridor Full Operating Segment



COMMUNITY PROFILES

Picture 1 : Aerial view of NAS Lemoore base



Image Credit: U.S. Navy (N.d.)

Naval Air Station Lemoore

Naval Air Station (NAS) Lemoore is a U.S. Navy base located at the convergence of northwestern Kings and Fresno counties. Lemoore Station, a census-designated place within the base and Kings County, was the geography selected for analysis since the base’s boundaries extend across two counties.

NAS Lemoore is the U.S. Navy’s largest Master Jet Base and houses more than half of the U.S. Navy’s aircraft fleet. It is a significant employment and economic driver for the San Joaquin Valley. In 2019, the base generated \$947 million for Kings County and provides almost 8,500 jobs. The base serves approximately 6,400 military members, 1,300 civilians, and 10,900 dependents.

Seven total stops are proposed for the base for Phase 1 of the Cross Valley Corridor. The proposed stops are predominantly located along Franklin Avenue, with a terminal location adjacent to the base electrical substation. A peak period only stop is proposed at the airfield gate.

Figure 2 : NAS Lemoore Proposed Stops and Trip Catchments



Table 3 : NAS Lemoore Summary Information

Year	Total Population	Population Density	Jobs
2010	7,890		
2021	6,692	1,580.7 people/sq. mile	514 (2020)
% Change	-15.2%		

Sources: ACS 2010 & 2021 5-Year Estimates, LEHD 2020

City of Lemoore

Lemoore is an incorporated city in northern Kings County located at the intersection of Highway 41 and Highway 198. The nearby Naval Air Station Lemoore serves as a large employment center for city residents. Lemoore is also known for the presence of West Hills College Lemoore, a local community college with more than 4,000 students³.

Two stops are proposed within the City of Lemoore for Phase 1 of the Cross Valley Corridor: one at E Street near Follett Street and the second to serve West Hills College Lemoore.

Figure 3 : City of Lemoore Proposed Stops and Trip Catchments



Picture 2 : West Hills College Lemoore



Image Credit: West Hills College Lemoore (N.d.)

Table 4 : City of Lemoore Summary Information

Year	Total Population	Population Density	Jobs
2010	23,901		
2021	26,631	3,021.4 people/sq. mile	3,876 (2020)
% Change	+11.4%		

Sources: ACS 2010 & 2021 5-Year Estimates, LEHD 2020

Picture 3 : Aerial view of Downtown Hanford Civic Center Park



Image Credit: Main Street Hanford (N.d.)

City of Hanford

Hanford is an incorporated city in northeastern Kings County and the county seat. It is the most populous city in Kings County with almost 59,000 residents as of 2021. Hanford is bound by State Route 198 to the south and State Route 43 to the northeast. The city is home to a diverse economy, including large activity centers such as the Hanford Municipal Airport and the Kings County Fairgrounds.

Two stops within the City of Hanford are proposed for Phase 1 of the Cross Valley Corridor: one at the existing Hanford Amtrak station and a second at the intersection of East 8th Street and North Harris Street which will be the location of the future Hanford Transit Center (when operational). After HSR initiation, the Amtrak stop will be discontinued.

Figure 4 : City of Hanford Proposed Stops and Trip Catchments

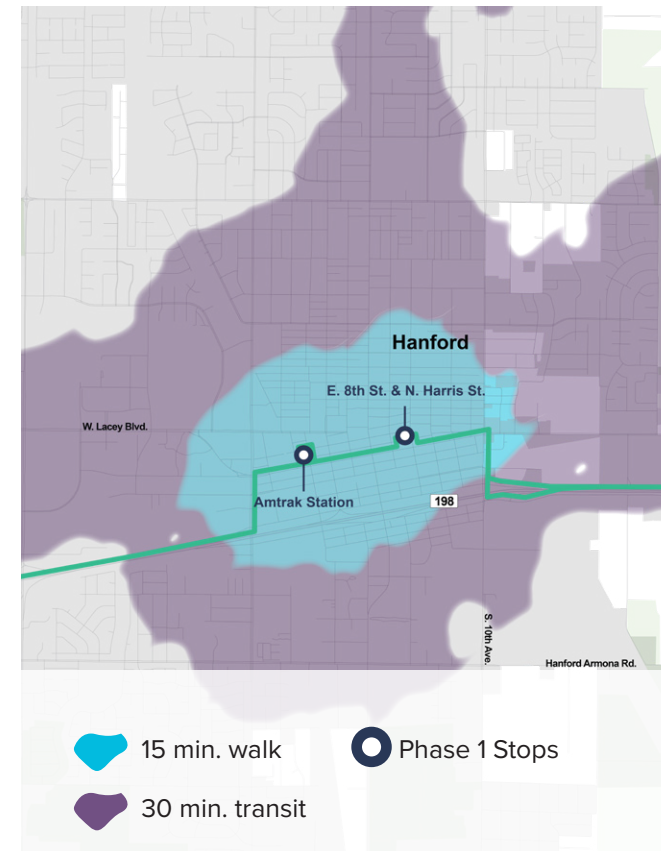


Table 5 : City of Hanford Summary

Year	Total Population	Population Density	Jobs
2010	52,315		
2021	57,359	3,296.5 people/sq. mile	14,579 (2020)
% Change	+9.6%		

Table Sources: ACS 2010 & 2021 5-Year Estimates, Total Jobs by Work Area, LEHD 2020

Kings/Tulare High Speed Rail Station

The Kings/Tulare High speed rail station is a planned high-speed rail hub with connections throughout California. Located in unincorporated Kings County near the intersection of State Route 198 and State Route 43, the station will serve as a critical regional hub for both Kings and Tulare counties.

The proposed station includes facilities to provide regional transit connectivity to feed the statewide high-speed rail corridor that will be operational beginning in 2030-2033.

Picture 4 : Ongoing construction at Kings/Tulare HSR station



Image Credit: Arup(2023)

Picture 5 : Conceptual rendering of Kings/Tulare HSR Station



Image Credit: California High Speed Rail Authority (2022)

Table 6: Kings/Tulare HSR Summary Information

Year	Total Population	Population Density	Jobs
2010	3,740		
2021	3,004	30.5 people/sq. mile	2,284 (2020)
% Change	-19.7%		

Table Sources: ACS 2010 & 2021 5-Year Estimates, Total Jobs by Work Area, LEHD 2020

Picture 6 : Visalia Fox Theatre



Image Credit: Downtown Visalia (N.d.)

City of Visalia

Visalia is an incorporated city in northwestern Tulare County and the county seat. It is the most populous city in Tulare County and the Cross Valley Corridor study area with about 143,000 residents as of 2021.

In addition to serving as the county seat, Visalia plays an important role as a major agricultural, logistics and economic center for Tulare/Kings County area with more than 50,000 jobs, the largest in the Cross Valley Corridor study area. Visalia is also regarded as a tourism hub for visitors traveling to Yosemite, Sequoia, and Kings Canyon National Parks.

Five stops within the City of Visalia are proposed for Phase 1 of the Cross Valley Corridor: one in West Visalia, another at Goshen and Akers, and three in Downtown Visalia.

Figure 5 : City of Visalia Proposed Stops and Trip Catchments

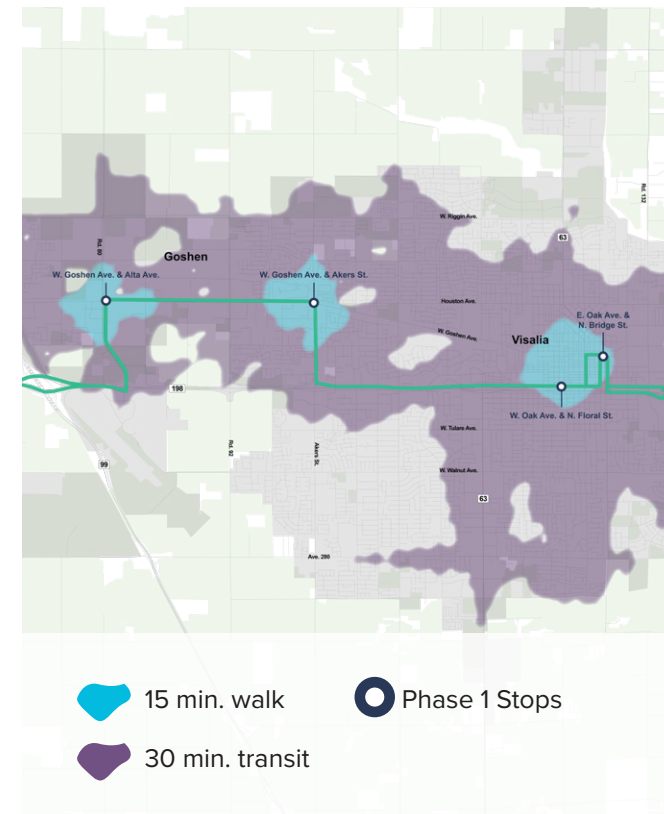


Table 7 : City of Visalia Summary Information

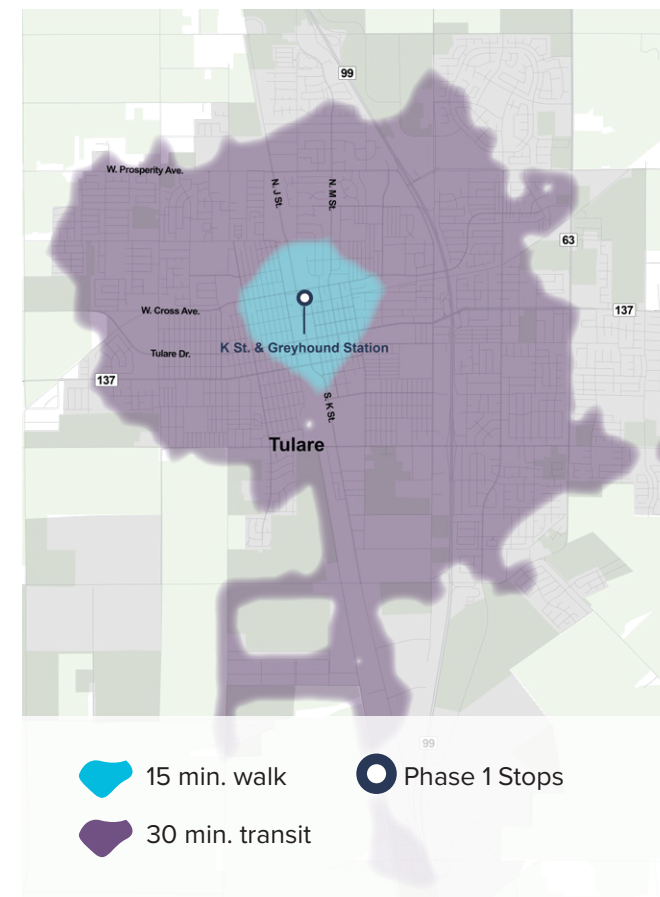
Year	Total Population	Population Density	Jobs
2010	119,312		
2021	143,000	3,763.6 people/sq. mile	53,790 (2020)
% Change	+17.4%		

Table Sources: ACS 2010 & 2021 5-Year Estimates, Total Jobs by Work Area, LEHD 2020

City of Tulare

Tulare is an incorporated city in western Tulare County located at the intersection of SR-99 and SR-137. The city has a diverse economy including major employers in food processing, logistics and distribution centers, and agriculture. Tulare is also home to the World Ag Expo, the world’s largest agricultural exposition.

Figure 6 : City of Tulare Proposed Stops and Trip Catchments



Picture 7 : Aerial view of Downtown Tulare



Image Credit: California.com (2023)

Table 8: City of Tulare Summary Information

Year	Total Population	Population Density	Jobs
2010	56,938		
2021	68,385	3,427.7 people/sq. mile	12,759 (2020)
% Change	+20.1%		

Table Sources: ACS 2010 & 2021 5-Year Estimates, Total Jobs by Work Area, LEHD 2020

Picture 8 : Park located in Farmersville

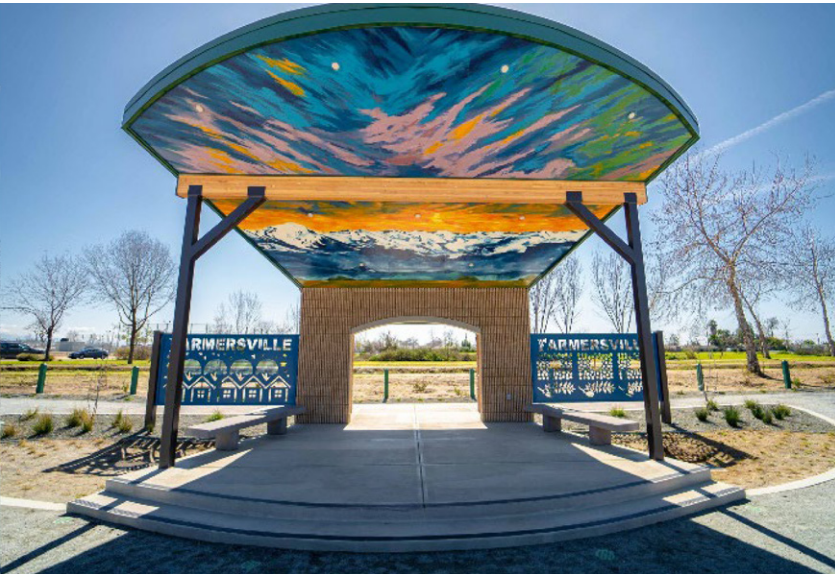


Image Credit: City of Farmersville Facebook (2023)

City of Farmersville

Farmersville is an incorporated city in western Tulare County located east of Visalia along SR-198. With about 10,000 residents as of 2021, Farmersville is one of the smallest cities in the Cross Valley Corridor study area.

One stop within the City of Farmersville is proposed for Phase 1 of the Cross Valley Corridor.

Figure 7 : City of Farmersville Proposed Stops and Trip Catchments

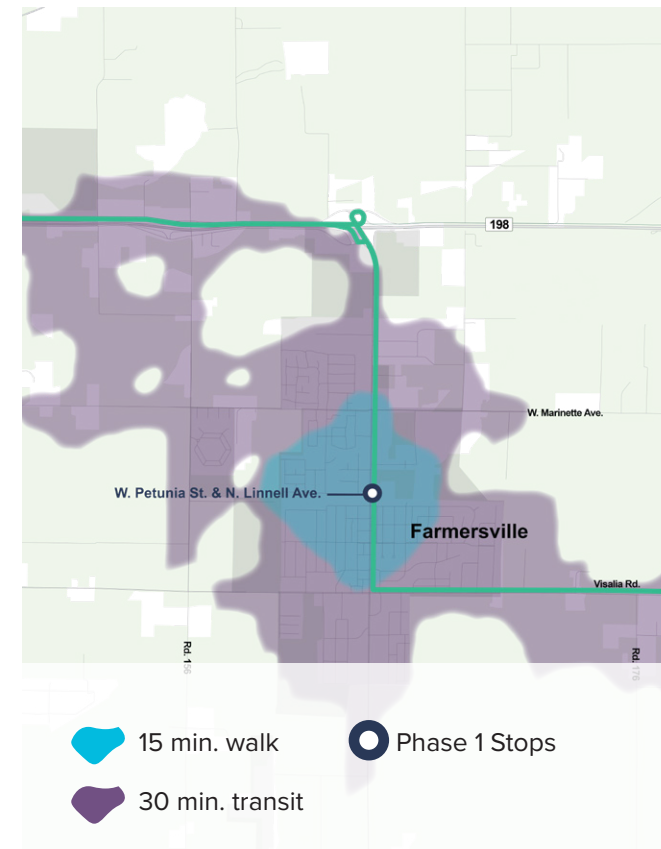


Table 9 : City of Farmersville Summary Information

Year	Total Population	Population Density	Jobs
2010	10,282		
2021	10,441	4,743.3 people/sq. mile	670 (2020)
% Change	+1.5%		

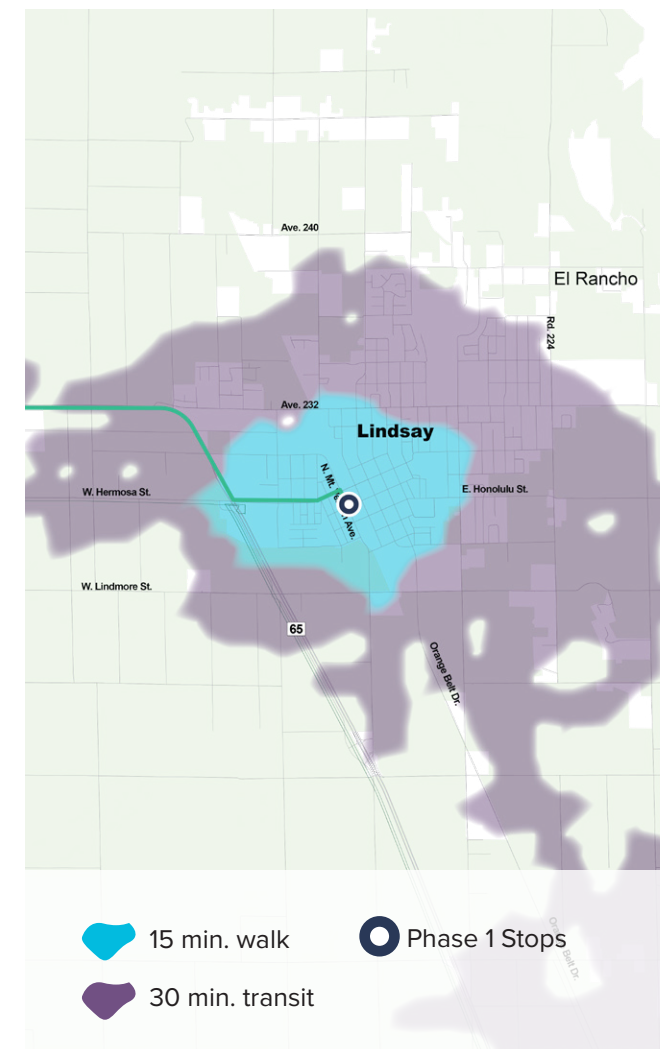
Table Sources: ACS 2010 & 2021 5-Year Estimates, Total Jobs by Work Area, LEHD 2020

Lindsay

Lindsay is an incorporated city in western Tulare County directly east of SR-65. It is one of the smallest cities within the Cross Valley Corridor study area with about 12,000 residents as of 2021.

One stop within the City of Lindsay is proposed for Phase 1 of the Cross Valley Corridor. This stop includes provision for enroute charging.

Figure 8 : City of Lindsay Proposed Stops and Trip Catchments



Picture 9 : Lindsay City Hall



Image Credit: City of Lindsay (2015)

Table 10: City of Lindsay Summary Information

Year	Total Population	Population Density	Jobs
2010	10,139		
2021	20,349	4,205.3 people/sq. mile	6,247 (2020)
% Change	+2.1%		

Table Sources: ACS 2010 & 2021 5-Year Estimates, Total Jobs by Work Area, LEHD 2020

04

DEMOGRAPHICS AND EMPLOYMENT

The purpose of this section is to identify any socioeconomic population indicators that may influence ridership and inform service planning considerations for the proposed Cross Valley Corridor Phase 1 locations.



PURPOSE AND METHODOLOGY

Findings are based on information from the American Community Survey (ACS) 5-Year Estimates and the Longitudinal Employer-Household Dynamics (LEHD) job totals reported by Work Area. For stops within an incorporated city, an aggregation of all census tracts within the city limits was used to summarize results.

Census tracts with boundaries that extend outside city limits were assigned to the unincorporated county; because of this, the results below may vary slightly from totals collected by each city. For NAS Lemoore, the Lemoore Station census-designated place was used for the geography of analysis, and for the King-Tulare High Speed Rail Station, Census Tract 1 was used.

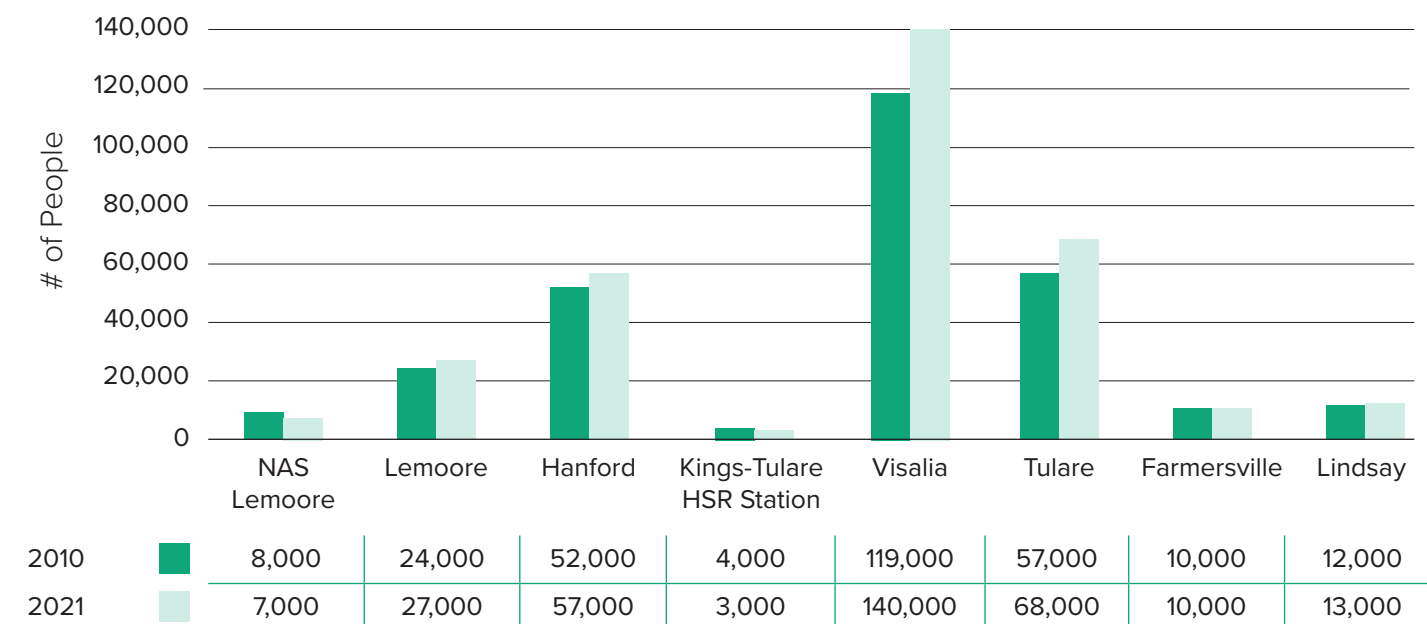
CORRIDOR FINDINGS

Population Change

The City of Visalia has the largest population within the Cross Valley Corridor initial study area with about 143,000 residents as of 2021, while the cities of Farmersville and Lindsay are the smallest.

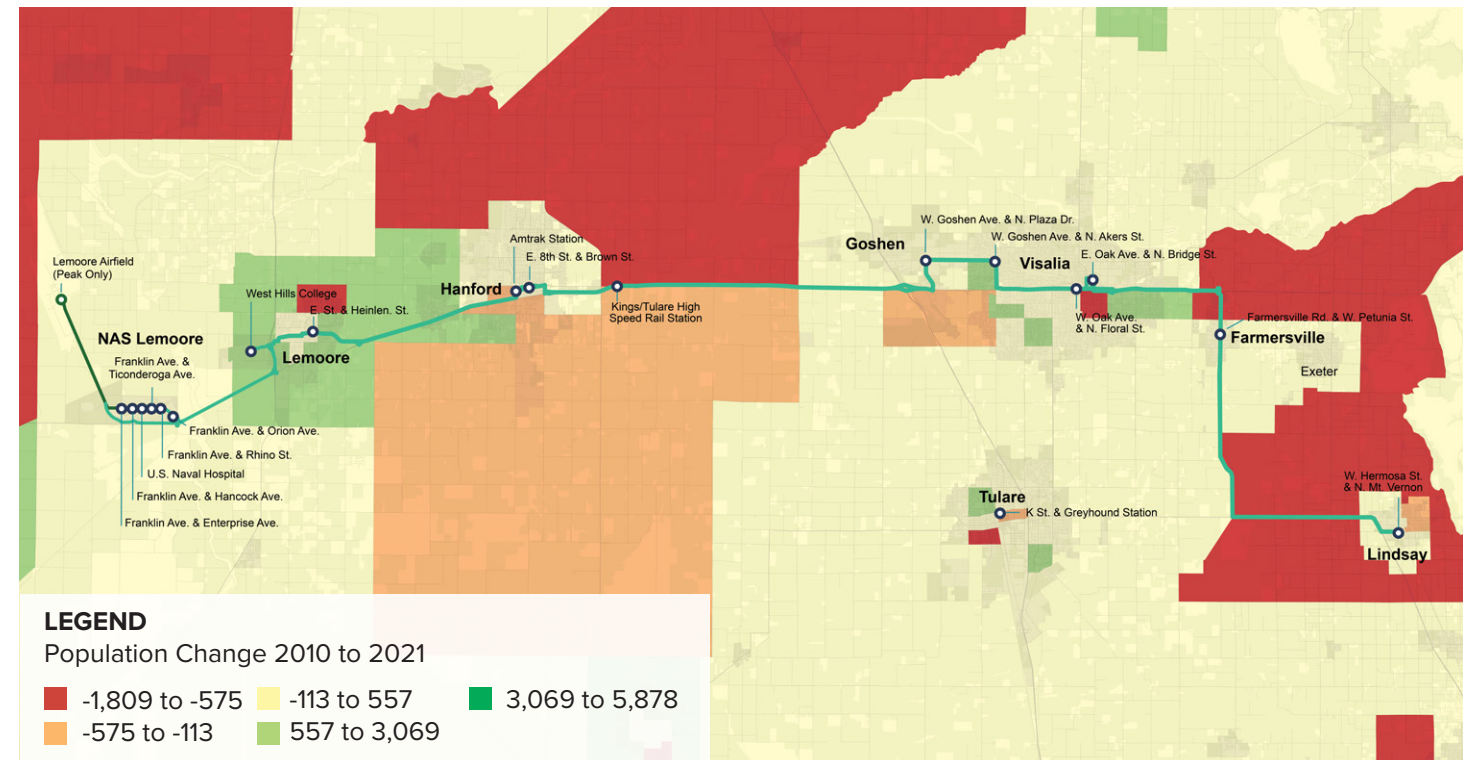
Population growth from 2010 to 2021 within the Cross Valley Corridor has been highest in census tracts near Lemoore and western Hanford. The census tracts surrounding the Kings/Tulare high speed rail station and the cities of Farmersville and Lindsay have experienced population declines. Note that Porterville, which has been previously identified as the rail terminal, has a population of about 63,000.

Figure 9: 2010-2021 Population Change at Proposed CVC Phase 1 Stops



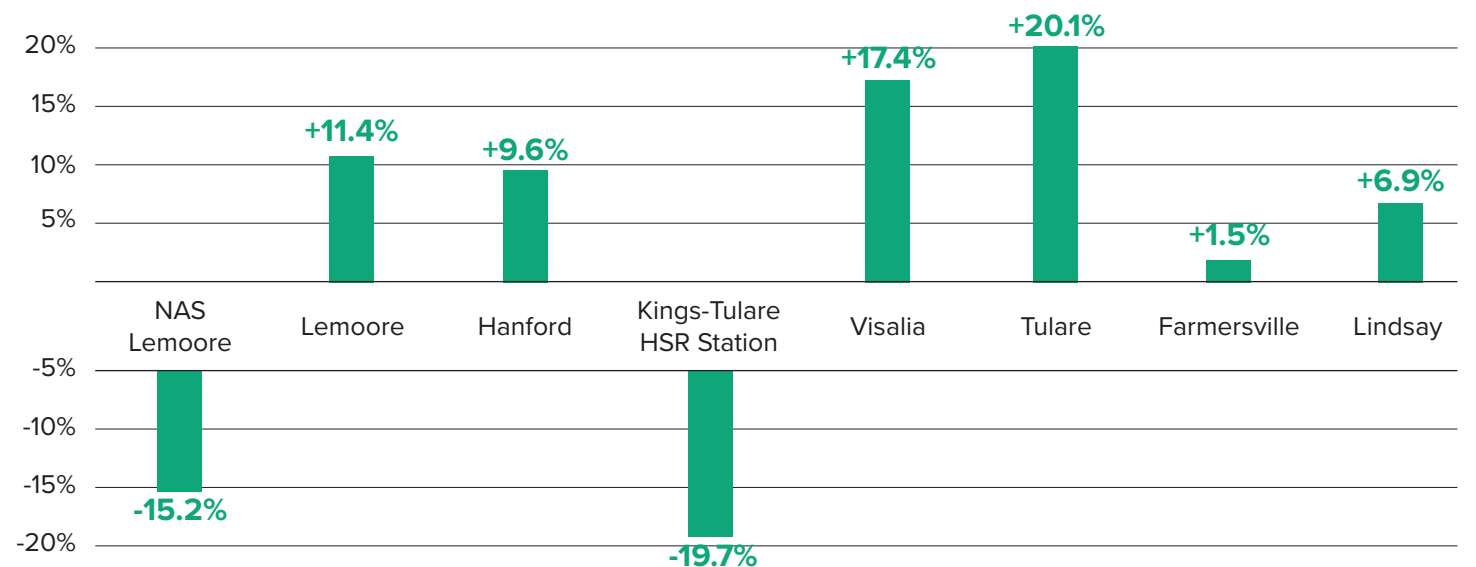
Sources: Table B03002, ACS 2010 & 2021 5-Year Estimates

Figure 10: 2010-2021 Population Change



Sources: Table B03002, ACS 2010 & 2021 5-Year Estimates

Figure 11: 2010-2021 Population Change at Proposed CVC Phase 1 Stops

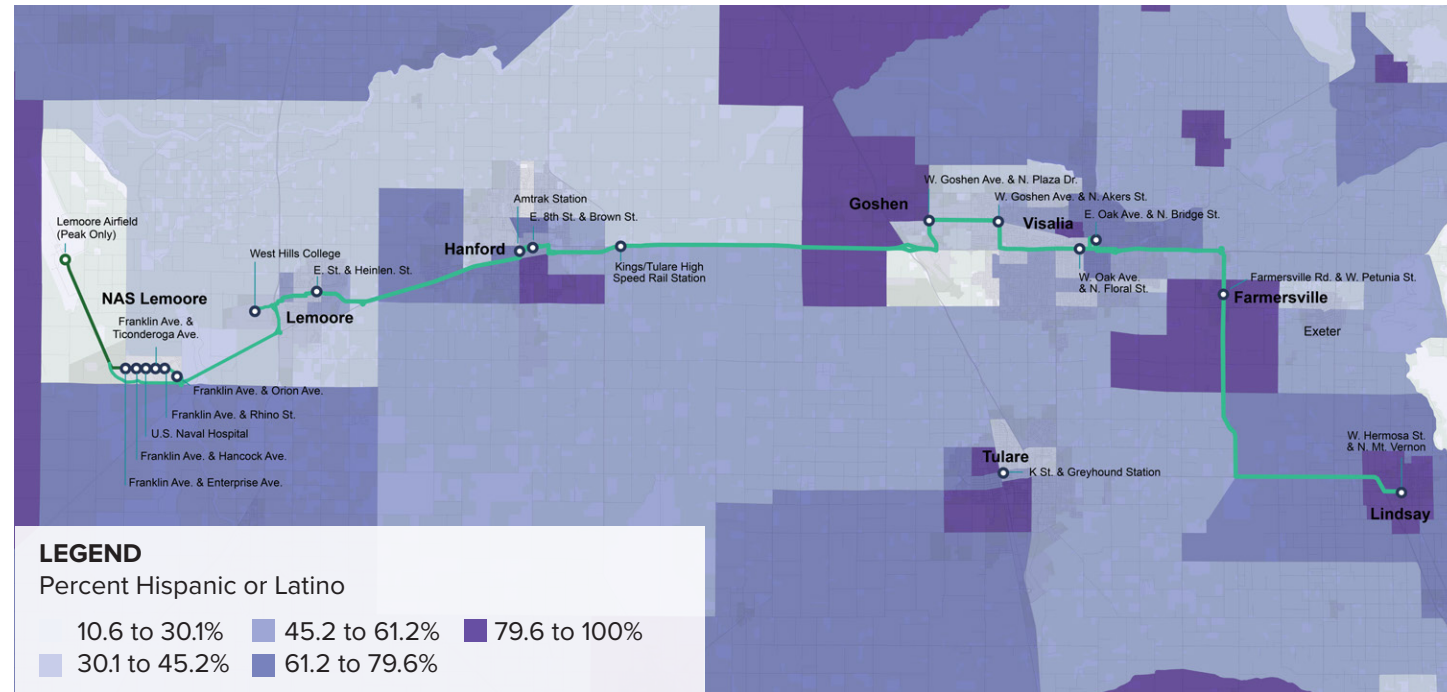


Sources: Table B03002, ACS 2010 & 2021 5-Year Estimates

Population Characteristics - Hispanic Origins and Race

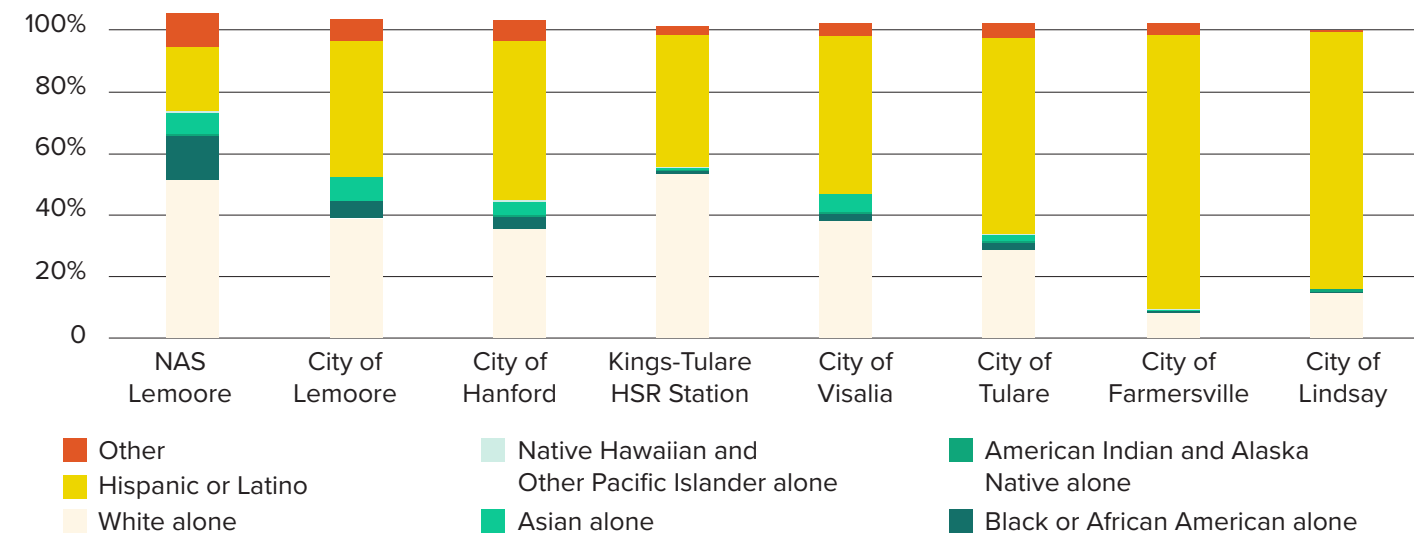
For most jurisdictions, more than half of the population residing in census tracts within the Cross Valley Corridor study area are Hispanic. In nearly all jurisdictions, more than 50 percent of the population identifies as a race other than White.

Figure 12: Percent of Population Hispanic Origins



Sources: Table B03002, ACS 2021 5-Year Estimates

Figure 13: Population Hispanic Origins & Race at Proposed CVC Phase 1 Stops

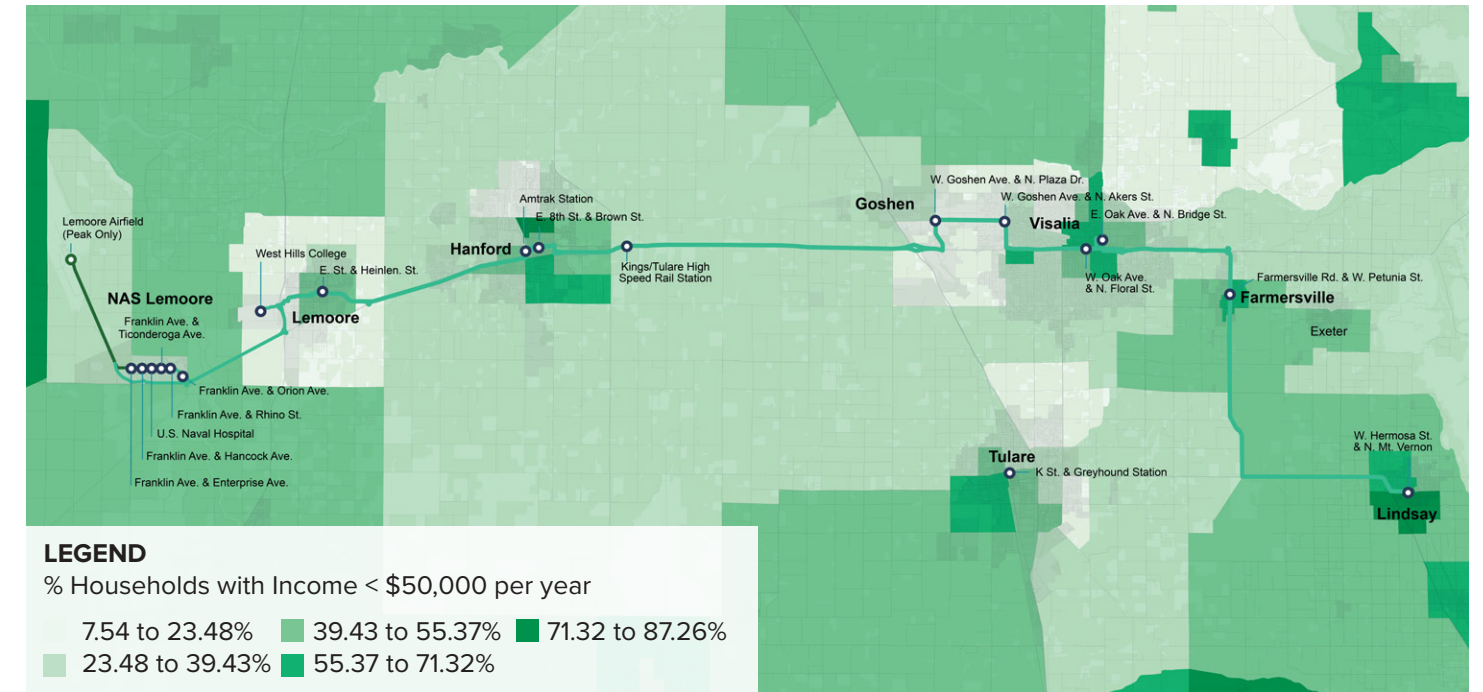


Sources: Table B03002, ACS 2021 5-Year Estimates

Population Characteristics - Household Income

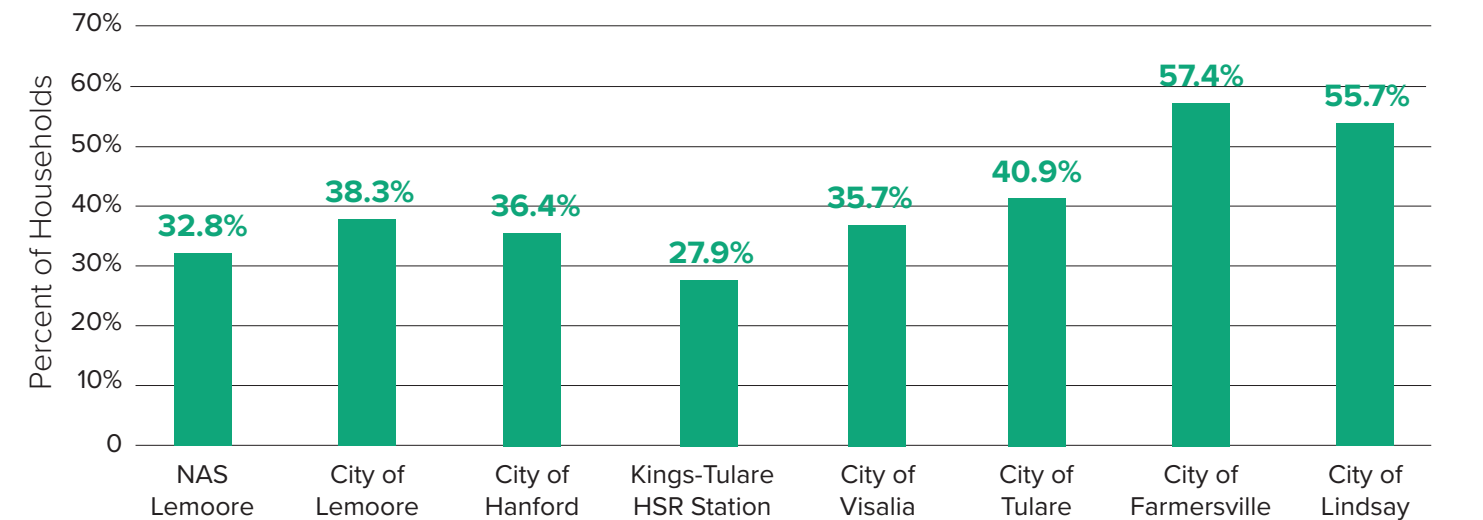
For most jurisdictions, one third of the total households have median annual incomes below \$50,000. Low-income populations are highest in census tracts near Downtown Hanford and Visalia as well as the cities of Farmersville and Lindsay.

Figure 14: Percent of Households Making Less than \$50,000 per year



Sources: Table B19001, ACS 2021 5-Year Estimates

Figure 15: Households Whose Median Household Income is Less than \$50,000 at Proposed CVC Phase 1

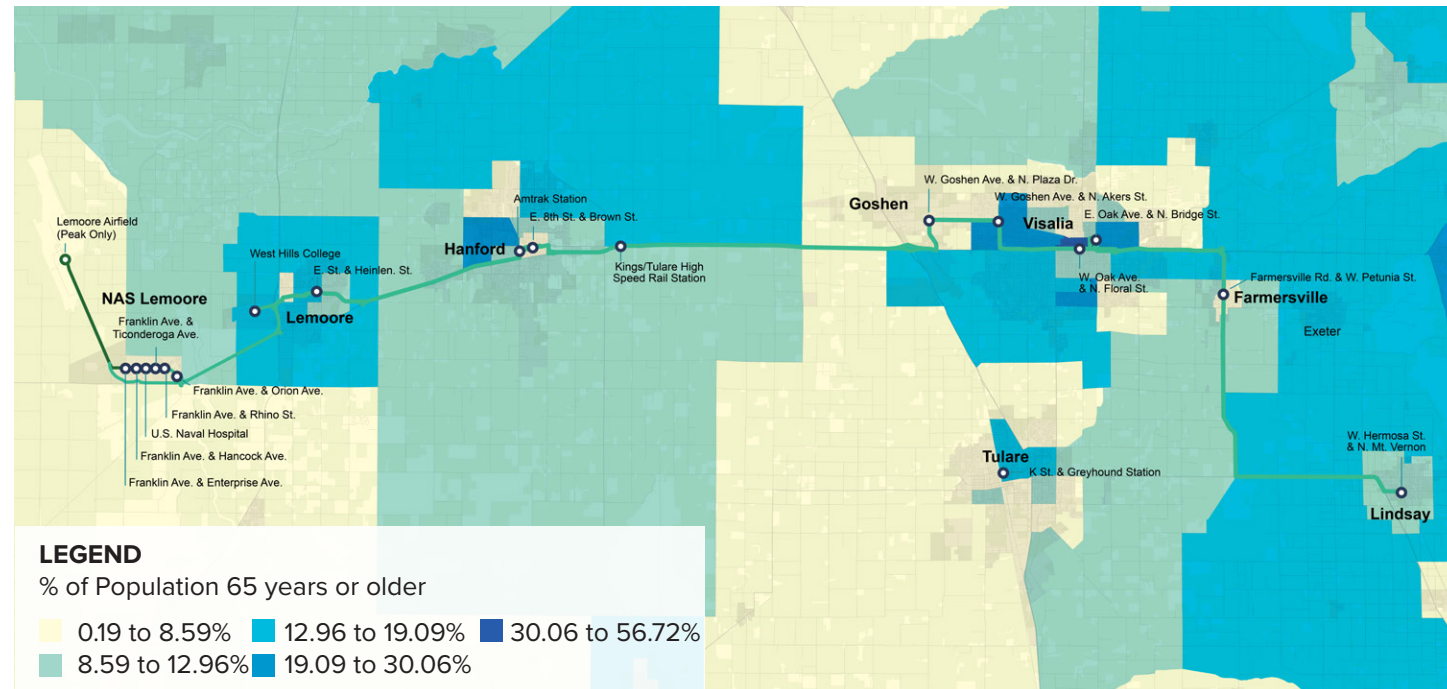


Sources: Table B19001, ACS 2021 5-Year Estimates

Population Characteristics - Residents Age 65+ Years Old

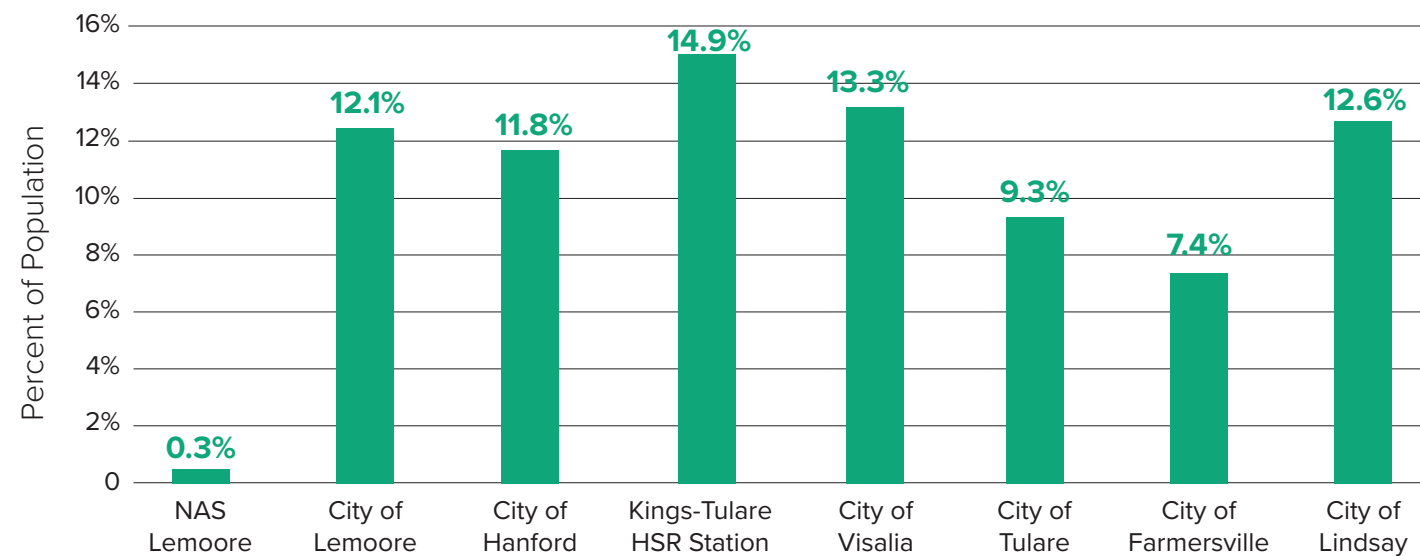
Western Hanford and Western Visalia as well as the cities of Lemoore and Lindsay have the highest concentrations of older residents.

Figure 16: Percent of Population Age 65+ Years Old



Sources: Table B01001, ACS 2021 5-Year Estimates

Figure 17: Population Age 65+ Years Old at Proposed CVC Phase 1 Stops

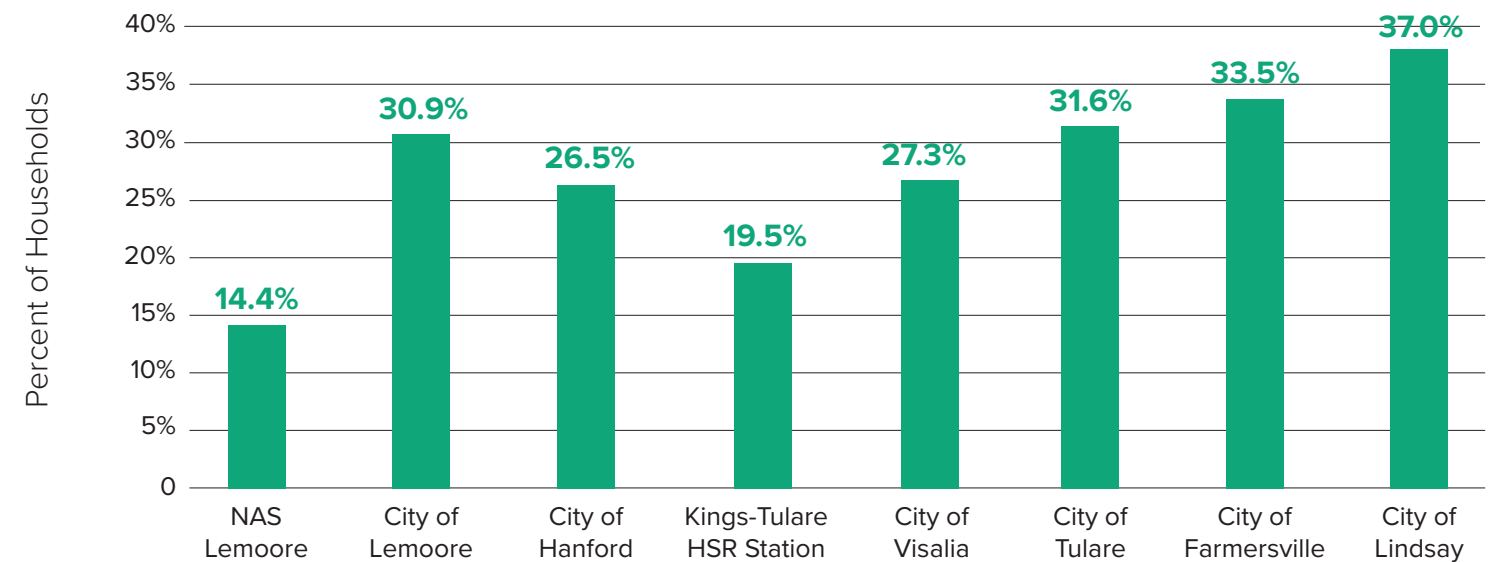


Sources: Table B01001, ACS 2021 5-Year Estimates

Population Characteristics - Persons with Disabilities

Nearly one-third of the total population for each jurisdiction within the proposed Phase 1 Cross Valley Corridor has a disability.

Figure 18: Percent of Households with 1 Or More Persons with a Disability at Proposed Phase 1 CVC Stops

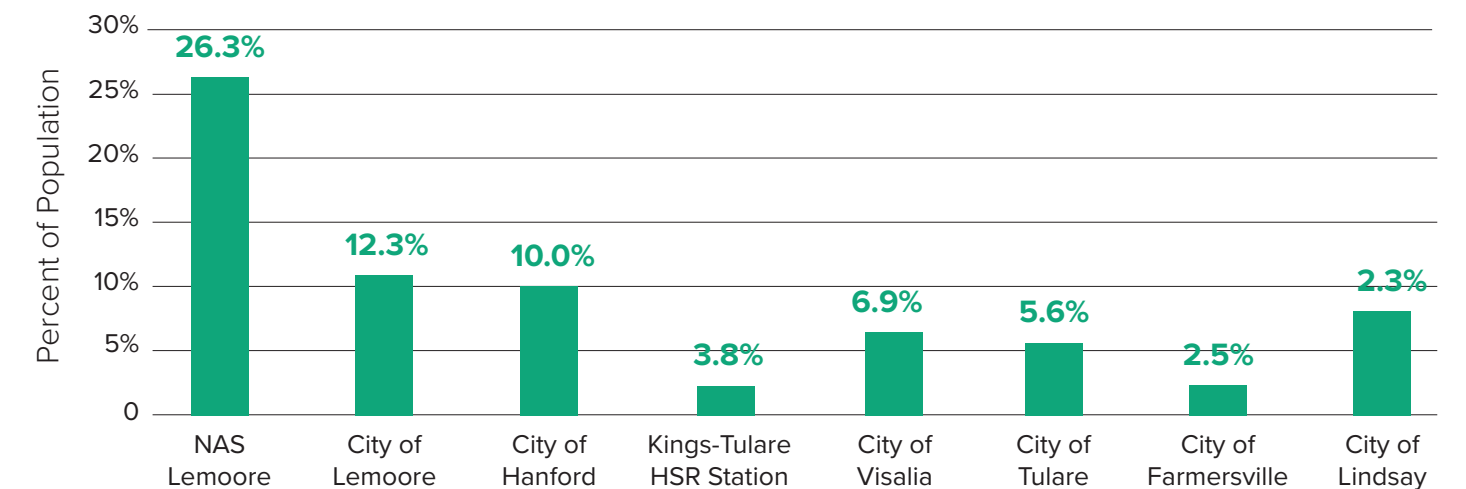


Sources: Table B22010, ACS 2021 5-Year Estimates

Population Characteristics - Veterans with Disabilities

The veteran population within the proposed Phase 1 Cross Valley Corridor is highest at NAS Lemoore and the City of Lemoore.

Figure 19: Percent of Population with Veteran Status at Proposed Phase 1 CVC Stops

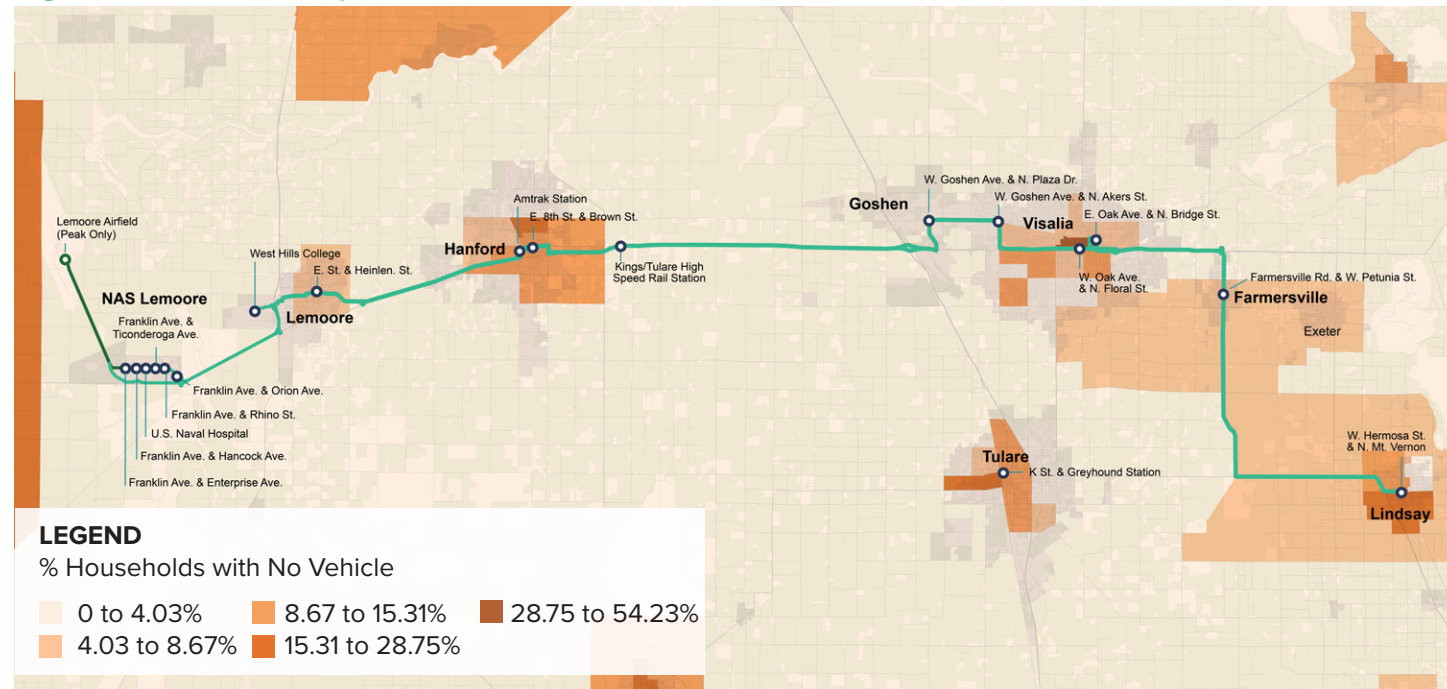


Sources: Table B210003, ACS 2021 5-Year Estimates

Population Characteristics - No Vehicle Access

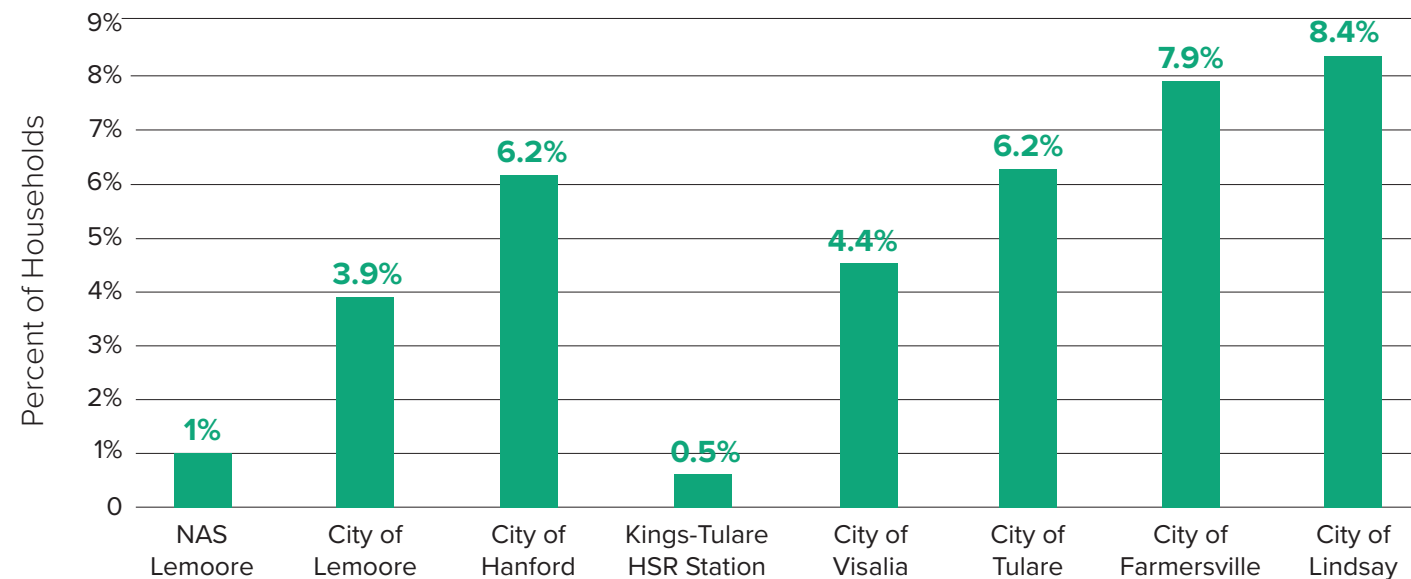
Citywide vehicle access rates are relatively high, however several census tracts near the cities of Farmersville and Lindsay have lower household vehicle access.

Figure 20: Percent of Population Without Vehicle Access



Sources: Table B08201, ACS 2021 5-Year Estimates

Figure 21: Percent of Households with Zero Vehicle at Proposed Phase 1 CVC Stops

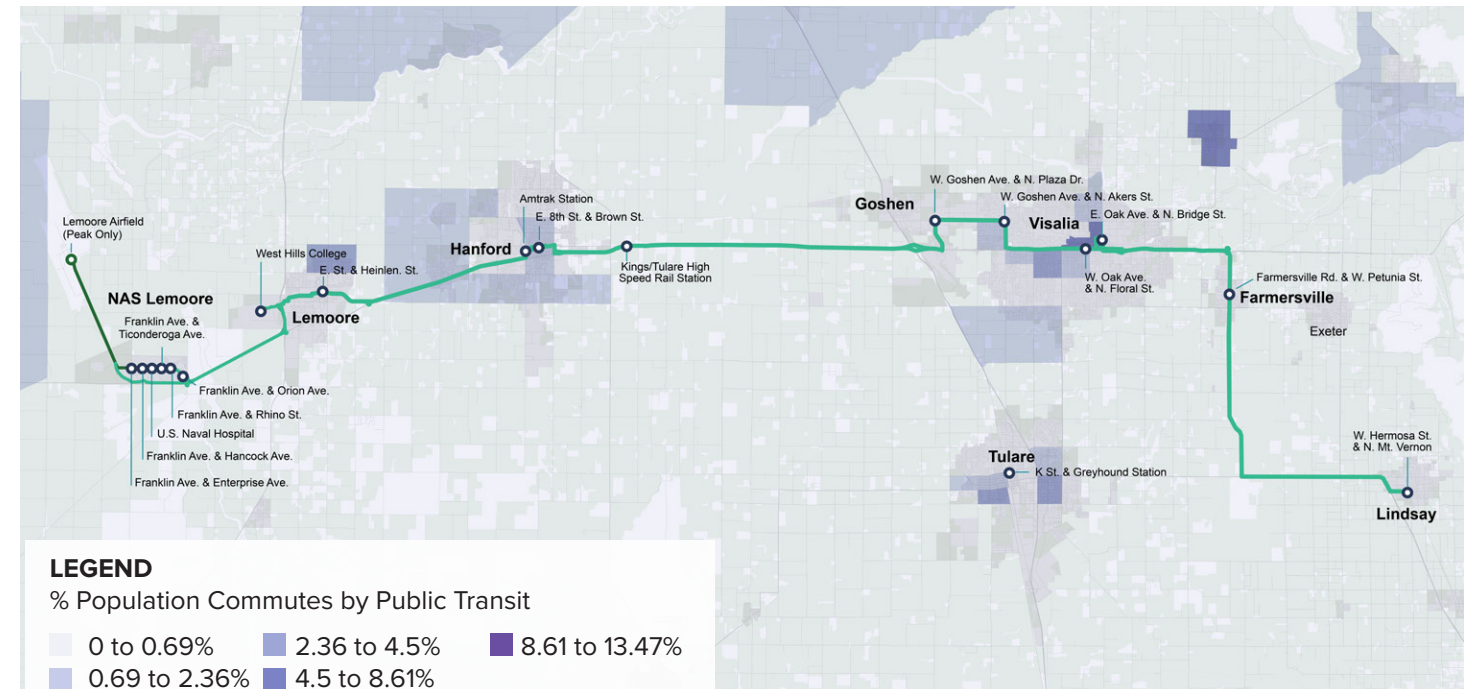


Sources: Table B08201, ACS 2021 5-Year Estimates

Commute Characteristics – Public Transit Usage

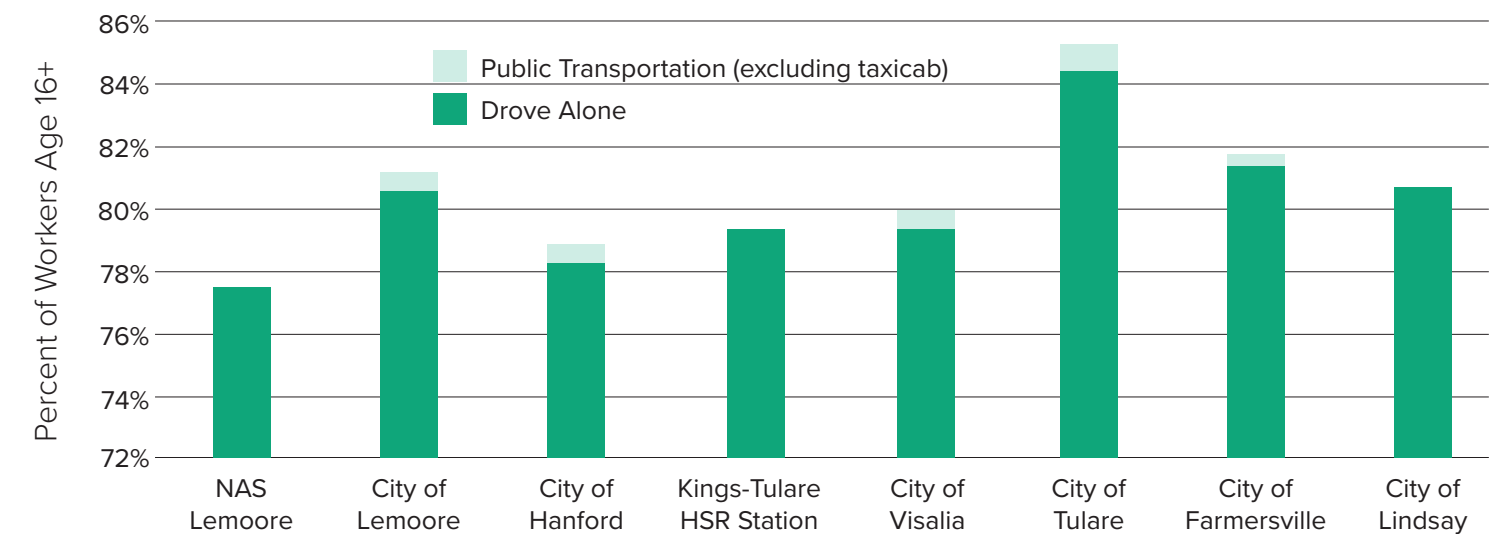
Citywide public transit usage for commuting to work is about 1 percent, however several census tracts in Hanford, Downtown Visalia, and Tulare have higher transit usage ranging from 8 to 13 percent.

Figure 22: Percent of Workers Who Commute by Public Transit



Sources: Table B08006, ACS 2021 5-Year Estimates

Figure 23: Means of Transportation to Work for Workers Age 16+ at Proposed Phase 1 CVC Stops

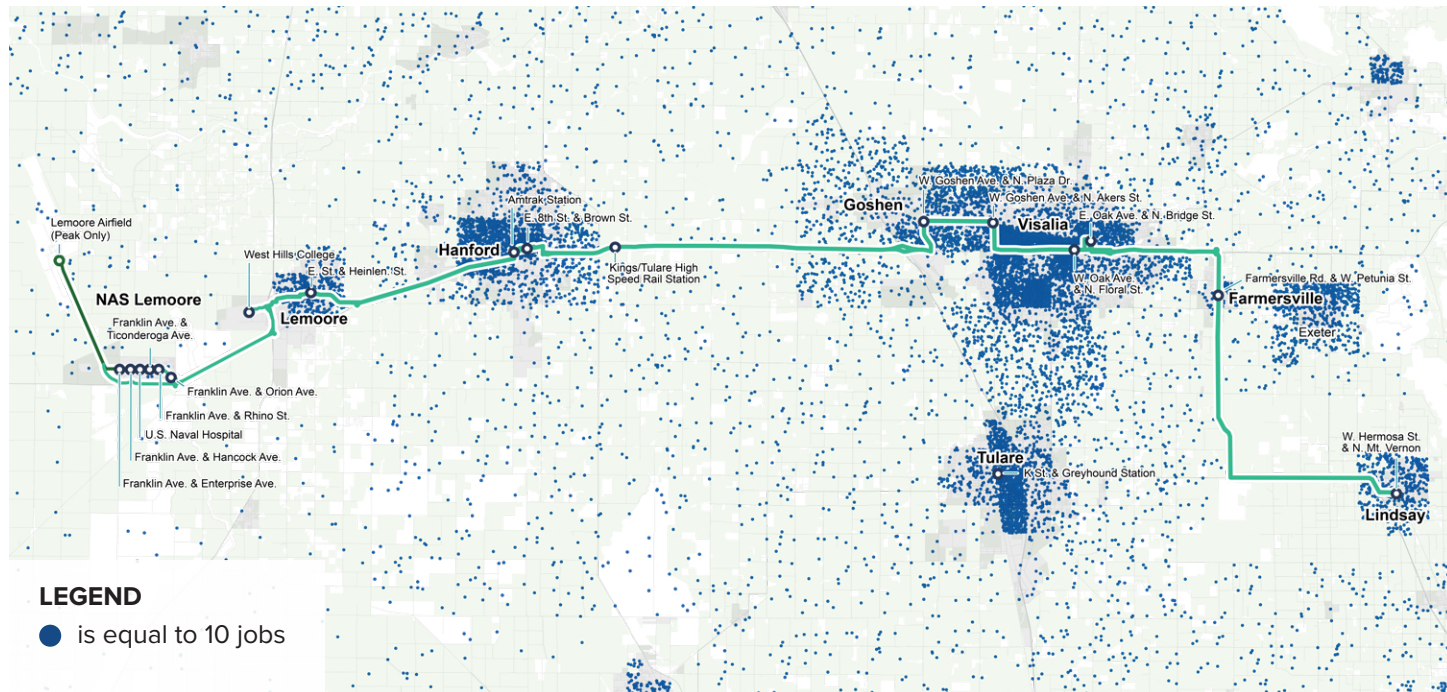


Sources: Table B08006, ACS 2021 5-Year Estimates

Existing Job Centers and Industries

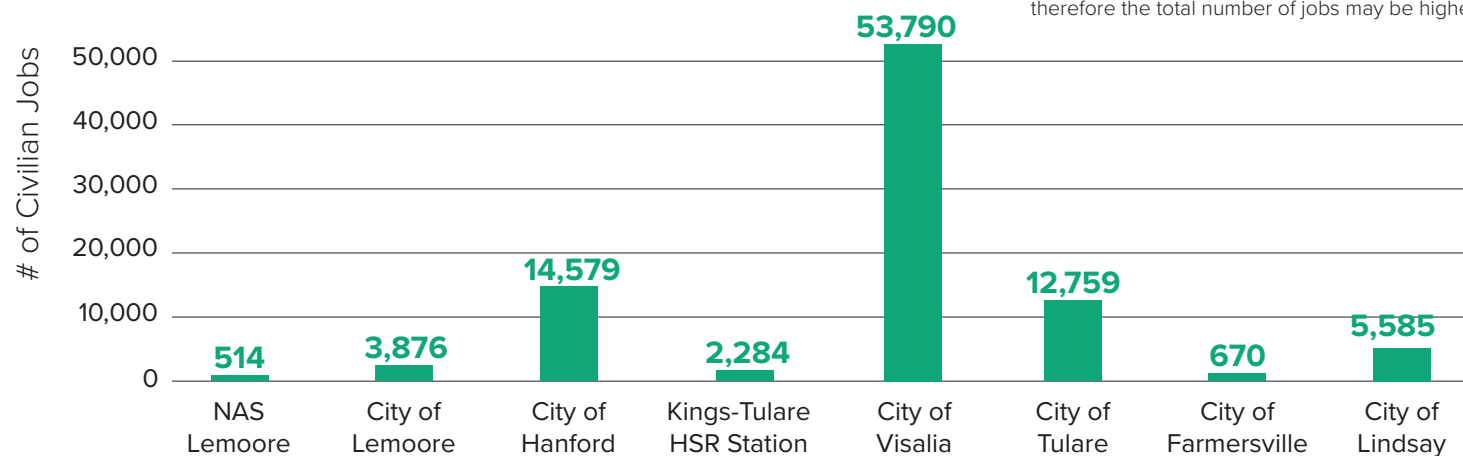
Jobs within the proposed Phase 1 Cross Valley Corridor are concentrated along SR-198 in Hanford and Visalia as well as in Tulare and Porterville. The City of Visalia has the highest number of civilian jobs while Farmersville has the lowest. Jobs within the Cross Valley Corridor are highest within the educational services/health care, agriculture, and retail industries.

Figure 24: Existing Job Centers - 2020



Source: KCAG and TCAG Travel Demand Model Inputs

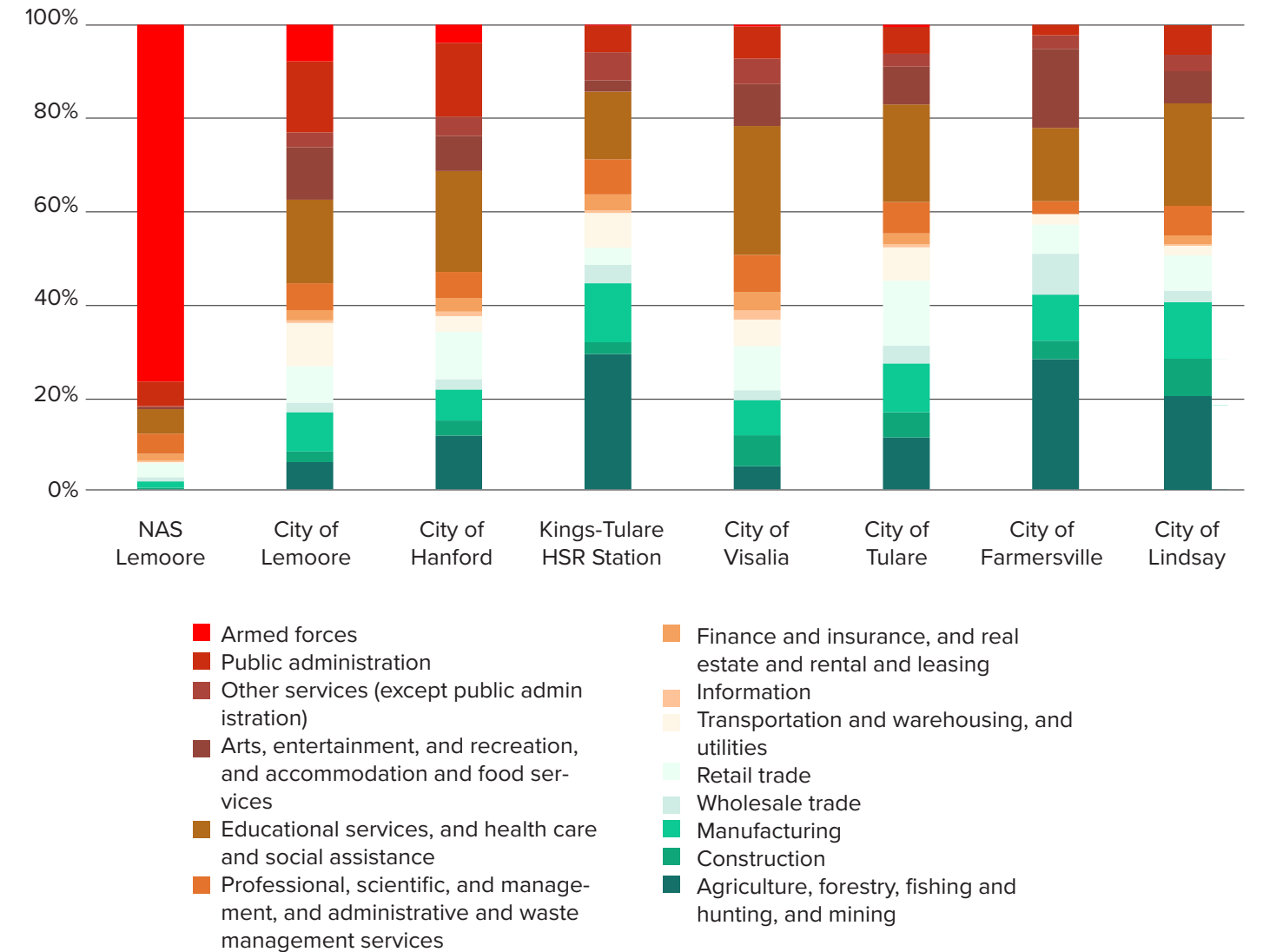
Figure 25: Total Jobs at Proposed Phase 1 CVC Stop Locations



Source: Total Jobs by Work Area, LEHD 2020

Note: The above data only represents civilian jobs, therefore the total number of jobs may be higher.

Figure 26: Industry of Employment for Workers Age 16+ at Proposed Phase 1 CVC Stop Locations



Source: Table B08126, ACS 2021 5-Year Estimates

SUMMARY OF FINDINGS

Population Size and Growth

The cities of Visalia, Tulare, and Hanford have the largest populations while the cities of Farmersville and Lindsay are the smallest. Tulare and Hanford experienced the greatest population growth between 2010 and 2021, while NAS Lemoore experienced a population decrease of 15 percent. It is unclear how much the population will change in the surrounding vicinity of the Kings-Tulare High Speed Rail Station once service is operational.

Population Hispanic Origins & Race

The cities of Farmersville and Tulare have the largest Hispanic populations with more than 60 percent of the total populations. Lemoore and NAS Lemoore have the largest Asian populations with about 7 percent of the total populations. For most cities, the American Indian and Alaska Native population is about 1 percent. The nearest tribal lands are the Tule River Indian Reservation east of Porterville; no tribal lands are within the proposed Cross Valley Corridor. Outreach materials and engagement activities in Task 3, as well as future transit service advertisements, should be produced in a variety of languages representative of the proposed CVC Phase 1 stop locations and in compliance with relevant federal and state requirements.

Household Income, Senior Population, Disability, and Veteran Status

The cities of Farmersville and Lindsay have the largest number of households with income below \$50,000 annually with over 50 percent each. The Kings-Tulare High Speed Rail Station census tract and Visalia have the largest senior population at roughly 14 percent each. Farmersville and Lindsay also have the largest populations with disabilities. NAS Lemoore and Lemoore have the largest veteran populations. These findings should inform recommended fare pricing and pricing schemes for CVC service.

Vehicle Access and Means of Transportation to Work

The cities of Farmersville and Lindsay have the highest number of households without a vehicle at 8 percent each. Tulare has the largest number of commuters who rely on public transportation at about 1 percent.

Jobs and Economic Characteristics

The City of Visalia has the largest number of jobs – more than 54,000 – followed by Hanford at about 15,000. Jobs within the Cross Valley Corridor are highest within the educational services/health care, agriculture, and retail industries.

06

DISADVANTAGED COMMUNITIES AND EQUITY CONSIDERATIONS

The purpose of this section is to identify socioeconomic and environmental indicators across the proposed Cross Valley Corridor Phase 1 locations to ensure that transit service investments are equitable and targeted to communities in high need of improved transportation.



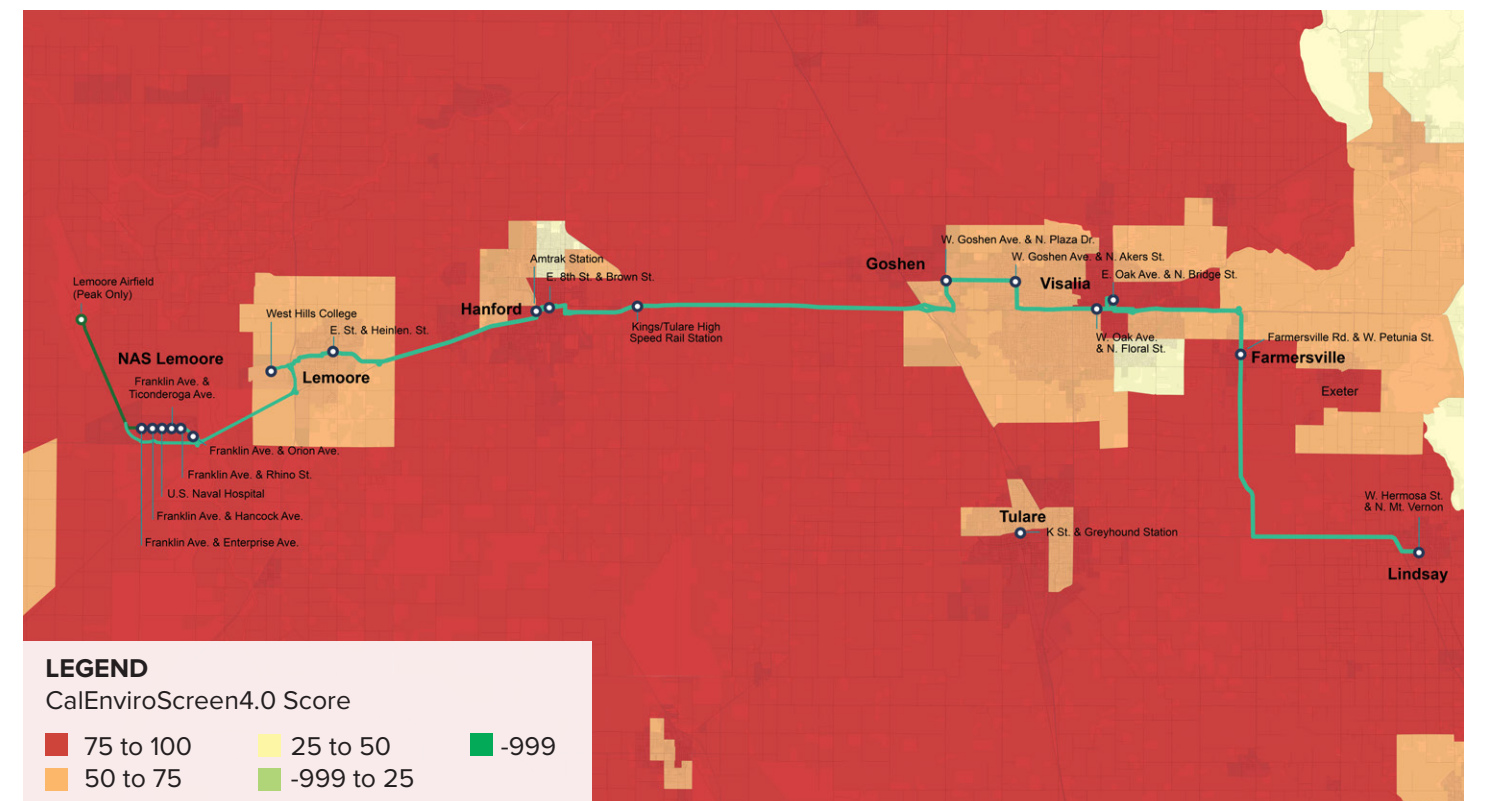
PURPOSE AND METHODOLOGY

Findings are based on information from the California Office of Environmental Health Hazard Assessment's California Communities Environmental Health Screening Tool (CalEnviroScreen 4.0). For stops within an incorporated city, an aggregation of all census tracts within the city limits was used to summarize results. Census tracts whose boundaries extend outside city limits were assigned to the unincorporated county; because of this, the results below may vary slightly from totals collected by each city. For NAS Lemoore, the Lemoore Station census-designated place was used for the geography of analysis, and for the King-Tulare High Speed Rail Station, Census Tract 1 was used.

CORRIDOR FINDINGS

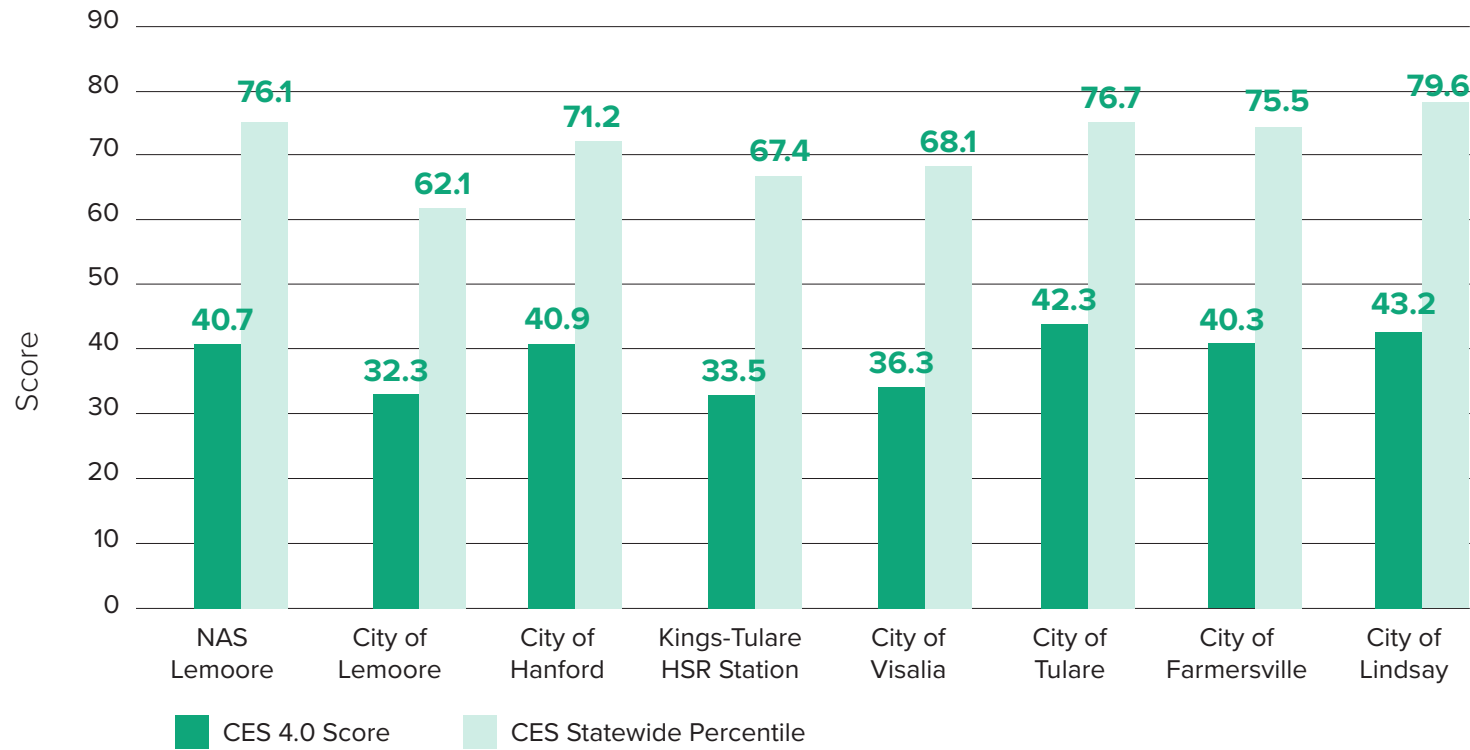
All of the census tracts within the Cross Valley Corridor study area have CalEnviroScreen 4.0 scores that are in the upper 50th percentile of statewide averages. Visalia, Hanford, and Tulare also have a high number of census tracts that are considered disadvantaged communities per SB-535 criteria. Ozone exposure, traffic levels, poverty, and linguistic isolation were some of the environmental burdens evaluated in relation to proposed stops locations.

Figure 27: CalEnviroScreen4.0 Scores



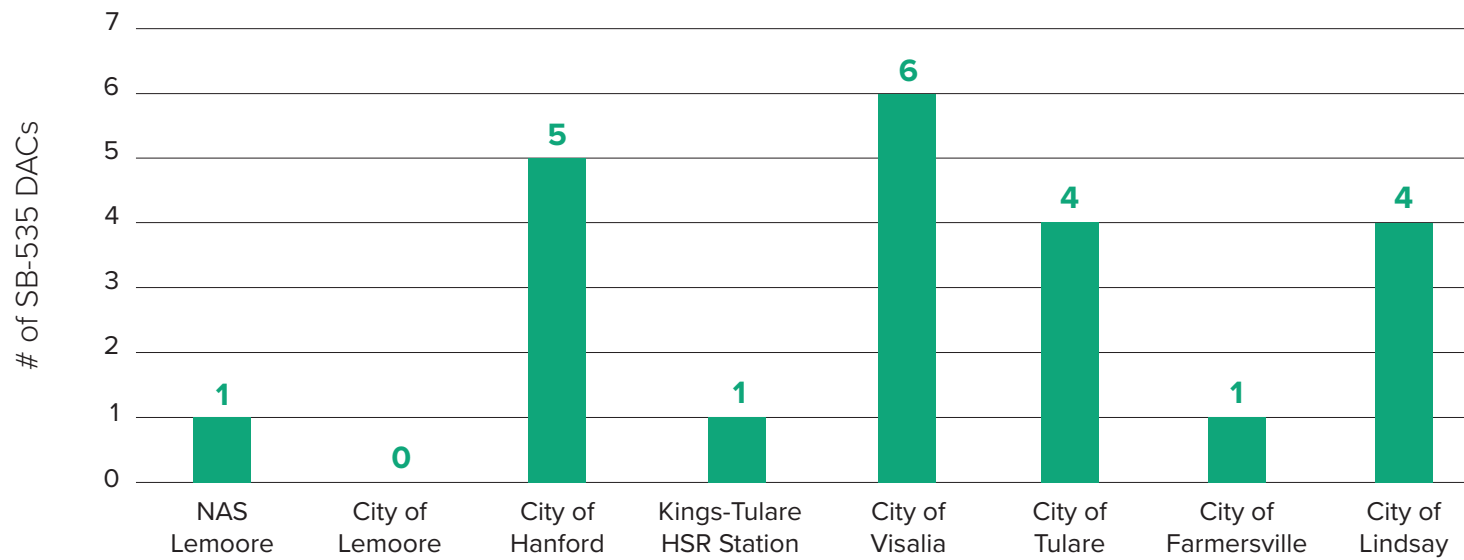
Source: CalEnviroScreen4.0

Figure 28: CalEnviroScreen 4.0 Scores & Percentile Scores of Proposed CVC Phase 1 Stop Locations



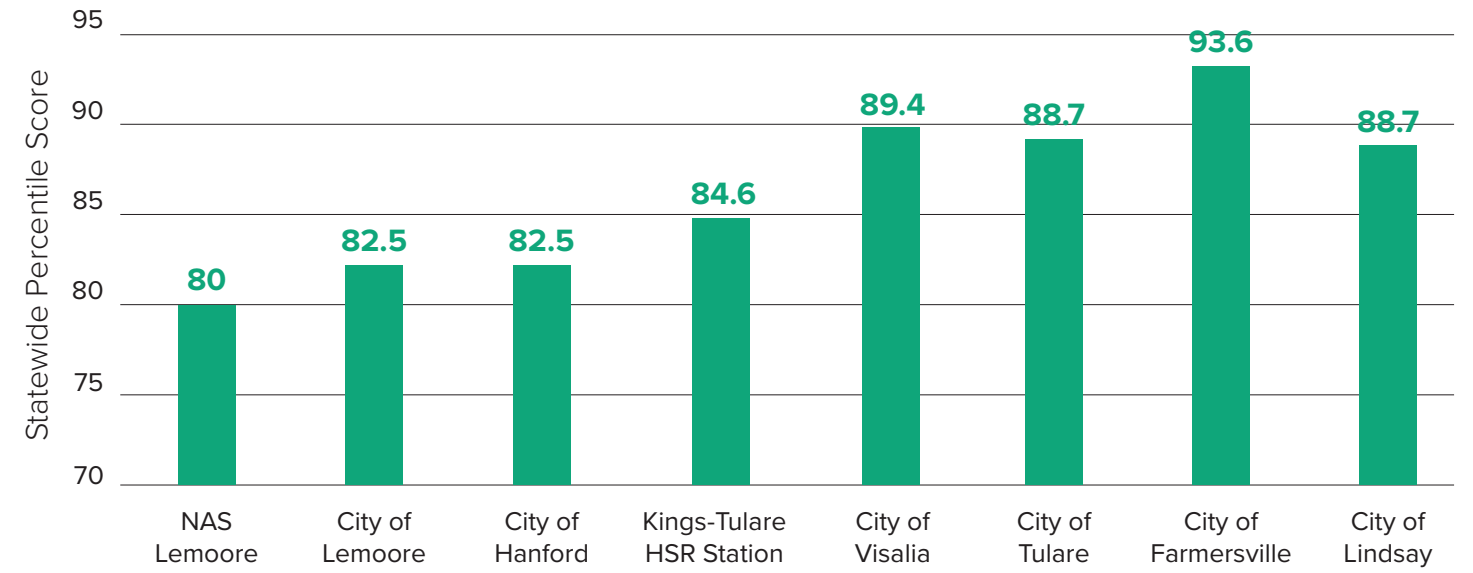
Source: CalEnviroScreen4.0

Figure 29: Number of SB-535 Disadvantaged Communities per Proposed CVC Phase 1 Stop Locations



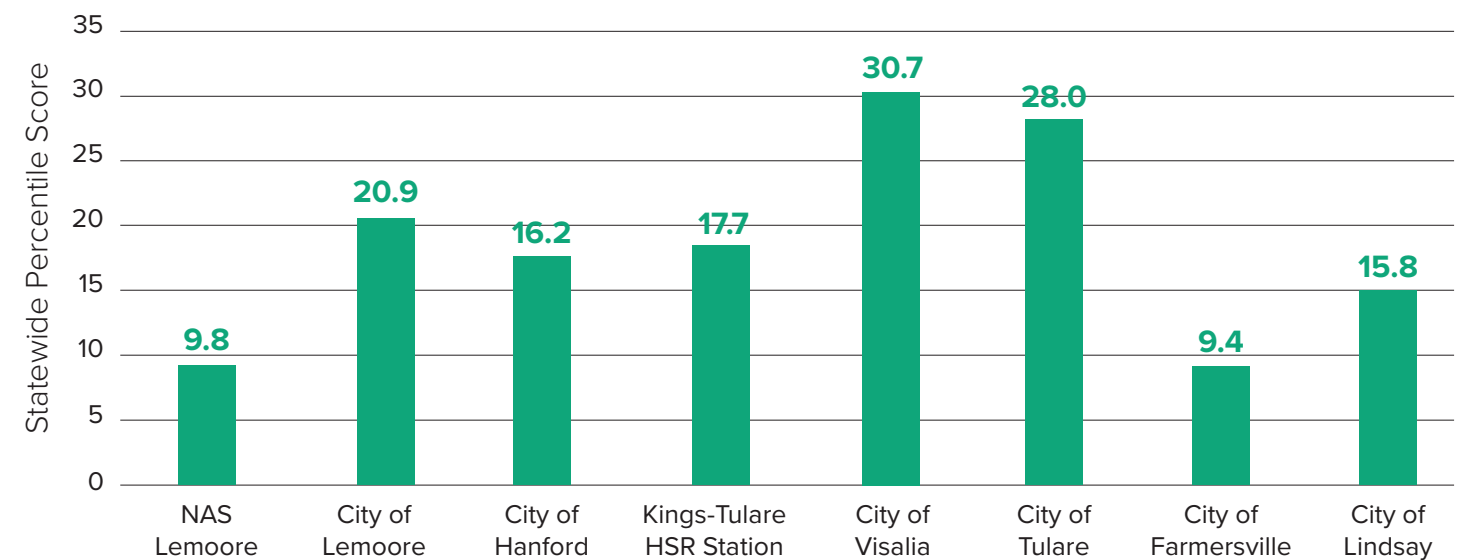
Source: California Office of Environmental Health Hazard Assessment, 2022

Figure 30: Ozone Percentile Scores at Proposed CVC Phase 1 Stop Locations



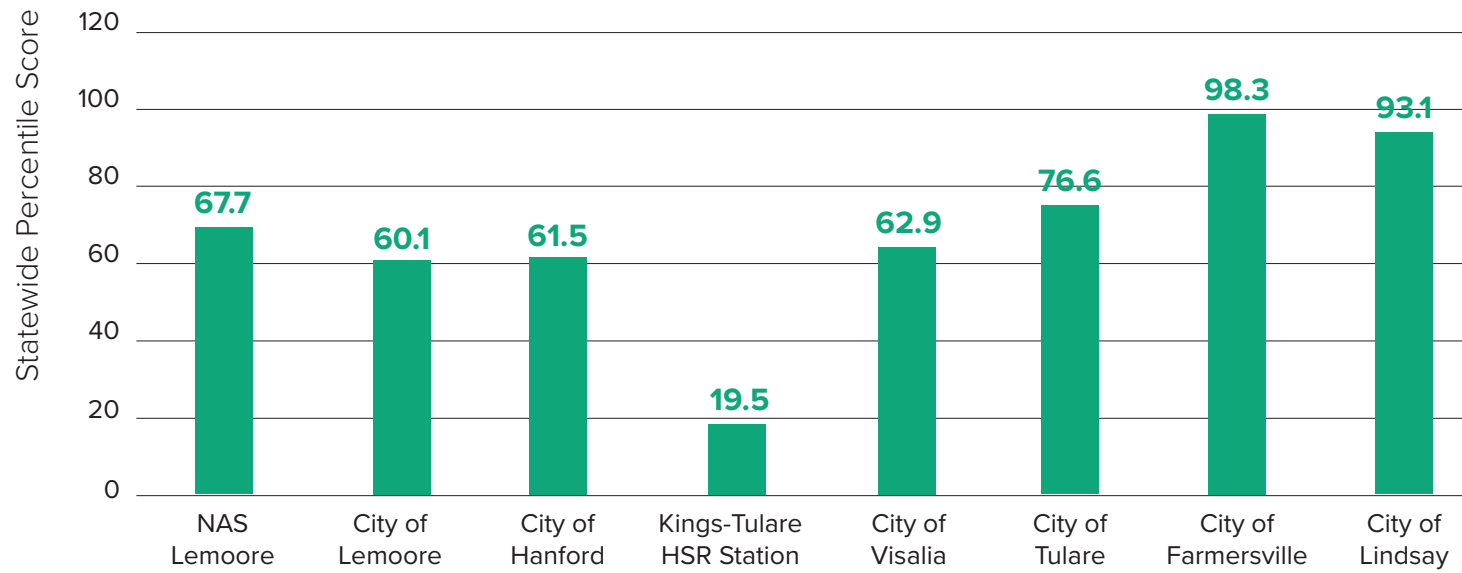
Source: CalEnviroScreen4.0

Figure 31: Traffic Percentile Scores at Proposed CVC Phase 1 Stop Locations



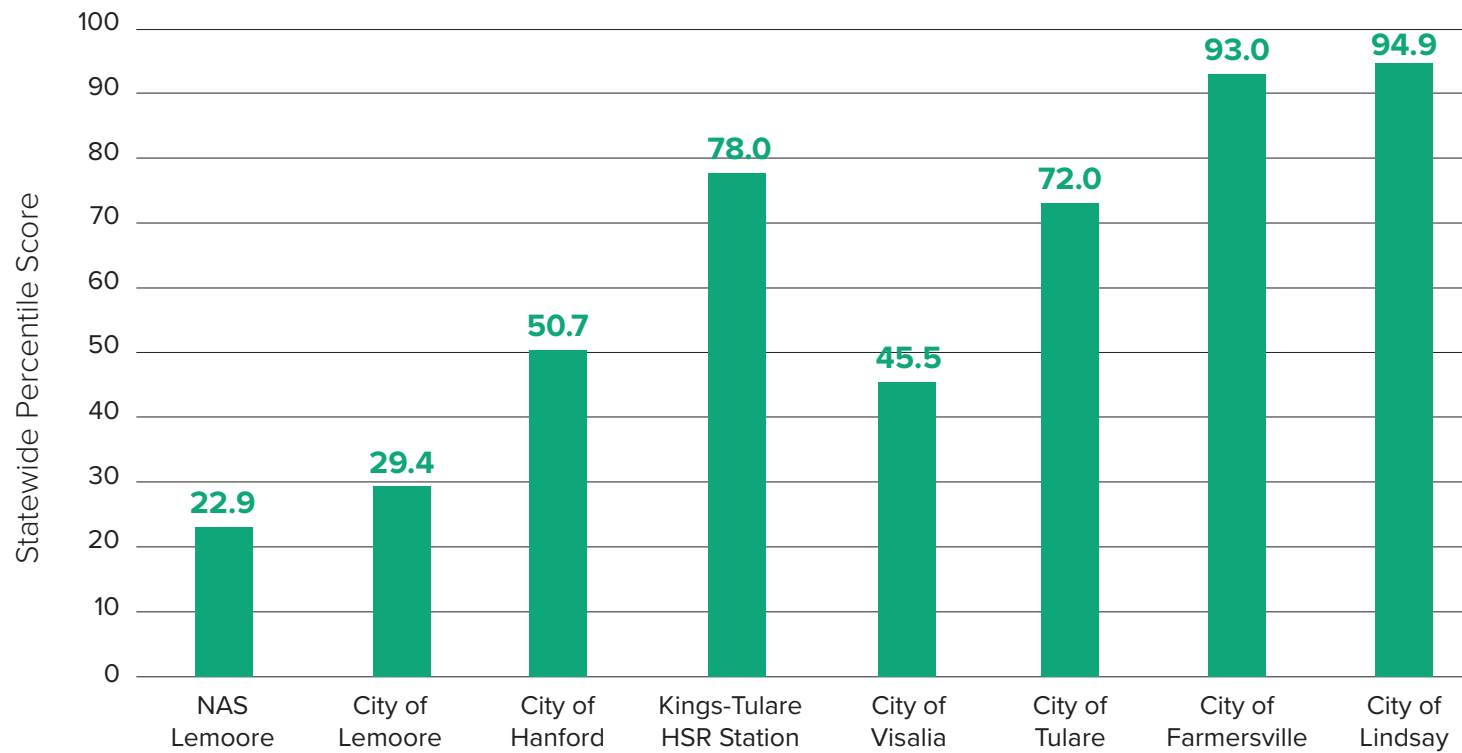
Source: CalEnviroScreen4.0

Figure 32: Poverty Population Percentile Scores at Proposed CVC Phase 1 Stop Locations



Source: CalEnviroScreen4.0

Figure 33: Linguistic Isolation Population Percentile Scores at Proposed CVC Phase 1 Stop Locations



Source: CalEnviroScreen4.0

SUMMARY OF FINDINGS

All of the proposed CVC Phase 1 stop locations have CalEnviroScreen 4.0 scores that are in the upper 60th or higher state percentiles. The cities of Visalia and Hanford have the highest number of SB-535 disadvantaged communities (DACs), while Lemoore is the only city to not have any designated DACs.

All of the proposed CVC Phase 1 stop locations have ozone concentrations that are in the upper 80th or higher state percentiles, with Farmersville and Lindsay scoring the highest at above the 90th percentiles each, indicating poor air qualities and high ozone exposure levels. Traffic percentile scores are highest in the City of Visalia, with scores in the 30th percentile; this indicates that poor air quality may not be attributed to local traffic congestion.

07

FUTURE GROWTH

To better understand the future growth in Kings and Tulare counties, which has implications for the amount of ridership anticipated, the consultant team analyzed and reviewed TCAG and KCAG travel model inputs to better understand this rate of change.



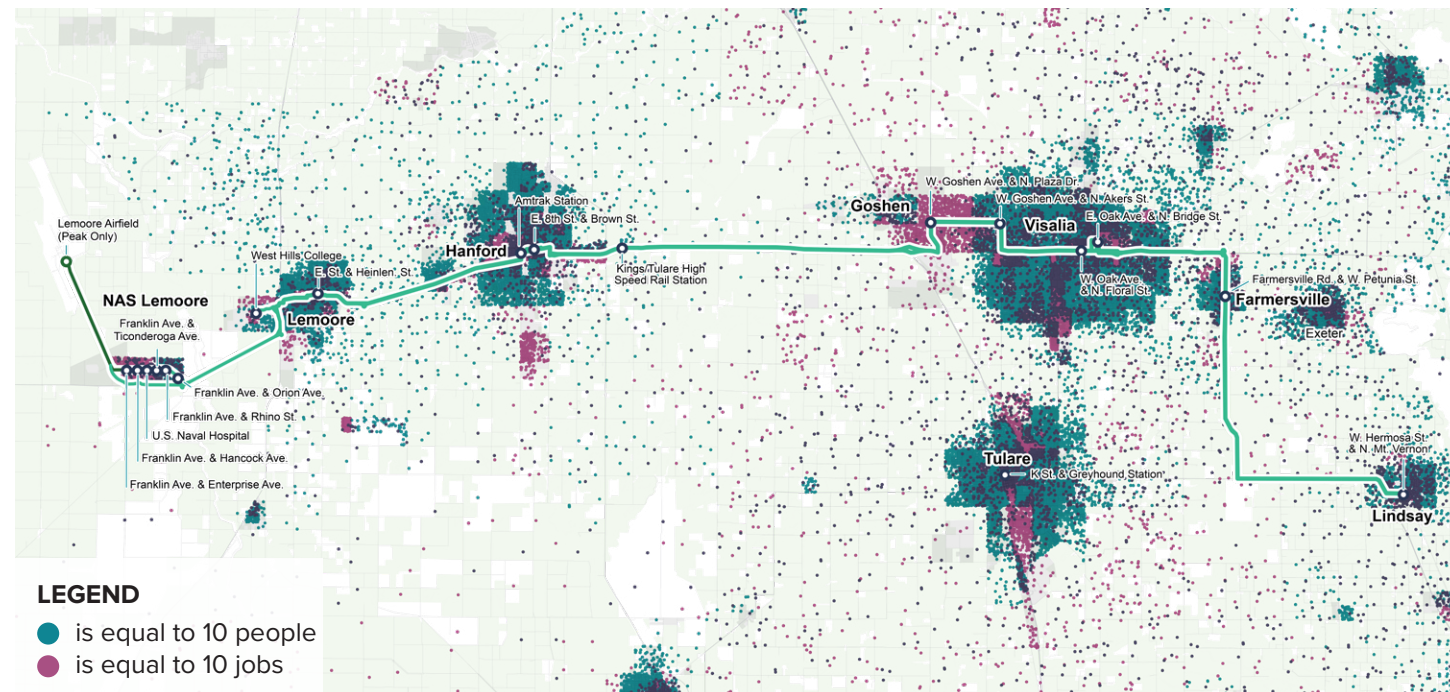
PURPOSE AND METHODOLOGY

TCAG and KCAG forecast and plan for employment and population growth in their counties by 2030. Travel demand model outputs include population, employment, and household projections for a 2046 forecast year. The consultant team interpolated a 2030 horizon year for population and employment using a linear growth rate between each model's baseline year and 2046.

CORRIDOR FINDINGS

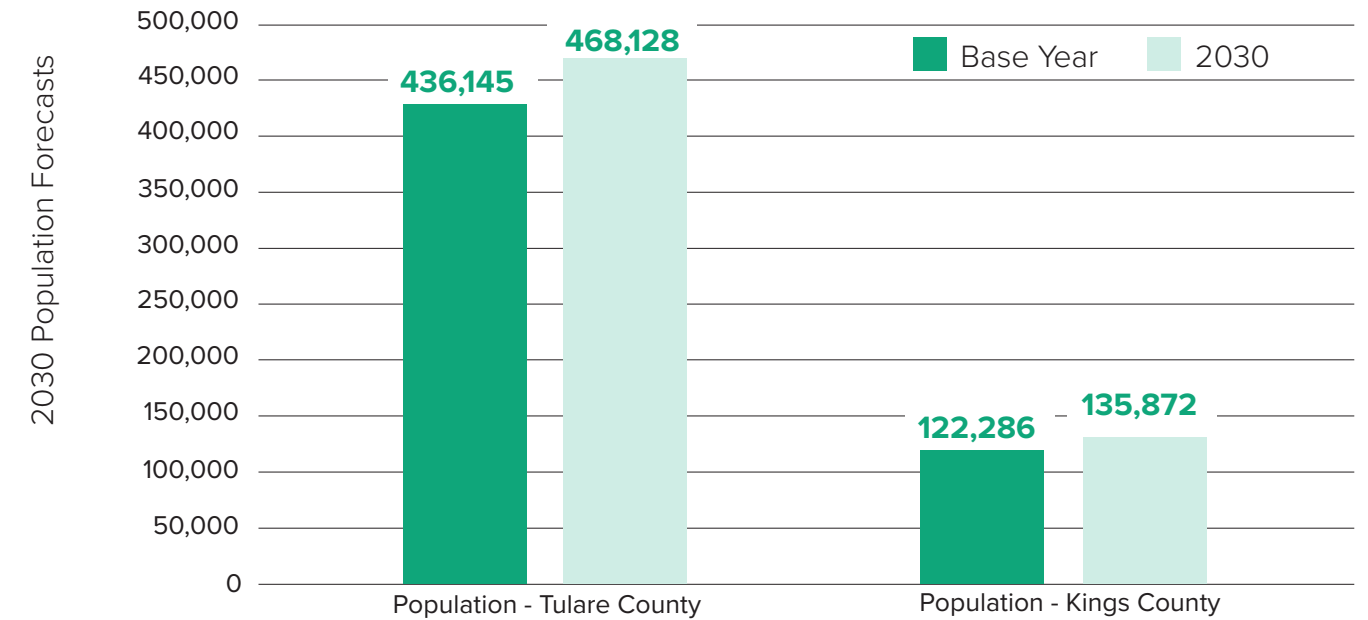
2030 population and employment forecasted growth is concentrated near proposed CVC Phase I stop locations. Kings County population is anticipated to grow by 13,500 by 2030, and employment is anticipated to grow by 5,100 by 2030. This represents an 11 percent increase for both population and employment in Kings County. Tulare County population is anticipated to grow by just under 32,000 people by 2030, and employment is anticipated to grow by 10,000 by 2030. This represents a 5 percent and 11 percent increase, respectively by 2030. Employment growth is accelerated for Tulare County compared to Kings County – notably with a higher proportion of growth in industrial areas on the Visalia/Goshen border.

Figure 34: Population and Employment 2030 Forecasts



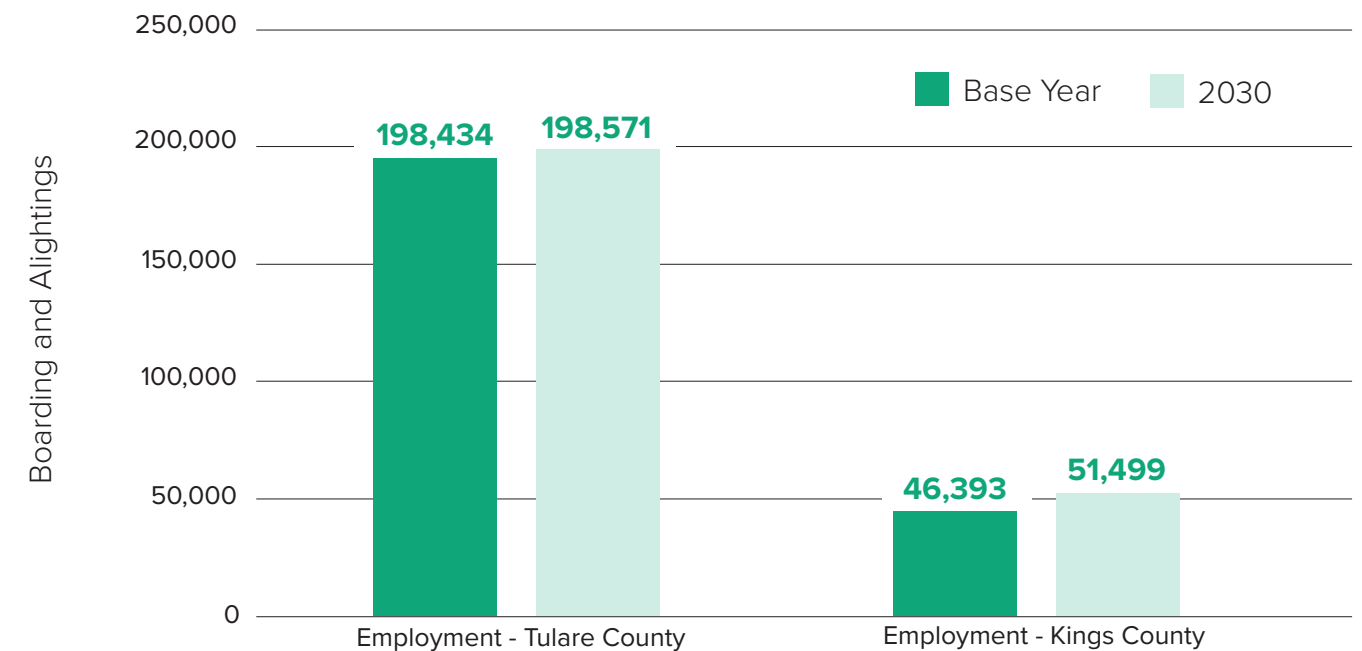
Source: KCAG and TCAG Travel Demand Model Inputs

Figure 35: 2030 Population Forecasts for Tulare and Kings Counties



Source: KCAG and TCAG Travel Demand Model Inputs

Figure 36: 2030 Employment Forecasts for Tulare and Kings Counties



Source: KCAG and TCAG Travel Demand Model Inputs

08

LAND USE

This section summarizes the latest land use information for the proposed CVC Phase 1 stop locations.

Findings will inform the potential CVC ridership market by outlining key residential and employment areas, as well as identifying opportunity areas for higher densities if served by high-frequency transit service.



PURPOSE AND METHODOLOGY

Findings were informed by land use GIS files provided by jurisdictions within the proposed Cross Valley Corridor. Where not available, publicly available land use GIS files and jurisdiction general plan documents supplemented calculations.

CONSIDERATIONS BY JURISDICTION

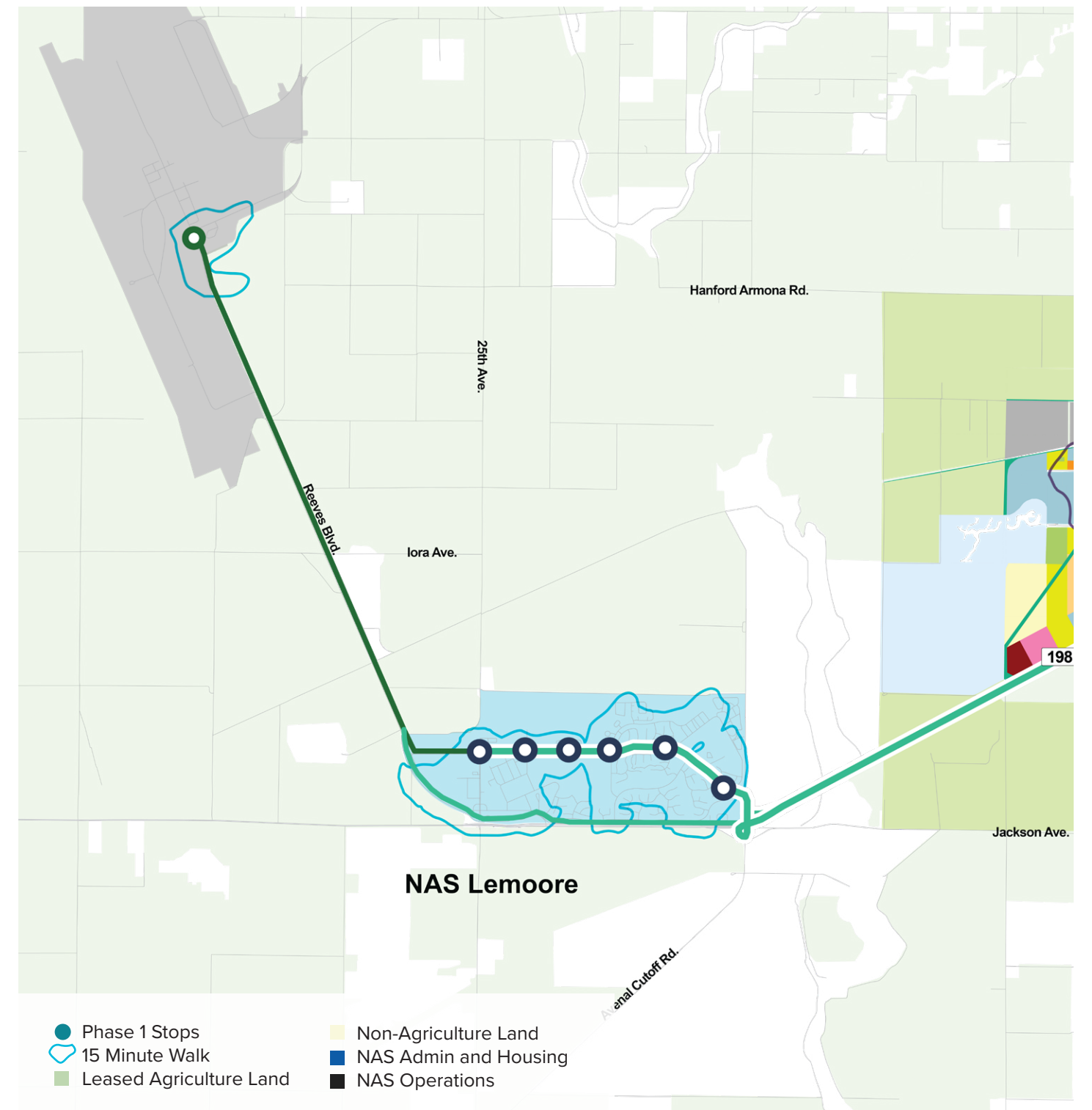
NAS Lemoore

There is limited public information available about existing and planned land uses within NAS Lemoore. Data from the U.S. Navy indicates that the existing land uses fall within six categories:

- Air operations
- Administrative uses
- Family housing
- Recreation
- Wildlife, and
- Agriculture.

About 75 percent of the total land area belonging to NAS Lemoore is leased out to local farmers for agriculture uses⁴. While NAS Lemoore is a federal entity, the 2035 Kings County General Plan adopted in 2010 provides guidance on development within and surrounding the base. The immediate vicinity surrounding the base is within unincorporated Kings County and is designated by the county as Exclusive Agriculture. In 2011, the NAS Lemoore Joint Land Use Study established overlay zones to ensure development is compatible with military uses.

Figure 37: NAS Lemoore Planned Land Uses



Source: 2035 Kings County General Plan (2010)

City of Lemoore

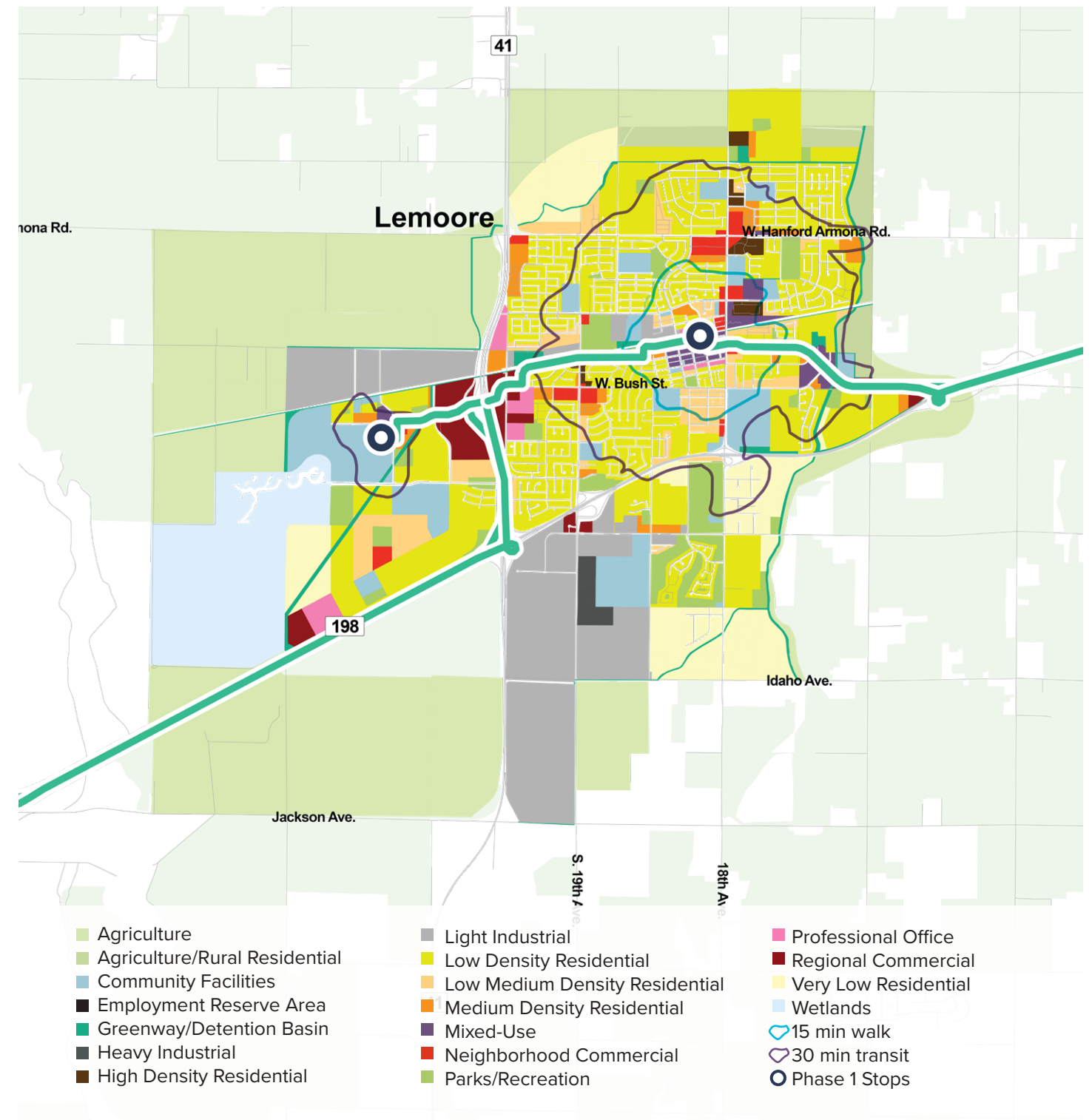
The City of Lemoore 2030 General Plan was adopted in 2008 with revisions in 2012. The predominant land uses within Lemoore are Agriculture, Low Density Residential, and Industrial. Both of the proposed CVC Phase 1 stops in Lemoore are surrounded by parcels designated as Mixed Use within the Downtown District, which permits a maximum residential density of 20 units per gross acre.

Table 11: City of Lemoore Land Use Designations

General Plan Designation	Total Acres	Percentage of Planning Area Total
Agriculture	3,352	41%
Low Density Residential	1,111	13%
Industrial	715	9%
Wetlands	655	8%
Very Low Density Residential	515	6%
Business, Technology and Industrial Reserve	398	5%
Agriculture/Rural Residential	213	3%
Parks/Recreation	208	3%
Community Facilities	218	3%
Low-Medium Density Residential	200	2%
Commercial	170	2%
Greenway/Basin	198	2%
Medium Density Residential	74	1%
Mixed Use	118	1%
Neighborhood Commercial	48	1%
Professional Office	78	1%
High Density Residential	0	0%
Total:	8,270	100%

Source: Table 2.1, City of Lemoore 2030 General Plan (2012)

Figure 38: City of Lemoore Planned Land Uses



Source: City of Lemoore 2030 General Plan (2012)

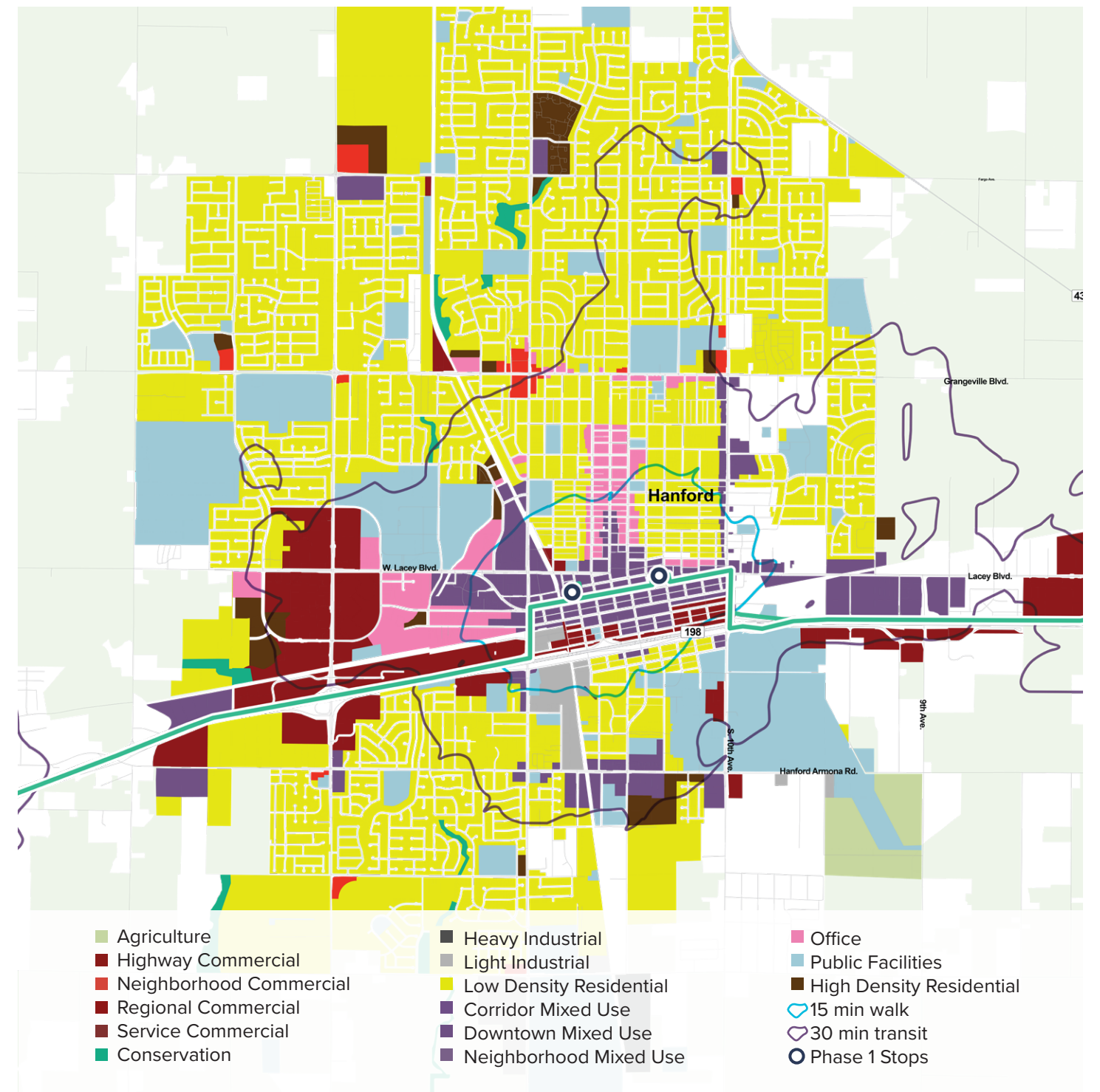
City of Hanford

The City of Hanford 2035 General Plan was adopted in 2017. The predominant land uses in Hanford are Low Density Residential, Heavy Industrial, and Medium Density Residential. Both proposed stops in Hanford are surrounded by parcels designated as Downtown Mixed Use, which permits up to 20 units per acre. The proposed Hanford Transit Center stop is also located within the boundaries of the Hanford Downtown East Precise Plan adopted in 2013.

Table 12: City of Hanford Land Use Designations

General Plan Designation	Total Acres	Percentage of Planning Area Total
Low Density Residential	5,633	34%
Heavy Industrial	3,690	22%
Medium Density Residential	1,033	6%
Light Industrial	912	5%
Airport Protection	799	5%
Public Facilities	865	5%
Open Space	592	4%
Interest Area	601	4%
Corridor Mixed Use	514	3%
Educational Facilities	509	3%
Regional Commercial	380	2%
Service Commercial	282	2%
High Density Residential	219	1%
Highway Commercial	147	1%
Office Residential	114	1%
Office	120	1%
Downtown Mixed Use	123	1%
Neighborhood Commercial	74	0%
Neighborhood Mixed Use	75	0%
Total	16,684	100%

Figure 39: City of Hanford Planned Land Uses

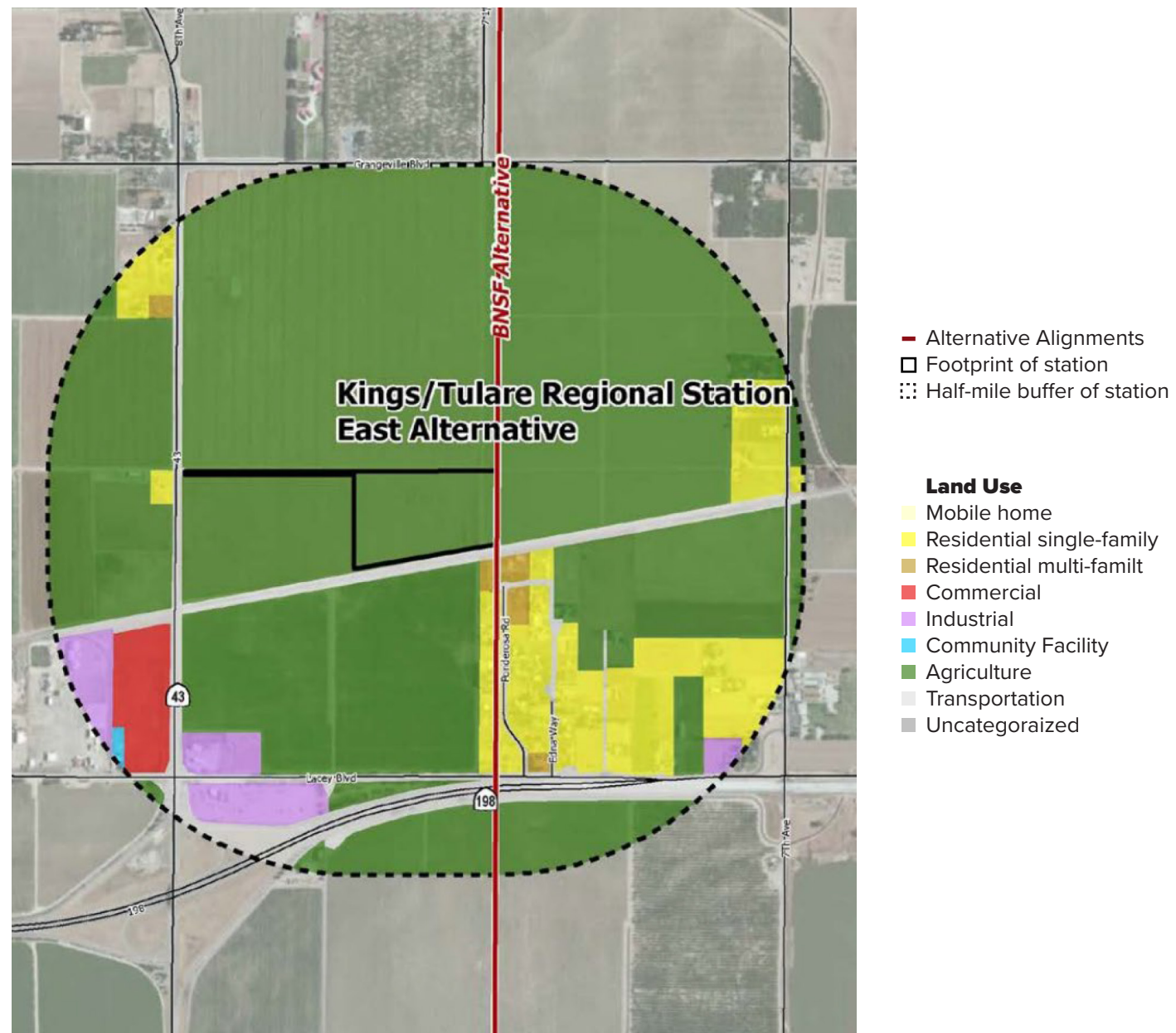


Source: City of Hanford 2035 General Plan (2017)

Kings-Tulare High Speed Rail Station

The Kings-Tulare High Speed Rail Station is under construction in unincorporated Kings County. The parcels surrounding the station are predominantly agricultural and uses with some low density residential. No development plans for the station area have been published as of August 2023, however future high speed rail service may present an opportunity for increased residential and/or employment density.

Picture 10: Kings-Tulare Station Existing Land Use



Source: Figure 3.13-3, Fresno to Bakersfield Section California HSR Project Final EIR/EIS (2022)

City of Visalia

The City of Visalia General Plan was adopted in 2014. The predominant land uses in Visalia are Agriculture, Residential Low Density, and Industrial. The four stops proposed for Visalia are surrounded by a variety of land uses: Industrial, Low Density Residential, and Downtown Mixed Use. The two stops in Downtown Visalia are surrounded by parcels with the highest permitted residential densities, Downtown Mixed Use, which permits a minimum of 20 units per acre and a maximum floor-area ratio of 5.0.

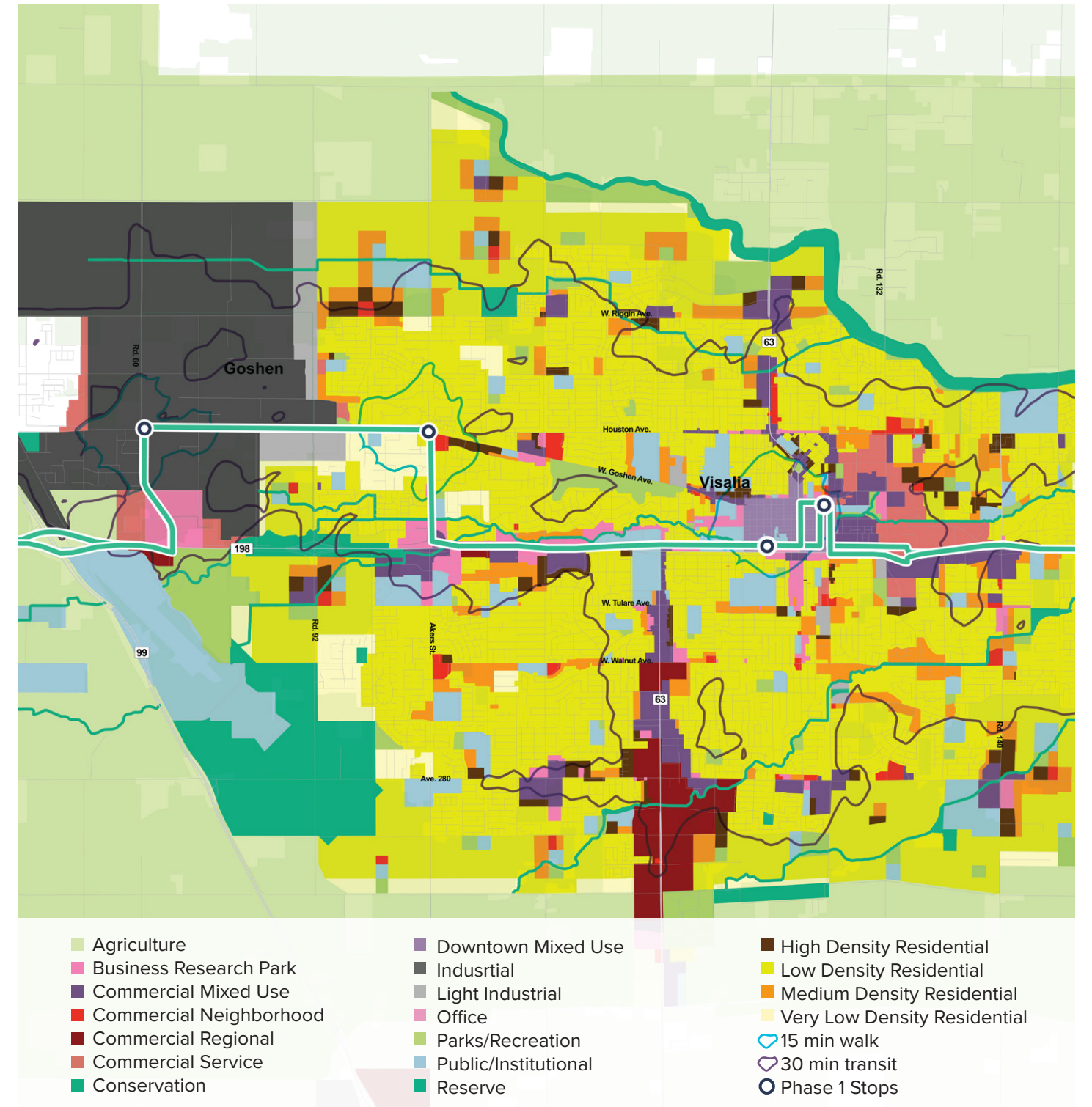
Table 13: City of Visalia Land Use Designations

Note: Goshen is not included in the above calculations

General Plan Designation	Total Acres	Percentage of Planning Area Total
Agricultural	31,991.2	48.9%
Low Density Residential	15,363.8	23.5%
Industrial	3,859.0	5.9%
Public/Institutional	2,618.2	4.0%
Parks/Recreation	1,665.2	2.5%
Conservation	1,541.2	2.4%
Medium Density Residential	1,554.1	2.4%
Very Low Density Residential	1,413.1	2.2%
Commercial Mixed Use	1,189.4	1.8%
Reserve	1,059.6	1.6%
Commercial Regional	560.7	0.9%
Commercial Service	554.9	0.8%
High Density Residential	541.9	0.8%
Office	474.8	0.7%
Light Industrial	392.3	0.6%
Downtown Mixed Use	230.4	0.4%
Commercial Neighborhood	226.6	0.3%
Business Research Park	160.6	0.2%
Total	65,397.2	100%

Source: City of Visalia General Plan (2014)

Figure 40: City of Visalia Planned Land Uses



Source: City of Visalia General Plan (2014)

City of Tulare

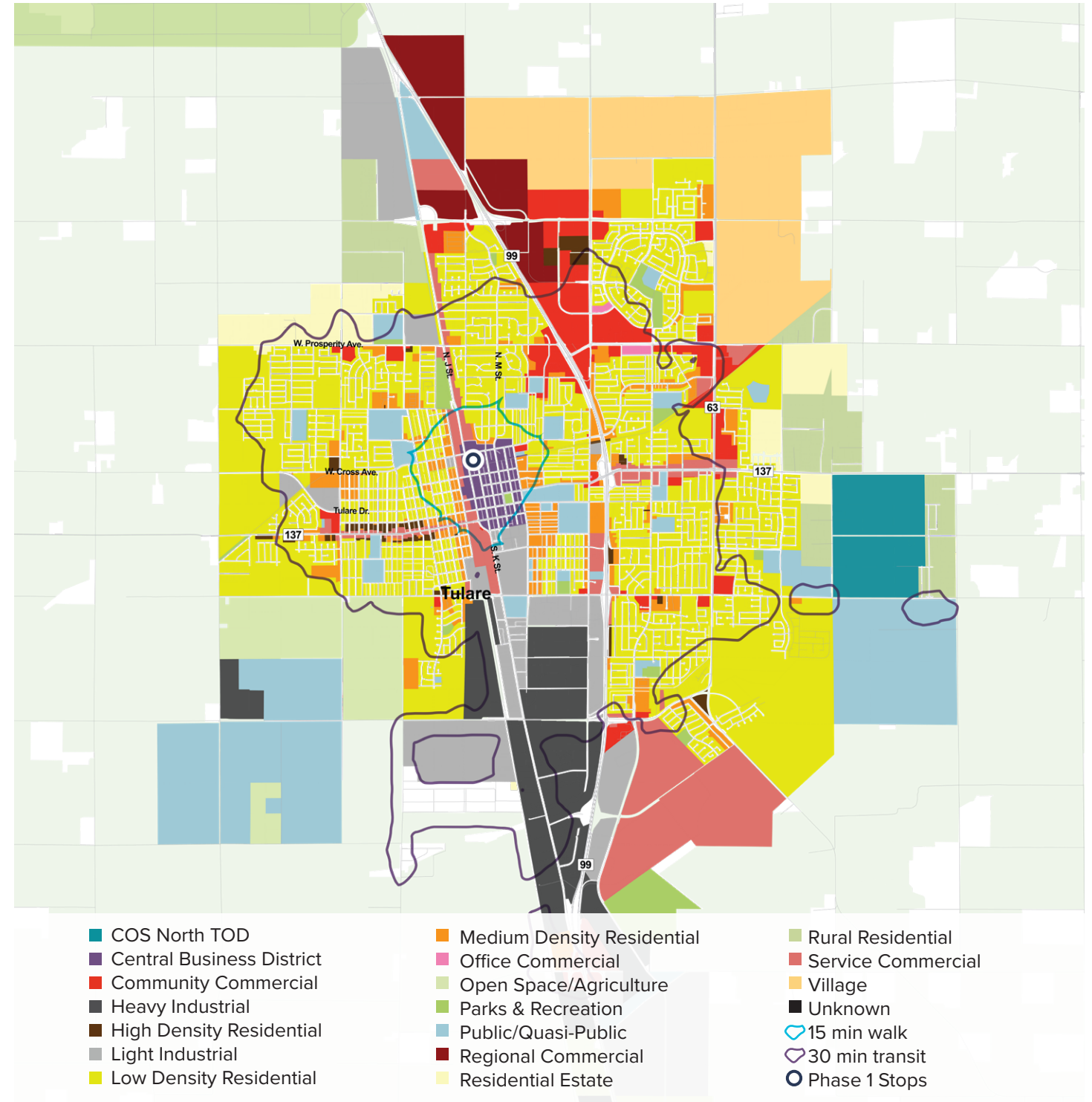
The City of Tulare General Plan was adopted in 2014. The predominant land uses in Tulare are Low Density Residential, Public/Quasi-Public, and Village. The proposed Tulare stop location for the off-line service is in Tulare's Central Business District, which permits a maximum residential density of 29 units per acre. The proposed Tulare stop location is also within the Downtown Plan Area of the city's 2013 Transit-Oriented Development Plan.

Table 14: City of Tulare Land Use Designations

General Plan Designation	Total Acres	Percentage of Planning Area Total
Low Density Residential	5,105.2	27.7%
Public/Quasi-Public	2,319.2	12.6%
Village	1,735.7	9.4%
Light Industrial	1,587.7	8.6%
Heavy Industrial	1,290.2	7.0%
Open Space/Agriculture	1,201.7	6.5%
Service Commercial	1,089.9	5.9%
Rural Residential	821.2	4.5%
Community Commercial	651.9	3.5%
Medium Density Residential	627.7	3.4%
Residential Estate	529.8	2.9%
Regional Commercial	503.2	2.7%
COS North TOD	454.5	2.5%
Parks & Recreation	276.9	1.5%
Central Business District	127.3	0.7%
Central Business District	127.3	0.7%
High Density Residential	102.4	0.6%
Office Commercial	16.2	0.1%
Total	83,837.8	100%

Source: City of Tulare General Plan (2014)

Figure 41: City of Tulare Planned Land Uses



Source: City of Tulare General Plan (2014)

City of Farmersville

The City of Farmersville 2025 General Plan was adopted in 2002. The predominant land uses in Farmersville are Agriculture/Urban Reserve, Medium Density Residential, and Public Facilities. The proposed Farmersville stop location would be surrounded by parcels designated as Medium Density Residential and Medium-High Density Residential, which would permit a maximum residential density of 15 units and 20 units per acre respectively.

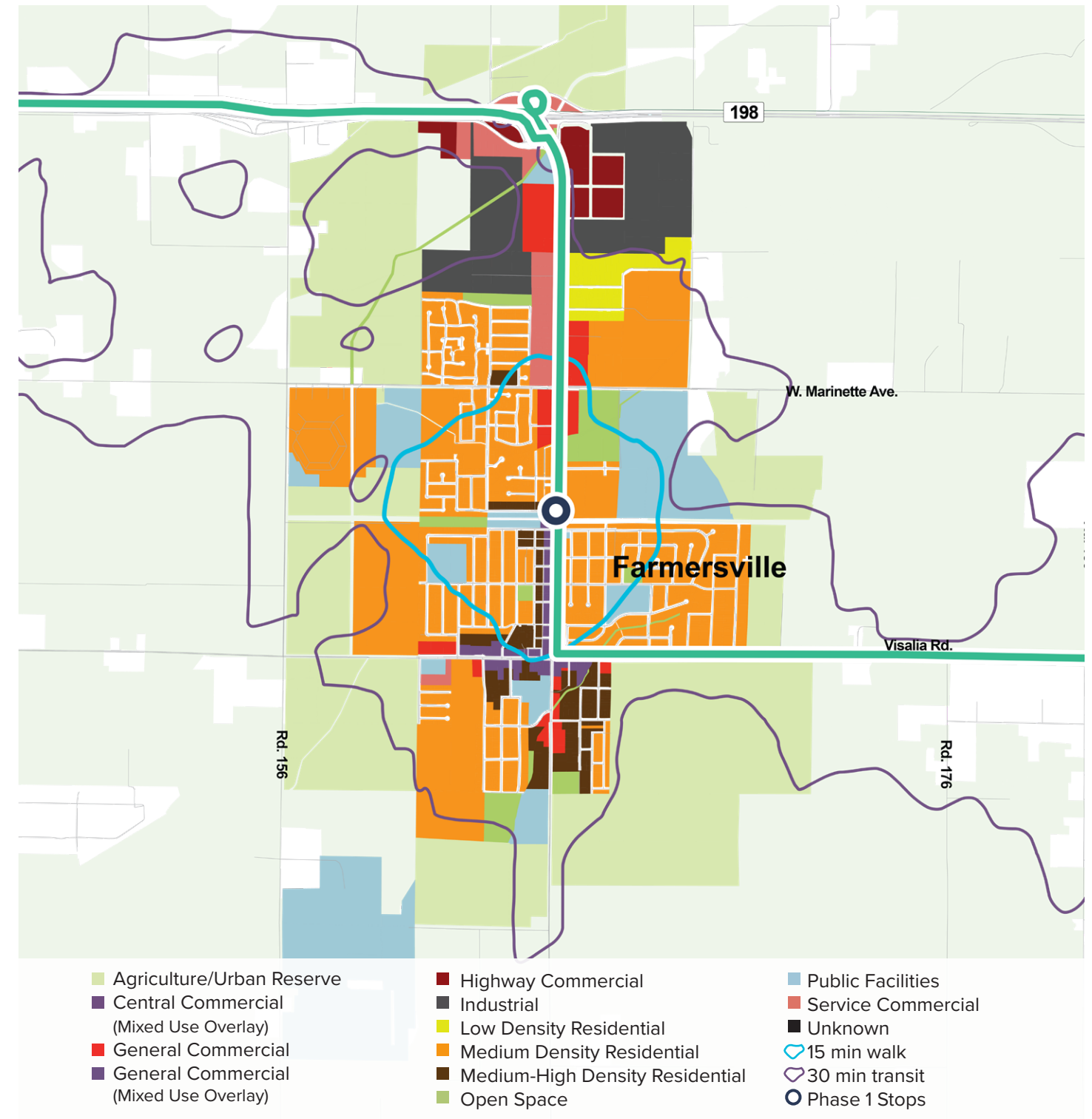
Since the adoption of the 2018 Cross Valley Corridor Plan, the city began drafting the Downtown Farmersville Specific Plan. If adopted, the proposed Farmersville stop would be located within the specific plan boundaries. No updates on the status of the plan since 2022 were identified.

Table 15: City of Farmersville Land Use Designations

General Plan Designation	Total Acres	Percentage of Planning Area Total
Agriculture/Urban Reserve	1,228.6	24.6%
Medium Density Residential	755.0	15.1%
Public Facilities	396.3	7.9%
Industrial	184.1	3.7%
Open Space	79.9	1.6%
Medium-High Density Residential	74.0	1.5%
General Commercial	77.3	1.5%
Service Commercial	54.9	1.1%
Highway Commercial	48.2	1.0%
Low Density Residential	48.3	1.0%
General Commercial	20.2	0.4%
Central Commercial	14.3	0.3%
Total	4,992.8	100%

Source: City of Farmersville 2025 General Plan (2002)

Figure 42: City of Farmersville Planned Land Uses



Source: City of Farmersville 2025 General Plan (2002)

City of Lindsay

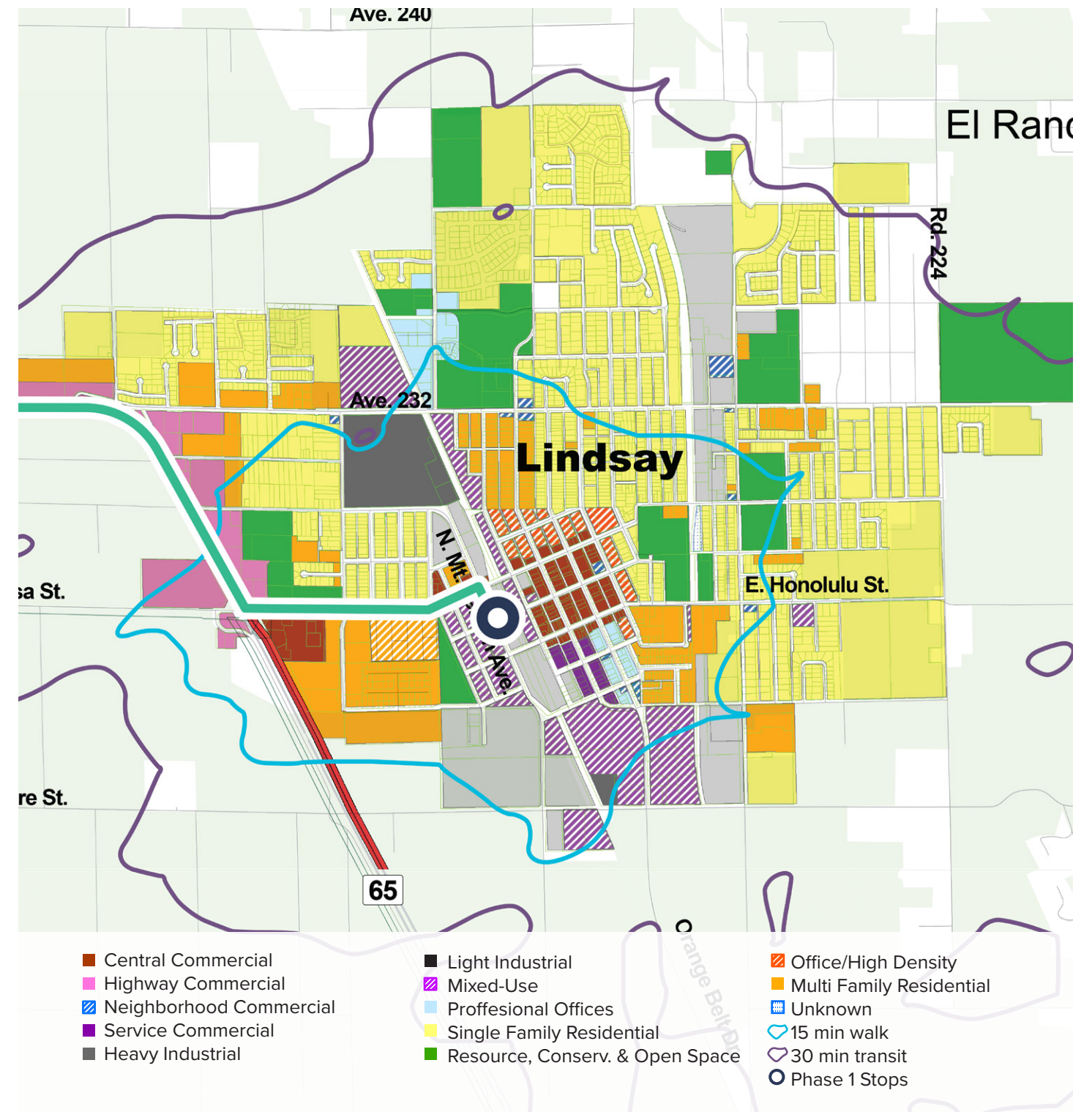
The City of Lindsay General Plan was adopted in 1989. The predominant land use in Lindsay is Low Density Residential. The proposed Lindsay stop location is surrounded by parcels designated as Central Commercial.

Table 16: City of Lindsay Land Use Designations

General Plan Designation	Total Acres	Percentage of Planning Area Total
Very Low Density Residential	59.4	4.7%
Low Density Residential	412.4	32.5%
Medium Density and High Density Residential	42.3	3.3%
Office	15.6	1.2%
Retail Commercial	25.0	2.0%
Highway Commercial	5.2	0.4%
Service Commercial	34.8	2.7%
Light Industrial	72.2	5.7%
Heavy Industrial	39.0	3.1%
Parks and Recreation	36.0	2.8%
Schools	83.1	6.5%
Other public	80.1	6.3%
Vacant land	130.1	10.2%
Vacant buildings	1.9	0.2%
Total	1,270.3	100%

Source: City of Lindsay General Plan (1985)

Figure 43: City of Lindsay Planned Land Uses



Source: City of Lindsay General Plan (1989)

Opportunity Areas

Increased building height limits, floor-area ratios, and updates to local zoning code can support increased development that is compatible with high quality transit service serving the corridor. Updates to the city and county general plan could support increased residential and employment density and identify key priorities with local stakeholders. Most of the general plans reviewed within the proposed Phase 1 Cross Valley Corridor locations have not been updated since the early 2000s. In lieu of a general plan update, corridor- or neighborhood-focused specific plans can also incentivize development in areas surrounding stop locations. Finally, cities should use the finalized Phase 1 stop locations to identify underutilized parcels within the stop vicinity that can accommodate increased densities. Parcels may be identified as part of developing updated general or specific plans as well through housing element site inventories.

09

EXISTING TRANSIT SERVICE EVALUATION

Multiple transit systems already operate bus services in the CVC. Evaluating these systems provides valuable insight regarding existing transit operations and ridership in the study area.

Findings from the following existing transit service evaluation will be used to inform service design for the CVC Phase 1 Bus Service to ensure the operating plans are reasonable and lead to productive and efficient service that is attractive to potential riders.



SYSTEMS OVERVIEW

The main bus systems within the CVC are summarized in Table 17 and described further below. The specific fixed route services which operate within the CVC are summarized in Table 18. Key fixed routes are mapped in Figure 44 as well. The existing routes are considered in two categories: (1) those that provide service along the corridor (i.e., primary purpose of the routes is to connect communities directly along the CVC), and (2) those that provide connecting services that feed into the CVC. Note that while KART Route 12 and TCRTA Route C90 both provide incidental connections between CVC communities, these two services largely serve to provide connections into the corridor and are thus included in the latter category. The overview presented in this section is broad in scope; later sections will present a more detailed analysis of the existing intercity fixed routes in the CVC.

Table 17: Overview of Existing Bus Services in the Cross Valley Corridor

Agency	Service Area	Number of Fixed Routes	Fleet Size	One-Way Fare	FY 2021-22 Ridership
Tulare County Regional Transit Authority (TCRTA) ¹	Tulare County Dinuba Porterville	26	Fixed Route: 62 Paratransit: 14 Microtransit: 23	\$2.00	654,503
Kings Area Rural Transit (KART)	Kings County Hanford	14	Fixed Route: 24 Paratransit: 10 Microtransit: 2 Flex Route: 1	Local: \$1.25 Intercity: \$1.75	490,225
Visalia Transit	Visalia	13	Fixed Route: 49 Paratransit: 11 Microtransit: 5	\$1.75	528,592
Fresno County Rural Transit Agency (FCRTA) Coalinga and Huron Transit ²	Coalinga Huron Fresno	3	Fixed Route: 2 Paratransit: 3	Local: \$0.50-\$0.75 Intercity: \$2.00-\$6.75	15,839
Amtrak San Joaquins Thruway Bus Service ^{3,4}	Visalia to Santa Maria, With Stop in Hanford	1	Fixed Route: 1	Hanford to Visalia: \$10.00 Santa Maria to Visalia: \$42.00	3,086

Note 1: TCRTA recently consolidated Dinuba Area Regional Transit (DART), Porterville Transit, Tulare County Area Transit (TCAT), Tulare Intermodal Express (TIME), and the Woodlake Dial-a-Ride services. In FY 2022-23 all services were operated under one contractor.

Note 2: The Cities of Coalinga and Huron have inter-agency service agreements with FCRTA to operate general public transportation within the respective Cities.

Note 3: Amtrak San Joaquins operates multiple Thruway Bus routes. The Thruway Route 18 bus is the only route serving Kings and Tulare Counties.

Note 4: Amtrak San Joaquins ridership represents only Thruway Route 18 boardings within Kings and Tulare Counties.

Tulare County Regional Transit

The Tulare County Regional Transit Authority (TCRTA) is a Joint Powers Agency (JPA) comprised of the County of Tulare, the Cities of Dinuba, Exeter, Farmersville, Lindsay, Porterville, Tulare, and Woodlake, and the Tule River Tribe. TCRTA was formed in August 2020 through the consolidation of multiple local service providers; TCRTA assumed transit management responsibilities from the Cities of Dinuba, Tulare, and Woodlake in Fiscal Year (FY) 2021-22, and from the City of Porterville and County of Tulare in FY 2022-23.

In all, TCRTA now provides services throughout a large portion of Tulare County, operating twenty-six fixed routes, five ADA paratransit zones, one general public dial-a-ride service, and one on-demand microtransit service. Weekday fixed route service is generally between 6:00 AM and 8:00 PM, and weekend fixed route service is generally between 9:00 AM and 6:00 PM. TCRTA passengers are able to transfer to KART and Visalia Transit. TCRTA Route C40 (Visalia – Porterville) is further analyzed in subsequent sections of this study, as it provides intercity bus services to the CVC.

Kings Area Rural Transit

Kings Area Regional Transit (KART) is the largest public transit operator in Kings County, operating fourteen fixed routes, one flex route, two ADA paratransit zones, and one on-demand microtransit service. KART also partners with Enterprise to provide a vanpool service for local workers. KART's fixed route service consists of eight local Hanford Routes, one intercity route between Hanford and Lemoore, and five out-of-town routes that travel to Visalia, Fresno, Avenal, Corcoran, and Laton. Weekday fixed route service is generally between 6:00 AM and 7:00 PM, and Saturday service is generally between 9:30 AM and 5:00 PM. KART passengers can transfer to TCRTA, Corcoran Area Transit (CAT), Visalia Transit, the Fresno County Rural Transit Agency, and the Fresno Area Express. KART Routes 15 and 20 both provide intercity bus services between CVC communities, therefore both routes are further analyzed in later sections of this report.

Visalia Transit

Visalia Transit operates thirteen fixed routes, ADA paratransit, and general public dial-a-ride service within a service area encompassing the Cities of Visalia, Farmersville, Exeter, and Goshen. Visalia Transit also jointly operates Route 11x (the Visalia Express) with TCRTA between the Cities of Visalia and Tulare. Weekday fixed route service is generally provided between 6:00 AM and 9:00 PM, while weekend service is provided primarily between 9:00 AM and 7:00 PM. Visalia Transit provides transfer opportunities to TCRTA and KART. Three routes (Routes 9, 12 and 15) provide intercity service to other communities along the rail corridor and are therefore further analyzed in subsequent sections of this report.

Fresno County Rural Transit Agency – Coalinga and Huron Transit

The Fresno County Rural Transit Agency (FCRTA) operates twenty-five individual services that provide both intra- and intercity transit services throughout rural Fresno County, which lies to the north of Tulare and Kings Counties. Two FCRTA subsystems, Coalinga Transit and Huron Transit, provide bus service either intra- or intercity services to the City of Huron. As Huron is located at the far western end of the proposed Cross Valley Rail, both Coalinga and Huron Transit are therefore considered to operate partially within the CVC.

Coalinga Transit consists of an intercity fixed route and a general public dial-a-ride service. The Coalinga intercity fixed route operates one roundtrip daily, Monday through Saturday, from Coalinga to the City of Fresno via Huron. Huron Transit also consists of an intercity fixed route and a general public dial-a-ride service. The Huron fixed route provides three roundtrips between Huron and Coalinga daily. The fixed route operates Monday through Friday between 9:00 AM and 5:00 PM. Coalinga and Huron residents can transfer to other local Fresno County services via the Coalinga intercity route. The Coalinga intercity route also allows for other transfer opportunities in Fresno, including to the Fresno Area Express, KART, and Amtrak San Joaquins.

Amtrak San Joaquins Service

Amtrak operates passenger rail service from Bakersfield, through the Central Valley to the East Bay. This essential service connects the Central Valley to California, serving communities including Fresno, Stockton, and Sacramento.

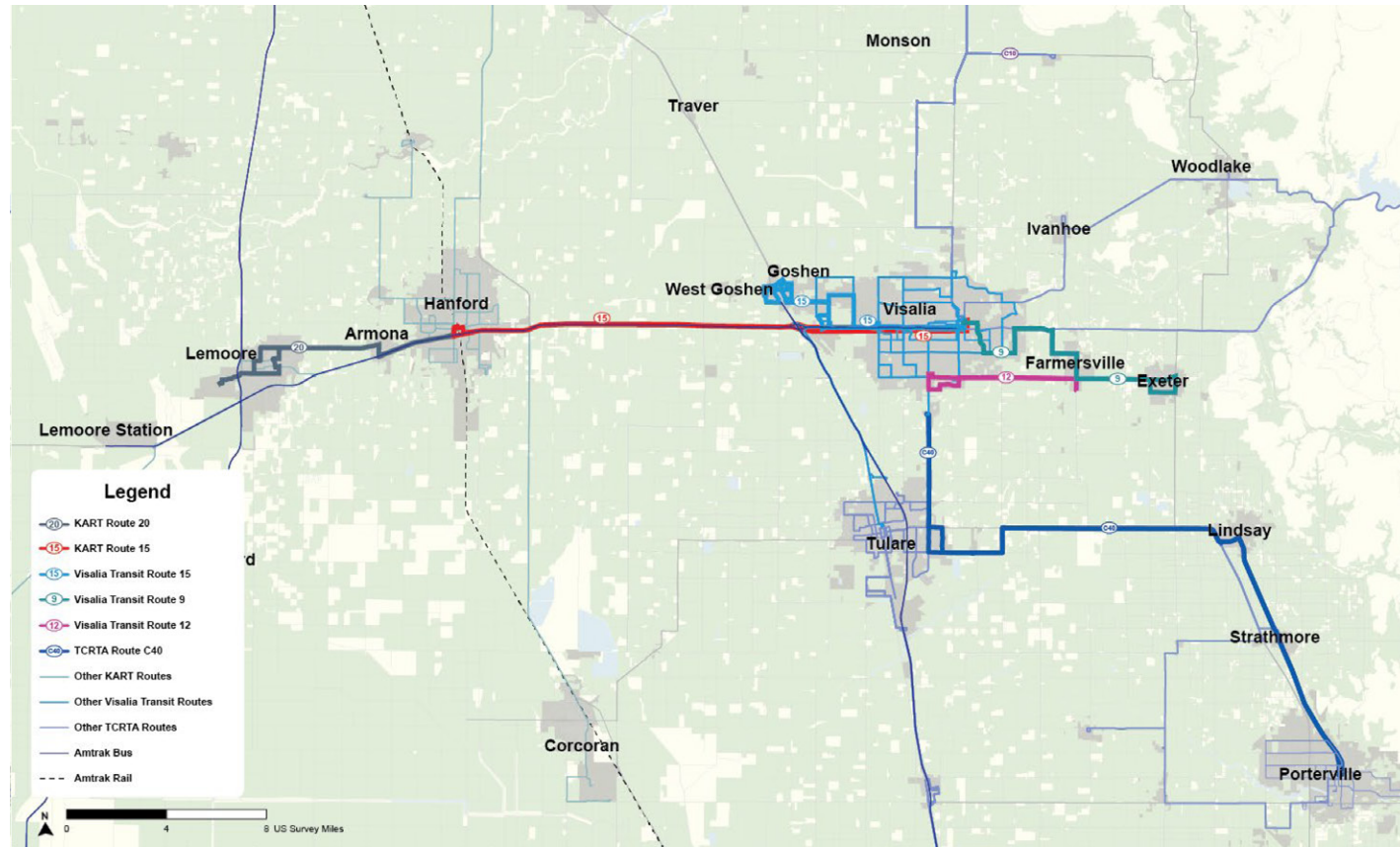
In addition to the rail service, Amtrak San Joaquins offers an extensive Thruway Bus service. Thruway Route 18 serves the CVC, routed from Santa Maria to Visalia via Hanford. The Thruway Route 18 bus completes one roundtrip daily. The westward bound bus departs Visalia at 1:00 PM and then Hanford at 1:30 PM. The eastbound bus arrives in Hanford at 12:10 PM and in Visalia at 12:30 PM. Thruway Route 18 passengers can transfer at the Hanford station to a southbound train at 12:24 PM and a northbound train at 1:39 PM.

Table 18: Overview of Existing Bus Routes in the Cross Valley Corridor

Route			Service Corridor	Span of Service			Frequency of Service			Peak Vehicles in Operation
				Weekday	Saturday	Sunday	Weekday	Saturday	Sunday	
Key Services along the CVC	KART	15	Hanford - Visalia	7:15 A.M. - 5:40 P.M.	-	-	3 Round Trips/Day	-	-	1
		20	Hanford - Lemoore	6:05 A.M. - 7:15 P.M.	9:35 A.M. - 4:30 P.M.	-	30 Min.	30 Min.	-	3
	TCRTA	C40	Visalia - Tulare -Lindsay - Porterville	5:25 A.M. - 7:53 P.M.	9:45 A.M. - 6:40 P.M.	9:45 A.M. - 6:40 P.M.	65 Min.	4 Round Trips/Day	4 Round Trips/Day	1
	Visalia Transit	9	Visalia-Farmersville-Exeter	6:00 A.M. - 8:47 P.M.	8:37 A.M. - 6:17 P.M.	8:37 A.M. - 6:17 P.M.	45 Min.	90 Min.	90 Min.	2
		12	Visalia - Farmersville	6:00 A.M. - 9:37 P.M.	7:57 A.M. - 6:37 P.M.	7:57 A.M. - 6:37 P.M.	60 Min.	60 Min.	60 Min.	1
		15	Visalia - Goshen	6:00 A.M. -10:20 P.M.	7:30 A.M. - 6:35 P.M.	7:30 A.M. - 6:35 P.M.	45 Min.	45 Min.	45 Min.	2
Other Services Connecting to the CVC	Amtrak	Thruway18	Santa Maria - Visalia	8:45 A.M. - 5:00 P.M.	8:45 A.M. - 5:00 P.M.	8:45 A.M. - 5:00 P.M.	1 Round Trip/Day	1 Round Trip/Day	1 Round Trip/Day	1
	KART	12	Hanford-Lemoore-Avenal ²	6:15 A.M. - 7:10 P.M.	8:45 A.M. - 5:00 P.M.	-	5 Round Trips/Day	2 Round Trips/Day	-	2
		13	Hanford-Corcoran	6:40 A.M. - 5:10 P.M.	-	-	3 Round Trips/Day	-	-	1
		14	Hanford-Laton	8:40 A.M. - 3:20 P.M.	-	-	2 Round Trips/Day	-	-	1
		17 ¹	Hanford-Fresno	9:00 A.M. - 4:00 P.M.	-	-	2 Round Trips/Day	-	-	1
		Hanford Local Routes		Hanford	6:30 A.M. - 7:30 P.M.	9:30 A.M. - 5:30 P.M.	-	60 Min.	60 Min.	-
	TCRTA	C10	Visalia-Dinuba	6:15 A.M. - 7:05 P.M.	10:25 A.M.- 5:47 P.M.	10:25 A.M.- 5:47 P.M.	60 Min.	60 Min.	4 Round Trips/Day	2
		C30	Visalia-Ivanhoe-Woodlake-Lemon Cove	5:15 A.M. - 8:15 P.M.	8:50 A.M. - 6:00 P.M.	8:50 A.M. - 6:00 P.M.	35 Min.	60-120 Min.	60-120 Min.	2
		C90	Lindsay-Porterville	6:20 A.M. - 6:30 P.M.	-	-	4 Round Trips/Day	-	-	1
		11x ²	Visalia-Tulare	6:30 A.M. - 9:30 P.M.	8:30 A.M. - 6:30 P.M.	8:30 A.M. - 6:30 P.M.	30 Min.	30 Min.	30 Min.	2
		Porterville Local Routes		Porterville	7:00 A.M. - 7:37 P.M.	7:00 A.M. - 7:37 P.M.	8:00 A.M. - 5:37 P.M.	30-40Min.	30 - 40 Min.	30 - 40 Min.
	Visalia Transit	Other Visalia Transit Routes	Visalia	6:00 A.M. -10:00 P.M.	7:00 A.M. - 7:00 P.M.	7:00 A.M. - 7:00 P.M.	15-60 Min.	30 - 90 Min.	30 - 90 Min.	18
	FCRTA	Coalinga Transit	Coalinga - Huron - Fresno	8:00 A.M. - 5:45 P.M.	8:00 A.M. - 5:45 P.M.	-	1 Round Trip/Day	1 Round Trip/Day	-	1
Huron Transit		Coalinga - Huron	9:00 A.M. - 5:04 P.M.	-	-	3 Round Trips/Day	-	-	1	

Note 1: KART Route 17 operates on only Mondays and Wednesdays.
 Note 2: TCRTA Route 11x is jointly operated by TCRTA and Visalia Transit

Figure 44: Map of Existing Cross Valley Corridor Bus Services



Note: Not all KART, Visalia Transit, and TCRTA routes are shown. Focused routes, include KART Route 20 and 15, Visalia Transit Route 9, 12, and 15, and TCRTA Route 40 were the focus of this analysis and are shown in bold.

EXISTING SERVICE EVALUATION

The following evaluation focuses specifically on the existing intercity fixed routes serving the CVC study area more than once per day. These include the following routes: KART Routes 15 (Hanford-Visalia) and 20 (Hanford-Lemoore), TCRTA Route C40 (Southeast County), and Visalia Transit Routes 9 (Visalia – Farmersville – Exeter), 12 (Visalia – Farmersville), and 15 (Visalia – Goshen).

Passenger Characteristics

Previous onboard surveys conducted on KART, TCAT (now TCRTA), and Visalia Transit services generated data regarding typical passenger characteristics. Key findings from these survey efforts are summarized in Table 19. All three survey efforts found the majority of passengers on each of the respective services are likely transit reliant; nearly 90 percent of TCAT passengers and 80 percent of KART and Visalia Transit passengers reported they did not have access to a functioning vehicle, and two-thirds of KART passengers reported they did not have their driver's license. Additionally, 90 percent of TCAT and 38 percent of Visalia Transit passengers reported living in households with annual incomes of \$24,999 or less, which is far below the median household income in California. KART, TCAT, and Visalia Transit passengers reported riding the bus for a variety of different reasons, with the top trip purposes cited being work, shopping, and medical appointments.

The TCAT survey in particular asked passengers what other transit systems they connect to via TCAT. These results are summarized in Figure 45. The top answer was Visalia Transit (37 percent of all surveyed passengers), followed by Porterville Transit and the Tulare Intermodal Express, both of which are now operated by TCRTA.

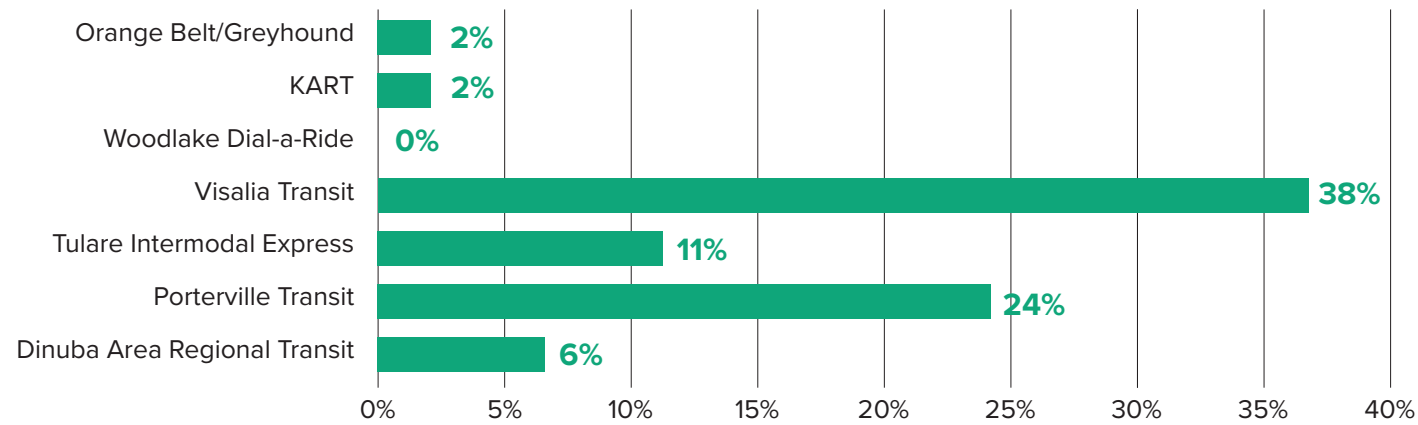
Table 19: Typical Characteristics of Existing CVC Transit Passengers

Characteristic	Agency	Agency		
		KART	TCAT	Visalia Transit
Annual Household Income	\$25,000 or More	-	12%	62%
	\$24,999 or Less	-	88%	38%
Driver's License Status	Licensed	34%	-	-
	No License	66%	-	-
Automobile Access	Yes	21%	11%	21%
	No	79%	89%	79%
Trip Purpose	Work	23%	19%	26%
	Shopping	28%	19%	19%
	School/College	4%	19%	16%
	Medical	12%	18%	20%
	Social	3%	11%	13%
	Other	30%	14%	6%

Note 1: TCRTA recently consolidated Dinuba Area Regional Transit (DART), Porterville Transit, Tulare County Area Transit (TCAT), Tulare Intermodal Express (TIME), and the Woodlake Dial-a-Ride services. In FY 2022-23 all services were operated under one contractor.

Sources: Kings County Transit Development Plan (2021), Tulare County Area Transit 2015-2020 Transit Development Plan (2015), Visalia Transit Short Range Transit Plan (2022).

Figure 45: Transit Connections Made by TCAT Passengers



Note 1: TCRTA recently consolidated Dinuba Area Regional Transit (DART), Porterville Transit, Tulare County Area Transit (TCAT), Tulare Intermodal Express (TIME), and the Woodlake Dial-a-Ride services. In FY 2022-23 all services were operated under one contractor.

Source: Tulare County Area Transit 2015-2020 Transit Development Plan (2015).

Existing Transit Service Quality

Whether or not someone chooses to use transit often relates to how the person perceives the service quality. One of the top service characteristics which influences bus ridership is the span of service, or the hours a specific bus is available. Table 20 details the span of service and service frequency for the six existing CVC intercity fixed routes.

Overall, the intercity routes are all available weekdays from 6:00 AM to 7:00 PM, with some operating more extended hours. All of the routes but KART Route 15 are also available on Saturdays, generally between 8:00 AM and 6:00 PM. TCRTA and Visalia Transit operate on Sundays as well. KART Route 20 and Visalia Transit Routes 9 and 15 operate on 30-to-45-minute frequencies, while the other three routes operate on frequencies of 60-minutes or longer. KART Route 15 does not operate continuously throughout the day, rather it provides a limited number of roundtrips each day.

Other important service quality factors include travel time and transfer requirements. Table 21 reviews current travel times between the proposed Cross Valley Rail station locations using existing bus services. This analysis assumes passengers could use other services

in addition to the six key routes to complete their trip. Travel times to NAS Lemoore were not calculated due to there being no existing services to the base.

Based on the travel matrix shown, the average travel time between the various destinations is more than three hours. The travel time obviously varies depending on the proximity of each of the proposed station locations; for instance, it takes only 18 minutes to travel from Farmersville to Exeter on the bus, but it takes more than nine hours to travel from Huron to Porterville (via Fresno). The only trips with service frequencies of 60-minutes or less are the trips which require only one bus to complete (i.e., no transfers).

As shown, 23 percent of trips can be completed with only one bus service. Another 21 percent require one transfer (as indicated by the letter “T”), resulting in longer travel times. The remaining 56 percent of the trips require two to four transfers to complete via existing bus services. In all, the travel time analysis shown in Table 21 suggests many residents are likely hindered from using existing transit services to travel between the CVC communities due to the long travel times and infrequent service options. The high number of transfers required to complete longer trips also likely deters riders due to the uncertainty associated with making transfers.

These findings are supported by comparing the transit travel times shown in Table 21 to the typical auto travel times for the same trips. This comparison is shown in Table 22. As evidenced in the table, some of the transit travel times are relatively comparable to the corresponding auto travel time, such as for trips between Visalia and Farmersville or between Porterville and Lindsay. In other cases, however, completing the

trip using existing transit services takes much longer than completing the trip by car, such as between Huron and Lemoore. A standard often used in transit planning is to strive to provide transit service that requires no more than 2 to 3 times the auto travel time. Using this as a guide, existing bus services provide a marginally acceptable alternative to cars in the key corridor between Hanford, Visalia, and Lindsay.

Table 20. Span of Service of Existing CVC Intercity Fixed Routes

Legend: ■ Less than 60 Min. ■ 60 Min. or More

Service Frequency		KART		TCRTA	Visalia Transit		
		15	20	C40	9	12	15
		Hanford - Visalia	Hanford - Lemoore	Visalia - Porterville	Visalia - Farmersville - Exeter	Visalia - Farmersville	Visalia - Goshen
Weekday	5:00 A.M.						
	6:00 A.M.						
	7:00 A.M.						
	8:00 A.M.						
	9:00 A.M.						
	10:00 A.M.						
	11:00 A.M.						
	12:00 P.M.						
	1:00 P.M.						
	2:00 P.M.						
	3:00 P.M.						
4:00 P.M.							
5:00 P.M.							
6:00 P.M.							
7:00 P.M.							
8:00 P.M.							
9:00 P.M.							
10:00 P.M.							
11:00 P.M.							
Saturday	7:00 A.M.						
	8:00 A.M.						
	9:00 A.M.						
	10:00 A.M.						
	11:00 A.M.						
	12:00 P.M.						
	1:00 P.M.						
	2:00 P.M.						
	3:00 P.M.						
	4:00 P.M.						
	5:00 P.M.						
6:00 P.M.							
7:00 P.M.							
Sunday	7:00 A.M.						
	8:00 A.M.						
	9:00 A.M.						
	10:00 A.M.						
	11:00 A.M.						
	12:00 P.M.						
	1:00 P.M.						
	2:00 P.M.						
	3:00 P.M.						
	4:00 P.M.						
	5:00 P.M.						
6:00 P.M.							
7:00 P.M.							

Sources: KART, TCRTA, and VT published schedules.

Table 21 : Cross Valley Corridor Existing Transit Service Quality

Weekday Travel Times, Frequency, and Transfers

		Destination Station							
		Huron	Lemoore	Hanford	Visalia	Farmersville	Exeter	Lindsay	Porterville
Origin Station	Huron		290 TT	248 T	444 T	520 TT	538 TT	553 TTT	575 TTT
	Lemoore	345 TT		52	123 TT	148 TT	166 TT	256 TTT	283 TTT
	Hanford	223 T	37		45	81 T	103 T	183 TT	205 TT
	Visalia	273 T	82 T	39		21	39	88	101 T
	Farmersville	337 TT	165 TT	125 T	26		18	123 TT	145 TT
	Exeter	360 TT	158 TT	108 T	49	23		191 TT	213 TT
	Lindsay	377 TTT	180 TTT	137 TT	86 T	129 TT	146 TT		29
	Porterville	400 TTT	205 TTT	173 TT	110 T	154 TT	166 TT	26	

Travel Time in Minutes

T= Transfer Required

Service Frequency

30 Min. or Less

31 - 60 Min.

61 Min. or More

Source: LSC Transportation Consultants, Inc. (Based on printed schedules and travel times per Google Maps).

Table 22: Comparison of Auto and Transit Weekday Travel Times Along the Cross Valley Corridor

		Destination Station							
		Huron	Lemoore	Hanford	Visalia	Farmersville	Exeter	Lindsay	Porterville
Origin Station	Huron		27 10.7	31 8.0	51 8.7	54 9.6	59 9.1	70 7.9	82 7.0
	Lemoore	27 12.8		12 4.3	32 3.8	36 4.1	41 4.0	51 5.0	6.3 4.5
	Hanford	31 7.2	12 3.1		22 2.0	26 3.1	31 3.3	41 4.5	54 3.8
	Visalia	51 5.4	31 2.6	22 1.8		11 1.9	16 2.4	26 3.4	39 2.6
	Farmersville	56 6.0	37 4.5	28 4.5	12 2.2		8 2.3	19 6.5	31 4.7
	Exeter	60 6.0	40 4.0	31 3.5	15 3.3	8 2.9		14 13.6	27 7.9
	Lindsay	70 5.4	51 3.5	42 3.3	26 3.3	19 6.8	14 10.4		16 1.8
	Porterville	85 4.7	63 3.3	56 3.1	38 2.9	31 5.0	26 6.4	16 1.6	

LEGEND

51	Typical Auto Travel Times in Minutes
2.0	Ratio of Transit Tavel Time to Auto Travel Time

Source: LSC Transportation Consultants, Inc. (Based on printed schedules and travel times per Google Maps).

Recent Ridership Trends and Operations Data

Historic ridership on the key existing CVC intercity bus routes is summarized in Table 23 and Figure 46. Overall, the six routes carried 200,677 passenger-trips in FY 2021-22, with KART Route 20 (Hanford-Lemoore), TCRTA Route C40 (Visalia-Porterville), and Visalia Transit Route 9 (Visalia-Farmersville-Exeter) serving the most passenger-trips (Figure 46). KART Route 15 (Hanford-Visalia), and Visalia Transit Route 12 (Visalia-Farmersville) carried less passenger-trips compared to the other four routes during the five years analyzed; it is possible this trend may be attributed in part to those two routes' slower service frequencies and shorter span of services, as discussed in the previous section.

The COVID-19 pandemic significantly impacted transit ridership worldwide, and this impact was also evident in transit ridership along the CVC. Ridership on the six intercity fixed routes decreased by 58 percent from FY 2017-18 to FY 2020-21; Visalia Transit Route 9 experienced the smallest decrease in ridership (-43 percent) while KART Routes 15 and 20 and Visalia Transit Routes 12 and 15 all experienced greater decreases (-70 percent or more). Ridership recovery was evident in FY 2021-22, however, with ridership on the six intercity fixed routes increasing by 23 percent over the previous year. The rate of ridership recovery observed in FY 2021-22 varied depending on the service, with TCRTA Route C40 and KART Route 20 experiencing the greatest recoveries year-over-year (+102 and +48 percent, respectively).

Table 23. Historical Ridership on the CVC Intercity Fixed Routes

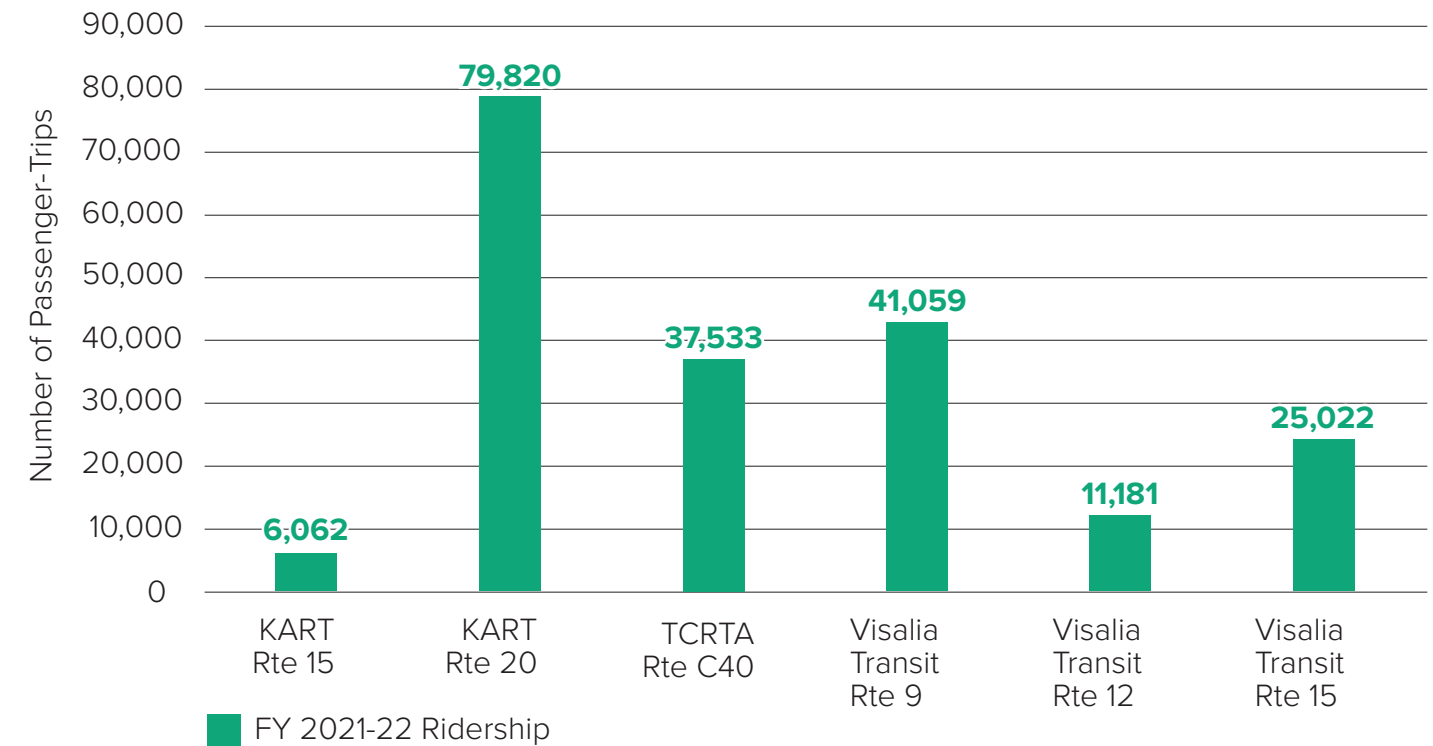
Route		Fiscal Year				
		2017-18	2018-19	2019-20	2020-21	2021-22
KART	15	17,609	17,452	13,479	4,662	6,062
	20	190,991	195,663	145,449	53,833	79,820
TCRTA	C40	37,275	34,476	31,566	18,615	37,533
Visalia Transit	9	82,760	88,081	72,965	47,086	41,059
	12	45,463	21,641	17,553	12,282	11,181
	15	15,762	12,960	21,592	27,129	25,022
Total		389,860	370,273	302,604	163,607	200,677
% Change in Total From Previous Year		-	-5%	-18%	-46%	23%
% Change in Total from 2017-18		-	-5%	-22%	-58%	-49%

Note 1: TCRTA Route 11x is jointly operated by TCRTA and Visalia Transit.

Note 2: TCRTA did not charge fares in FY 2021-22. The Free Fare Ridership Campaign was funded by the CalTrans Low Carbon Transit Operations

Sources: KART, TCRTA, Visalia Transit.

Figure 46: CVC Intercity Fixed Routes FY 2021-22 Ridership



Sources: KART, TCRTA, Visalia Transit.

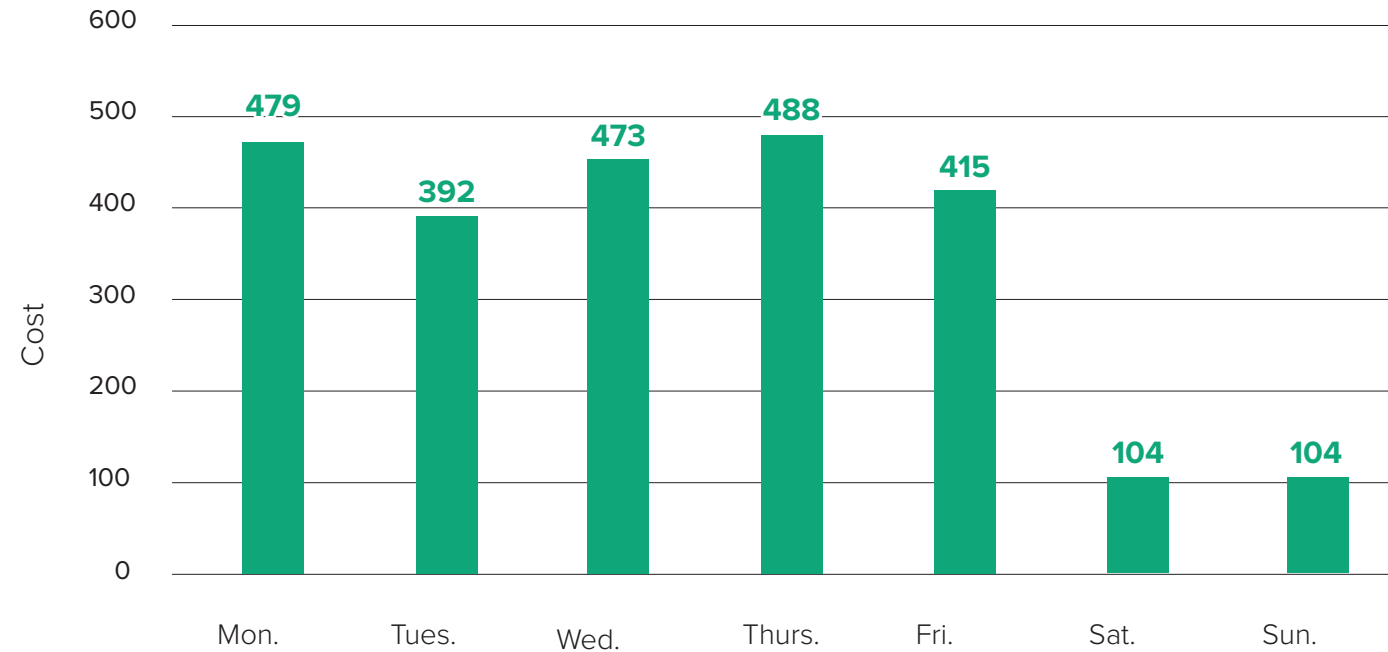
Figure 47 shows average daily ridership during March 2023 on all of the TCRTA County Routes that operate either partially or fully within the CVC (Routes C10, C30, C40, and C90). Weekday ridership on the four routes averaged 451 passenger-trips per day, while weekend ridership averaged 104 passenger-trips per day. Thursday saw the highest average daily ridership in the month considered compared to any of the other days of the week (488 passenger-trips). It should be noted that ridership levels were nearly identical on Saturdays and Sundays, which is actually rather atypical; most transit services observe significantly less ridership on Sundays compared to Saturdays.

Table 24 summarizes additional FY 2021-22 operations data for the six subject routes. In sum, the six routes operated 42,049 vehicle service hours and

819,935 vehicle service miles in FY 2021-22 at a cost of \$4.4 million.

These service levels required ten buses to be in service at peak times. TCRTA did not require fares in FY 2021-22, therefore Route C40 did not generate any fare revenue. Service levels varied among the different routes considered in part due to the different spans of service, but also due to different route lengths. For instance, one round-trip on KART Route 20 is much shorter than a roundtrip on TCRTA Route C40, therefore TCRTA Route C40 operated more vehicle service miles over the course of FY 2021-22 despite not completing as many actual roundtrips. Operating costs varied due to the respective service levels operated by each route, but also due to the routes being operated by different agencies and contractors.

Figure 47: TCRTA CVC County Routes Average Daily Ridership – March 2023



Note 1: The average daily ridership calculations only include data for Routes C10, C30, C40, and C90.

Sources: KART, TCRTA, Visalia Transit.

Table 24: CVC Intercity Fixed Routes - FY 2021-22 Operations Data

Route		Service Characteristics				
		Passenger-Trips	Vehicle Service Hours	Vehicle Service Miles	Operating Costs	Fare Revenue
KART	15	6,062	815	31,751	\$ 88,108	\$ 18,557
	20	79,820	9,839	164,804	\$ 1,064,199	\$ 67,737
TCRTA	C40	37,533	7,709	207,759	\$ 557,619	-
Visalia Transit	9	41,059	8,201	151,526	\$ 943,990	\$ 40,776
	12	11,181	5,175	75,255	\$ 588,889	\$ 10,230
	15	25,022	10,311	188,841	\$ 1,186,618	\$ 21,672

Sources: KART, TCRTA, Visalia Transit.

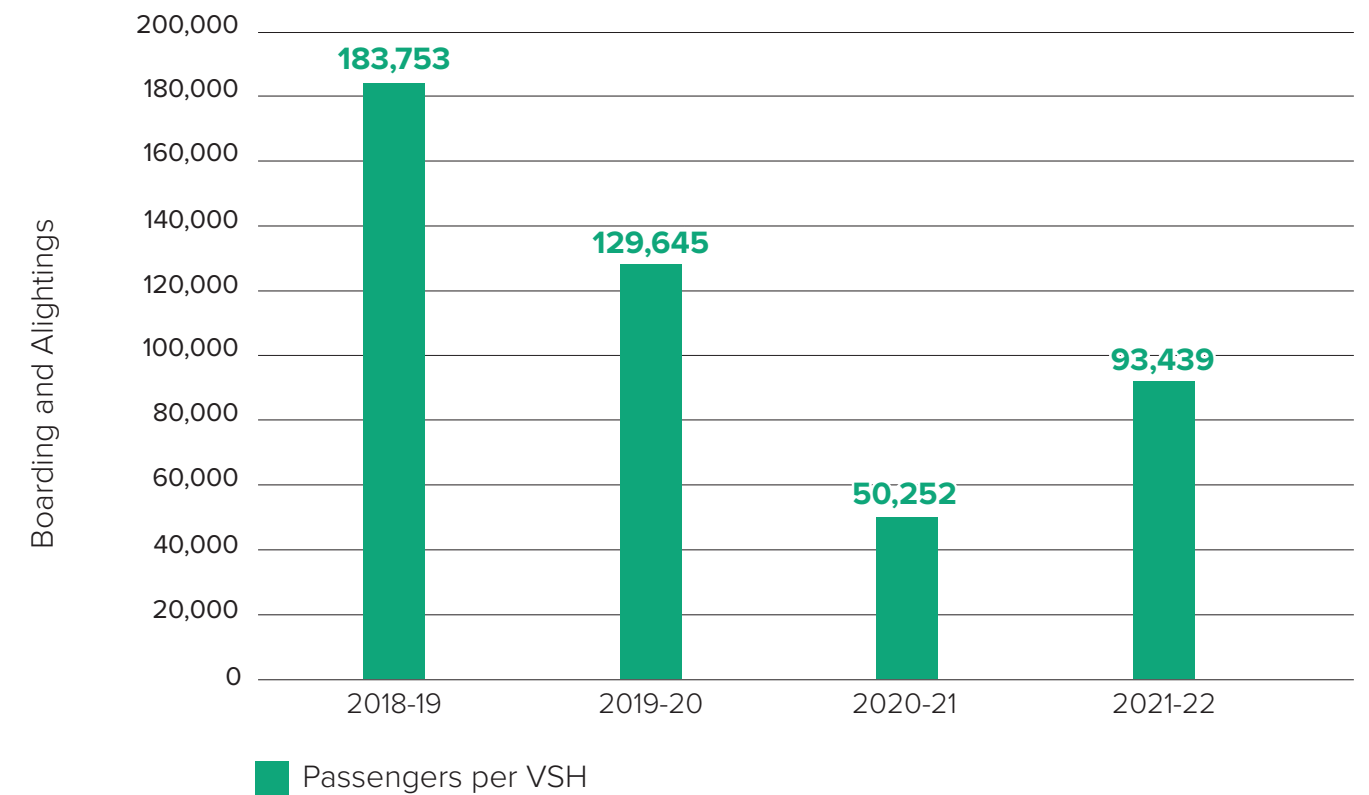
San Joaquins Service

Amtrak operates passenger rail service from Bakersfield, through the Central Valley to Sacramento and the East Bay, as well as thruway bus service connecting San Luis Obispo to Hanford and Visalia. This essential service connects the Central Valley to California, serving communities including Fresno, Stockton, and Sacramento. In FY 2018-19, the Hanford San Joaquins station served more than 94,000 boarding passengers, and 89,000 alighting passengers. Current post-pandemic Amtrak ridership at Hanford is about half the 2019 totals.

The Amtrak Thruway Route 18 provides daily connecting bus service from the Hanford San Joaquins station east to Visalia and west to San Luis Obispo, Santa Maria and other stops. Annual total boardings and alightings at the Hanford station in recent years are as follows:

- FY 2018/19 **29,971**
- FY 2019/20 **17,661**
- FY 2020/21 **2,570**
- FY 2021/22 **3,086**

Figure 48: San Joaquin Amtrak Rail Boardings and Alightings at Hanford Station



Sources: KART, TCRTA, Visalia Transit.

FY 2021-22 Performance

The relative performance of transit services is often assessed with measures such as the cost per vehicle service hour or the cost per passenger-trip. The FY 2021-22 operations data shown in Table 25 was used to calculate multiple performance metrics for the six subject routes. This performance analysis is summarized in Table 25.

The first two metrics, passenger-trips per vehicle service hour and vehicle service mile assess the productivity of each route. Altogether, the six CVC intercity fixed routes carried 4.8 passenger-trips per vehicle service hour in FY 2021-22. KART Route 20 (8.1 passenger-trips per vehicle service hour), KART Route 15 (7.4), and Visalia Transit Route 9 (5.0) were the three most productive services based on this metric. Passenger-trips per vehicle service hour data is also summarized in Table 26. The total number of passenger-trips carried per vehicle service mile on all six routes was 0.2, with KART Route 20 carrying the most passenger-trips per vehicle service mile (0.5), followed by Visalia Transit Route 9 (0.3).

The operating cost per passenger-trip can be used to assess the cost effectiveness of transit services. The total operating cost per passenger-trip across all six routes was \$22.07, however this metric varied significantly depending on the service. Generally, the routes with greater ridership had lower operating costs per passenger-trip. KART Routes 15 and 20 and TCRTA Route C40 all had operating costs per passenger-trip below \$15. The three Visalia Transit routes all generated more than \$20 in operating costs per passenger-trip, with Routes 12 and 15 each generating closer to \$50 in operating costs per passenger-trip. This information is summarized in both Table 25 and Table 26.

The subsidy per passenger-trip represents the public investment in each passenger-trip. This metric is calculated by first determining the operating cost per passenger-trip, then subtracting fare revenues. KART Routes 15 and 20 had the lowest subsidies per passenger-trip in FY 2021-22 (less than \$13), while Visalia Transit Routes 12 and 15 had the highest (more than \$46). TCRTA did not charge fares in FY 2021-22, therefore the subsidy per passenger-trip on Route C40 was the same as the operating cost per passenger-trip.

The operating cost per vehicle service hour in FY 2021-22 across all six intercity routes was \$105.34. The KART services had an operating cost per vehicle service hour of about \$108.15, TCRTA Route C40 had a cost of \$72.33 per vehicle service hour, and the Visalia Transit Routes costs about \$114 per vehicle service hour. These costs were influenced by the agreements each agency adopted with their respective operations contractors.

It is important to note that FY 2021-22 operations were still significantly impacted by the COVID-19 pandemic, which began in March 2020. The pandemic also coincided with a multi-year period of high inflation rates, which caused transit agencies' operating costs to greatly increase in a short amount of time. Available data suggests that transit ridership on the six key CVC intercity routes increased in FY 2022-23 over the previous year. Data from the federal and state governments has also indicated that inflation rates have slowed in FY 2022-23, which may have had a positive impact on the cost effectiveness of each of the specific routes. Therefore, it is likely that most, if not all, of the routes being evaluated performed better in FY 2022-23 compared to the previous year.

Table 25: CVC Intercity Fixed Routes - FY 2021-22 Performance

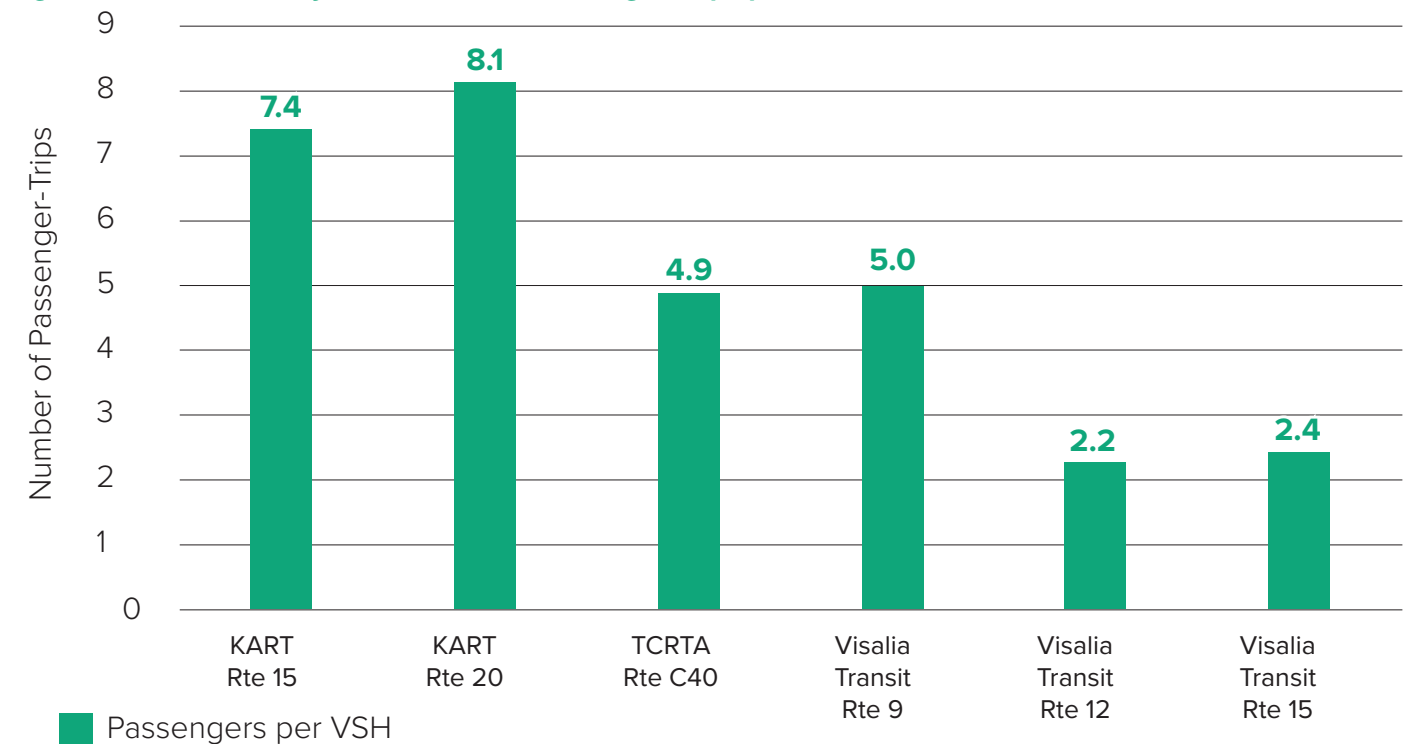
Route		Performance Indicator					
		Passenger-Trips per Vehicle Service Hour	Passenger-Trips per Vehicle Service Mile	Cost per Passenger-Trip	Subsidy per Passenger-Trip	Cost per Vehicle Service Hour	Cost per Vehicle Service Mile
KART	15	7.4	0.2	\$14.53	\$11.47	\$108.11	\$2.77
	20	8.1	0.5	\$13.33	\$12.48	\$108.16	\$6.46
TCRTA	C40	4.9	0.2	\$14.86	\$14.86	\$72.33	\$2.68
Visalia Transit	9	5.0	0.3	\$22.99	\$22.00	\$115.11	\$6.23
	12	2.2	0.1	\$62.67	\$51.75	\$113.80	\$7.83
	15	2.4	0.1	\$47.42	\$46.56	\$115.09	\$6.28
Total		4.8	0.2	\$22.07	\$21.28	\$105.34	\$5.40

Note 1: TCRTA Route 11x is jointly operated by TCRTA and Visalia Transit.

Note 2: TCRTA did not charge fares in FY 2021-22. The Free Fare Ridership Campaign was funded by the CalTrans Low Carbon Transit Operations Program (LCTOP).

Sources: KART, TCRTA, Visalia Transit.

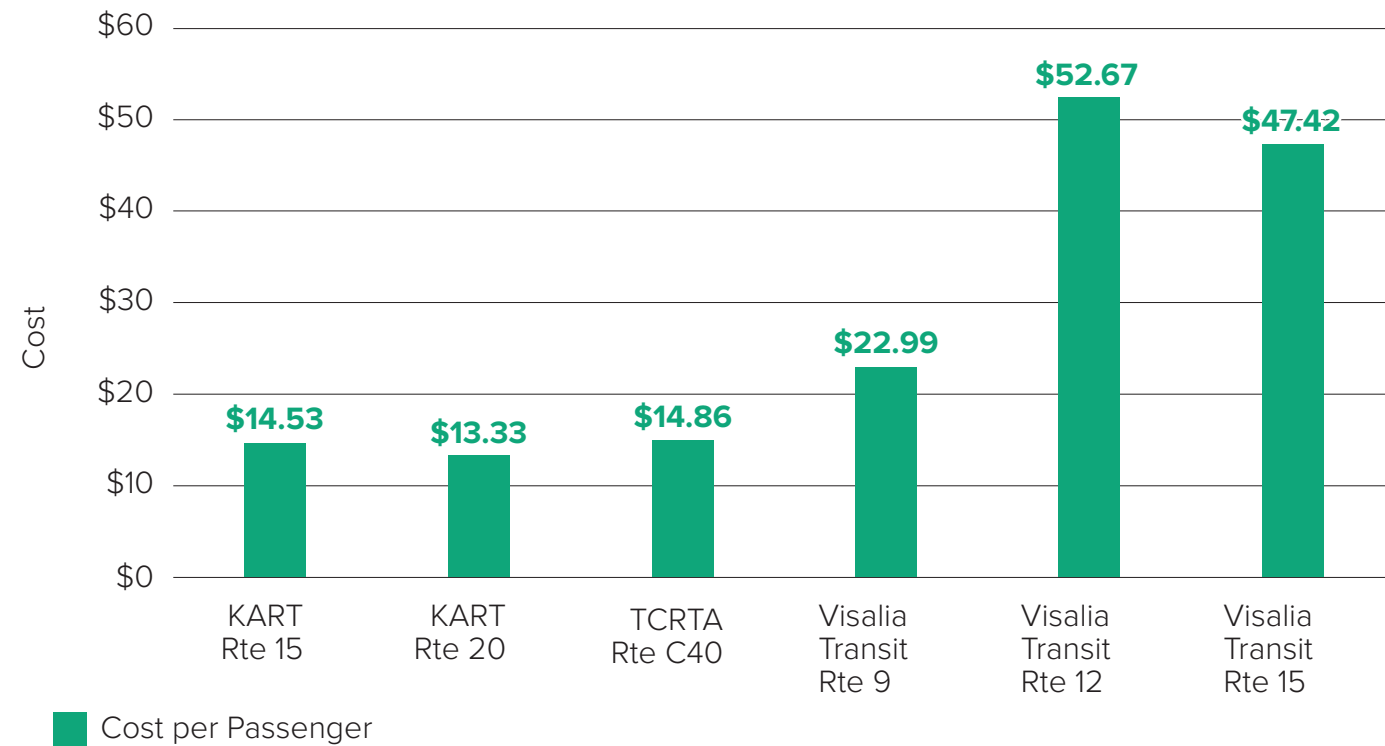
Figure 49: CVC Intercity Fixed Routes - Passenger-Trips per Vehicle Service Hour – FY 2021-2022



Note 1: TCRTA Route 11x is jointly operated by TCRTA and Visalia Transit.

Sources: KART, TCRTA, Visalia Transit.

Figure 50: CVC Intercity Fixed Routes - Operating Cost per Passenger-Trip – FY 2021-2022



Note 1: TCRTA Route 11x is jointly operated by TCRTA and Visalia Transit.
 Note 2: TCRTA did not charge fares in FY 2021-22. The Free Fare Ridership Campaign was funded by the CalTrans Low Carbon Transit Operations Program (LCTOP).
 Sources: KART, TCRTA, Visalia Transit.

OPPORTUNITY AREAS

The CVC is currently served by multiple transit operators, many of which in turn operate multiple different subsystems. The six intercity fixed routes evaluated in this section play a distinctly important role in enhancing regional mobility, collectively carrying more than 300,000 passenger-trips per year pre-COVID. Previous survey data indicates that passengers rely on these existing intercity services to get to work, commercial centers, and school, as well as to transfer to other local transit systems, demonstrating the importance of the regional connections provided by these intercity routes. While the existing services address basic inter-community mobility needs, additional trips could enable discretionary ridership. While limited options for commuting are available, existing services do not serve commuting to Kings County from Tulare County and accessing many jobs in the region require multiple transfers and long travel times. Using existing transit routes to travel along the CVC in most instances requires longer travel times compared to traveling by car (for some trips by a factor of 4 or more), and many times will require passengers to transfer, which can be confusing and expensive. Some services are also operated on a more limited frequency, meaning the bus may not be available when people actually need to ride. In addition, many San Joaquin train service times at the Hanford Station are not well served for travel to/from Tulare County.

The evaluation of existing intercity bus services makes it clear that the ultimate CVC bus service will be entirely different from current service offerings in the CVC. With implementation of full CVC service, transit ridership between the CVC communities will likely increase if the resulting Phase 1 bus service has the following impacts:

- Reduced travel times over existing services.
- Reduced need to transfer over existing services.
- More frequent service opportunities.
- Ability to use existing services as feeders and connectors into CVC.
- Provide a service that is easier to understand.
- One fare payment system to travel along the CVC.
- Better timing of connections to San Joaquin rail service prior to HSR implementation.

10

TRAVEL MARKET AND POTENTIAL FUTURE DEMAND



The purpose of the market assessment is to evaluate the demand between station and city pairs to estimate the potential range of future ridership in 2030.

Ridership estimates are preliminary rough order of magnitude, subject to change, and should not be used for any financial forecasting.

PURPOSE

Access/egress trips forecasted by the California High Speed Rail Authority are in the process of updates with new population forecasts from the California Department of Finance and Caltrans Economic Branch and are anticipated to change.

METHODOLOGY

Given the boundary limitations of TCAG and KCAG’s travel demand models, Replica data was used to evaluate the potential future travel demand for CVC stop catchments. Replica is a big data vendor that builds and maintains megaregional scale activity-based travel demand models. The California Megaregion model includes the entire state of California and Nevada. Replica is updated annually and seasonally to represent a typical weekday or weekend in either a Fall or Spring season. It is calibrated and validated with GPS and location-based services (LBS) data, highway vehicle counts, transit ridership data, and other demographic and economic data like credit card transactions.

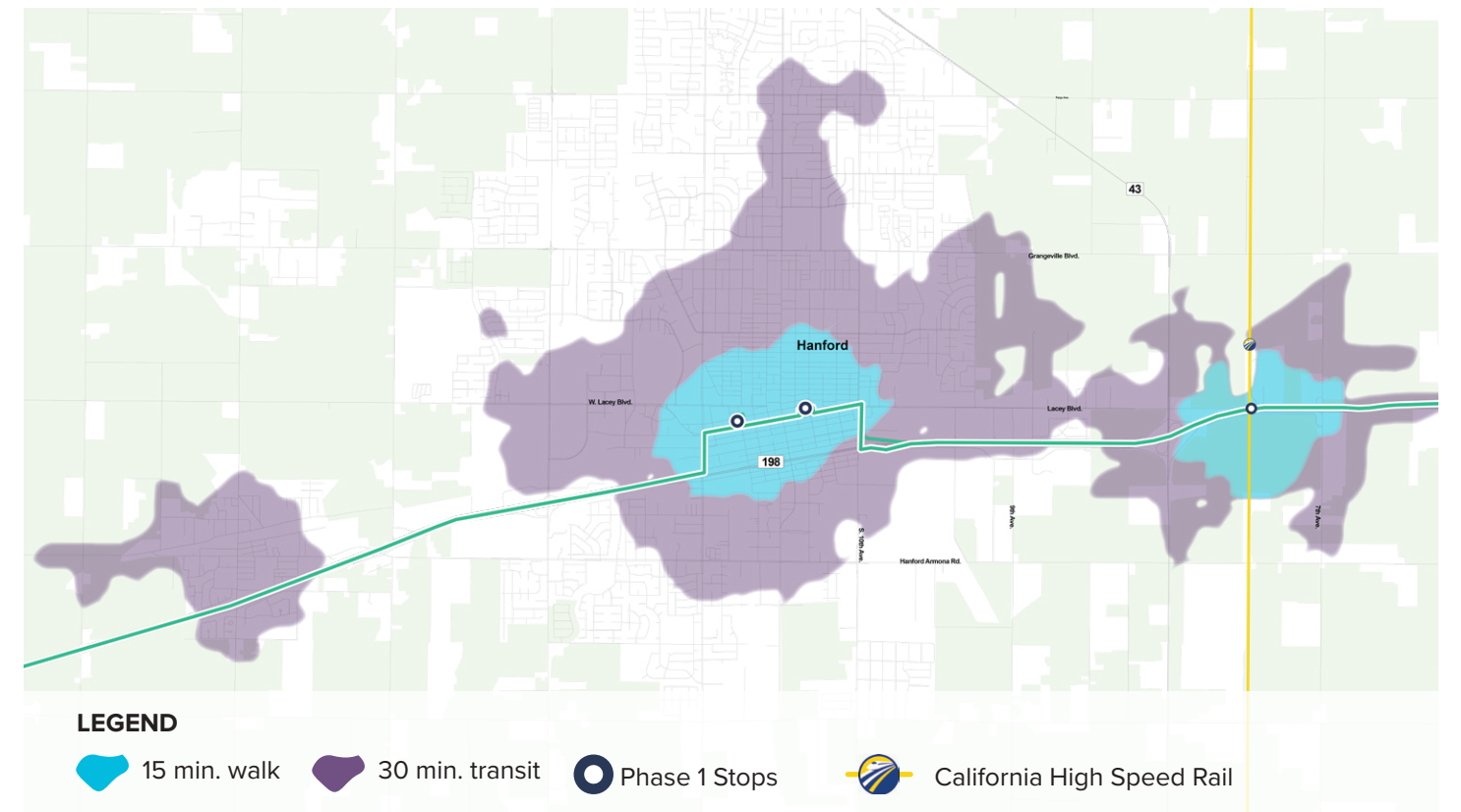
Arup queried baseline travel demand data from Replica for all person trips within the California megaregion for a typical weekday in Fall 2022. The market assessment included the following steps:

1. Query baseline Fall 2022 average weekday person trip data from Replica.
2. Generate station catchment areas for a 15 min walk and 30 min transit trip from proposed stops.
3. Identify block groups that are located within each catchment area.
4. Summarize origin-destination person trips by catchment area and mode.
5. Evaluate TCAG and KCAG travel demand model outputs.
6. Interpolate 2030 condition based on linear growth rates between model horizon years.
7. Estimate growth rate by each origin location from TCAG and KCAG’s model.
8. Apply growth rate for cross-county trips to Replica baseline travel demand.
9. Estimate low-range transit mode split based on existing transit mode split and baseline access/egress transit trips to the Kings/Tulare HSR station from the CAHSR authority’s model.
10. Estimate high-range transit mode split based on demand elasticities for improvements to transit service including transit service coverage and transit frequency.
11. Apply transit mode split assumptions to estimate a high and low-end ridership estimate for CVC Phase 1 bus service.

STOP CATCHMENTS

Using accessibility modeling with OpenTripPlanner that is based on an existing Open Street Map network and scheduled transit service through agencies’ General Transit Feed Specification (GTFS), catchments were drawn around future stop locations that visualize how far people can travel by different modes in a given time. Figure 51 shows the output of this accessibility modeling for the Hanford and Kings/Tulare HSR stops.

Figure 51: Walk and Transit Catchments for Hanford and Kings/Tulare HSR Stops



Managing Overlapping Catchments

Many of the proposed CVC stop locations have overlapping catchment areas (e.g., 2 adjacent stops in Hanford). To avoid double counting existing demand between these catchments, GIS post-processing (Thiessen polygon splitting) was required to adjust catchment boundaries so there are no overlapping features.

Catchment Areas to Census Block Groups

The smallest geographical unit for the Replica Fall 2022 trip tables was origin and destination locations at the US Census block group level. Block groups are statistical divisions of census tracts and are defined to contain between 600 and 3,000 people. Block groups were assigned to catchment areas based on the centroid of the block group boundary. This enables Replica trips to be aggregated by catchment area to assign demand to bus stops.

BASELINE TOTAL TRAVEL BETWEEN STATIONS

There is significant travel between stop catchments within and between Kings and Tulare counties. According to Replica model outputs, on an average weekday in Fall 2022, there were more than 135,000 person trips between stop catchments along the corridor. The greatest share of travel occurs between Tulare and Visalia, with about 17,000 person trips. Other catchments with significant travel include Lemoore to Hanford (12,000 trips), Visalia to Farmersville (10,000 trips), Kings/Tulare HSR to Hanford (4,000 trips), and Hanford to Visalia (3,400 trips). Stops were aggregated by stop city given granularity of Replica outputs at the block group level.

Table 26: Fall 2022 Average Weekday Person Trips by Stop Catchment

	Fall 2022 Average Weekday Person Trips	Destination Catchments									
		Lindsay	Farmersville	Visalia/Goshen	Hanford	Kings Tulare HSR	Lemoore	NAS Lemoore	Tulare	Visalia	Total
Origin Catchments	Lindsay		425	75	50	-	-	175	975	1,400	3,100
	Farmersville	375		650	200	25	25	-	1,025	9,650	11,950
	Visalia / Goshen	50	650		425	50	125	-	1,675	4,825	7,800
	Hanford	50	200	475		4,075	12,250	1,825	1,125	3,400	23,400
	Kings Tulare HSR	-	25	50	4,050		600	75	125	400	5,325
	Lemoore	25	25	100	12,225	650		1,725	300	800	15,850
	NAS Lemoore	175	-	-	1,675	25	1,875		25	200	3,975
	Tulare	875	1,125	1,800	1,175	100	300	25		17,000	22,400
	Visalia	1,400	9,675	4,575	3,425	375	750	150	16,525		36,875
	Total	2,950	12,125	7,725	23,225	5,300	15,925	3,975	21,775	37,675	130,675

Source: Replica

2030 GROWTH

TCAG and KCAG travel demand models assume growth between their baseline years and 2046. Arup summarized the transportation analysis zones (TAZs) within the station catchments from each model and analyzed the growth in person trips by origin catchment. Results were interpolated to a 2030 forecast year using a linear growth rate between 2022 and 2046. The Kings/Tulare HSR transit catchment represents the greatest growth between 2022 and 2030, or a 40 percent increase according to KCAG's travel model. Other walk and transit catchments are anticipated to grow at a modest rate, with an average growth rate in person trips of 9 percent between 2022 and 2046. These growth rates were applied to baseline person trips from Replica's model to estimate 2030 person trips travel demand.

Table 27: 2030 Person Trips Growth by Origin Catchment

CVC Stop Catchment Name	County	Origin in 30-min Walkshed			Origin in 30-min Transit-shed		
		Trips 2022	Trips 2030	% Change	Trips 2022	Trips 2030	% Change
Lindsay	TCAG	18,988	20,496	7.9%	32,520	35,742	9.9%
Farmersville	TCAG	17,562	18,479	5.2%	142,913	154,933	8.4%
Visalia/Goshen	TCAG	3,159	3,745	18.6%	105,196	112,175	6.6%
Tulare	TCAG	25,965	28,882	11.2%	212,676	222,047	4.4%
Visalia	TCAG	15,054	15,663	4.0%	99,926	106,973	7.1%
Hanford	KCAG	19,935	21,369	7.2%	73,606	79,388	7.9%
Kings Tulare HSR	KCAG	321	321	0.0%	3,414	4,779	40%
Lemoore	KCAG	17,765	18,391	3.5%	31,319	32,919	5.1%
Nas Lemoore	KCAG	19,684	19,664	-0.1%	-	-	-

Sources: KART, TCRTA, Visalia Transit.

Table 28: 2030 Person Trips Estimate

	Fall 2022 Average Weekday Person Trips	Destination Catchments									
		Lindsay	Farmersville	Visalia / Goshen	Hanford	Kings Tulare HSR	Lemoore	NAS Lemoore	Tulare	Visalia	Total
Origin Catchments	Lindsay		475	75	50	-	-	200	1,050	1,500	3,350
	Farmersville	425		675	200	25	25	-	1,125	10,375	12,850
	Visalia / Goshen	50	700		475	50	125	-	1,800	5,150	8,350
	Hanford	75	200	525		4,400	13,200	1,975	1,225	3,650	25,250
	Kings Tulare HSR	25	25	75	5,675		850	100	175	550	7,475
	Lemoore	25	25	125	12,775	700		1,800	325	850	16,625
	NAS Lemoore	175	-	-	1,675	25	1,875		25	200	3,975
	Tulare	925	1,200	1,900	1,225	100	325	25		17,925	23,625
	Visalia	1,475	10,300	4,875	3,650	400	800	175	17,600		39,275
	Total	3,175	12,925	8,250	25,775	5,700	17,200	4,275	23,325	40,200	140,775

Sources: Replica, KCAG, TCAG

POTENTIAL RIDERSHIP

Given the unique planned service, connecting rural communities across county lines, traditional modeling methods were deemed infeasible to estimate potential ridership along the corridor. Further, COVID-19 has impacted travel behavior, reducing the certainty of future forecasts as telecommute and relocation rates stabilize.

In order to estimate potential transit ridership of the CVC Phase I corridor, a low-range and high-range transit mode split was assumed by station catchment type (walk to walk, walk to transit, transit to transit) based on existing transit mode splits (generally less than 1 percent). Ridership potentials represent a rough order of magnitude estimate and are not appropriate for use in future service planning or financial modeling of CVC Phase I. Informed by academic literature, demand elasticities were applied to the low-range transit mode split to account for increases in transit use based on improvements to transit frequency, transit network coverage, and the inclusion of transit-oriented development and intensification of land uses adjacent to transit stops. These elasticities are described in more detail in Appendix A. Low-range estimates represent a 2030 person-trip demand between station catchments with an existing transit mode split (less than 1% today). The high-range estimates apply demand elasticity functions that factor that baseline ridership estimate, assuming higher ridership from increases in service network coverage and frequency, and assuming additional transit oriented development patterns adjacent to future station locations. Additionally, access/egress trips from the California High Speed Rail Authority's travel demand model were analyzed for the TAZs that are adjacent to proposed CVC Phase I stops.

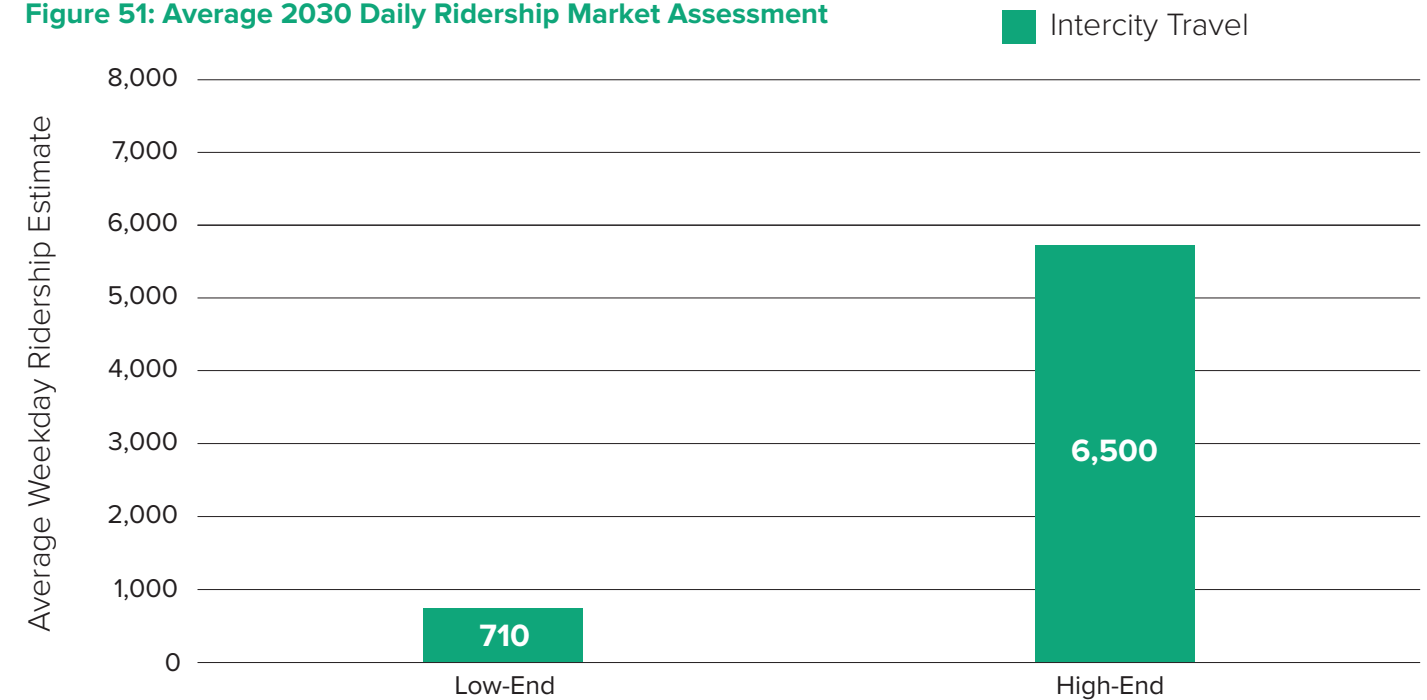
Model outputs from CAHSR represent a 2030 condition which includes the Central Valley Alignment of the high-speed rail project with stations in Merced, Fresno, Kings/Tulare, and Bakersfield. By 2030-2033, CAHSR service will replace existing San Joaquins rail service, connecting Hanford to communities north and south of the proposed CVC alignment.

Therefore, access/egress trips in the HSR travel model to the Kings/Tulare station are representative of anticipated north/south travel demand. CAHSR model outputs are undergoing updates to align with the California Department of Finance and Caltrans' Economic Branch's new population forecasts and are anticipated to change. The CAHSR 2030 model zones that were within a transit catchment of a proposed CVC stop were included, and access trips were doubled to account for return trips. Access/egress trips were divided by an annualization factor of 254 to estimate average weekday HSR access/egress trips via transit. For the lowrange, raw outputs from the HSR model were used, assuming all transit trips modeled in 2030 for access for zones adjacent to CVC Phase I stops would be assigned to the CVC Phase I corridor.

For the high-range estimate, an increase in transit mode split was applied to total access/egress trips to account for improvements in transit service frequency, network coverage, and TOD potential. Given the timeline for updates of CAHSR model outputs and the primary driver of demand along the corridor consisting of intercity travel, CAHSR access/egress trips were not included in 2030 daily ridership estimates for either the low or the high range in this deliverable. It should be noted that the proposed CVC alignment enables transformational

transit connectivity, not just for the proposed station catchments on the CVC alignment, but better connecting Kings and Tulare counties to the rest of the state, and that this knock-on effect for transit ridership should be studied further with the potential to both increase HSR ridership at 1) the Kings/Tulare station and 2) along the CVC.

Figure 51: Average 2030 Daily Ridership Market Assessment



A.1

APPENDIX A: TRAVEL DEMAND METHODOLOGY

TRANSIT MODE SPLIT AND ELASTICITIES

Transit mode split represents the percentage of trips made using transit for each catchment pair type. The low-end transit mode split is the existing mode split of current transit services which represents the baseline mode split with proposed CVC Phase I bus route. The high-end transit mode split represents the higher potential mode split with ridership elasticities that are applied to the low-end transit mode split.

Ridership elasticities represent how transit ridership responds to changes in factors introduced by the development of a new bus route. The factors considered for this analysis were transfer penalties, transit-oriented development, increase in service miles, and increase in transit service frequencies.

Table 29: Transit Mode Split and Elasticities

Catchment Type	Low-End Transit Mode Split	High-End Transit Mode Split
Transit to Transit	0.5%	3.3%
Transit to Walk	0.5%	4.9%
Walk to Transit	0.5%	5.8%
Walk to Walk	1%	15.3%

Transfer Penalty

Transfers have an important influence on whether trip makers find transit an attractive option.⁶ Transfer penalty is the decrease in transit mode split for specific origin-destination pairs when one or more transfers are required to make the journey by transit.

Transfer penalty is shown in Table 30 ranging from a 25 percent decrease to 75 percent decrease in transit ridership. Transfer penalty was applied to transit to transit and transit to walk catchment types, assuming two transfers for transit to transit, and one for transit to walk or walk to transit.

Table 30: Transfer Penalty

# of Transfers Required by Trip	% Decrease in Transit Mode Split
0	0.0%
1	-25.0%
2	-50.0%
3	-75.0%

Transit Oriented Development

Transit Oriented Developments (TOD) are developments that maximize residential, retail, and office developments within walking distance of high-quality transit.

In a 2004 paper by Lund et. al., it is estimated that on average, transit shares for TOD residents exceed the surrounding city by a factor of 4.9⁷.

Catchment areas around the proposed bus stops are assumed to be TODs with new and frequent bus service. For catchment pair types that begin and/or end with walking, the baseline transit mode share is multiplied by 4.9. This analysis assumes an increase in TOD activity and intensification of land use adjacent to stop locations.

⁷ Travel Characteristics of Transit-Oriented Development in California, Lund, 2004.

⁸ Understanding Transport Demands and Elasticities, Litman, 2022.

⁹ Understanding Transport Demands and Elasticities, Litman, 2022.

Increase in Service Miles

When transit service is expanded, there is an increase in transit mode share. In a 2022 paper by Litman, it is estimated that for each 1% increase in transit vehicle-miles, there is a 1 percent increase of the existing transit mode share⁸.

The existing transit services in this service area include Amtrak's thruway service from Visalia to Hanford, KART Route 15 and 20, and Visalia Transit Routes 9 and 11 with a combined service of 178 miles. With the CVC Phase I bus alignment, service miles increase to 256 miles which is a 79 percent increase.

Therefore, there is a 79 percent increase of the existing transit mode share.

Increase in Transit Frequency

When transit frequency increases, there is an increase in transit mode share. Existing transit services are on an irregular or daily headway, with frequencies ranging from every hour to daily. With the proposed bus alignment, a 30-minute headway is assumed, resulting in a 2400% increase in service frequency.

In a 2022 paper by Litman, it is estimated that for each 1 percent increase in service frequency, there is a 0.05 percent increase of the existing transit mode share⁹.

Therefore, there is a 2400 percent increase of the existing transit mode share applied to baseline transit mode splits.

RESULTS BY CATCHMENT OD PAIR

Table 31: Results by Catchment OD Pair

2030 Low End estimate by Catchment OD Pair		Destination Catchments									
		Lindsay	Farmersville	Visalia	Hanford	Kings Tulare HSR	Lemoore	NAS Lemoore	Tulare	Visalia	Grand Total
Origin Catchment	Lindsay			-	-	-	-	-	10	10	20
	Farmersville	-		-	-	-	-	-	10	60	70
	Visalia / Goshen	-	-		-	-	-	-	10	30	40
	Hanford	-	-	-		20	70	10	10	20	130
	Kings Tulare HSR	-	-	-	30		-	-	-	-	30
	Lemoore	-	-	-	70	-		10	-	10	90
	NAS Lemoore	-	-	-	10	-	10		-	-	20
	Tulare	-	10	10	10	-	-	-		90	120
	Visalia	10	50	20	20	-	-	-	90		190
Grand Total		10	60	30	140	20	80	20	130	220	710
2030 High End estimate by Catchment OD Pair		Destination Catchments									
		Lindsay	Farmersville	Visalia	Hanford	Kings Tulare HSR	Lemoore	NAS Lemoore	Tulare	Visalia	Grand Total
Origin Catchment	Lindsay		30	-	-	-	-	20	50	80	180
	Farmersville	20		30	10	-	-	-	50	480	590
	Visalia / Goshen	-	30		20	-	10	-	60	180	30
	Hanford	10	10	20		170	710	140	60	160	1,280
	Kings Tulare HSR	-	-	-	210		30	10	10	20	280
	Lemoore	-	-	10	690	30		150	20	40	940
	NAS Lemoore	10	-	-	130	-	170		-	10	320
	Tulare	40	50	70	60	-	20	-		730	970
	Visalia	70	460	180	160	10	40	10	710		1,640
Grand Total		150	580	310	1,280	210	980	330	960	1,700	6,500