STAA Truck Route Study

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Executive Summary

The 1982 Federal Surface Transportation Assistance Act (STAA) allowed larger trucks on the National Network. These larger trucks are called "STAA vehicles" and many businesses rely on STAA trucks for their day-to-day operation. These STAA trucks require specific infrastructure for safe and efficient operation. Local jurisdictions[1] are responsible for defining appropriate STAA truck route designation to provide access from the National Highway Network to businesses which rely on STAA Trucks.

For the last decade, the San Joaquin region has experienced substantial growth and anticipates continued growth in goods movement, resulting in a need to re-evaluate STAA truck routes throughout the County. In various jurisdictions residents are concerned about high volumes of trucks on local arterials and neighborhood roads, trucks parked on unauthorized areas, noise, and emissions of heavy- duty trucks. On the other hand, truck drivers have their own challenge of finding safe space for parking, staging, and queuing. Lack of consistent and adequate signage, easy access to STAA route designations in some jurisdictions may put them at risk of violating codes or loss of time and efficiency.

The goal of this study is to collaborate and coordinate with stakeholders (e.g., jurisdictions technical experts, advocacy groups) to create inventory of existing STAA routes and develop implementable STAA route recommendations.

An extensive engagement process with all stakeholders throughout San Joaquin County was essential in developing the project list and other recommendations. To provide multiple opportunities for those interested in providing input to the project, the stakeholders were categorized as follows and the project team reached out to each group to share the progress, hear their feedback and document their input. These

[1] CVC 35401.5 (d) "The Department of Transportation or local authorities may establish a process whereby access to terminals or services may be applied for upon a route not previously established as an access route…."

smaller groups allow more opportunity to capitalize on the quantity and quality of input received.

Government agencies:

- San Joaquin Council of Government (SJCOG), San Joaquin County, Caltrans District 10, City of Escalon, City of Ripon, City of Tracy, City of Lathrop, City of Manteca, City of Stockton, and City of Lodi

Cohort one:

- California Highway Patrol (CHP), California Trucking Association (CTA), Truck fleet operators, Port of Stockton, Stockton Metropolitan Airport, Prologis

Cohort two:

- Business Council of San Joaquin, Stockton Downtown Alliance, Building Industry Association (BIA), Visionary Builders

Cohort three:

- Community Based Organizations such as Sierra Club, Public Health Advocates, Third City Coalition, Catholic Charities, etc. or any concerned resident

Various data sources and analysis were used to understand the current trucking operation characteristics, the needs and gaps in current STAA network such as:

- existing STAA truck route maps for each jurisdiction;
- truck traffic volume by vehicle type on selected arterials;
- truck involved collisions during last 5 years;
- existing truck generating land uses;
- areas with vulnerable receptors and disadvantage communities;
- ongoing infrastructure projects; and
- planned warehousing and logistic developments projects.

The existing STAA truck route maps are presented in *Figure 3* to *Figure 9*.

The overall study goal is to identify existing and potential future gaps in the regional and local STAA truck network. The main deliverable of this STAA truck route study is a list of prioritized recommended actions for modified or new STAA route designations, along with supporting infrastructure improvements that may become projects in the future. The literature review, analysis of existing truck travel patterns, and maps of

freight generating land uses were prepared to support applications for new STAA routes. Guidance on potential funding sources and grant applications for infrastructure development projects is also included to support implementation.

The team took the following steps in identifying the list of projects:

1. Prepared a list of potential projects for short- and long-term improvements.
2. Evaluated all short-term projects for required infrastructure to accommodate STAA trucks.
3. Screened short-term projects based on Right-of-Way (ROW) requirements.
4. Classified short-term projects into 3 tiers, where Tier 1 is low-cost and easy to implement, Tier 2 is medium-cost and somewhat more difficult to implement, and Tier 3 is high cost, requiring multiple jurisdiction coordination and ROW acquisition).
5. Shared Tier 1 and Tier 2 projects with all stakeholders for further review and consolidated their comments.
6. Modified the project list as needed based on stakeholder inputs.

Some potential improvement projects are located at the boundary of a single jurisdiction or across multiple jurisdictions. For those potential projects, further coordination and potential studies with relevant jurisdictions is recommended to ensure consistency with local plans and to evaluate the fair allocation of costs.

- Tier 1 projects: require only signage to be designated as STAA truck routes.
- Tier 2 projects: require minimal improvements, signage, no major construction, and low cost.
- Tier 3 projects: require additional research and coordination with local jurisdictions before any consideration for implementation. These potential future projects are not recommended for implementation at this time.

Long Term projects are included in the list as well. These projects may be needed due to future industrial/ Logistic developments.

The following is the list of Tier 1 and Tier 2 projects and associated cost estimates.

Tier 1 and 2 Projects		
Recommendation – Main, Extents	Jurisdiction	Planning Level Estimated Cost
Tier 1		
Mariposa Road, CA-99 Off Ramp to Austin Road	San Joaquin County	$5,000
Grant Line Road, MacArthur Drive to Paradise Road	City of Tracy	$5,000
E. Pescadero Avenue, MacArthur Drive to Chrisman Road Extension	City of Tracy	$5,000
Airport Road between Roth Road and French Camp Road	City of Manteca / San Joaquin County	$5,000
Roth Road between Intermodal Way and Airport Way	City of Manteca	$5,000
Intermodal Way between the end of Intermodal Way and Roth Road	City of Manteca	$5,000
Dupont Court, Spreckels Avenue to East end of Dupont Court	City of Manteca	$5,000
Tier 2		
Tillie Lewis Drive, Charter Way to Navy Drive	City of Stockton / Caltrans	$15,000
Skylark Way, Grant Line Rd. to Paradise Road	City of Tracy	$130,000
Paradise Road, Skylark Way to Chrisman Road	City of Tracy	$130,000

Given that the investments for Tier 1 and 2 projects are small and the benefits are very local, they are not competitive for federal or statewide grants. Several potential local funding sources are identified for these projects.

The following recommendations are based on stakeholders' inputs:

- Continuous and consistent education programs for local truck drivers and shippers. One example is preparing a map of existing STAA truck route designations for distribution.
- Research additional ways of keeping STAA trucks on STAA designated routes up to their last mile destination and parked in an authorized location for STAA trucks.

Project Understanding

For the last decade, the region has experienced substantial growth and anticipates continued growth in goods movement, resulting in a need to re-evaluate STAA routes:

- In San Joaquin County, the transportation and warehouse industry has grown by approximately 34% (US Census Bureau)
- San Joaquin County is the geographic center of the 21 counties that comprise the Northern California Megaregion. This region has experienced an approximately 3% yearly increase in population and an approximately 7% yearly increase in jobs (US Census Bureau)
- The San Joaquin region is highly specialized in warehouse and distribution uses, with relatively low shares of research and development and technology manufacturing. The SJCOG area has seen a greater increase in development space for goods movement per square mile than the SF Bay Area or the SACOG area within the last 10 years, driven primarily by large e-commerce and logistics companies.
- In recent years, demand for e-commerce and regional distribution centers has increased rapidly in an effort to support online retailers' expedited shipping guarantees. Competitive shipping guarantees have required more strategic locations for warehouse and distribution centers as consumer expectations have increased.

Considering recent and anticipated future growth, as well as the County's desire to stimulate and facilitate jobs in the logistic and warehousing industry, STAA routes must be reviewed and re-evaluated. The STAA routes are evaluated holistically considering safety, industry accessibility, traffic circulation, and potential health impacts on communities. New metrics are developed to prioritize new or modified STAA route designations that have a high probability of implementation.

The goal of this study is to collaborate and coordinate with stakeholders (e.g., jurisdictions, technical experts, advocacy groups) to create an inventory of existing STAA routes and develop implementable STAA route recommendations.

The ultimate deliverable of this truck route study is a list of prioritized recommended actions for modified or new STAA route designations, along with supporting infrastructure improvements that may become projects in the future. In addition, supporting data and analysis are provided to prepare applications for new STAA routes, and guidance on potential funding sources and grant applications for infrastructure development projects.
The study supports the broader strategies identified in the 2018 SJCOG's RTP/SCS:

- **Strategy #16** – Improve freight access to key strategic economic centers.
- **Strategy #17** – Promote safe and efficient strategies to improve the movement of goods by water, air, rail, and truck.
- **Strategy #18** – Support transportation improvements that improve economic competitiveness, revitalize commercial corridors and strategic economic centers, and enhance travel & tourism opportunities.

Goods Movement Landscape in San Joaquin County

San Joaquin County is uniquely positioned as a freight hub due to its extensive multimodal transportation infrastructure. Six major freeways, Interstates 205, 580, 5, and Highways99, 120, and 4 intersect or travel through the county providing access to and from the Central Valley, Southern California, the San Francisco Bay Area, the Sacramento region, and communities further north.

San Joaquin County has the 175-year-old Port of Stockton, which is a major inland deep-water port that connects the county via the Stockton Deepwater Shipping Channels to the Pacific Ocean. The county is also a confluence of two national (Class-1) rail lines and hosts two major intermodal rail-freight terminals. In addition, it has a regional airport with a rapidly growing air freight service.

The feasibility of an inland port in San Joaquin Valley[2] demonstrated a strong market and potential significant economic development for a new inland port in Lathrop. The COVID-19 pandemic has accelerated the growth of e-commerce/freight logistics and the need for more regional logistic hubs. The inland port will improve the competitiveness of San Joaquin County as a hub for the logistic and warehousing industry. Therefore, improving the safety and connectivity of the STAA truck network in the region is critical.

San Joaquin County has an estimated population of 745,000, spread over 1,426 square miles. The STAA network provides connectivity and accessibility for industries and communities across the county. It is important for this study to look at all major population and industrial hubs and document existing

[2] https://sjvcogs.org/california-inland-port-project/ , https://sjvcogs.org/wp-content/uploads/2021/07/Attachment-1-CA-Inland-Port-FS-Phase-1-Report.pdf accessed March 1st, 2023

conditions as well as planned future growth improvements, zoning, and land entitlements. Each city has specific needs, challenges and opportunities that must be heard and addressed accordingly.

In **Table 1** the population of major cities in San Joaquin County based on 2010 and 2020 Census is depicted. The County has an average steady 1.5 percent annual population growth rate, with the highest growth experienced in the cities of Lathrop and Manteca.

Table 1: City and Unincorporated Population in San Joaquin County

Item	Jurisdiction	Population 2010 Census	Population 2020 Census	Decade Population growth	Primary* Employment (2019)
1	City of Escalon	7132	7472	5%	1,866
2	City of Lathrop	18,023	28,701	59%	9,834
3	City of Lodi	62,134	66,348	7%	21,829
4	City of Manteca	67,096	83,498	24%	17,045
5	City of Ripon	14,297	16,013	12%	4,158
6	City of Stockton	291,707	320,804	10%	97,990
7	City of Tracy	82,922	93,000	12%	30,913
8	Other towns and incorporated areas	141,995	163,397	15%	45,608
9	San Joaquin County	685,306	779,233	14%	229,243

* A primary job is defined as the one job for each worker that provides the most earnings.
Source: Census.gov , https://onthemap.ces.census.gov/

Literature Review

This chapter gives an overview of STAA Truck background and summarizes the freight-related topics and truck accessibility as presented in previous related studies in the region. These studies lay out the major considerations and strategies for transportation network improvements, while considering the broader economic and land use implications of transportation-related decision-making. We aimed to be efficient and targeted during this task in order to identify issues, challenges and recommendations described in these studies.

Evaluated literature sources include:

1. the Interregional Truck Operations on I-5 and SR 99 and STAA Routes Improvement Study,
2. the 2018 Regional Transportation Plan (RTP) & Sustainable Communities Strategy (SCS),
3. the 2017 Regional Transportation impact Fee (RTIF) Jobs Balancing Investment Fund Report,
4. the 2013 San Joaquin Valley Interregional Goods Movement Plan,
5. the 2019 Warehousing, E-Commerce, and Evolving Trade Patterns in San Joaquin Count report,
6. the 2040 Envision Stockton General Plan Update.

There are two main types of STAA routes in California: Terminal Access and Service Access. Service Access are routes, where STAA trucks may exit the interstate onto a local road, for one mile only, for food, fuel, lodging, or repair. This Report focuses on Terminal Access[3], where STAA trucks may exit off the interstate and travel onto State and local routes.

STAA Truck Background

In 1982, Congress enacted the Surface Transportation Assistance Act (STAA), which allowed for longer and wider trucks to operate on Interstate highways. The key change was to allow larger trucks, already in use in many states, access across the National Network of Highways. STAA vehicle and access provision regulations are presented in:

[3] Caltrans Quick Guide: Truck Lengths & Routes, access online at: https://dot.ca.gov/programs/traffic-operations/legal-truck-access/quick-guide

Code of Federal Regulations (CFR), Title 23 - Highways. Chapter I - Federal Highway Administration, Department of Transportation. Subchapter G - Engineering and Traffic Operations, Part 658—Truck Size and Weight, Route Designations—Length, Width and Weight Limitations.

Applicability

The STAA regulations apply to the National Network, which includes Interstates and additional designated routes. The CFR includes SR-99, I-205, I-580, SR-120, - through San Joaquin County in the National Network.

§ 658.1 Purpose. The purpose of this part is to identify a National Network of highways available to vehicles authorized by provisions of the Surface Transportation Assistance Act of 1982 (STAA) as amended, and to prescribe national policies that govern truck and bus size and weight.

§ 658.7 Applicability. Except as limited in § 658.17(a) the provisions of this part are applicable to the National Network and reasonable access thereto. However, nothing in this regulation shall be construed to prevent any State from applying any weight and size limits to other highways, except when such limits would deny reasonable access to the National Network.

National Network (NN). The composite of the individual network of highways from each State on which vehicles authorized by the provisions of the STAA are allowed to operate. The network in each State includes the Interstate System, exclusive of those portions excepted under § 658.11(f) or deleted under § 658.11(d), and those portions of the Federal-aid Primary System in existence on June 1, 1991, set out by the FHWA in appendix A to this part.

In *Figure 1* the symbol for STAA truck and California Legal trucks are shown based on Caltrans guideline. The difference between CA-Legal and STAA truck is the tractor length[4]. This study focus on STAA trucks.

Figure 1. STAA Truck and California Legal Truck Symbol

[4] for further information regarding CA-Legal truck please see https://dot.ca.gov/programs/traffic-operations/legal-truck-access/quick-guide

Source: https://dot.ca.gov/programs/traffic-operations/legal-truck-access/quick-guide

Truck Size and Weight

The STAA regulation does not explicitly allow 53-foot trailers but prohibits state limits of less than 48 feet and state limits on overall length. The 53-foot trailer length is an industry standard, not an STAA mandate. The 102-inch width in § 658.15 has also become an industry standard. STAA weight and axle load limits are the same as California's from STAA review perspective (***Figure 1***).

§ 658.13 Length.

(a) The length provisions of the STAA regulations apply only to the following types of vehicle combinations:

(1) Truck tractor-semitrailer

(2) Truck tractor-semitrailer-trailer.

The length provisions apply only when these combinations are in use on the National Network or in transit between these highways and terminals or service locations pursuant to § 658.19.

(b) The length provisions referred to in paragraph (a) of this section include the following:

(1) No State shall impose a length limitation of less than 48 feet on a semitrailer operating in a truck tractor-semitrailer combination.

(2) No State shall impose a length limitation of less than 28 feet on any semitrailer or trailer operating in a truck tractor-semitrailer-trailer combination.

(3) No State shall impose an overall length limitation on commercial vehicles operating in truck tractor-semitrailer or truck tractor-semitrailer-trailer combinations.

§ 658.15 Width.

(a) No State shall impose a width limitation of more or less than 102 inches, or its approximate metric equivalent, 2.6 meters (102.36 inches) on a vehicle operating on the National Network, except for the State of Hawaii, which is allowed to keep the State's 108-inch width maximum by virtue of section 416(a) of the STAA.

§ 658.17 Weight.

(a) The provisions of the section are applicable to the National System of Interstate and Defense Highways and reasonable access thereto.

(b) The maximum gross vehicle weight shall be 80,000 pounds except where lower gross vehicle weight is dictated by the bridge formula[5].

Reasonable Access

States must allow STAA vehicles reasonable access to "terminals" – which include customer locations that ship and receive freight – and to facilities for food, fuel, and rest.

§ 658.19 Reasonable access.

(a) No State may enact or enforce any law denying reasonable access to vehicles with dimensions authorized by the STAA between the National Highway Freight Network (NHFN)[6] and terminals and facilities for food, fuel, repairs, and rest.

(b) All States shall make available to commercial motor vehicle operators' information regarding their reasonable access provisions to and from the National Network.

(d) No State may enact or enforce any law denying access within 1 road-mile from the National Network using the most reasonable and practicable route available except for specific safety reasons on individual routes.

Terminal. The term terminal as used in this regulation means, at a minimum, any location where:

- Freight either originates, terminates, or is handled in the transportation process; or
- Commercial motor carriers maintain operating facilities.

Access Review Process

The CFR specifies an access review process.

(i)(1) Except in those States in which State law authorizes the operation of STAA-dimensioned vehicles on all public roads and highways, all States shall have an access review process that provides for the review of requests for access from the National Network.

(2) State access review processes shall provide for:

(i) One or more of the following:

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[5] Further information can be found here: https://ops.fhwa.dot.gov/freight/publications/brdg_frm_wghts/

[6] FHWA definition for National Highway Freight Network can be found here: https://ops.fhwa.dot.gov/Freight/infrastructure/nfn/index.htm

(A) An analysis of the proposed access routes using observations or other data obtained from the operation of test vehicles over the routes;

(B) An analysis of the proposed access routes by application of vehicle templates to plans of the routes;

(C) A general provision for allowing access, without requiring a request, for commercial motor vehicles with semitrailers with a kingpin distance of 41 feet or less (measured from the kingpin to the center of the rear axle, if single, or the center of a group of rear axles). State safety analyses may be conducted on individual routes if warranted; and

(ii) All of the following:

(A) The denial of access to terminals and services only on the basis of safety and engineering analysis of the access route.

(B) The automatic approval of an access request if not acted upon within 90 days of receipt by the State. This provision shall become effective no later than 12 months following the effective date of this rule unless an extension is requested by the State and approved by FHWA.

(C) The denial of access for any 102-inch wide vehicles only on the basis of the characteristics of specific routes, in particular significant deficiencies in lane width.

STAA Truck Issues

As these larger trucks became common, reports were published throughout the 1980s and into the 1990s on the effect these trucks have had, and will continue to have, on roads across the country. These include issues regarding safety, traffic, maneuverability on current roads, infrastructure updates needed to accommodate them, how much these updates will cost, and who will pay for them. Since STAA trucks have been the industry norm for the past two decades, we did not find any recent legislation or study by FHWA or TRB.

According to a 1986 TRB report on Large-Truck Safety Research, most studies found that STAA trucks do not increase traffic problems, but also do not reduce them. Whether or not these vehicles are loaded when driving through the traffic has a greater effect than their size, although the effect is not large. The main issue noted is that large, loaded vehicles travel slower than surrounding traffic.

This 1986 report brings up several other issues regarding STAA trucks, many of which are concerns expressed by motorists. One major concern is the effect of larger trucks on accidents. The research found that doubles had higher accident rates than singles, and that empty trucks had more accidents than loaded ones. Truck weight did not increase accident rates or severity. However, this research was controversial, and the results of the study have been widely disputed.

The report continues on to state that, though motorists often had anxiety about passing larger trucks, this did not result in significant safety issues. It also concludes that widening trailers (even just from 96 to 102 inches) may improve stability and decrease rollover thresholds.

Another major issue regarding safety, operations, and infrastructure for these larger trucks is offtracking, when the truck leaves the roadway due to turns being too tight for its radius. In 1989, TRB published *Operational Considerations Relating to Long Trucks in Urban Areas*, a report which reviews extensive research and goes into great detail on offtracking. This study employed cameras throughout intersections in Wisconsin to observe truck paths. The report states that most truck drivers are chiefly concerned over sidewalk encroachment at intersections. The research showed that sidewalk encroachment has turned out to be less of a problem, but that lane encroachment (trucks going into the opposing lane to make the turn) is almost constant at most intersections. It also noted that at least an 8.5-foot area of no parking must be included around intersections to accommodate the turning radius of left-turning trucks (otherwise, the trucks would either have to hit any parked cars there or get stuck). The report concludes by recommending that "Highways on downtown two-lane streets that are 37 feet wide or less and have right-angle turns at one or more intersections should not be included in a designated highway system if there are large numbers of long trucks in the traffic stream." It also concludes that installing signals along these highways can cause significant problems for large trucks, and that free traffic flow should be encouraged. Finally, it discourages replacing or changing these intersections until "well-known measures" such as limiting parking, restricting trucks during rush hours, and metering cross traffic (among others) have been tried.

A TRB report was published in 1986 titled *California Design Practice for Large Trucks*. This report discusses issues regarding offtracking at California intersections and freeway on- or off-ramps for the new, larger trucks. It uses a computer model to analyze offtracking plots, and states that "current practice requires highway designers to use the Interstate truck-turn templates on all new or upgraded interchange projects." However, it brings up issues with this practice. Widening these interchanges can cause difficulties regarding sign placement and can also increase incidences of wrong way traffic (motorists driving the wrong way down an on- or off-ramp). Widening may also increase "pedestrian travel distances" (pedestrians will have to walk farther with wider intersections). Despite these concerns, all new interchanges are required to be built to accommodate these larger trucks, and any modifications or updates to current interchanges must accommodate them as well.

Offtracking is, of course, not just a problem at intersections. A 1993 report from the State of Virginia Department of Transportation researched offtracking on two-lane roads through the state, and the impacts larger STAA trucks have had on the frequency and severity of these issues. The report recommends, based on the analyzed data, that no restrictions be placed on roads with lane widths of 12 feet or greater. However, it recommends restricting these trucks on roads with lane widths between 10.5 and 12 ft if these roads have sharp curves or other issues. It

recommends that trucks with trailer lengths of 48 ft or longer be completely restricted on roads with lane widths less than 10.5 ft.

Report #1: Interregional Truck Operations on I-5 and SR 99 and STAA Routes Improvement Study

This report[7] addresses the challenges surrounding STAA (Surface Transportation Assistance Act of 1982) truck route designation in California and in San Joaquin County and provides recommendations based on its findings.

Highlights

- Operation of STAA vehicles has become a widespread norm for the trucking industry; however, STAA route designation in California has not kept pace with the influx of STAA vehicles and expansion of facilities relying upon STAA vehicles.
- Caltrans has a designation policy which limits STAA vehicles to either "terminal" or "service" routes, while local access is determined by local jurisdictions.
- Stakeholders interviewed for the study reported that, in San Joaquin County, STAA requirements are enforced more rigorously than in other California jurisdictions.
- Local Findings:
    - STAA routes are generally disconnected, incomplete and not well-documented.
    - STAA routes are not proactively planned by regional planners, most route designation is done on an ad-hoc basis. Applicants have reported frustration over processing time and arbitrary requirements for approval[8].
- State Findings:
    - Enforcement of STAA routes is inconsistent and perceived as ineffective by private industry.
    - Caltrans's designation process is extremely well-organized; however, outside of Caltrans, other stakeholders are unaware of the process (or do not follow it), resulting in a mismatch between designated routes and future needs.
- Universal Findings:

[7] Prepared by Tioga Group Inc. for Sacramento Area Council of Governments San Joaquin Council of Governments 2013

[8] City of Stockton and San Joquin County have both currently incorporated STAA designation process in the development application process.

    - STAA vehicles often operate on non-designated routes.
    - Private industry stakeholders are often unaware of designation issues.
    - STAA routes are often found to be impractical by STAA operators.
    - Difficulties regarding STAA access and enforcement create economic disadvantages for San Joaquin County.
    - Shippers, receivers and developers are typically unaware of STAA route designation and out- of-state truckers often drive where they are not strictly prohibited from driving.
    - Reliance on ad-hoc designation application processes is broadly ineffective, especially when STAA vehicle operation is the norm.

Recommendations

- Local Recommendations:
    - Widespread education and outreach to shippers, receivers, developers, truckers, fleet operators, municipal planners etc. regarding STAA designations processes and rules.
    - Improved and expanded STAA route signage.
    - Clarification regarding STAA route engineering and safety requirements for uniform interpretation.
- Universal Recommendations:
    - Investment in additional resources at all levels to improve route STAA route designation processes.
    - Creation of accurate, easy-to-use STAA route maps that connect to major route software applications.
- Proactive planning strategies include:
    - Identifying current and anticipated STAA truck access needs.
    - Determining through-arterial routes that can support STAA operation and may require infrastructural upgrades (leaving local routes to local jurisdictions.
    - Designating eligible segments as STAA routes with appropriate signage and mapping.
    - Developing and implementing plans to create a connected, coherent STAA network.
- Regional planning approaches will need to reconcile conflicting concerns of cities, counties, agencies and other stakeholders. Jurisdictions and local residents are often worried about legitimizing large truck access, even if STAA vehicles are already operating on local roads without permission.
- Major re-engineering of local roads and intersections will be needed to meet minimum requirements necessary to accommodate STAA vehicles.
- Current route designation processes broadly do not reflect that STAA vehicle operation is widespread and, to meet the needs of the future, these processes will need to improve.

Report #2: 2018 Regional Transportation Plan (RTP) & Sustainable Communities Strategy (SCS) SJCOG

In accordance with Measure K (half-cent sales tax) and SB 375, the 2018 RTP provides a broad vision and decision-making framework for San Joaquin County's transportation network until 2042. The 2018 RTP & SCS commits to sustainability, environmental preservation and growth management. It recognizes the important economic role of the goods movement industry and its growing influence.

Highlights

- The RTP broadly covers what the future transportation system should look like, what kinds of decisions and actions will help attain that vision and what types of performance measures are needed.
    - The RTP prioritizes infill development, access to travel options, better public infrastructure use and minimizing farmland impacts. Relevant components include de-emphasizing highway roadway expansions while reducing vehicle miles traveled (VMT) and congestion via multimodalism; investing in high-tech projects for roadway incidents; expanding infrastructure maintenance; encouraging jobs and housing in urbanized areas; and supporting goods movement accessibility for major hubs (e.g., the Port and commercial corridors).
- San Joaquin County contain 912,600 acres and is home to 746,868 residents, with Stockton having the highest population (320,554). Key points about jurisdictions within San Joaquin County include:
    - Stockton has 14 fully improved industrial and business parks, nine of which contain rail access and easy freeway access. It also contains the Port of Stockton and the Stockton Metropolitan Airport, both of which have grown significantly in recent years.
    - Tracy is known as "Silicon Valley East" due to its high percentage of residents who commute to the Bay Area for white-collar work.
    - Lodi's economy is deeply rooted in its agricultural and manufacturing output. It exports 40% of California wine grapes.
    - Manteca is an increasingly popular place for Bay Area commuters to live. It has grown about 14.3% over ten years between 2010 and 2016.
    - Lathrop experienced the greatest population growth, 22.5%, between 2010 and 2016.
    - Manteca, Tracy, Lodi and Mountain House (unincorporated) are projected to have the greatest housing growth due to their proximity to the Bay Area.
    - Emerging logistics and warehousing employment centers are anticipated near Tracy and the west side of Stockton.
- Between 2016 and 2017, San Joaquin County had the 5th highest population growth in the state. Long-term growth is estimated to be 1.3% on average, putting the County in the top six fastest growing regions in the state. (See Appendix A Figure 19)

    - Overall, the population is younger than the state and national averages. However, like other parts of the state and country, it still will need to contend with an aging population in the future.
- Since the economic downturn of 2008, San Joaquin County has generally recovered, gaining back its pre-recession job numbers by 2015. (As compared to the Bay Area, economic recovery has been slower.)
    - The housing market was especially hit hard by the recession, projections forecast that housing will need to accommodate 100,000 people by 2042.
- Agriculture continues to be the largest industry in San Joaquin County. However, this may change as employers, like Amazon, continue to expand operations in the County.
    - Having only arrived in 2014, Amazon will quickly become the County's largest private employer.
- Approximately 16% of all jobs in San Joaquin County are in transportation, production, material moving operations. For the future, the region broadly is interested in promoting white-collar jobs.
- Of approximately 240,000 working residents, 115,000 commute daily out of San Joaquin County.
- Two key logistics hubs include:
    - The Port of Stockton
        - 75 nautical miles away from San Francisco, contains 7.7 million square feet of warehousing and provides 5,500 jobs.
    - The Stockton Metropolitan Airport
        - Began flying goods for Amazon Fulfillment Services in 2016 and contains a new 600,000 square foot warehouse built in 2018.
- Key issues that emerged from public outreach on the RTP were: 1) poor roadway conditions, 2) heavy congestion and travel times and 3) lack of good-paying jobs in the region.
- Important planning documents that informed the RTP included: the Measure K Expenditure Plan, Regional Bicycle, Pedestrian, and Safe Routes to School Master Plan, local agency climate action plans, and the Regional Smart-Growth Transit-Oriented Development Plan.
- Transportation accounted for 45% (the largest share) of emissions in San Joaquin County.
- RTP investments will yield an estimated $9.5 billion in full economic benefits for the local/regional economy, while generating 3,600 new jobs per year.
- The RTP calls for $4.45 billion for maintenance of existing infrastructure. Funding sources primarily include Measure K and SB 1 (statewide gas tax).
- Widening I-5 along with providing improvements on SR 99 has relieved some congestion for truck traffic.
    - Per the RTP, widening projects are valuable in so far as they assist goods movement trips (single occupancy vehicles do not generate similar economic value).
- Future roadway infrastructure targets include:
    - New HOV lanes for I-205

    - Improvements at I-5 Mossdale Wye
    - Operations/reconstruction projects for SR 99 and SR 120
    - Reconstructed interchanges at International Parkway, between I-205 and I-805 (for a large number of planned logistics and warehousing facilities at Corder Ranch Business Park)
    - Completion of Arch-Sperry Corridor widening to improve accessibility for Stockton Airport
    - Maintenance/improvements along McKinley Avenue in Manteca, International Parkway in Tracy, Eight Mile Road in Stockton, and River Road in Ripon (due to anticipated job growth).
- Future technology will be aimed: freight signal priority, freight dynamic travel planning/performance, dynamic speed harmonization, probe-based traffic and pavement monitoring.

Relevant Strategies & Policies

- Enhance the environment for existing and future generations and conserve energy
- Improve air quality by reducing transportation-related emissions
- Maximize mobility & accessibility
    - Improve regional transportation system efficiency
    - Improve major transportation corridors to minimize impacts on rural roads
- Increase safety & security
    - Facilitate projects that reduce the number of and severity of traffic incidents
- Preserve the efficiency of the existing transportation system
    - Optimize existing transportation system capacity through available or innovative strategies
    - Support the continued maintenance and preservation of the existing transportation system
    - Encourage system efficiency with transportation improvements that facilitate improvement in the jobs/housing balance
    - Improve transportation options linking residents to employment centers within and out of the County
- Support economic vitality
    - Improve freight access to key strategic economic centers
    - Promote safe and efficient strategies to improve the movement of goods by water, rail, and truck
    - Support transportation improvements that improve economic competitiveness, revitalize commercial corridors and strategic economic centers, and enhance travel & tourism opportunities
- Promote interagency coordination and public participation for transportation decision-making and planning efforts

- Provide equitable access to transportation planning
- Engage public early, plainly and continuously

Report #3: 2017 Regional Transportation impact Fee (RTIF) Jobs Balancing Investment Fund Report

The SJCOG Board established the Jobs Balancing Investment Fund utilizing Regional Transportation Impact Fee Program (RTIF) in 2005. RTIF is designed to promote job development in San Joaquin County, while reducing vehicle miles traveled (VMT) and encouraging local growth.

Highlights

- RTIF intended to help cover a portion of the of cost for new transportation facilities needed to serve new development within San Joaquin County. Funds are obtained via fees from new developments that will impact the regional transportation network.
- The program is anticipated to result in $1 million annually for eligible transportation projects by providing a suite of economic incentives for potential employers.
    - Individual projects are limited to $500,000.
- 10% of the funding is reserved for highway, interchange and regional roadway projects. (See Appendix A Figure 20 for a map of roadway deficiencies.)
- Growth projections in housing and employment are used to identify projects that are eligible to receive RTIF funds.
- Transportation projects must meet these criteria (additional screening is required for non-highway, interchange and regional roadway projects):
    - Located on or within a half mile of the Regional Transportation Network
    - Scheduled for delivery within the appropriate timeframe, as evaluated by the RTIF technical report (by 2040)
    - Designed to include a capacity improvement of one or more travel lanes, passing lanes, or turn lanes
    - Included in the current Regional Transportation Plan (RTP)
- The RTIF program charges fees for industrial and warehouse land uses (amongst other categories like residential and retail). It has been recommended that separate fee rates be established for mining, intermodal facilities and agricultural uses.
- RTIF Employment Growth Projections:
    - Industrial: 47,260 (in 2015) to 52,856 jobs by 2040
    - Warehouse (including agriculture and other categories): 25,584 (in 2015) to 35,763 jobs by 2040

Report #4: 2013 San Joaquin Valley Interregional Goods Movement Plan

San Joaquin Valley plays a central role in distributing goods throughout California. The purpose of the plan is to provide a list of priority projects, programming and policies that will guide goods movement for the region's future.

Highlights

- San Joaquin Valley (SJV) consists of eight counties (Kern, Kings, Tulare, Fresno, Madera, Merced, Stanislaus, and San Joaquin) and 62 cities. It is the fastest growing region in California in large part due to its growing logistics and transportation industry. The region will grow from 4 million to just over 6 million people by 2040.
- SJV has expanded its distribution and production facilities due to two primary factors: 1) affordable land values and 2) labor availability.
- Goods movement projects have largely been funded via the Federal TIGER program; programs and projects evaluated by the Plan have been competitive for these funds.
- Approximately 44% of jobs in SJV (564,000) are dependent (to varying degrees) on goods movement, which is higher than the statewide average.
- The GDP for goods movement-dependent industries in SJV was approximately $56 billion, which includes wholesale and retail trade, agriculture and manufacturing.
    - About 30,000 companies rely on goods movement.
    - A majority of businesses (80 to 90%) in the SJV employ less than 20 people, which creates a need for consolidation/aggregation points for goods movement.
- By 2040, jobs in goods movement-dependent industries are anticipated to increase by 45% (250,000 jobs). (See Appendix A Figure 22).
- Within SJV, there are approximately 2,700 miles of truck routes, with 80% designated as STAA National Truck Routes.
    - The industry has shifted to STAA vehicles.
    - New industrial clusters have begun developing around regional roads not designed to accommodate STAA vehicles (worsening pavement conditions and raising safety concerns).
- Truck stops are mainly located along I-5 and SR 99.
- Main corridors utilized by trucks (according to interviews with truck operators and owners) Include: I-5, SR 99, SR 58 (east of SR 99), and I-580. Per themodel, there were between 5,000 and 10,000 trucks per day on these segments.
    - Additionally, SR 152, SR 46, SR 58, SR 108, SR 119, and SR 198 carry large volumes of trucks.
- About 50% of total tonnage in SJV goes through intraregional truck flows.
    - These types of trips are typical for agricultural and energy industries, where there are several stages of production before reaching a consumer.

- Inbound commodities to SJV are about 29% of "non-through" flows, originating in areas like San Francisco, Southern California, and the Central Coast.
    - Agricultural/food goods dominate inbound and outbound tonnage for truck and rail (approximately a third of the total inbound and outbound tonnage).
- Through trips (trips not starting or ending in SJV) are approximately 30% of all traffic flows.
- Approximately 53% of all truck tonnage is associated with raw agricultural products and mining materials.
- Overall, there is no single dominant origin or destination for inbound or outbound tonnage to SJV. San Francisco is somewhat more dominant for outbound flows (10%), and Southern California is more dominant for inbound flows (10%).
- Trucks carry approximately 92% of the total tonnage on SJV highway's network, followed by rail at 8%. Air and water modes carry less than 1% of total tonnage. (See Appendix A Figure 22.)
    - About 53% of the total tonnage carried by trucks was intraregional.
    - About 21% of the total tonnage was shipped out of SJV and about 26% was shipped into SJV.
- Freight movement is anticipated to reach over 800 million tons by 2040 (60% more growth since 2007).
    - Intraregional movement (trips starting and ending within SJV) will account for 50% of total anticipated tonnage.
    - Outbound tonnage will grow by 90%, versus 60% for inbound tonnage.
- Trucks are expected to carry 93% of future freight flows, followed by rail at 7%. Air and water modes are anticipated to account for less than 1% of the total flows.

Challenges

- Major Infrastructure Constraints:
    - Highway Corridor Capacity on I-5 and SR 99: daily trucks will increase by more than 7,500 on I-5 and anywhere from 5,000 to 7,500 trucks on SR 99
    - East-West Connectivity: current east-west segments have difficulties accommodating existing volumes, as many of them are two-lane highways. SR 58, SR 65 and SR 198 carry volumes that exceed capacity
    - "Last Mile" Connectivity: many facilities are located in rural regions with poor connectivity, resulting in trucks traversing roads not intended for such vehicles
    - Truck Parking Shortages: estimates show that demand exceeds capacity at all public rest areas and about 88% of private truck stops in California
    - Pavement Wear and Tear: poor conditions result in safety, speed and maintenance concerns
- Operational Constraints:
    - STAA Routing Issues: routes are often outdated or not considered in land use decisions

    - Seasonality Concerns: certain industries (like agriculture) have significant inflows depending on time year which can lead to equipment shortages, worsening of the "last mile" connectivity issue, and parking shortages
- Institutional Constraints:
    - Land Use Issues: air quality, truck safety, hazmat, parking, noise etc. are exacerbated by goods movement
    - Environmental Regulation Uncertainty: new emissions regulations have generated confusion regarding industry impacts
    - Difficulties surrounding Incentives for Improving Air Quality: participants have reported challenges obtaining funding for retrofitting trucks with exhaust filters

Relevant Goals & Strategies

- The goals of the Plan fall into these general categories: capacity, efficiency, economic development, environment and balance.
- Broad strategies include:
    - Coordinating land use, economic development, passenger transportation and goods movement
    - Involving the private sector to help industry adapt to future change
    - Mitigating impacts to communities disproportionately exposed to adverse impacts created by goods movement
    - Expanding existing capacity where effective while reducing safety hazards, shifting through movements out of city centers/sensitive receptor areas, and providing "last mile" access
    - Relieving bottlenecks at intersections, turn pockets, rail grade crossings, and passing lanes (along with geometry improvements)
    - Improving regional highway capacity, east-west connectivity, and "last mile" access
    - Encouraging low-emission goods movement via alternative fuels, electrification etc.
    - Promoting modal shift in favor of rail over trucks

Report #5: 2019 Warehousing, E-Commerce, and Evolving Trade Patterns in San Joaquin County

(Published by The Center for Business and Policy Research, University of Pacific)

This report provides background on the substantial transformation of San Joaquin County's goods movement system, focusing on its role in the broader Northern California megaregion and identifying key trends that have spurred transformation.

Highlights

- Transformation of San Joaquin County's goods system is connected to four primary phenomena:

1. E-Commerce and Interconnected Technologies
2. Increased Intra- and Inter-Regional Integration of the Northern California megaregion
3. Extensive Transportation Infrastructure & Strategic Location
4. Well-Matched Workforce

- San Joaquin County is positioned strategically to serve the Bay Area and the broader megaregion, as property values in San Francisco are generally prohibitive.
- Currently, San Joaquin County has the 2nd highest concentration of transportation and warehousing jobs in the country and places 7th in nation for new hiring in these sectors.
    5. Most job postings in this sector are searching for people with high school or vocational backgrounds, with less than five years' experience.
    6. Jobs in this sector are transforming, with less demand for packers and more need for freight movers. (Light truck/delivery drivers saw wages decline as well.)
        - However, in general, with the increased demand for freight movers, wages are anticipated to grow. (See Appendix A Figure 23)
- Infrastructure investments from the private and public sector have made tremendous gains to San Joaquin's logistical operations.
    7. Improvements to Roads and Streets from Measure K sales tax (major freeways: 205, 580, I-5, & I-99)
    8. Port of Stockton Expansion
    9. Expansion of two intermodal rail-freight terminals (BNSF & UP)
    10. Stockton Metropolitan Airport growth (Amazon Cargo)

Challenges/Recommendations

- Growth in e-commerce generally poses challenges to traditional brick-and-mortar retail and future policy actions will need to be mindful of these impacts.
- Goods movement infrastructure improvements should not be done in isolation, but, rather, as part of a coordinated, megaregional strategy.
- Given increases in commuting, migration, and goods movement within the megaregion, more planning and policy development should be done on a broader megaregional level.
- As most jobs in e-commerce are relatively low paying, there needs to be strategies in place for sustained career advancement as automation and Artificial Intelligence (AI) systems scale up.

Report #6. Envision Stockton 2040 General Plan Update, City of Stockton

The Envision Stockton 2040 General Plan Update lays out a roadmap for the future of Stockton concentrating on four key areas: Land Use, Transportation, Safety and Community Health. It provides broad City and community goals, with key policies and actions designed to achieve these goals. In line with State targets to reduce GHGs and encourage sustainable growth, Envision

Stockton 2040 focuses on encouraging multimodalism while being mindful of the need for safe and efficient truck routes and industrial land use designation.

Highlights

- The Plan was significantly updated from the 2035 General Plan to emphasize infill development for sustainable growth.
- Stockton is a major Northern Californian hub due to its accessibility via waterways, railroads and road network,
- The Plan advocates shifting industrial land use designations along major corridors to the outer edges of Stockton. By changing these land use patterns, Stockton hopes to incentivize more walking and biking within commercial and mixed-use corridors.
- The city has adopted a "complete streets" approach in which all travel modes are accommodated in a balanced way, accounting for location, land use and functionality.
- Relevant Land Use goals are listed as: Regional Destination, Strong Downtown, High Quality Jobs, Protected Resources and Effective Planning.
- Transportation goals are listed as: Mobile Community, Active Community, Sustainable Transportation and Effective Transportation Assessments.
- Safety goals are listed as: Safe Community, Hazard Protections, Clean Water and Clean Air.
- Relevant Community Health goals are listed as: Healthy People, Restored Communities, and Skilled Workforce.

Relevant Policies

- Promote Downtown Stockton as a central node with multi-modal connections throughout the city and region.
- Ensure that land use decisions work to reduce vehicle miles traveled (VMT) by ensuring that origins and destinations are in as close proximity as possible.
- Ensure that roadways safely and efficiently accommodate all road users.
    - Relevant Action: Direct truck traffic to designated truck routes, facilitating efficient goods movements while minimizing risk to areas with sensitive receptors (e.g., schools). For example, prohibiting new truck routes along segments with schools or with vulnerable road users (e.g., pedestrians and bicyclists).
- Enhance the use and convenience of rail service for passenger and goods movement.
- Facilitate expanded port and airport operations, service and development to meet community needs and encourage job growth.
- Protect the community from health hazards and nuisances associated with excessive noise levels.
    - Relevant Action: Prohibiting industrial uses louder than 81 decibels (DBAs).

Report #7. San Joaquin County's Truck Parking and Sales Study

The project is a combination of three applications to address the shortage of truck parking and truck sales locations currently available within San Joaquin County[9].

Highlights

In the 2018 the San Joaquin County Community Development Department prepared a report about illegal truck parking of commercial trucks in unincorporated areas but, due to the large amount of undeveloped land, it is difficult to enforce the code. Extra budget was dedicated to hire new officers and to enforce the Code. However, hiring of additional Code Enforcement staff did not provide resolution to the ongoing illegal truck parking problem, but rather provided additional staff to cite those in violation. The real issue was shortage of truck parking. Therefore, the General Plan Amendment, Zone Reclassification and Text Amendments were needed to provide a significant number of new truck parking and truck sales opportunities in the County.

In January of 2019, the San Joaquin Council of Governments released a report regarding San Joaquin County Transportation and Warehousing Trends. Based on this report, San Joaquin County is expanding its reputation as the premier setting for corporate warehouse and logistics, especially in Lathrop and Tracy. The industry sector has grown 74.3% in the last five years and more than 20,000 workers are employed by the industry sector in the county. Fulfillment centers in Tracy and Stockton and delivery centers in Manteca provide residents in Stockton, Tracy, Manteca, Modesto, Lathrop, and Ripon same-day shipping on some items. These types of facilities have greatly contributed to Stockton Metropolitan Airport's growth as an air cargo center and is now one of the San Joaquin County's top private employers. These facilities also dependon the trucking industry to deliver the goods. In an effort to satisfy this demand, trucking operations are continually searching for locations that permit legalized truck parking. Because there is a shortage of appropriately zoned locations, many trucks park on unpermitted properties throughout the County.

In 2021, the Community Development Department held two study sessions with the Planning Commission to discuss potential policies related to truck parking and sales. Over 200 notices were sent to existing trucking companies within San Joaquin County prior to these meetings seeking feedback from the logistics community. After conducting the study sessions and reviewing

[9] Planning Commission Staff Report Item # 1, November 18, 2021 General Plan Text Amendment & Development Title Text Amendment, General Plan Map Amendment, and Zone Reclassification Nos. PA-2100196, 197, & 198 Prepared by: Jennifer Jolley https://www.sjgov.org/commdev/cgi-bin/cdyn.exe?grp=main&htm=results&typ=apd&str=PA-2100196

comments received from the public, the Department was able to establish new policies, create development standards and identify potential sites for future truck parking and truck sales operations.

Recommendations

Following rigorous evaluation and measures, the Community Development Department identified 40 potential parcels where their designation can be changed from General Agriculture zone to Agriculture-Industrial zone. The uses permitted in the Agricultural-Industrial zone will be the same as uses permitted in the General Agriculture zone but also permit the parking and sales of trucks. Property owners of identified parcels were notified of the proposed changes prior to review and notification of the public. ***Figure 2*** shows the location of potential sites.

To provide even more opportunities for truck parking locations the Community Development Department also proposed a Development Title Text Amendment to permit a variety of truck related operations on parcels with a zoning designation of General Commercial when located within a ½ mile radius of an interchange with an interstate or highway. With this opportunity, an additional 39 parcels could potentially be utilized for truck related uses throughout the County.

The General Plan Text Amendment & Development Title Text Amendment (PA-2100196), the General Plan Map Amendment (PA-2100197) and Zone Reclassification (PA-2100198) were proposed to implement the above recommendations.

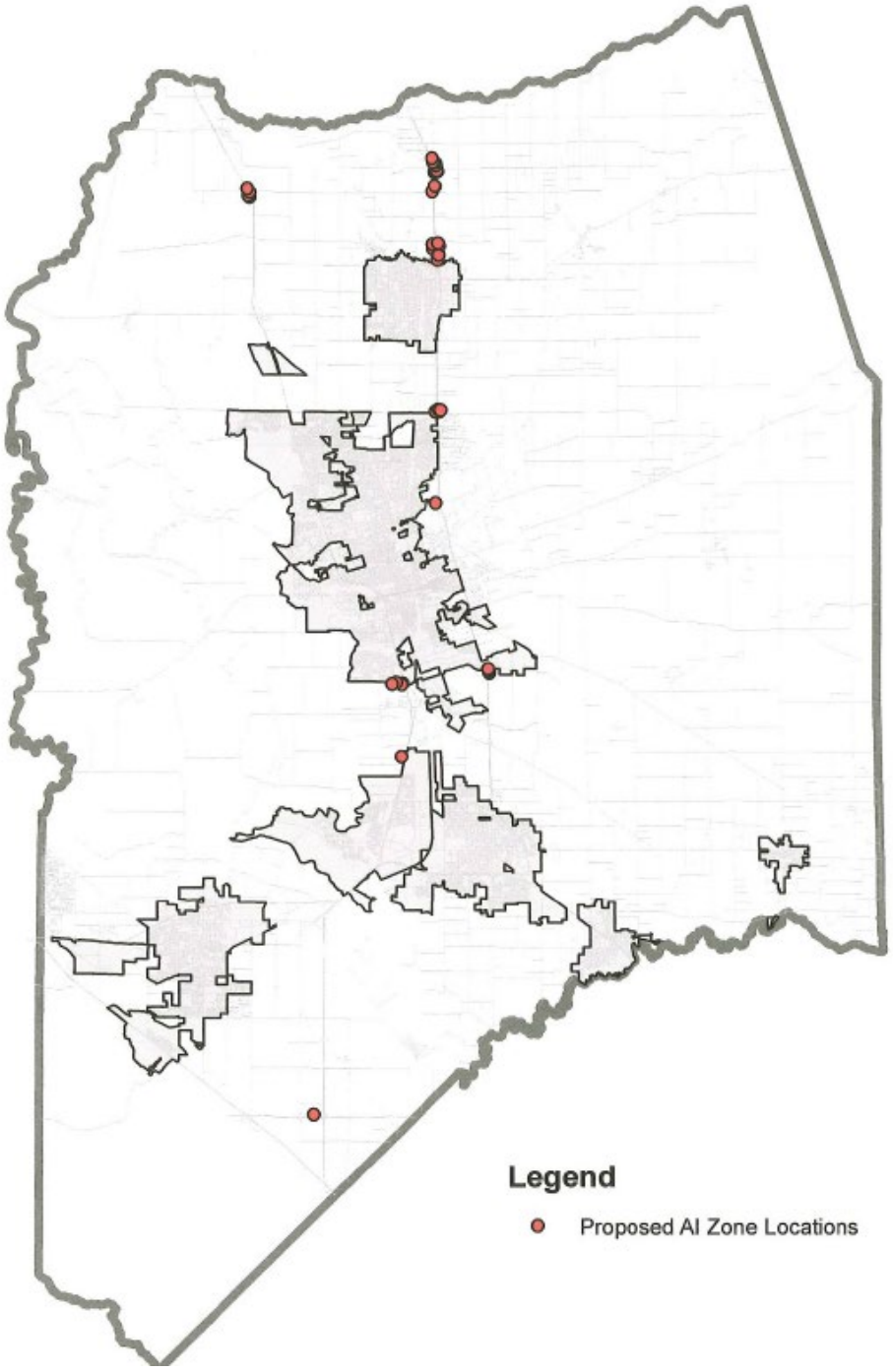


Figure 2. Proposed Agriculture-Industrial Zone Locations for Potential Truck Parking

Regional and Local Trends and Needs Assessments

There are 8 jurisdictions within San Joaquin County; Escalon, Lathrop, Lodi, Manteca, Ripon, Stockton, Tracy, San Joaquin County (oversees unincorporated areas).

Each jurisdiction has an adopted General Plan which includes land use designations for all parcels within the jurisdictional boundary. At the time of this study several Jurisdictions were in the process of updating their General Plan. The information in this study is based on available information.

The land use information was used to inform where heavy truck generating developments are most likely to be located due to existing General Plan land use designations within San Joaquin County. General Plan land use maps, containing a full list of General Plan designations, are provided in **Appendix B**

As noted, the goal of this study is to understand where existing and future heavy truck generating developments are likely to occur and evaluate which routes may or may not be appropriate to provide a connection to these locations from the various freeways in the region, while minimizing impacts on communities.

To evaluate the safety of truck movement activities in the area, truck involved collision between 2014 and 2018 were reviewed. Since the focus of this study is facilities within local jurisdictions and County of San Joaquin authority, collisions on State and Interstate routes were not included in analysis.

Heavy Truck Generating Uses

General Plan land use designations are used to help determine where certain types of developments should be located. Because local jurisdictions use General Plan land use designations to oversee land use decisions, adopted General Plan land use designations were used to evaluate existing and future heavy truck generation uses. We assumed the following land use designations could result in heavy truck generating developments for each jurisdiction.

Escalon

- Commercial
- Light Industrial
- Heavy Industrial

Lathrop

- Service Commercial
- Freeway Commercial
- Limited Industrial
- General Industrial

Lodi

- Business Park
- Commercial
- Industrial

Manteca

- Agriculture
- General Commercial
- Business Industrial Park
- Light Industrial
- Heavy Industrial

Ripon

- Regional Commercial
- Highway Service
- Business Park
- Light Industrial
- Heavy Industrial
- Agricultural Reserve

Stockton

- Commercial
- Industrial
- Open Space/Agriculture

Tracy

- Commercial
- Industrial
- Agriculture
- Aggregate

San Joaquin County (Unincorporated)

- Freeway Service (commercial)
- General Commercial
- General Industrial
- Truck Terminals
- Limited Industrial
- General Agriculture
- Limited Agriculture
- Agriculture-Urban Reserve

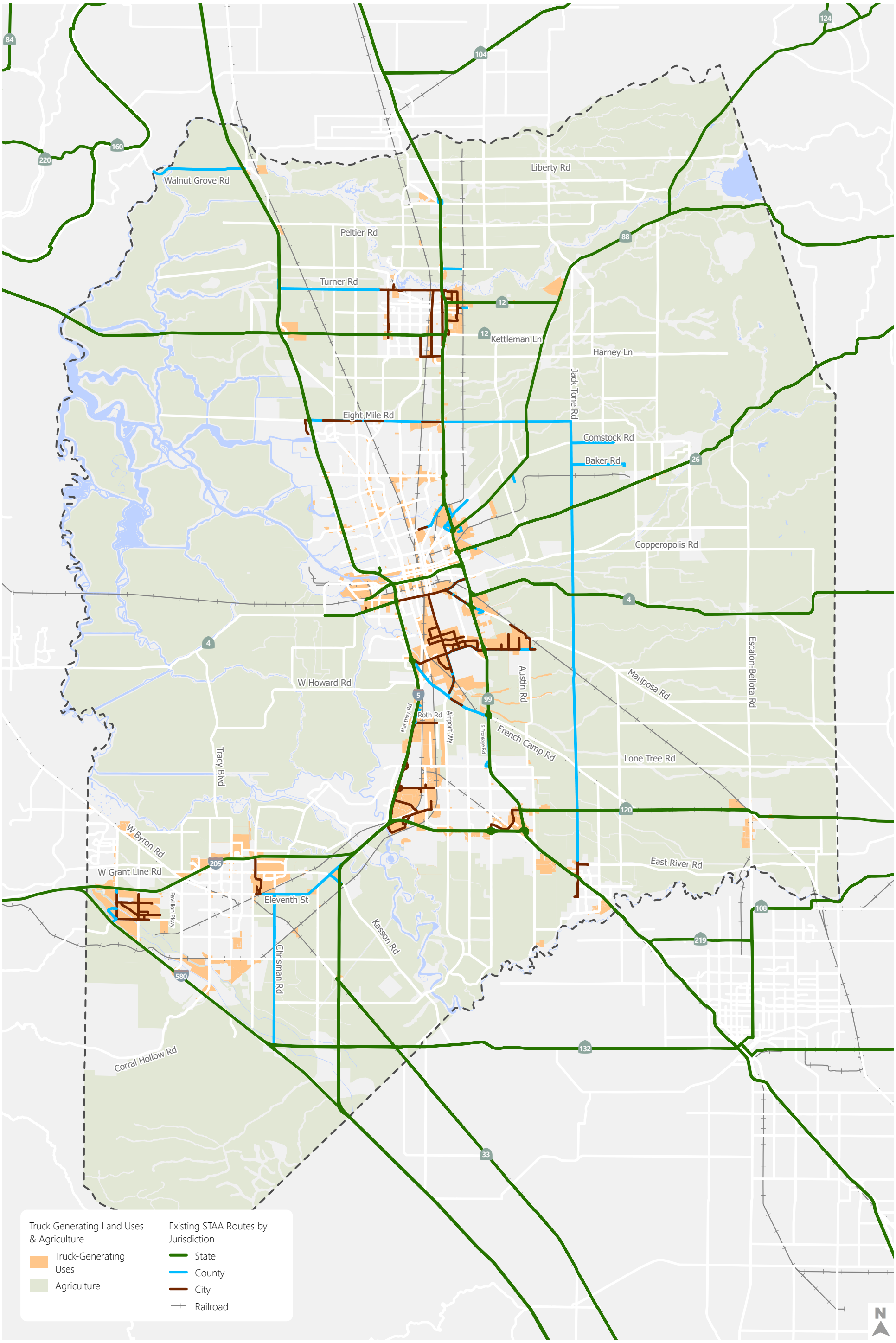
These locations are displayed ***Figure 3*** to ***Figure 9*** Because each jurisdiction has their own naming convention for various land use designations, all designations aside from Agriculture are displayed as "Truck Generating Land Use". Much of Unincorporated San Joaquin County is designated Agriculture, which has different peak seasons and results in a high quantity of truck trips during certain times of the year and a very low quantity of truck trips during other times of the year. Therefore, Agriculture land use designations are displayed separately as "Agriculture".

For more details on existing establishments a set of maps based on industry categories and number of employees was prepared. Data Axle[10] business record data base for year 2021 was used for this exercise. It includes 4546 establishments with 10 or more employees. Each establishment has detailed primary and secondary six-digit NAICS[11] code. The distribution of various freight generating uses in each jurisdiction is presented in **Appendix C.**

Existing STAA Truck Routes

The existing adopted STAA routes for all jurisdictions were compiled. The maps were reviewed individually with each agency for accuracy. ***Figure 3*** to ***Figure 9*** present the existing STAA network at each jurisdiction.

[10] https://www.data-axle.com/
[11] North American Industry Classification System (NAICS) https://www.census.gov/naics/?58967?yearbck=2022



Prepared by Fehr & Peers, February 2023

Figure 3. San Joaquin County Existing STAA Routes

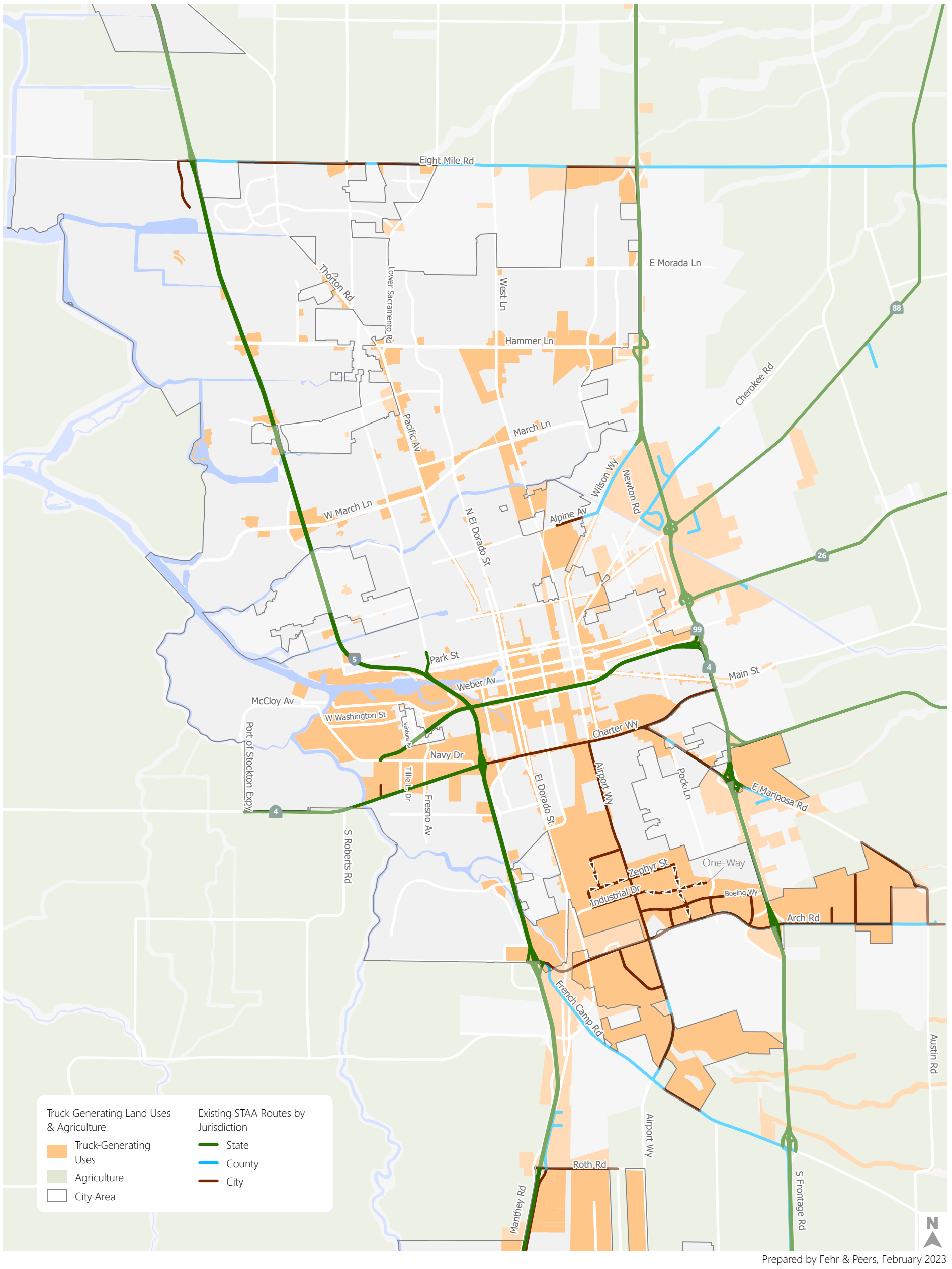
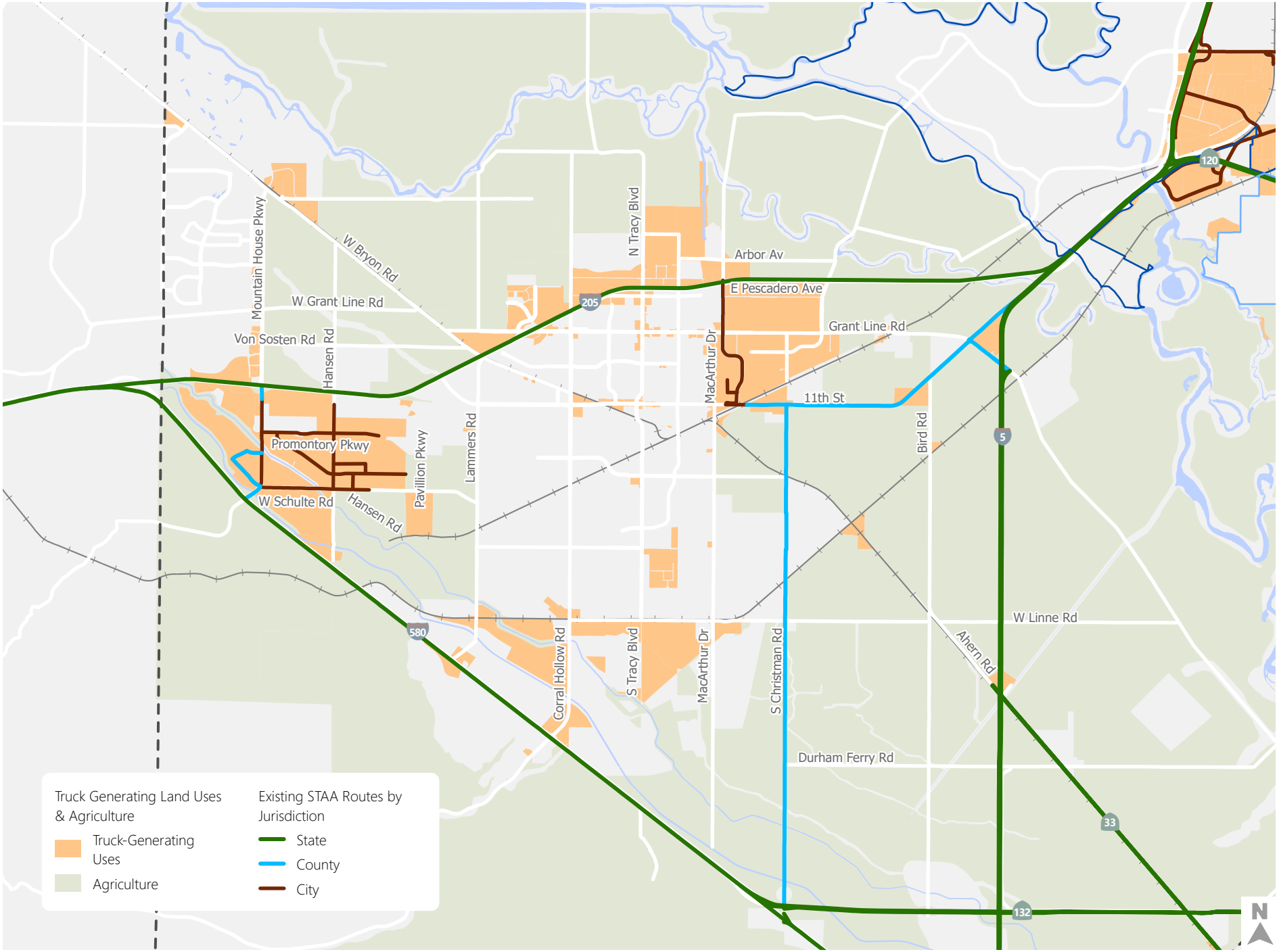
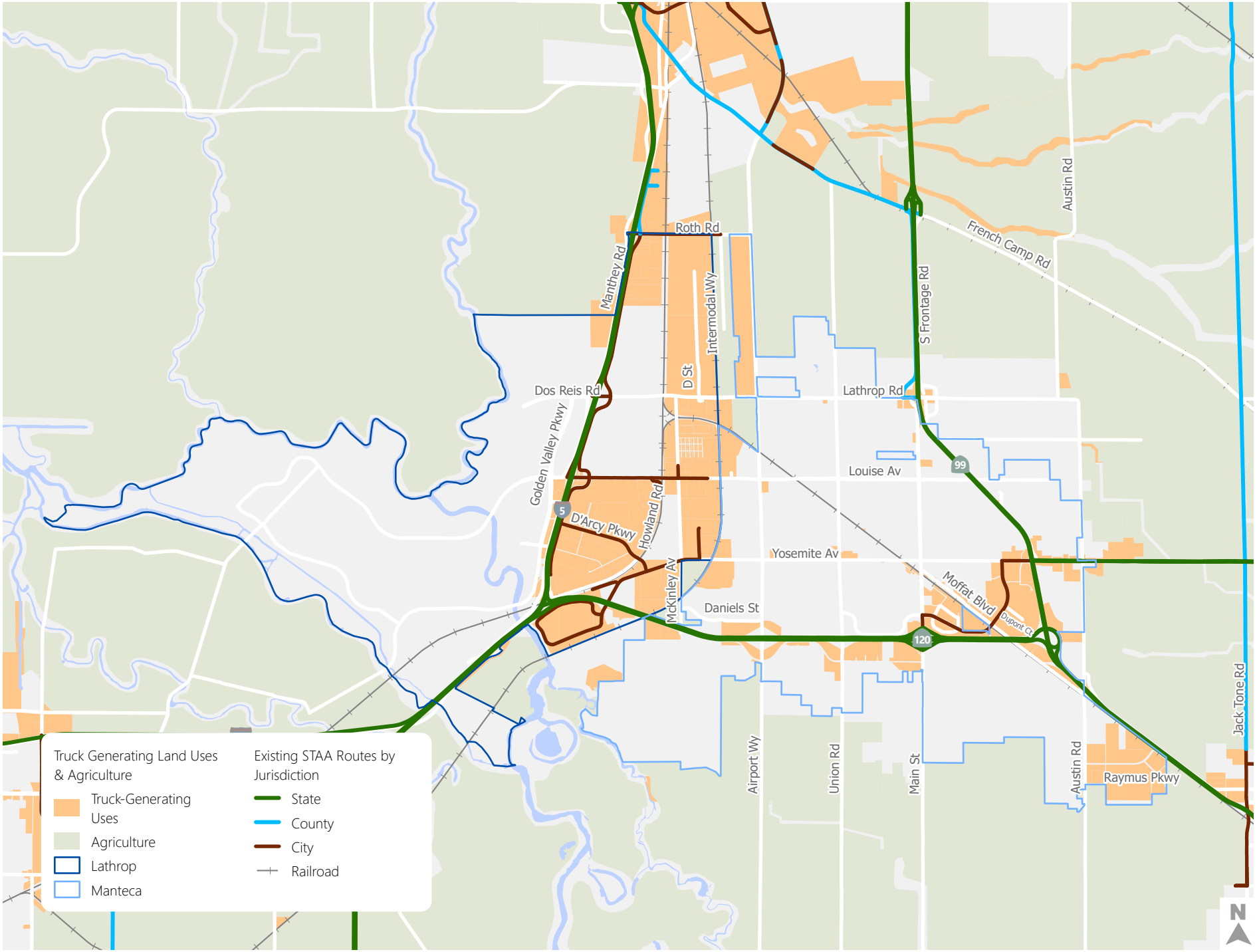


Figure 4. City of Stockton Existing STAA Routes



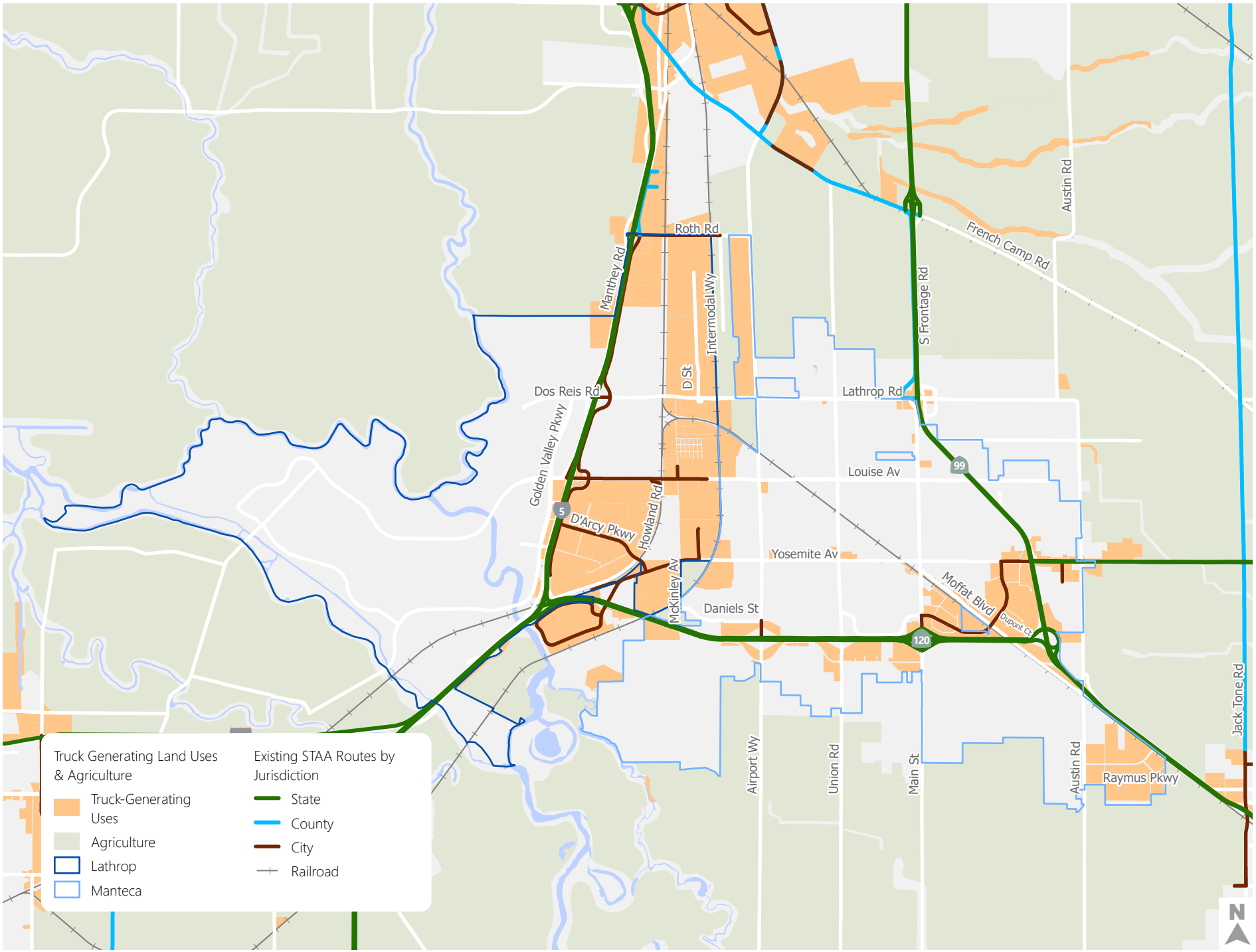
Prepared by Fehr & Peers, February 2023

Figure 5. City of Tracy Existing STAA Routes



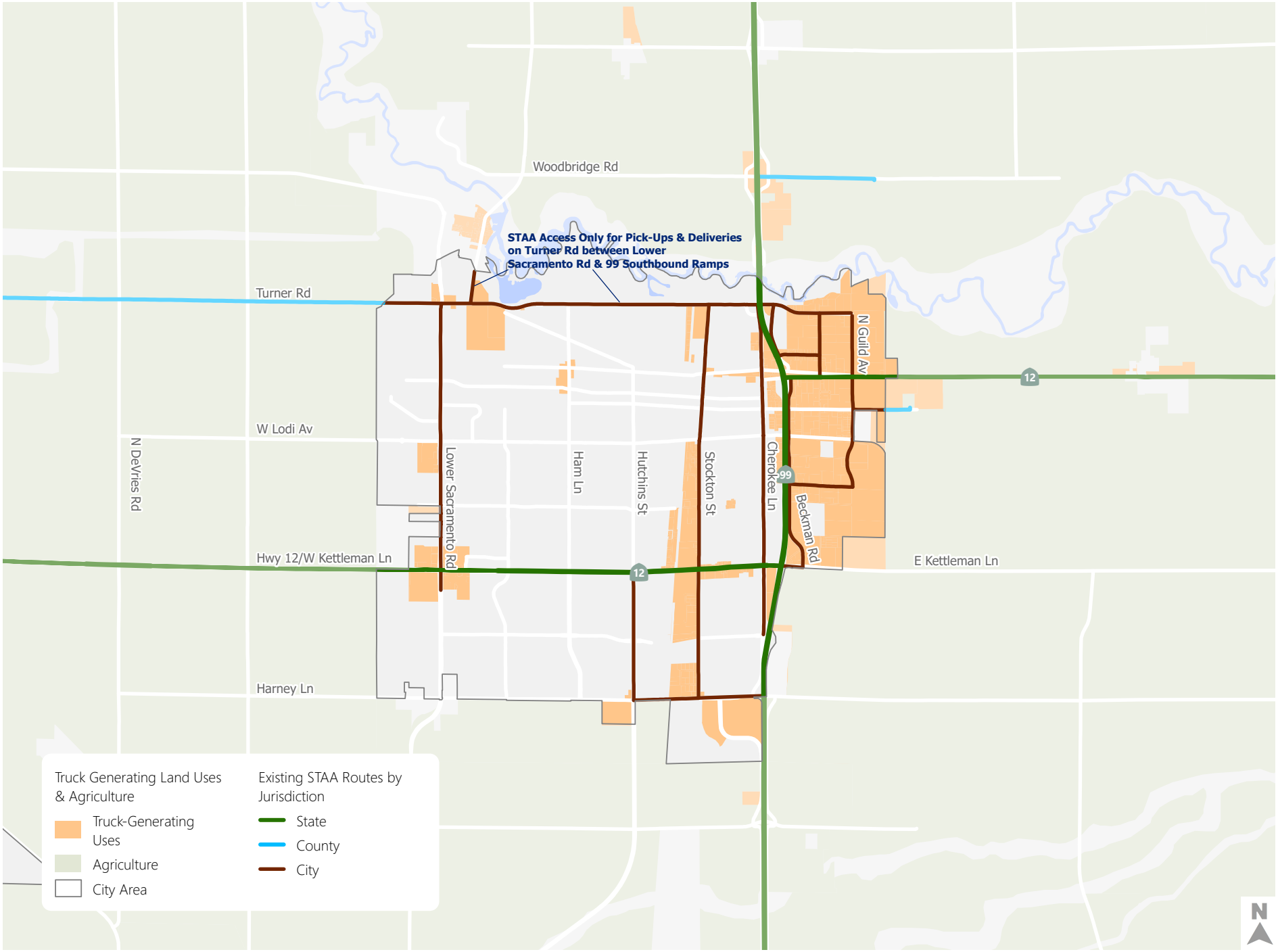
Prepared by Fehr & Peers, February 2023

Figure 6. Cities of Lathrop & Manteca Existing STAA Routes



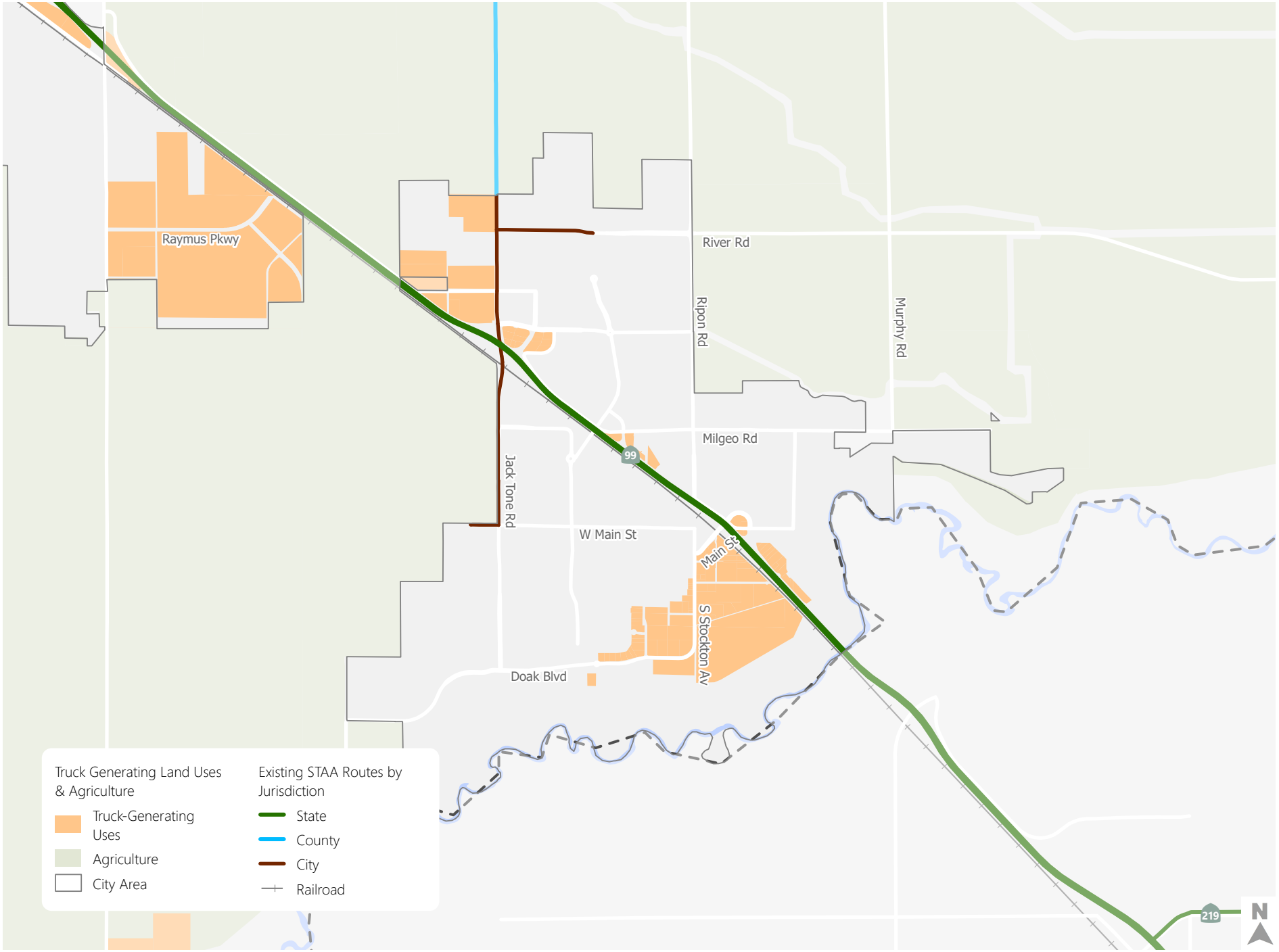
Prepared by Fehr & Peers, February 2023

Figure 6. Cities of Lathrop & Manteca Existing STAA Routes



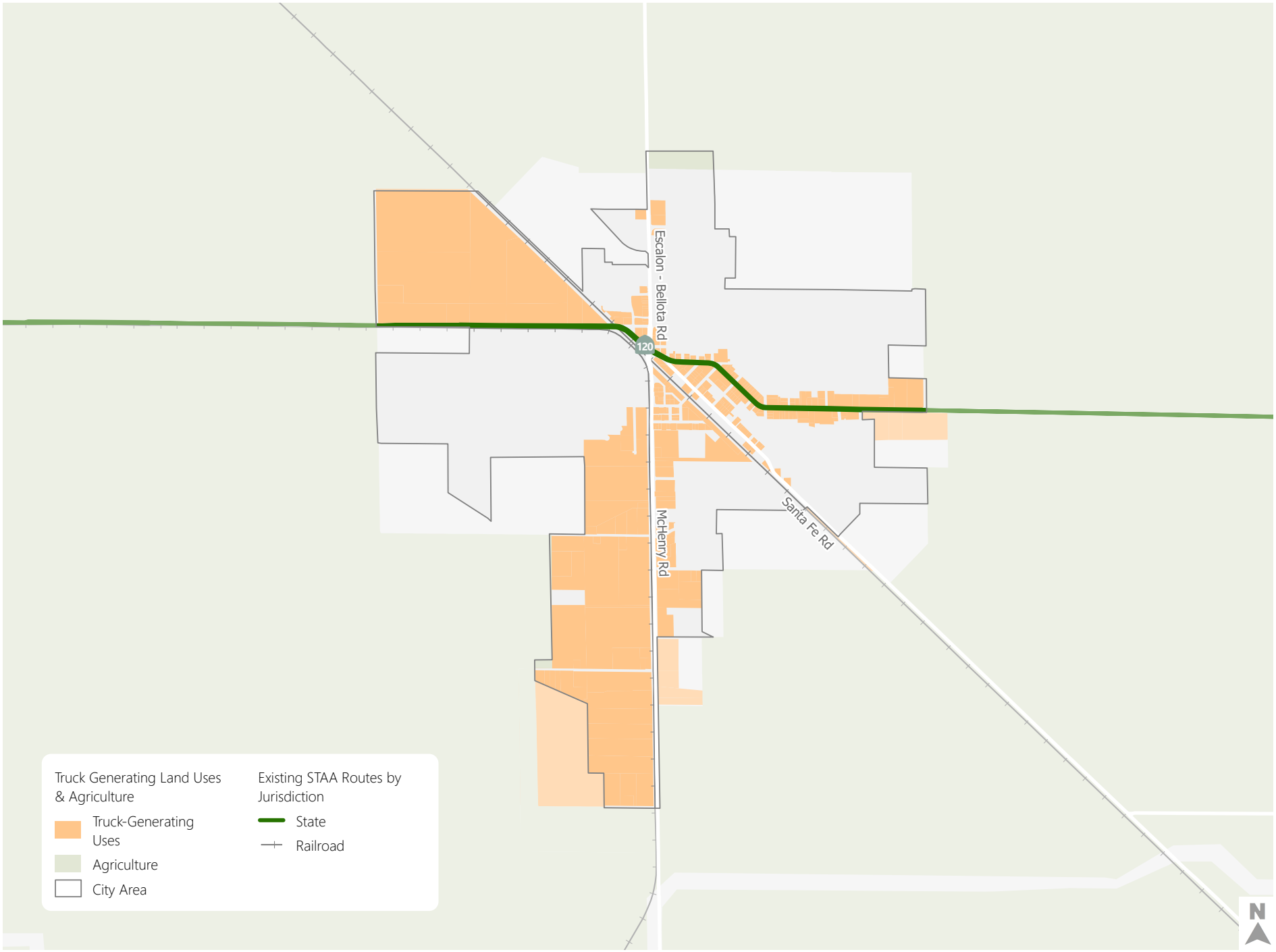
Prepared by Fehr & Peers, February 2023

Figure 7. City of Lodi Existing STAA Routes



Prepared by Fehr & Peers, February 2023

Figure 8. City of Ripon Existing STAA Routes



Prepared by Fehr & Peers, February 2023

Figure 9. City of Escalon Existing STAA Routes

Truck involved Collision History

To evaluate the safety of truck movement activities in the area, truck involved collision data between 2016 and 2020 was reviewed.

There have been 1301 truck involved collisions between 2016-2020 in the county[12]. Of those, 841 (65%) occurred on state highways and 460 (35%) occurred on local jurisdiction roadways. These collisions resulted in a total of 82 fatalities and 182 severe injuries. About 58% of fatalities and severe injuries have been in unincorporated areas of the county. Stockton (18%) and Manteca (13%) have the highest number of fatal and severe injuries in the County. Unsafe speed, improper turning and unsafe lane change has been the primary cause of truck involved collisions accounting for 36.5%, 15.4% and 13.2% of these collisions respectively.

Since the focus of this study is facilities within local jurisdictions and County of San Joaquin authority, the summary charts and graphics does not include collisions on State highways. At local jurisdictions unsafe speed (25.5%), vehicles right of way (23.1%), improper turns (11.8%), traffic signals and signs (11.8%) were the top primary collision factors and accounted for over 72% of all truck involved collisions. ***Figure 10*** and ***Figure 11*** shows summary statistics of truck involved collisions on local roads at each city.

[12] Source: Transportation Injury Mapping System (2016-2020)

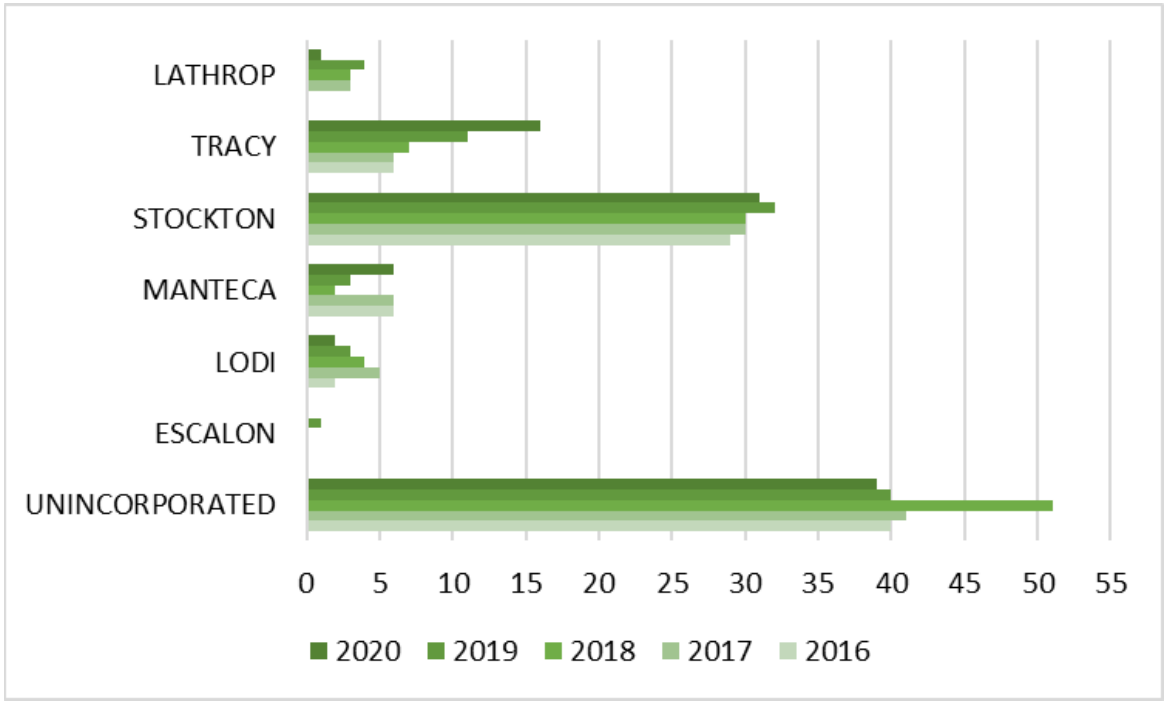


Figure 10. Truck Involved Collisions-San Joaquin County (2016-2020)– Non-State highways

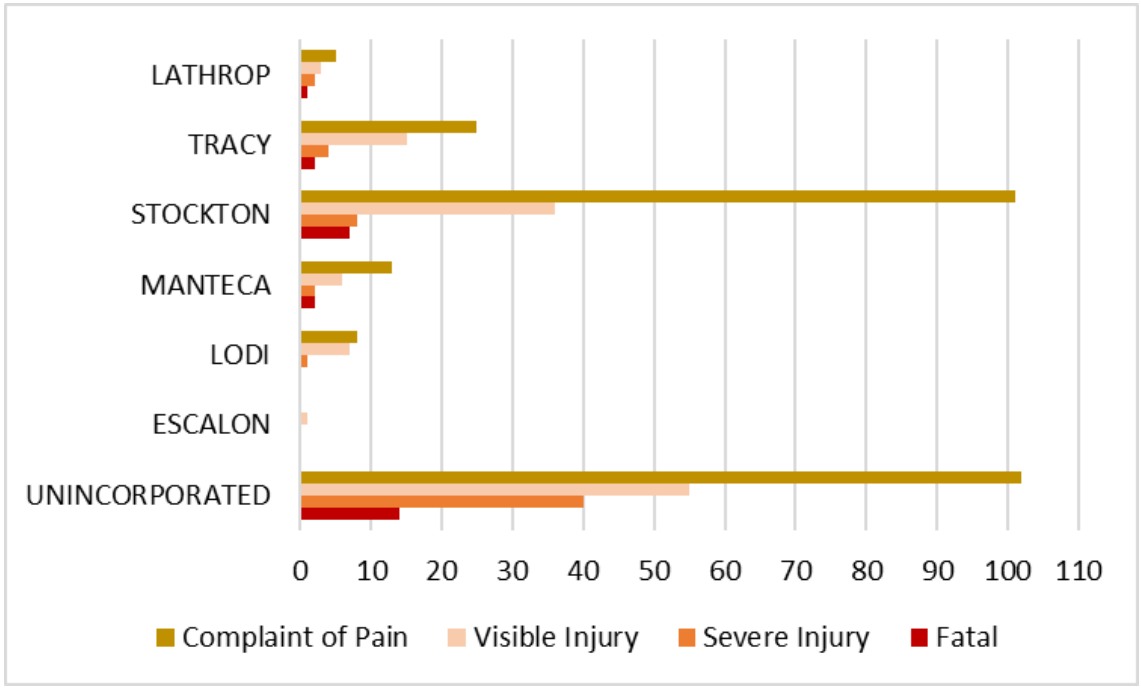


Figure 11. Truck Involved Collisions - San Joaquin County by severity (2016-2020) – Non-State highways

In ***Figure 12*** a heatmap of all truck involved collisions on non-state facilities across San Joaquin County between 2016 to 2020 is depicted[13].

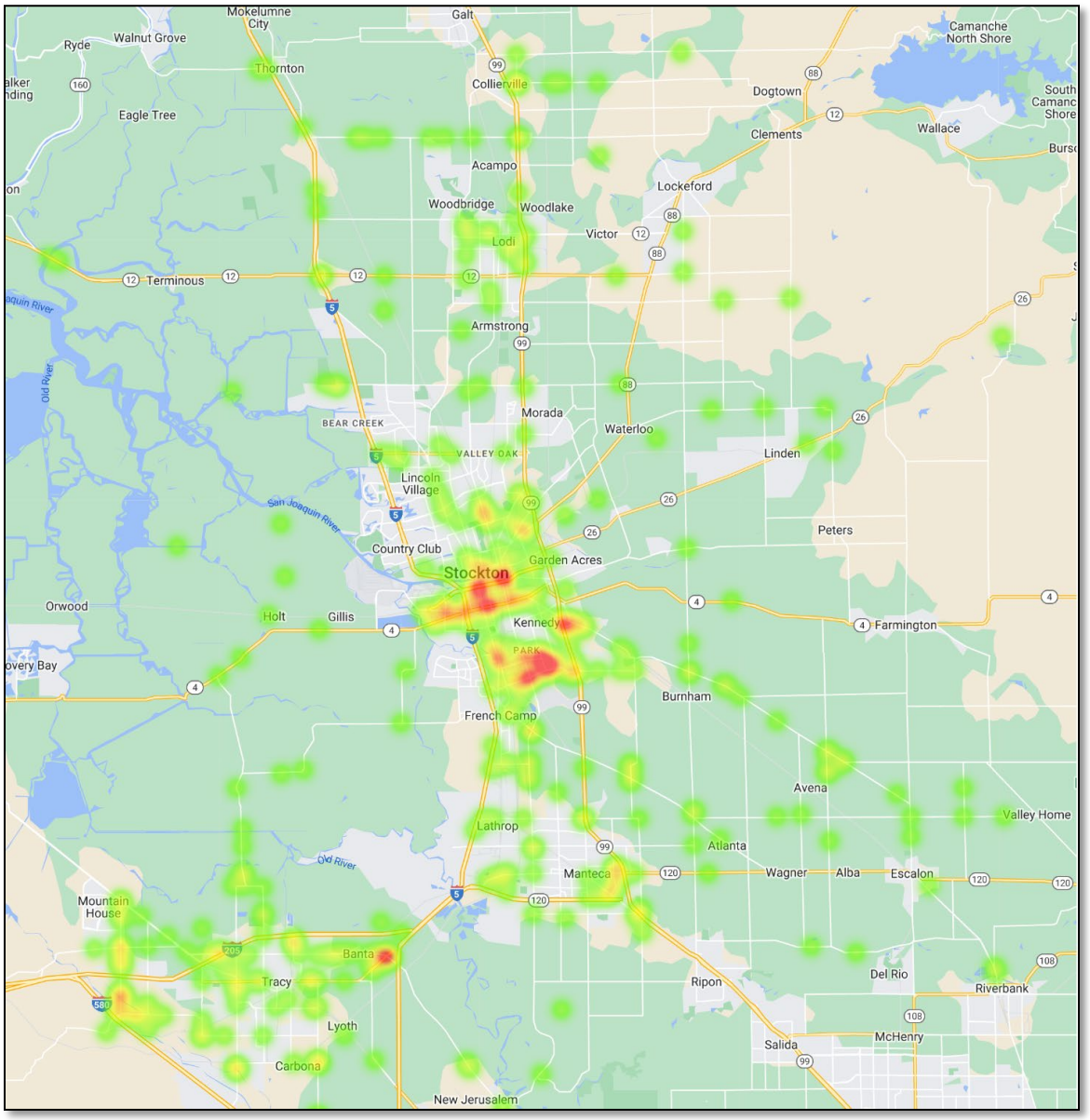


Figure 12. Truck Involved Collisions Heatmap – non- State Highways – 2016-2020

[13] Source: Transportation Injury Mapping System https://tims.berkeley.edu/tools/query/summary.php

Truck GPS Data Analysis

The available truck volume counts on local roads were limited. To understand how truck drivers are currently accessing various destinations, what are the popular routes and what is the distribution of medium and heavy trucks on various roadways a sample of truck GPS data from Streetlight Data[14] was used. The sample included 51 segments across all jurisdictions in San Joaquin County.

The dataset includes medium trucks with Gross Vehicle Weight Rating (GVWR) between 14,000 to 33,000 lbs and heavy trucks with GVWR greater than 33,000 lbs. The sample data usually covers about 10% of the truck flow activities. We did not have enough information to estimate total daily truck volumes for these locations, however the sample data provides a good overview of the relative magnitude of truck flows and activities on various arterials. ***Figure 13*** shows the 51 locations where the GPS data was collected and summarized. *Figure 14* shows the relative magnitude of medium and heavy trucks in the City of Tracy, Similar information was analyzed for all cities.

[14] https://insight.streetlightdata.com

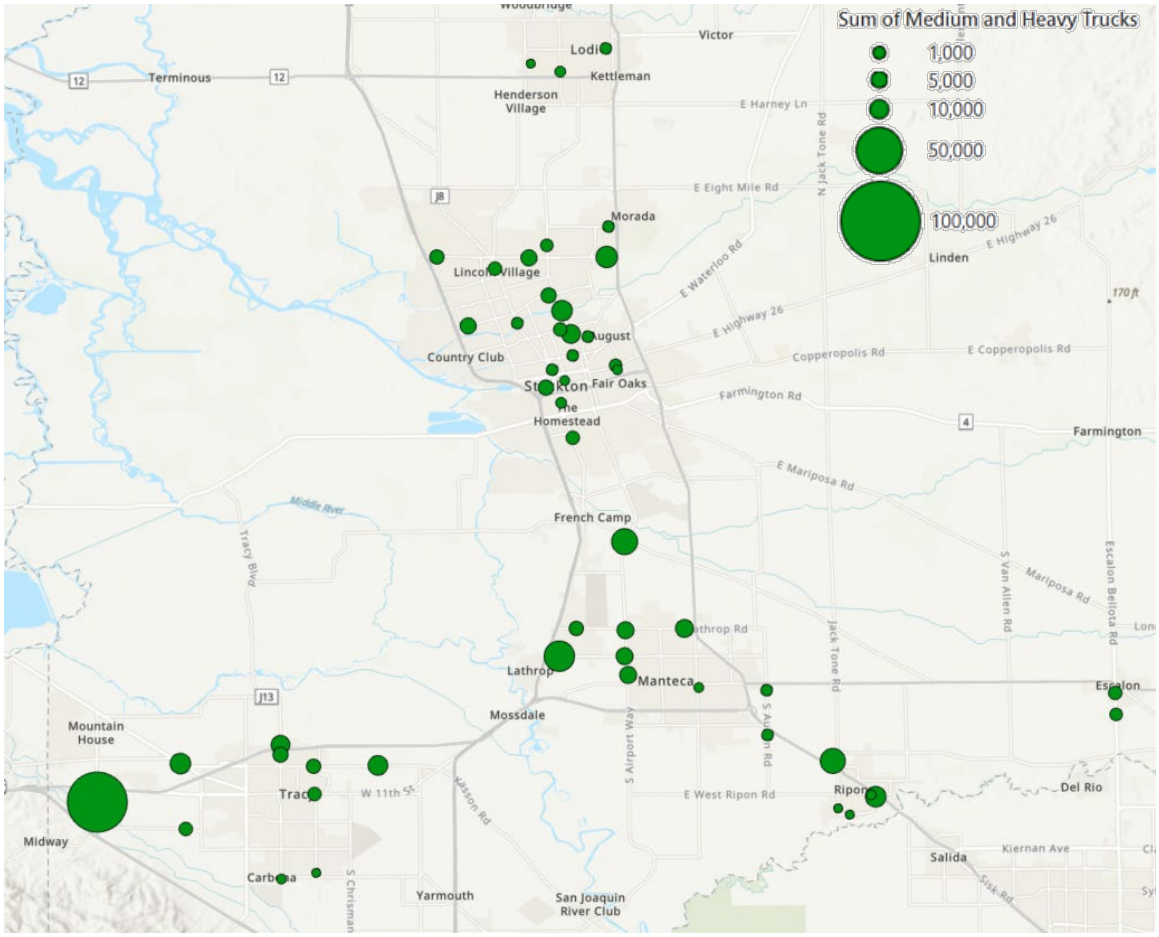


Figure 13. Truck GPS data collection segments – Streetlight daily Index

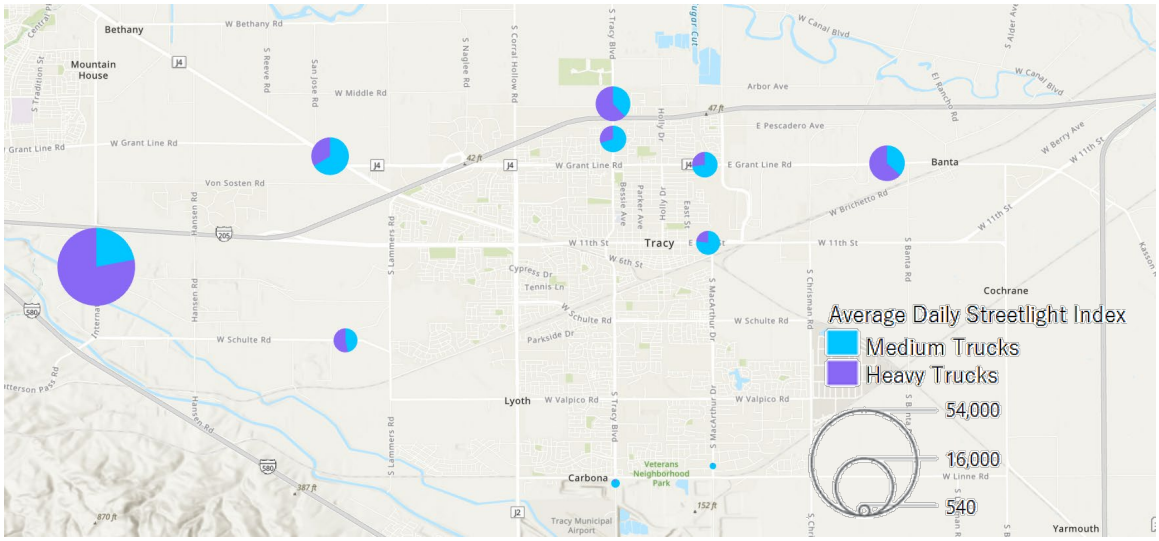


Figure 14. Heavy and Medium Truck GPS data in Tracy– Streetlight daily Index (2019)

Metrics for STAA Route Assessment and Infrastructure Improvement(s)

This chapter focuses on developing metrics that will be used to assess which truck routes may or may not be appropriate to designate as STAA routes in San Joaquin County, and to prioritize routes where there are options. Unlike other states that allow STAA access to allow routes unless specifically restricted, in California STAA trucks are only allowed on designated and signed routes. Our goal is to develop a set of metrics that will be used to evaluate potential alternatives for STAA network enhancements and modifications of existing STAA routes as needed in San Joaquin County. This study will serve as an information guideline to help local jurisdiction coordination and make informed decisions based on analysis and cost estimates for potential improvements. Ultimately, it is the authority of each local jurisdiction to consider or adopt the recommendations of this study. The literature review, existing STAA route information, and inputs from stakeholders provide the initial foundation for developing STAA metrics. As envisioned, the STAA metrics will be used:

- To assess the use and performance of existing STAA routes;
- To identify and quantify the need for improvements on existing or new STAA routes;
- To identify and prioritize potential new STAA routes; and
- To gauge public, jurisdictional, and funding support for route designation and improvements.

Selected metrics must meet the following key criteria:

- Use accessible or collectible data and information;
- Address residents, business owners, industry operators and public agencies concerns regarding safe and efficient goods movement operation in the region;
- Consider impacts on communities such as emission, noise, safety, etc.;
- Provide SJCOG with useful data and analysis to make decisions and set priorities; and
- Be recognized as valid by other funding and policy-making bodies.

Methodology and Process

Streetlight GPS data can provide historic and real-time operations information for trucks traveling to, from, within, and through San Joaquin County. The Streetlight truck GPS data sources were reviewed for multiple time periods, including pre- and post-COVID-19 periods, and peak and off-

peak seasons, to review changes to truck routing patterns due to the COVID-19 pandemic and common peak season variations. The result of this analysis will be presented in a separate memorandum.

Conventional metrics and data sources used to analyze existing STAA routes or assign new STAA route designations are as follows:

- Vehicle counts and truck percentages
- Truck Origin-Destination (O-D) patterns
- Level of Service estimates
- Conformance with HDM STAA guidelines (e.g., Section 404.5 turning templates).
- Roadway type and width
- Conformance with Caltrans, County, or city truck routes.

To develop a comprehensive list of STAA route evaluation metrics that address local needs, stakeholders were asked during the first workshop to identify "Performance Metrics and Criteria for Evaluating New /Modifying Existing Routes". ***Figure 24*** shows their feedback on Mural Board. A summary of the workshop was prepared, and the key issues are presented in "Stakeholder Engagement" section.

The recommended STAA Metrics will include both conventional measures and new measures to address private industry and community concerns. Some of the metrics requested by participants at the workshop may conflict with each other due to differing concerns and priorities among stakeholders. For example, the shortest or most direct route that connects a major industrial site to the freeway network may cross a dense residential area or a school. Some of these conflicts are inherited from the General Plan and zoning land use designations. This study will focus on developing route recommendations based on adopted General Plan land use designations, as General Plan land use designations are used to guide what types of developments occur in what locations. Approaches might include:

- Land uses served, based on zoning maps and General Plan designations;
- Public support or opposition to route-by-route STAA or truck route designations, based on surveys or outreach findings;
- Conformity of proposed improvements with available funding programs and categories (safety benefits, health risk assessment, equity analysis, noise impacts, vibration impacts);
- Industry/customer preferences for routes and designations, benefits to truck drivers (travel time reduction, vehicle miles of travel (VMT) reduction, fuel savings);
- Jurisdictional support, based on conformity with jurisdiction plans, policies, and priorities (ease of implementation, funding opportunities and eligibility, network connectivity score, compatibility with other jurisdictions plans, enforcement opportunities and constraints); and
- Opportunity for future developments and job creation, where the route is adjacent to Industrial and Commercial zoning

STAA Metrics

Existing and future land uses were analyzed with a focus on industrial uses, warehouses, distribution centers, and other freight-generating land uses. Land use information was collected from the adopted General Plan of each jurisdiction in San Joaquin County. As we noted, over the years industrial and residential land uses have grown together, and truck traffic has increased on almost all major roadways. This project will only focus on improvements to roadway designations; and land use information will only be used as input to our analysis.

Table 2 contains a draft set of primary metrics that are recommended for consideration when evaluating STAA routes. The metrics use a mix of numerical ratings, yes/no qualifiers, and relative rankings. **Table 3** contains secondary metrics suggested during workshop #1 or were found during the literature review. Some of these metrics are qualitative. To evaluate various alternatives, metrics should be quantified to provide thresholds.

Once metrics are finalized, metrics will be assigned weights to evaluate alternatives comprehensively. We will discuss these options with stakeholders and finalize the STAA metrics during the second workshop.

Table 2: STAA Truck Route Improvement Primary Metrics

Safety	Infrastructure	Access	Community Impact
Goal: Avoid intersections with heavy commute / pedestrian /cyclist traffic **Metric:** Number of bikes/ peds and LOS for peak hours	**Goal:** Conformity with Caltrans requirements for new STAA route designation[15] and CVC Section 35401.5(a) **Metric:** Yes/no match with Caltrans requirements	**Goal:** Provide connectivity and continuity through multiple jurisdictions. **Metric:** Ranking of jurisdictional continuity and access.	**Goal:** Avoid schools (or safe route to schools), hospitals, parks, or other areas with high pedestrian activities. **Metric:** Proximity to sensitive community uses as defined in local plans, number of route-miles with proximity issues.

[15] https://dot.ca.gov/programs/traffic-operations/legal-truck-access/ta-process

Safety	Infrastructure	Access	Community Impact
Goal: Prioritize major arterials **Metric:** Yes/no classification as Major Arterial by the local jurisdiction	**Goal**: Have sufficient route and intersection right of way to accommodate STAA turning radii and lane width **Metric:** Yes/no availability of XX STAA turning radius and 12-foot lane width in existing right of way.	**Goal:** Provide access to truck parking/staging areas, and existing or planned commercial/industrial zones. **Metric:** Relative access to existing and future truck generating land uses defined in local General Plans.	**Goal:** Avoid high density residential areas. **Metric:** Proximity to high density residential areas as defined in local plans, number of route-miles with proximity issues.

Note: Some of these metrics require additional data such as truck volumes, intersection LOS or ped/bike counts or truck parking inventories. These metrics can be included based upon data availability.

Table 3: STAA Truck Route Improvement Secondary Metrics

Operation	Infrastructure	Land use	Safety
Goal: Provide shortest and most direct access to heavy truck generators to minimize truck VMT. **Metric:** Weighted distance to existing or future truck generators served.	**Goal:** Prioritize routes with minimum grade to reduce noise and air pollution. **Metric:** Distance-weighted grades (max allowable grade is 3-5 percent)	**Goal:** Minimize impact to adjacent residences. **Metric(s):** Housing density, setbacks, exitance of sidewalks and bike lanes, vegetive barriers, etc.	**Goal:** Minimize accidents. 2 **Metric:** Number and severity of truck-involved accidents as percentage of total traffic and truck trips.
Goal: Align routes with local jurisdiction plans and studies. **Metric:** Yes/no alignment with local jurisdiction plans and studies.	**Goal:** Prioritize routes with good pavement conditions and regular maintenance. **Metric:** Pavement condition; maintenance budgets and programs.		

Note:

- Some of these metrics require additional data such as truck volumes or grade information. These metrics can be included based upon data availability.

Stakeholder Engagement

Intensive public outreach and stakeholder engagement was conducted during this study. To ensure that all stakeholders have ample opportunity to provide inputs and review deliverables, they are grouped as shown in **Table 4**

Table 4: Stakeholder Engagement Groups

Stakeholder Cohort	Engagement Process
Core Group: SJCOG, Local government agency (City's planner and traffic engineer)	1. City of Escalon / City of Ripon/ San Joaquin County 2. City of Tracy 3. City of Lathrop / City of Manteca 4. City of Stockton / Lodi
Cohort 1: CHP, CTA, Truck fleet operators, Port of Stockton, Stockton Metropolitan Airport, Prologis	One on one interviews to discuss. Comments will be submitted by email.
Cohort 2: Business Council of San Joaquin, Stockton Downtown Alliance, Building Industry Association (BIA), Visionary Builders	Virtual meeting, live discussion, comments will be submitted through web site or Mural board
Cohort 3: Sierra Club, Public Health Advocates, Third City Coalition, Catholic Charities, Concerned Residents	Virtual meeting, live discussion, comments will be submitted through web site or Mural

The following steps were defined in collaboration with COG staff for inclusive stakeholder engagement process:

- **Step 1**- Present Draft to Core group and Cohort 1
    - Update recommendations as needed, prepare updated Draft
- **Step 2**- Present updated Draft to Core group and Cohort 1
    - Update recommendations as needed, prepare Final Draft in collaboration with SJCOG
- **Step 3**- Final Draft will be published on the SJCOG website.
- **Step 4**- Present Final Draft to Cohort 2. Public comments will be collected through website
- **Step 5**- Present Final Draft to Cohort 3. Public comments will be collected through website
- **Step 6-** FP will summarize comments received in step 4 and 5.

- **Step 7**- Core group and Cohort 1, will review comments and decide if further modification is needed
    - Update recommendations as needed, prepare Final packet and review with SJCOG
    - Final QA/QC in collaboration with SJCOG
- **Step 8**- Share a final packet of STAA route recommendations with standing committees and Board prior to the completion of the study.
- **Step 9**- Final packet will be published on SJCOG website

A series of workshops, conference calls and in-person events were conducted between June 2021 and March 2023 to complete the above process. Summary notes from each event is provided in **Appendix D.**

STAA Truck Improvement Recommendations

Methodology and Process

Based on the analysis presented earlier, performance metrics and extensive public and stakeholders' engagement, a list of potential short- and long-term improvement projects needed for the STAA Truck network for all jurisdictions across San Joaquin County was prepared. Short-term projects are those needed that address existing needs or ongoing land use developments. Long-term projects are anticipated upon completion of planned Specific Plan or General Plan entitlements.

Short-term projects, roadway segments and intersections within each roadway segment, were evaluated to accommodate truck turning, except for intersections that did not connect to an existing STAA truck route. A high-level conceptual evaluation was done for roadway segments and intersections by: evaluating available GIS level right of way (ROW) information; identifying existing overhead utilities and signals using Google Street View; and identifying roadway improvements using aerial imagery. It should be noted that more accurate or detailed ROW information may produce different results for some roadway segments, especially within intersection areas.

The following steps summarize the process:

1. Prepared a list of potential projects for short- and long-term improvements (Map of Long Term projects are presented in Appendix G. These projects may be needed due to future industrial or Logistic developments.)
2. Evaluated all short-term projects for required infrastructure to accommodate STAA trucks.
3. Screened short-term projects based on ROW requirements.
4. Classified short-term projects into 3 tiers, where tier 1 is low-cost and easy to implement whereas tier 3 is high cost, requiring multiple jurisdiction coordination and ROW acquisition (tier 2 is in between).
5. Shared Tier 1 and Tier 2 projects with all stakeholders for further review and consolidated their comments.
6. Modified the three tiers as needed based on stakeholder inputs.

The goal of this task was to identify existing and potential future gaps in the regional and local STAA truck network. This analysis and information will help jurisdictions during their decision-making process and can be used to support potential grant applications if new STAA routes are adopted by the respective jurisdictions.

Some potential improvement projects are located at the boundary of or across multiple jurisdictions. For those potential projects, further coordination and potential study with relevant jurisdictions is

recommended to ensure consistency with other local plans and to evaluate the fair share financial allocation of costs.

Project List

In ***Figure 15*** to ***Figure 18*** three tiers of projects are depicted:

- Tier 1 projects: require only signage to designated as STAA truck route.
- Tier 2 projects: require minimal improvements, signage, no major construction and low cost.
- Tier 3 projects: require additional research and coordination with local jurisdictions before any consideration for implementation.

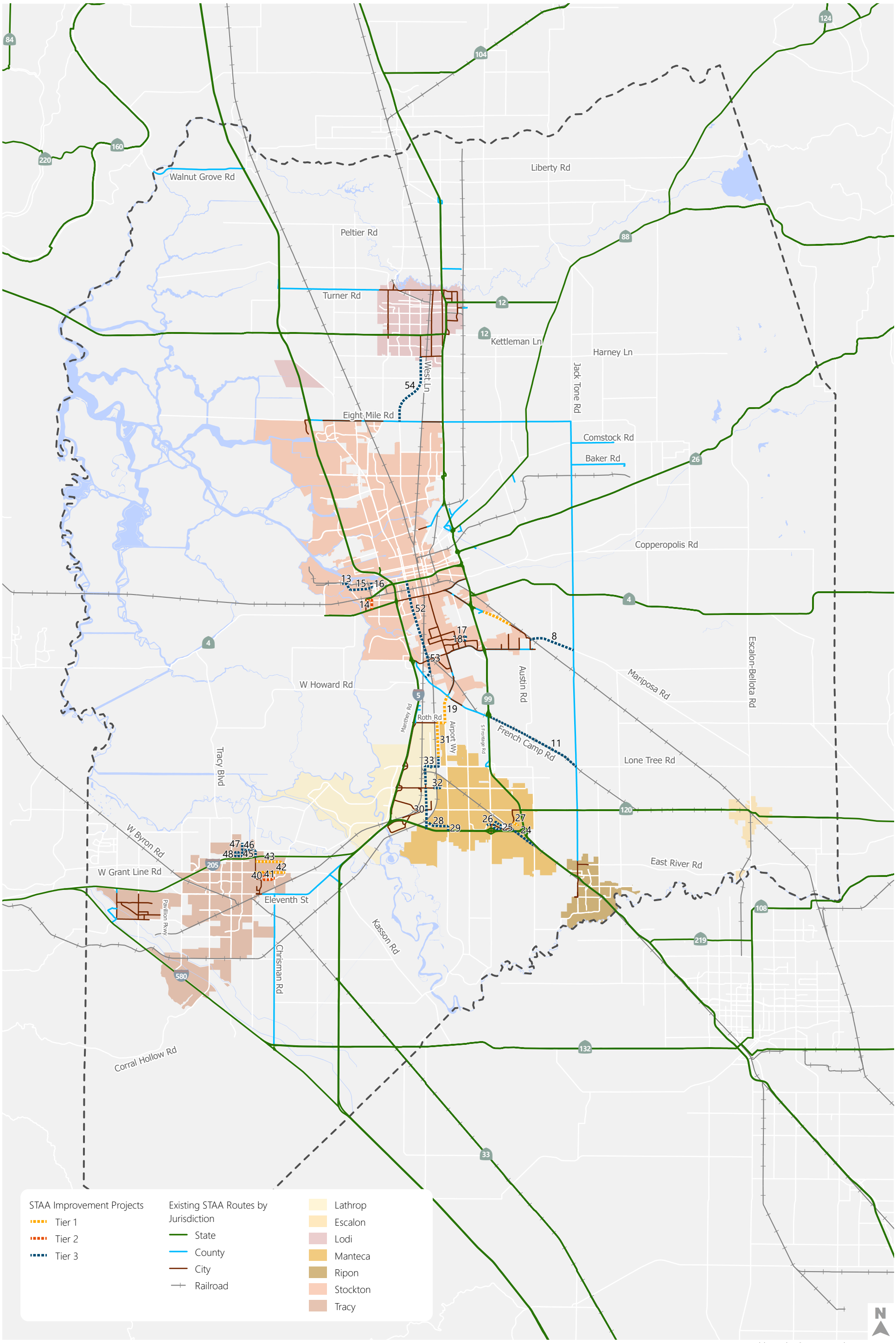
In **Table 5** list of tier 1, tier 2 and tier 3 projects are presented.

Table 5: STAA Truck Route Tier 1, 2, and 3 Improvement Projects

Project ID	Project Description
Tier 1 Projects	
8a	Mariposa Road between CA-99 Off Ramp to Austin Road (San Joaquin County)
42	Grant Line Road between MacArthur Drive to Paradise Road (Tracy)
43	E. Pescadero Avenue between MacArthur Drive to Chrisman Road Extension (Tracy)
19b	Airport Road between Roth Road and French Camp Road (Manteca SOI)
19a	Roth Road between Intermodal Way and Airport Way (Manteca)
31	Intermodal Way between the end of Intermodal Way and Roth Road (Manteca)
27	Dupont Court, form Spreckels Avenue to East end of Dupont Court (Manteca)
Tier 2 Projects	
14	Tillie Lewis Drive between Charter Way and Navy Drive, Navy Drive from Lewis Drive to CA-4 (Stockton/ Caltrans)
41	Paradise Road between Skylark Way to Chrisman Road (Tracy)
40	Skylark Way between Grant Line Road to Paradise Road (Tracy)
Tier 3 Projects	
8b	Mariposa Road between Austin Road and Jack Tone Road (Stockton / Stockton SOI)
11	French Camp Road between CA -99 and Jack Tone Road (County)
13a	Navy Drive between Charter Way and West Washington Street (Stockton / Stockton SOI)
15a	West Washington Avenue between Navy Drive and Port Road 21 (Stockton / Stockton SOI)
15b	West Washington Avenue between Port Road 21 and Ventura Avenue (Stockton / Stockton SOI)
16	Ventura Avenue between West Washington Street and Port Road A (Stockton / Stockton SOI)

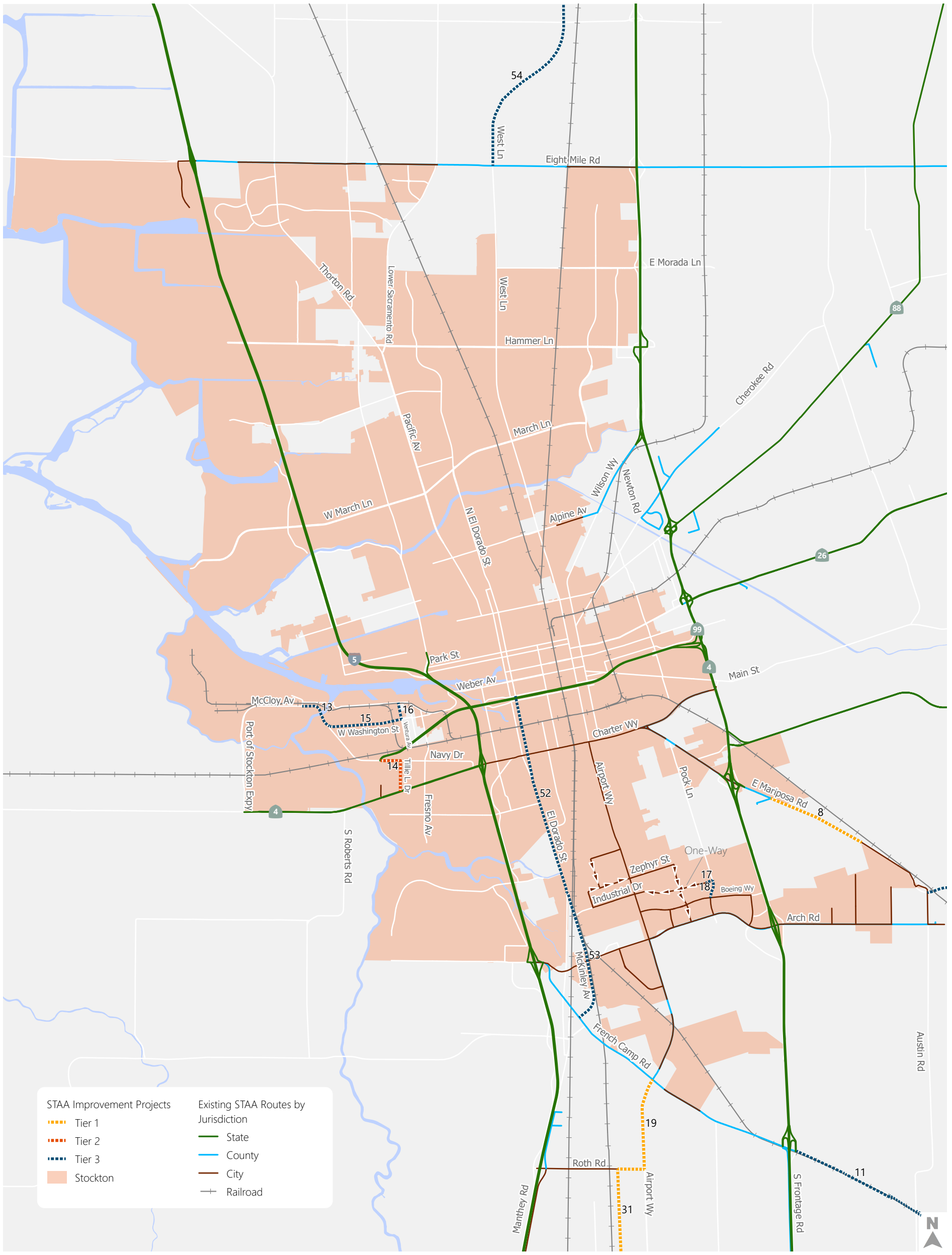
Project ID	Project Description
17	Industrial Drive between Pock Lane and 600 feet west of Pock Lane (Stockton / Stockton SOI)*
18	Pock Lane between Boeing Way and Industrial Drive (Stockton / Stockton SOI)*
52	El Dorado Street between McKinley Avenue and East Bound Crosstown Freeway (CA-4) off/on Ramps (Stockton / Caltrans)
53	McKinley Avenue between El Dorado Street and French Camp Road (Stockton/County)
54	West Lane Road between Eight Mile Road and Harney Lane (Lodi/County/ Stockton)
28	Daniels Street between McKinley Avenue and Airport Way (Manteca)
29	Airport Way Between CA-120 and Daniels Street (Manteca / Caltrans)
24	Moffat Boulevard between Spreckels Avenue and North of Austin Road (Manteca)
25	Vanderbilt Circle/Bessemer Avenue/ Carnegie Street/ South Mellon Avenue (Manteca)
26	Mission Ridge Drive between South Main Street and Mission Ridge Plaza (Manteca)
32	Louise Avenue between Lague Road to Villa Ticino Drive (Manteca/ Lathrop)
30b	McKinley Avenue between Daniels Street and West Yosemite Avenue (Lathrop)
30c	McKinley Avenue between West Yosemite Ave and West Louise Avenue (Lathrop)
30d	McKinley Avenue between West Louise Ave and Lathrop Road (Lathrop)
33	Extension of Intermodal Way to Lathrop Road, then Lathrop Road to McKinley Avenue (Lathrop/ Manteca)
45	MacArthur Drive between I-205 and Arbor Avenue (Tracy/Tracy SOI)
46	Arbor Avenue between MacArthur Drive and South Holly Drive (Tracy/Tracy SOI)
47	South Holly Drive between West Larch Road and W. Sugar Road (Tracy/Tracy SOI)
48	West Larch Road between South Holly Drive and Industrial Way/ Enterprise Place/Commercial Drive (Tracy/Tracy SOI)

**The City of Stockton is currently working on the design for #17 and #18*



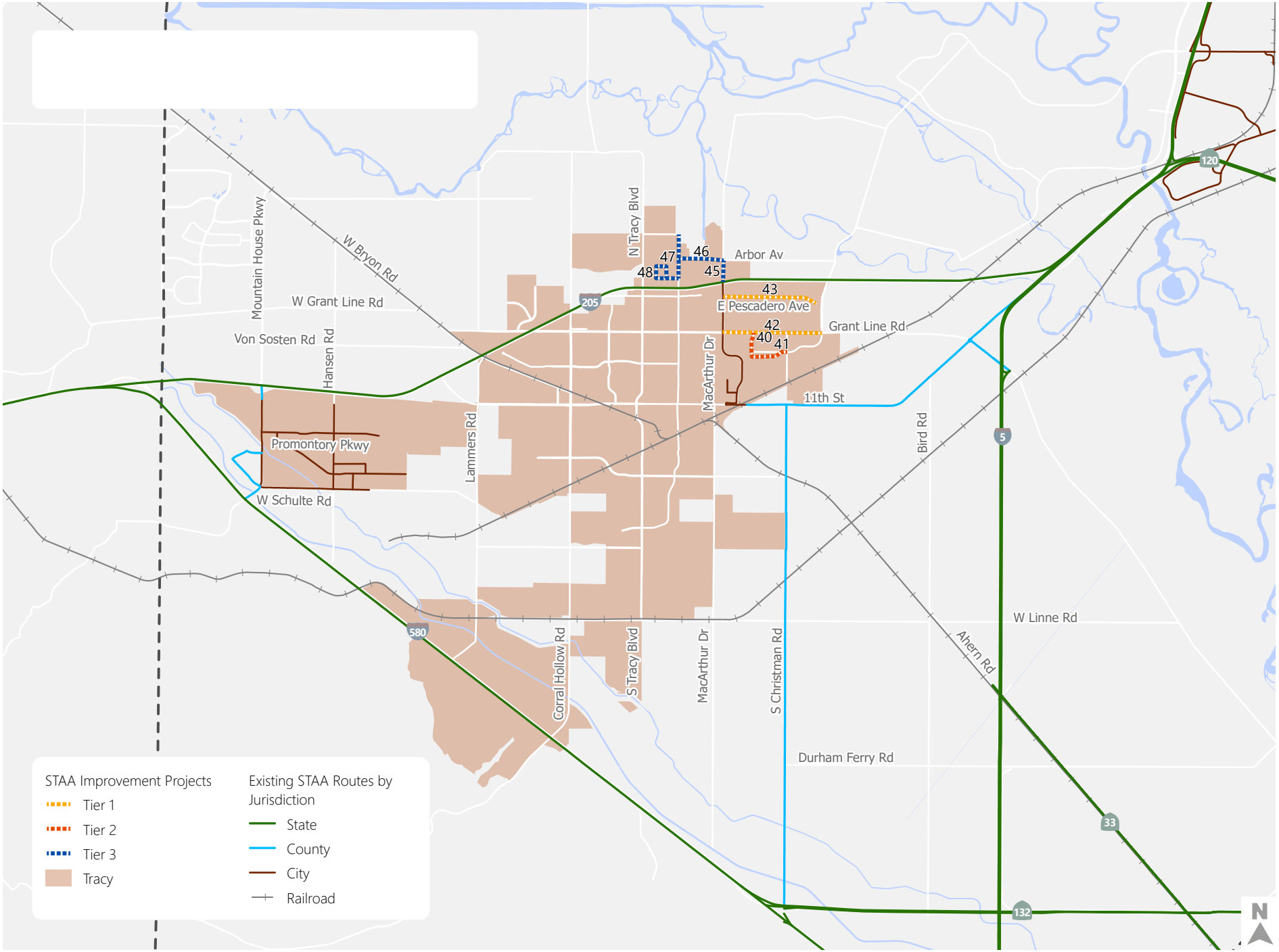
Prepared by Fehr & Peers, February 2023

Figure 15. STAA Truck Route Improvement Tiered Projects in San Joaquin County



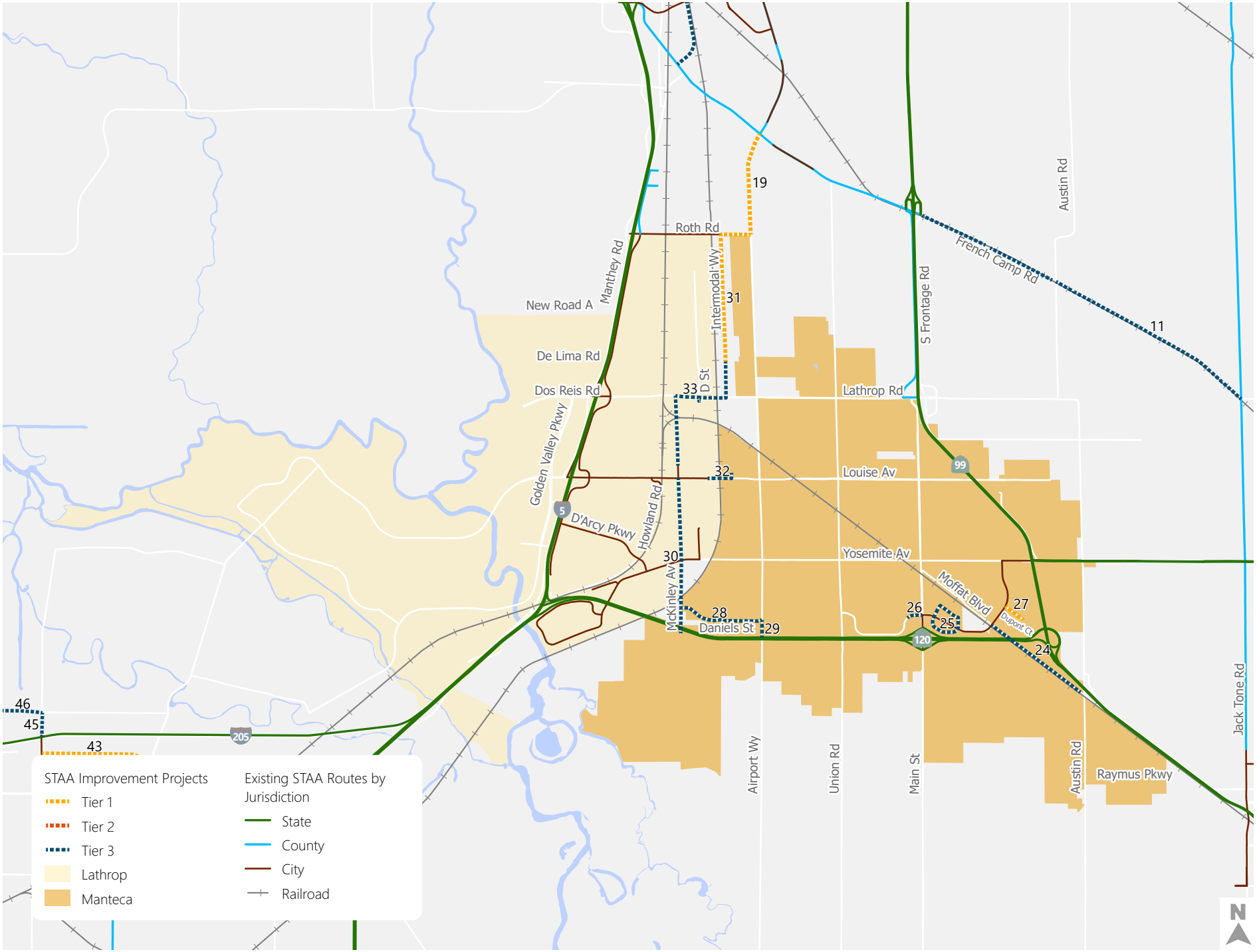
Prepared by Fehr & Peers, February 2023

Figure 16. TAA Truck Route Improvement Tiered Projecs in City of Stockton



Prepared by Fehr & Peers, February 2023

Figure 17. STAA Truck Route Improvement Tiered Projects in City of Tracy



Prepared by Fehr & Peers, February 2023

Figure 18. STAA Truck Route Improvement Tiered Projects in Cities of Lathrop & Manteca

Infrastructure Evaluation and Cost Estimate

The existing roadway classifications for roadway segments in **Table 5** were evaluated to see if they can accommodate STAA trucks. The intersections within each roadway segment were also evaluated to accommodate truck turning except those intersections that did not connect to an existing STAA truck route. Per Caltrans Highway Design Manual 404.4(b), the intersections were evaluated with an STAA 48-foot semitrailer template. Evaluation of the roadway segments and intersections were done at a high conceptual level by evaluating available GIS level right of way (ROW) information, existing street view was used to identify existing overhead utilities and signals, and aerial imagery was used to identify roadway improvements. It should be noted that more accurate or detailed ROW information could produce different results for some roadway segments especially in the intersection areas.

The goal was to **identify easily implementable STAA truck access routes.** We developed a rating system as follows:

Easy implementation: This rating included minor roadway improvements required (new pavement, signal relocation, signs, curb, gutter, and sidewalk, curb ramp modifications). No ROW needs and/or utility impacts.

Challenging implementation: This rating included potential ROW impacts as well as roadway improvements, utility impacts, and potential parking modifications. ROW impacts and utility impacts tend to take a little longer to implement as there are negotiations required with the property owners and utility owners. Most potential ROW impacts identified are minor, however per SJCOG, ROW impacts were identified as a challenging implementation and were used as a differentiator.

Methodology and Assumptions for Cost Estimation

There were a number of assumptions made to complete this preliminary review; they are as follows:

- If a segment crossed a railroad track with no proposed widening, no crossing improvements were needed.
- Pavement quality and remaining service life were not taken into consideration for cost. Any required pavement upgrade will be determined at a later time.
- For cost purposes a pavement section of 0.45' Hot Mix Asphalt (Type A) and 1.20' Class 2 Aggregate Base was used. This is based on the pavement sections used for the SR 120/Union Avenue interchange improvements project in the City of Manteca (construction completed) that accommodates STAA vehicles.
- On-Street or off-Street parking for STAA vehicles was not considered.
- It is assumed that shoulder widening was not required, except where shoulder widening is needed for truck off tracking in intersection areas.
- Minimum 12-foot travel lanes were assumed adequate for STAA vehicles.
- All new roadway segments under study connect to an existing STAA route.

- Construction cost estimates were only prepared for easily implementable segments. These estimates do not include soft costs such as securing environmental clearance, securing environmental permits, undertaking design, and providing construction management services.
- Truck turn templates in AutoCAD are theoretical, but are common tools used to determine the general swept path of a truck. In actual application, truck drivers could be able to make some turns that are currently shown as tracking over curb or into the opposite direction lanes. For the purpose of this memo, truck turn templates were the basis of design and implementation.

Segment Analysis

Segment 8a: Mariposa Road, CA-99 Off Ramp to Austin Road - **Easily Implementable**

- Per F&P, truck turn analysis at Austin Road intersection is not needed as intersecting road not an existing STAA route.
- Construction costs to support designation as a STAA route include added signage.
- This segment is anticipated to be designated as STAA based on development east of Carpenter Road.

Segment 8b: Mariposa Road, Austin Road to Jack Tone Road

- Per note from City of Stockton Staff the signalized intersection of Mariposa Road and Austin Road is currently operating as a 4-way and meets minimum requirements for STAA trucks.
- Per F&P, truck turn analysis at Austin Road intersection is not needed as intersecting road not an existing STAA route.
- Potential ROW impact at the northwest corner of the intersection at Jack Tone Road due to truck off tracking.
- The overhead utility pole at the northwest corner of the intersection would also likely need to be relocated.
- Construction costs to support designation as a STAA route would include Jack Tone Road shoulder/intersection widening and added signage.

Segment 11a: French Camp Road, CA-99 to Austin Road - **Easily Implementable**

- Per F&P, truck turn analysis at Austin Road intersection is not needed as intersecting road not an existing STAA route.
- Construction costs to support designation as a STAA route include added signage.
- While this segment is easily implementable, It does not provide a practical access and network connectivity without segment 11b

Segment 11b: French Camp Road, Austin Road to Jack Tone Road

- Per F&P, truck turn analysis at Austin Road intersection is not needed as intersecting road not an existing STAA route.
- Potential ROW impact at the northwest corner of the intersection at Jack Tone Road.

- The overhead utility pole at the northwest corner of the intersection would also likely need to be relocated.
- Construction costs to support designation as a STAA route would include shoulder widening, striping improvements, and added signage.

Segment 13a: Navy Drive, Charter Way to W. Washington Street

- The intersection at Navy Drive and Charter Way currently accommodates STAA truck turns.
- For the intersection at Navy Drive and W. Washington Street, the lanes on the Washington leg are too narrow to accommodate truck tracking. Widening could be accommodated but would likely impact railroad track lines and potential ROW impacts. One alternate solution would be to only provide one instead of two left turn lanes (for both the left turn onto Navy Drive and the left turn onto W. Washington Street). This alternate solution would need to be vetted for traffic review and potentially with the nearby property owners.
- The truck turns were completed with trucks turning out of all lanes however even in the event of just one truck turn, it is observed that that truck's swept path is tracking out of its designated lane.
- This segment is anticipated to be STAA designated based on development, Navy Drive between SR4 extension and Charter Way.

Segment 14: Tillie Lewis Drive, Chapter Way to Navy Drive - **Easily Implementable**

- Construction costs to support designation as a STAA route would include added signage and striping modifications.
- Based on Crosstown freeway extension plans, the Ort. J. Lofthus Freeway meets STAA requirements.

Segment 15a: W. Washington Avenue, Navy Drive to Port Road 21

- Same note as Segment 13a. For the intersection at Navy Drive and W. Washington Street, the lanes on the Washington leg are too narrow to accommodate truck tracking. Widening could be accommodated but would likely impact railroad track lines and potential ROW impacts. One alternate solution would be to provide one instead of two left turn lanes (for both the left turn onto Navy Drive and the left turn onto W. Washington Street). This alternate solution would need to be vetted for traffic review and potentially with the nearby property owners.

Segment 15b: W. Washington Avenue, Port Road 21 to Ventura Avenue

- Potential ROW impacts at northeast and northwest corners of the Ventura Avenue and W. Washington Avenue intersection.
- Construction costs to support designation as a STAA route would include minor roadway improvements including added signage and widening.

Segment 16: Ventura Avenue, W. Washington Avenue to Port Road A

- Same note as Segment 15b. Potential ROW impacts at northeast and northwest corners of the Ventura Avenue and W. Washington Avenue intersection.
- Construction costs to support designation as a STAA route would include minor roadway improvements including added signage and widening.

Segment 17: Industrial Drive, Pock Lane to 600 feet west of Pock Lane

- Potential ROW impact at the southwest corner of the intersection at Industrial Drive and Pock Lane.
- Construction costs to support designation as a STAA route would include southwest corner would need to be widened and sidewalk/curb ramps reconstructed.
- City of Stockton is currently working on the design of this project.

Segment 18: Pock Lane, Boeing Way to Industrial Drive

- Potential ROW impact at the northwest and northeast corner of the Pock Lane and Boeing Way intersection.
- Same as Segment 17. Potential ROW impact at the southwest corner of the intersection at Industrial Drive and Pock Lane.
- Construction costs to support designation as a STAA route would include northeast and northwest corner would need to be widened and curb and gutter reconstructed.
- A low cost alternative would be to restripe the south leg of Pock Lane so that there is only one northbound and one southbound lane (currently provides two northbound and one southbound lane).
- City of Stockton is currently working on the design of this project.

Segment 19: S. Airport Way, Roth Road to French Camp Road

- The intersection of S. Airport Way and Roth Road could accommodate truck turns with minor roadway improvements.
- The intersection of S. Airport Way and French Camp Road southeast and southwest corners have potential ROW impacts.
- Construction costs to support designation as a STAA route would include signal relocation, striping modifications, median modifications, and widening.

Segment 24: Moffat Boulevard, Spreckels Ave to North of Austin Road

- Per F&P, truck turn analysis at Austin Road intersection is not needed.
- Potential ROW impacts at the northwest corner of Moffat and Spreckels Avenue would be needed to reconstruct sidewalk and curb ramp.

- Potential conflict with overhead utility.
- Construction costs to support designation as a STAA route would include signal relocation, concrete curb, gutter, and sidewalk, light pole relocation, and roadway widening.

Segment 25: Vanderbilt Circle/Bessemer Avenue/ Carnegie Street/ S Mellon Avenue

- Potential ROW impacts at the southwest corner of Vanderbilt Circle and Industrial Drive and the northwest intersection of Bessemer Avenue and Carnegie Street.
- A low cost option would be to establish and enforce parking limitations/restrictions near the intersections, this would need to be further evaluated.
- Construction costs to support designation as a STAA route would include concrete curb and gutter replacement, striping, signage, and roadway widening.

Segment 26: Mission Ridge Drive, S. Main Street to Mission Ridge Plaza

- Potential ROW impacts at the southwest corner would be needed to reconstruct sidewalk and curb ramp.
- Construction costs to support designation as a STAA route would include concrete curb, gutter, sidewalk and curb ramp replacement, striping, signage, and roadway widening.

Segment 27: Dupont Court, Spreckels Avenue to East end of Dupont Court - **Easily Implementable**

- Construction costs to support designation as a STAA route would include added signage.

Segment 28: Daniels Street, Airport Way to McKinley Avenue -

- Daniels Street was recently constructed, so ROW is unknown. This segment could potentially have ROW impacts, but for this preliminary analysis was assumed to not have ROW impacts.
- Construction costs to support designation as a STAA route would include widening at the northeast corner of Daniels Street and McKinley and striping modifications.
- Per request from residents and City Staff recommendation, this project was considered in Tier 3.

Segment 30B: McKinley Avenue, Daniels Street to Yosemite Avenue

- Same note as 28. Daniels Street was recently constructed, so ROW is unknown. This segment could potentially have ROW impacts, but for this preliminary analysis it was assumed to not have ROW impacts.
- Potential ROW impact at northwest, southwest, and southeast corner of the McKinley Avenue and Yosemite Avenue intersection.
- Potential conflict with overhead utility.
- Construction costs to support designation as a STAA route would include widening, signage, and striping.

Segment 30C1: McKinley Avenue, W. Yosemite Ave to W. Louise Ave

- F&P noted that Louise Avenue is an existing STAA truck route.
- Potential ROW impact at northwest, southwest, and southeast corner of the McKinley Avenue and Yosemite Avenue intersection.
- Potential ROW impacts at the southwest corner at McKinley Avenue and Louise Avenue.
- Construction costs to support designation as a STAA route would include widening, signage, signal relocation, and striping.

Segment 30C2: McKinley Avenue, W. Louise Ave Lathrop Road

- F&P noted that Louise Avenue is an existing STAA truck route.
- Same as Segment 30C2. Potential ROW impacts at the southwest corner at McKinley Avenue and Louise Avenue.
- Construction costs to support designation as a STAA route would include widening, signage, signal relocation, and striping.

Segment 32: Louise Avenue, Lague Road to Villa Ticino Drive

- Segment seems to provide access to private parcels. There does appear to be ROW impacts, but the impacts are to the property being benefited by the truck access improvements. For this preliminary analysis this segment assumed to not have ROW impacts.
- Construction costs to support designation as a STAA route include minor added signage.
- This segment is on the border off Lathrop andManteca. Further coordination between the two cities will berequired before designating this segment as STAA route.

Segment 40: Skylark Way, Grant Line Rd. to Paradise Road - **Easily Implementable**

- Construction costs to support designation as a STAA route include minor added signage.

Segment 41: Paradise Road, Skylark Way to Chrisman Road - **Easily Implementable**

- Construction costs to support designation as a STAA route include added signage and striping.

Segment 42: Grant Line Road, MacArthur Drive to Paradise Road – **Easily Implementable**

- Construction costs to support designation as a STAA route include added signage.

Segment 43: E. Pescadero Avenue, MacArthur Drive to Chrisman Road Extension - **Easily Implementable**

- Construction costs to support designation as a STAA route include added signage.

Segment 45: MacArthur Drive, I-205 to Arbor Avenue

- Potential ROW impacts at the northwest and southwest corner of the intersection of MacArthur Drive and Arbor Avenue.
- Potential overhead utility in conflict.
- Construction costs to support designation as a STAA route include shoulder widening, striping improvements, and added signage.

Segment 46: Arbor Avenue, MacArthur Drive to S. Holly Drive

- Potential ROW impacts at the northwest and southwest corner of the intersection of MacArthur Drive and Arbor Avenue.
- Potential overhead utility in conflict.
- Construction costs to support designation as a STAA route include shoulder widening, striping improvements, and added signage.

Segment 47: S. Holly Drive, W. Larch Road to W. Sugar Road

- Potential ROW impacts at the northwest corner of the intersection of S. Holly Drive and W. Larch Road.
- Construction costs to support designation as a STAA route include shoulder widening, striping improvements, and added signage.

Segment 48: W. Larch Road, S. Holly Drive to Industrial Way/ Enterprise Plaza/Commercial Drive

- Potential ROW impacts at the northeast corner of the intersection of W. Larch Road and Industrial Way.
- Parking would have to be limited near the intersections.
- Construction costs to support designation as a STAA route include shoulder widening, striping improvements, and added signage.

Summary

The following are the recommended easily implementable segments with the various construction cost estimates associated with each segment.

Tier 1

- Segment 8a: Mariposa Road, CA-99 Off Ramp to Austin Road - $5,000
- Segment 42: Grant Line Road, MacArthur Drive to Paradise Road - $5,000
- Segment 43: E. Pescadero Avenue, MacArthur Drive to Chrisman Road Extension - $5,000
- Segment 11a: French Camp Road, CA-99 to Austin Road - $5,000

Tier 2

- Segment 14: Tillie Lewis Drive, Chapter Way to Navy Drive - $15,000
- Segment 27: Dupont Court, Spreckels Avenue to East end of Dupont Court - $41,000
-
- Segment 40: Skylark Way, Grant Line Rd. to Paradise Road - $130,000
- Segment 41: Paradise Road, Skylark Way to Chrisman Road - $130,000

Projects removed from Tiers 1 and 2 due to post evaluation determining additional research, coordination, and/or collaboration is needed.

- Segment 28**: Daniels Street, Airport Way to McKinley Avenue - $60,000
- Segment 32**: Louise Avenue, Lague Road to Villa Ticino Drive - $275,000

**These two segments have potential ROW impacts however are benefiting the property owner, so ROW impact was not assumed to be a factor in evaluation.

The truck turning exhibits and cost estimate for easily implementable improvements are presented in **Appendix E** and **Appendix F**

Other Recommendations

The following programs are recommended based on stakeholders' inputs:

- Continuous and consistent education programs for local truck drivers and shippers. One example is preparing a map of existing STAA truck route designations for distribution.
- Research additional ways of keeping STAA trucks on STAA designated routes up to their last mile destination and parked in an authorized location for STAA trucks.
  Last mile allows STAA trucks to travel on non-STAA roads up to a mile of their destination. For more information on last mile-related signage (i.e., S-sign), please refer to https://dot.ca.gov/programs/traffic-operations/legal-truck-access/quick-guide

Funding Sources

The Tier 1 and Tier 2 recommended improvements are low-cost projects that benefit local users of STAA truck networks and communities. These projects may not be competitive for discretionary federal or state grant programs. On the other hand, the tier 3 and long-term projects have broader multimodal and regional benefits and are more competitive. In this section we describe available funding programs that might be applicable.

Regional and Local Fund Sources

Local Signage and Striping Program

Lodi allocates maintenance funding to updating their local signage and striping. This includes regular on-going maintenance due to wear and tear on the transportation system and design guidance updates to meet current standards. Unfortunately, most cities struggle with allocating adequate budget for maintenance and have to overdue maintenance and need to prioritize their maintenance projects strictly each year.

Regional Transportation Impact Fee (RTIF)

RTIF program is a county-wide, multi-jurisdiction capital improvement funding program intended to cover a portion of the costs for new transportation facilities required to serve new development within the County. RTIF funding can be applied to projects on RTIF capital project list.

Jobs Balancing Improvement Program (JBIF)

JBIF program is a funding source within RTIF program that provides transportation project funding that may serve as part of a package of economic incentives to encourage job-creating firms to locate in San Joaquin County. SJCOG selects project(s) eligible for JBIF funding. The applicant may receive up to $500,000 per project, with an annual program maximum of $1,000,000.

Measure K (MK), Local Streets and Roads Repair

Measure K is a half-cent sales tax for transportation projects of regional significance in San Joaquin County. Jurisdictions received funding for local streets and roads repair. For more information, please refer to SJCOG Measure K webpage.

Surface Block Transportation Grant (STBG)

The Surface Transportation Block Grant Program (STBG) promotes flexibility in State and local transportation decisions and provides flexible funding to best address State and local transportation needs.[16]. STBG is a federal discretionary funding program, administered by SJCOG.

State and Federal Fund Sources

MPOs and local agencies are eligible to compete for discretionary transportation funds available from various State and federal agencies. The proposed truck routing improvements would best compete for discretionary funding sources administered by USDOT or Caltrans. Many of the federal programs focus on capital grants with a minimum value of $1 million, whereas the State through funding authorizations such as SB1[17] provide funding for smaller projects. SJCOG will continue to collaborate with local jurisdictions to jointly pursue future state and federal funding opportunities as they become available.

[16] https://www.fhwa.dot.gov/specialfunding/stp/

[17] https://catc.ca.gov/-/media/ctc-media/documents/deputy-approved/guidelines/05052020-revised-final-adopted-2020-lpp-guidelines.pdf

Appendix

A. Literature Review

The following infographics are selected from reports summarized in Literature Review section .

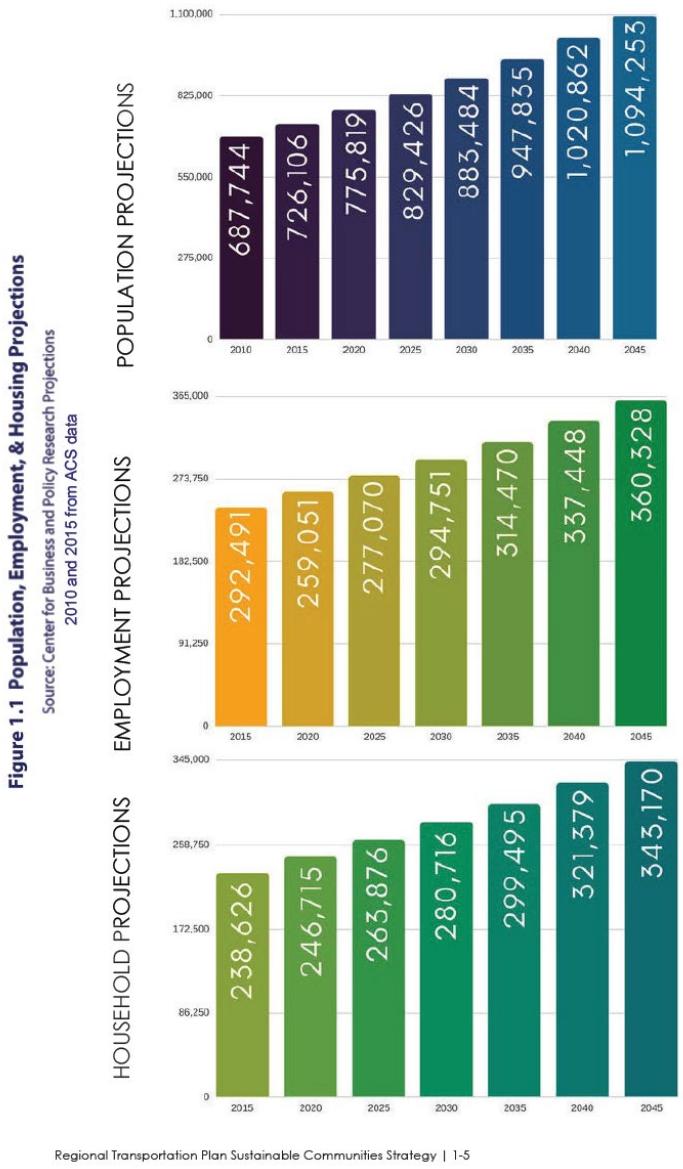
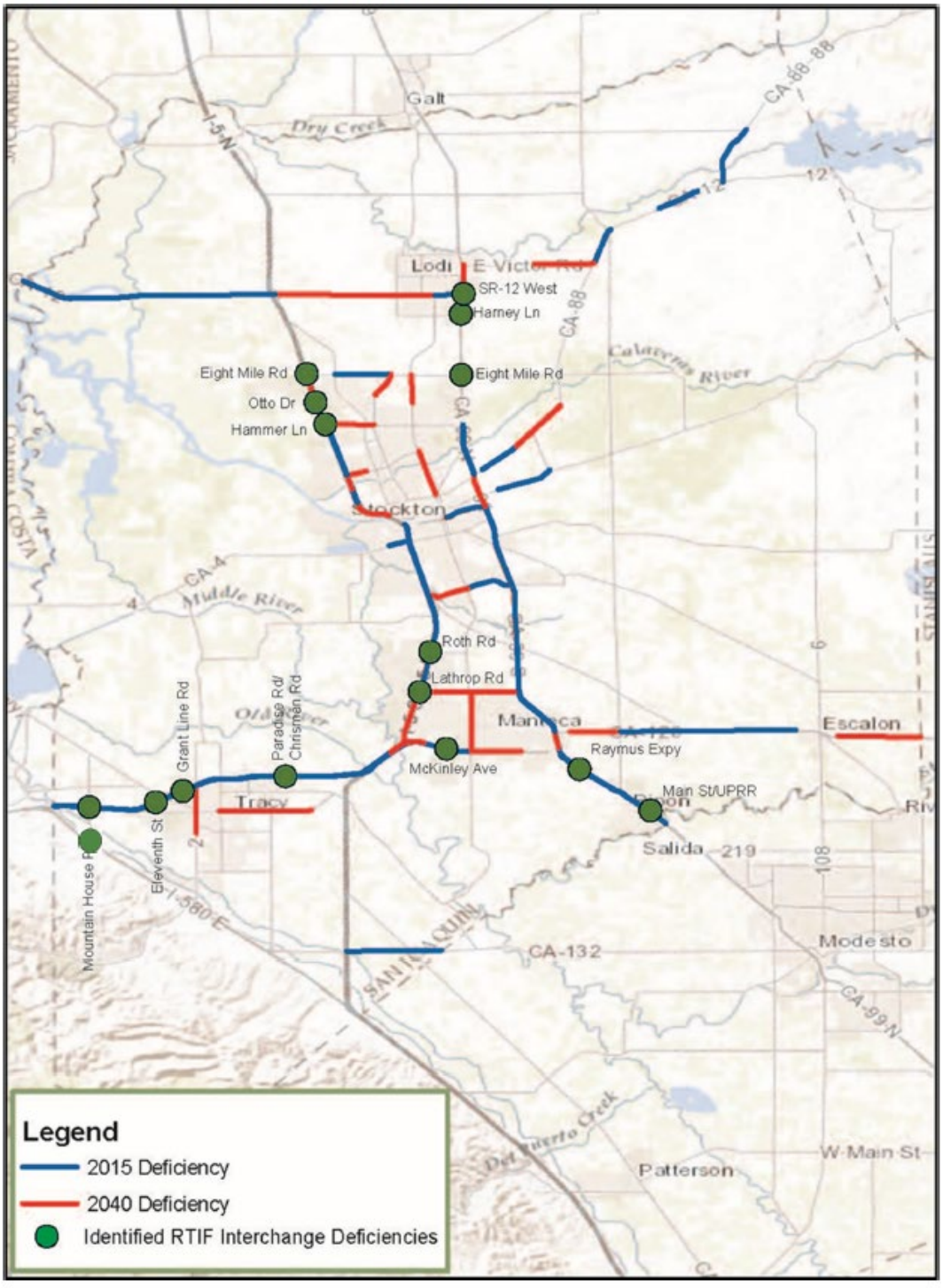


Figure 19. Projected Housing, Employment and Population Growth in San Joaquin County

Source: 2018 Regional Transportation Plan (RTP) & Sustainable Communities Strategy (SCS), Page 31.

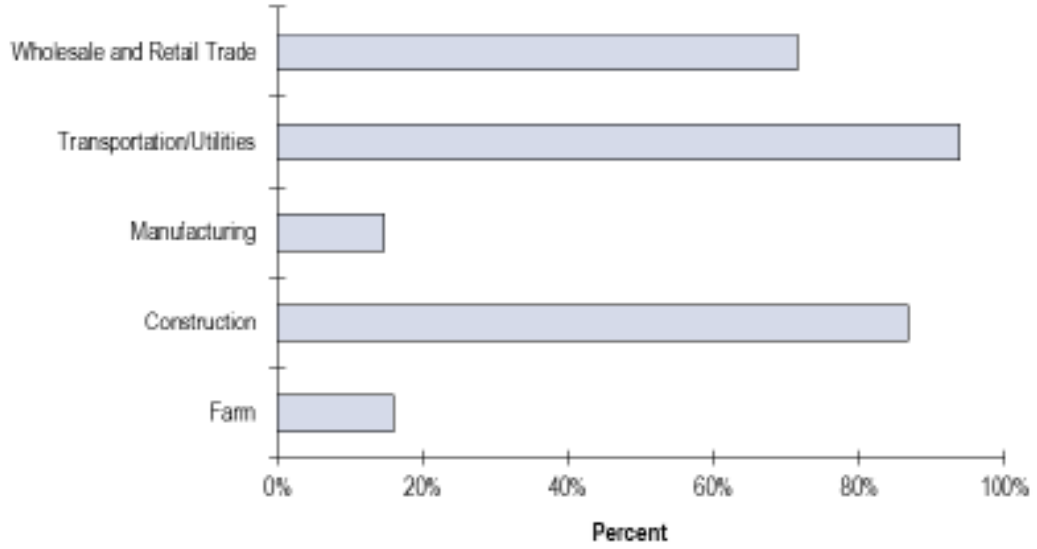
Figure 3. Existing and Future Year Interchange Deficiencies



Source: 2017 Regional Transportation impact Fee (RTIF) Jobs Balancing Investment Fund Report, Page 22.

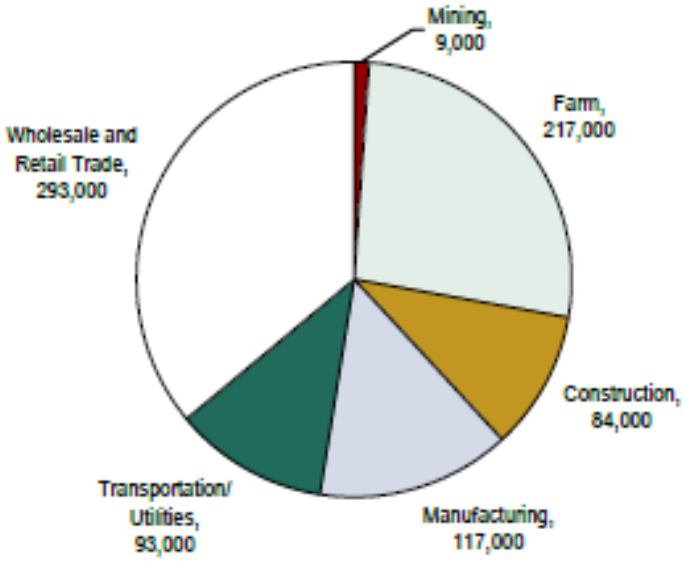
Figure 20. San Joaquin County Roadway & Interchange Deficiencies

Figure 2.2 Percentage Employment Growth in Goods Movement-Dependent Industries between 2010 and 2040



Source: California Forecast, 2011.
Note: Mining jobs are expected to experience a net decline of 3,000 jobs between 2010 and 2040 (about 18 percent).

Figure 2.3 2040 Goods Movement Industry Employment in the SJV

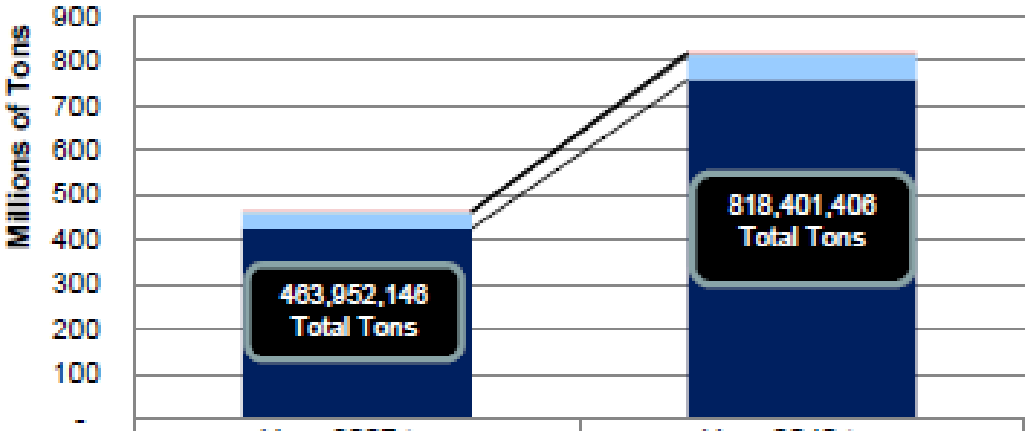


Source: California Forecast, 2011, Moody's economy.com (for mining employment).

Source: 2013 San Joaquin Valley Interregional Goods Movement Plan and California Forecast, Page 19.

Figure 21. Projected Employment Growth by 2040 in Freight-Related Industries

Figure 2.11 2007 and 2040 Commodity Volumes Moving into, out of, or within the SJV



	Year 2007 tons	Year 2040 tons
Air	11,034	11,034
Water	2,140,388	6,234,782
Rail	36,494,492	54,205,458
Truck	425,306,232	757,950,132

Source: FHWA FAF3, California State Rail Plan – Freight Rail Market Assessment.

Note: Air and water data have a 2011 base year. Base year water data (2011) are from Port of Stockton and informal (i.e., not-official) forecasts were developed by the Tioga Group for this report. Base year air data (2011) is from the California Division of Aeronautics for Fresno-Yosemite International Airport, the only SJV airport with measurable levels of air cargo.

Source: 2013 San Joaquin Valley Interregional Goods Movement Plan and California Forecast, Page 35.

Figure 22. Existing & Projected Commodity Volumes for San Joaquin Valley

Table 6: Profile of Select Transportation & Warehousing Occupations in San Joaquin County, 2018

Occupation	2008 Job Postings	Median Salary	Location Quotient	LQ Rank (CA)	Projected Growth '16-'26
Tractor-Trailer Truck Driver	4,284	$59k	2.7	#1	11.9%
Laborer / Warehouse Worker	1,558	$26k	2.7	#1	15.6%
Forklift / Pallet Jack Operator	567	$28k	5.8	#1	17.9%
Light Truck Delivery Driver	488	$31k	2.3	#1	12.1%
Packager	94	$23k	2.2	#2	6.2%

Source: Labor Insight Jobs (Burning Glass Technologies).

Source: 2019 Warehousing, E-Commerce, and Evolving Trade Patterns in San Joaquin County Report and Labor Insights, Page 11.

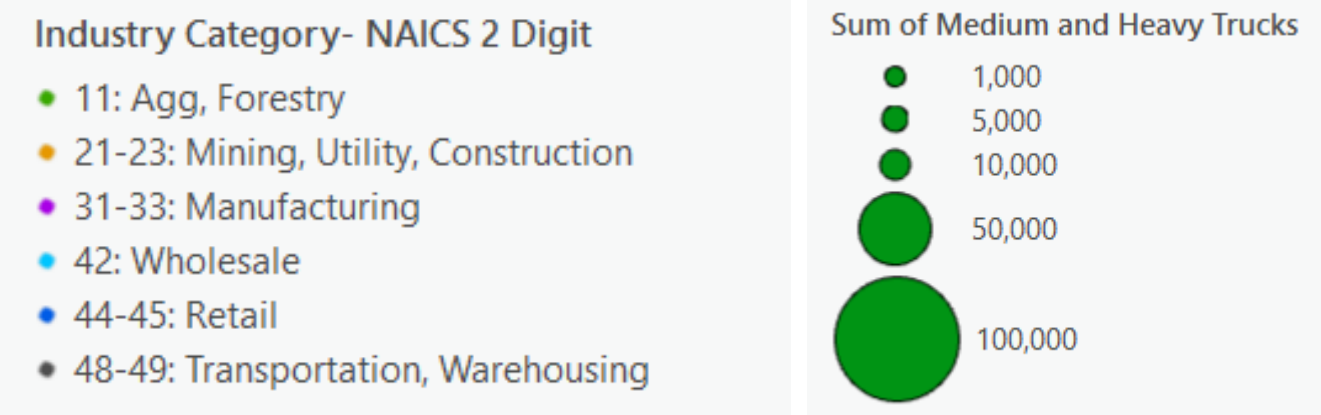
Figure 23. Jobs Profile of Selection Transportation & Warehousing Occupations

B. General Plan Land Use Designations

C. Freight Generating Establishments

The following graphics show the distribution of various freight generating establishments across San Joaquin County. The establishments are classified based on their NAICS codes and number of employees.

The following symbology is used to aggregate and visualize the establishments



D. Summary of Notes from Public Outreach and Stakeholder Engagement

SJCOG Stakeholder Workshop #1

The first stakeholder workshop was on June 17th, 2021. The goal was to identify concerns and challenges regarding STAA truck routes on each jurisdiction and identify Measures that are important for modifying existing STAA truck routes or adding new one. A Mural board was used to support an interactive platform so all stakeholders could have an opportunity to share their views and participate.

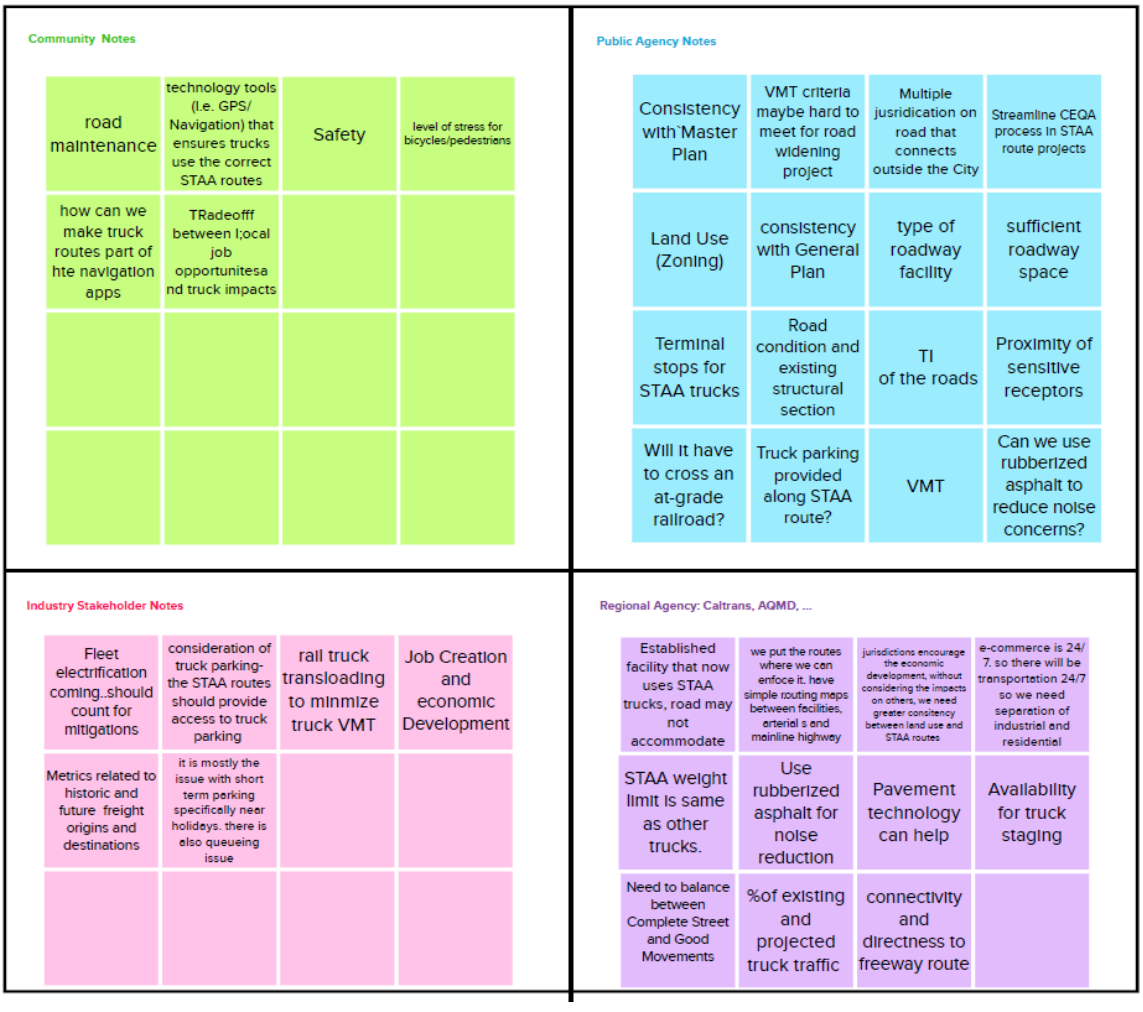


Figure 24. Stakeholders Response for Performance Metrics and Criteria for Evaluating New /Modifying Existing Routes

Major Themes & Discussion Points

Topic 1: Challenges & Concerns regarding STAA Routes

1. Community Notes
    a. Signage & Wayfinding
        i. Insufficient signage and wayfinding - truckers rely upon GPS navigation systems with incorrect information.
            1. Results in truckers driving through residential neighborhoods
    b. Roadway Maintenance
        i. Road maintenance is an issue. Residents are particularly concerned with dealing with the consequences of deteriorated roads caused by trucking activities.
    c. Emission & Noise Pollution
        i. Concerns regarding air and noise pollution associated with driving and idling, particularly in sensitive receptors (e.g., senior communities).
    d. Broader Community Impacts
        i. Decrease in property values (residential?) due to proximity to STAA route.
        ii. It is challenging for local traffic to intermingle with truck traffic (e.g., congestion and safety issues).
    e. Communication
        i. Public agency communication with communities about STAA routes needs to improve —local residents have complaints that need to be addressed.
2. Local Public Agency Notes
    a. Funding
        i. Local agencies need funding for roadway improvements.
            1. Many improvements are near term “low hanging fruit” that could easily be improved (e.g., old roadways with insufficient turning radii).
    b. Regional Consistency
        i. Need consistent regional planning for connectivity across jurisdictional boundaries. Currently, STAA routes are spread out within and in-between cities.
    c. Community Objections
        i. Public agencies will face objections in getting STAA route approvals due to broad community opposition (to trucks in their neighborhoods).
    d. Infrastructure Challenges
        i. Many roadways and intersections are inadequate for STAA vehicles (e.g. intersection geometry, ped/bike infrastructure, intersection stacking and left turn pockets).
            1. Easements for roadway widening are challenging for built out areas.
            2. Need to ensure traffic models accurately represent heavy vehicle percentages to account for stacking.
    e. Connectivity/Land Use

i. There is a disconnect between land use and STAA connectivity. Often, roadways separate land uses (e.g., with residential on one side and industrial on the other) which can conflict with the shortest travel path for a STAA vehicle.

f. Parking
    i. Lack of adequate parking for truckers results in them parking anywhere and everywhere.

g. Electric Vehicles (EVs)
    i. The shift to EVs will require agencies to rethink STAA route needs/standardization.

h. Enforcement
    i. Enforcing STAA routes versus a regular truck route.

i. Wayfinding
    i. Wayfinding is a major issue for agencies because truckers often ignore/don't know about STAA routes & GPS services will most likely use the "short path" without factoring in truck routes.
    ii. It is challenging to find STAA route information online as well.

3. Industry Stakeholder Notes
    a. Limited STAA Connectivity and Signage
        i. There is a lack of identified STAA routes in San Joaquin County (SJC) and lack of connectivity between jurisdictions.
            1. This confuses truckers, and when using GPS, they get routed on routes they did not intend to be on.
        ii. CA differs from other states in that it is the only state that indicates where STAA trucks are permitted, rather than prohibited.
    b. Difficult Designation Processes
        i. It is difficult to understand the STAA route designation process.
    c. E-Commerce & Freight Growth
        i. The industry is rapidly expanding, particularly in the realm of e-commerce, but STAA routes have not been able to meet demand—resulting in congestion, delays and driver hardship. There needs to be a long-term solution because this will only get worse.
    d. Land Use/Route Coordination
        i. Lack of coordination between STAA route designation and land use. In particular, land use decisions can often preclude good truck routing choices. This results in excess fuel, labor, and delivery delays – increased pressure to deliver on time can lead to a driver violating local rules and regulations.
    e. Parking
        i. Insufficient parking within jurisdictions, near drop-off locations and along STAA routes.
4. Regional Agency Notes
    a. Regional Connectivity & Coordination

        i. There is a need for broader, regional STAA route network connectivity and proactive, well-funded planning efforts.
    b. Wayfinding
        i. There is a lack of consistent, permanent STAA signage. Issues with navigation apps and confusion surrounding regular route versus STAA routes. There is a need for driver training on existing STAA routes.
    c. Enforcement
        i. Lack of consistent enforcement results in truckers using non-STAA routes.
    d. Mitigation
        i. There is a need for VMT/traffic/environmental pollution mitigation, highlighting the growth of activity in the future.
    e. Land Use/Route Planning Disconnects
        i. There has been a lack of coordination/foresight between land use decisions and route planning.
        ii. There is discord between SB743 (VMT)/reducing VMT and prohibitive land use planning (disallowing STAA vehicles to be able to take the shortest trip possible).

Topic 2: Performance/Criteria for Evaluating New STAA & Modifying Existing STAA Routes

1. Community Notes
    a. Potential metrics:
        i. Road maintenance needs
        ii. Safety
        iii. Local job growth due to the trucking industry
        iv. Inclusion of STAA routes in navigation apps
        v. Level of stress for bicyclists and pedestrians
2. Local Public Agency Notes
    a. Potential metrics:
        i. Master Plan/General Plan/Zoning consistency
        ii. VMT criteria & evaluation
        iii. Acceptable roadway geometries/configurations for STAA vehicles
        iv. Route efficiency (i.e., will it have to cross at an at-grade rail crossing?)
        v. Roadway conditions/maintenance
        vi. Adequate terminal stops for STAA vehicles and adequate parking facilities
        vii. Level of Stress (LOS) for pedestrians/bicyclists
        viii. Intra-jurisdictional connectivity
        ix. Streamlined environmental review
3. Industry Stakeholder Notes
    a. Potential metrics:
        i. Fleet Electrification/Mitigation

ii. Historic versus future freight origins & destinations
iii. Job growth and economic development opportunities
iv. Truck-to-rail transloading
v. Accessible parking with enough space to accommodate demand

4. Regional Agency Notes
    a. Potential metrics:
        i. Appropriate balance between Complete Streets & goods movement
        ii. Growth in rubberized asphalt use (& other pavement technologies)
        iii. Evaluation of existing & projected truck traffic
        iv. Greater consistency between land use & route designation (need to separate residential and industrial)
        v. Is the route enforceable?

SJCOG Stakeholder Workshop #2

The second stakeholder virtual workshop for San Joaquin County STAA truck route planning study was held on September 1st, 2021. 26 people participated from cities and county agencies, trucking companies, private developers, port of Stockton, and community groups. The participants were divided into four smaller groups to discuss their concerns and potential improvements regarding existing or conceptual STAA truck routes.

A Mural board was used to collect comments from participants. Given the limited time during the workshop, follow-up meetings and correspondences were conducted with the county, several cities (Stockton, Tracy, Lathrop and Manteca), Port of Stockton, California Highway Patrol, and the California Trucking Association to better understand their concerns and potential solutions regarding STAA routes.

Summary of Discussion Items

- STAA trucks (53' trailers, long wheelbase tractors) are the standard for long-haul and interstate freight.
- San Joaquin County shipper and consignees will need to accommodate STAA trucks as a matter of routine business. The alternative would be costly, and disruptive switching of long-haul and day cab tractors, which may not be feasible, and which would increase the overall number of truck and long trailer movements within the county.
- Businesses considering locations in San Joaquin County will require and apply for STAA access. The business competitiveness of the County relies on adopting standards of the freight industry.
- Per legislations described in this memorandum, Caltrans/San Joaquin County and local jurisdictions are required to allow STAA trucks access to customers, fuel, food, rest in the absence of specific safety issues.
- Planning for industrial parks, commercial development, and routes to/from those areas should be designed to accommodate STAA trucks.

Inputs from Stakeholders

Recent STAA Improvements:

- Escalon - Caltrans recently improved the NE corner of SR-120/McHenry to accommodate STAA trucks accessing McHenry from EB SR-120 and trucks heading SB on McHenry to WB SR-120.
- Tracy - All roads in the Cordes Ranch Specific Plan will be designed, constructed, and listed as STAA. Most roads are either already constructed or will be in the next 5 years.
- County - Current STAA map should be updated to show Chrisman Rd or 11th Street near Tracy as STAA routes. 11th Street from I-205 to Chrisman and Chrisman from 11th Street to the main entrance of Sharpe Depot are designed for STAA trucks.
- County- Holly Commerce Center at Holly and Arbor intersection is under construction. The STAA route is proposed from I-205- MacArthur Drive-Arbor Avenue- Holly Drive- Facility and back. 24-hour turnaround will be provided within the property. Some improvements at the off-ramp at MacArthur Drive is also underway to allow for these movements.

Planned Future Improvements:

- Ripon - Future improvements on both sides of Jack Tone Rd north of SR 99. Aiming to keep most trucking related activity on the west side of Jack Tone Rd.
- Tracy –
    - Interchange at Chrisman/I-205
    - NEI Truck Route Map in East Tracy will be STAA compliant. In this region, the City of Tracy is trying to make the loop between I-205-MacArthur Drive - Grant line Road-Paradise Road-Pescadero Avenue – MacArthur Road–I-205 as STAA-compliant ahead of the Chrisman Road extension and Interchange construction.
    - STAA improvements at I-205/Tracy Blvd WB ramp intersection
- Lathrop/Manteca –
    - Louise/Airport intersection

Potential Future Improvements Not Yet Officially Planned:

- Lodi - Expand the existing route on Guild Avenue further south as development continues, potentially to Harney Lane.
- Tracy - Lammers Rd/I-205 needs STAA access
- Stockton
    - Pock Lane to Industrial Rd (when industrial is developed) for circulation
    - Tillie Lewis Dr from Charter to Navy Dr
- County - 2018 County study proposed Liberty Rd as a new STAA route connecting SR 99 and SR 88, Peltier from I-5 to SR 99, and French Camp Rd between SR 99 and Jack Tone

Additional Notes Related to Each Area, Stakeholder Group or Observation from Field Visit

City of Lodi:

- West of SR 99 is mostly residential; STAA route should not be expanded.
- Expanding the STAA route east of SR 99/Harney Lane would require analysis of existing hook-ramp interchange for STAA access.
- The City of Lodi is expanding its sphere of influence – they may wish to expand the existing route on Guild Avenue further south as development continues; potentially to Harney Lane. No expansion west of SR 99 is expected beyond what is already planned.

City of Escalon:

- Caltrans recently improved the NE corner of SR-120/McHenry to accommodate STAA trucks accessing McHenry from EB SR-120 and trucks heading SB on McHenry to WB SR-120.

City of Ripon:

- Improvements to Main Street overcrossing would be helpful.
- Most future improvements will be on both sides of Jack Tone Rd north of SR 99. Aiming to keep most trucking related activity on the west side of Jack Tone Rd.
- Heavy truck traffic on River Rd from Modesto/Oakdale. Future plans to extend River Rd west to go between Manteca/Ripon; aiming for 140' ROW with signals within City limits.
- Bottleneck on SR 99 where bridge crosses the river at county line due to trucks entering and slowing.

City of Tracy:

- Planning for interchange at Chrisman/205
- Planned STAA route on Pescadero in north part of Tracy
- STAA extension of Pavilion Parkway over I-205 is vital for getting labor and freight to/from West Tracy to/from Byron Highway, Grant Line, and Lammers.
- West Tracy e-commerce freight and labor want to travel predominantly to/from the east (SR 99 and (-5 corridors). Lammers Rd/I-205 needs STAA access.
- Need to avoid Grant Line RD due to residents and Banta Elementary School.
- Caltrans has proposed STAA improvements at I-205/Tracy Blvd WB ramp intersection due to STAA requests.
- All roads in Cordes Ranch Specific Plan will be designed, constructed, and listed as STAA. Most are constructed or will be soon.

City of Lathrop and Manteca:

(Note- the inputs for these two cities are combined. Given the proximity of the two cities and close interaction between the uses

- Concern using Airport Way south of Roth Rd. Both have very poor pavement conditions on several segments

- N/S Intermodal Way should be STAA to keep trucks off Airport Way (multiple comments about utilizing Intermodal Way to connect to Roth and I-5 or French Camp to SR 99).
    - Southern intermodal way connection should be complete before new development can operate
- Lathrop/Manteca should coordinate on final recommendation and support same recommendations.
- Roth Rd should be improved to minimize safety issues on Lathrop Rd – needs to be a coordinated effort to make it a regional solution for Manteca, Lathrop, the County, the Port and UPRR.
- Lathrop Rd should not be STAA – should have an environmental study to evaluate Lathrop between McKinley and Airport.
- STAA on Austin Rd may be incompatible with residential land uses in area; Caltrans has received complaints about large trucks using Austin Rd between SR 99 and 120 and residents do not want trucks there.
- Need to improve Louise/Airport intersection, which currently does not meet STAA requirements but has heavy truck traffic.
- Pavement quality on Airport Way in city of Manteca is poor.
- Cumulative impacts should be considered when evaluating projects.
- The entrance of a large Flying J truck Stop facility is at Roth Road, near the railroad crossing. Roth Road has only one lane in each direction. During peak period long queues of trucks block the road. This creates unsafe conditions for truck drivers and other users of Roth Road (***Figure 25***)

Figure 25. Long Queue of Trucks at Roth Road at the entrance of Flying J truck Stop

City of Stockton:

- Navy Dr from Charter to Port of Stockton may need to be STAA but needs to be verified with traffic division.
- Extend STAA designation of Pock Lane to Industrial Rd (when industrial is developed) for circulation.
- Evaluate W Dr. Martin Luther King Dr and Center to look at truck routes and school – is this a truck route?
- Tillie Lewis Dr from Charter to Navy Dr
- Mariposa Rd isan existing STAA route but the pavement is in poor condition.

Port of Stockton

- The 1.28-mile Intermodal Connector designated as part of Primary Highway Freight System (PHFS)[18] for the Port of Stockton is: Harbor Street (Terminal to Fresno), Fresno Avenue (Harbor to Navy), Navy Drive (W Washington to Charter Way), Charter Way (Navy to I-5), @ Washington Street (Navy to Fresno).
- The entrance gate for the eastern port complex at Harbor Street is currently the only access point to facilities north of railroads. Fresno Avenue is currently heavily used by trucks because there is no alternative access. There is an access At Port Road 13and Washington Street, It is currently gated since there is severe safety concern. This access intersects with the Port's major rail track. This track provides access to both eastern and western complexes .
- Port is currently evaluating alternative access to the eastern complex via Navy Drive and a new bridge on San Joaquin River and port Road A. With this new access, all trucks on Fresno Ave can be re-routed to the new gate.
- The eastern Port complex creates concerns regarding limited STAA access. The access to the cold storage facilities currently is from Fresno Avenue. Almost all refer trailers are 53 feet. It is challenging to accommodate the demand with only California Legal access routes.
- The truck route signage needs a comprehensive review and an update as needed. For example, Truck Route sign at intersection of Fresno Avenue and Navy Drive was originally intended only for hazardous material (***Figure 26***)

[18] https://ops.fhwa.dot.gov/freight/infrastructure/ismt/state_maps/states/pdf/phfn_tables/ca_california_phfs.pdf .
Note: The initial designation of the Primary Highway Freight System (PHFS) was set by the FAST Act as the 41,518 mile long network identified during the designation process for the MAP-21 highway-only primary freight network (PFN) under 23 U.S.C. 167(d). The FHWA Administrator is required to re-designate the PHFS every 5 years to reflect changes in freight flows, including emerging freight corridors and critical commerce corridors.

Figure 26. Truck Signage at intersection of Navy Drive and Fresno Avenue (near Port of Stockton)

San Joaquin County:

- Map excludes sections of the County north of Lodi, such as Lockeford, as well as south of Tracy near quarries off SR 132.
- Current map does not show Chrisman Rd or 11th St near Tracy as STAA routes. 11th from I-205 to Chrisman and Chrisman from 11th to the main entrance of Sharpe Depot should be listed.
- 2018 County study proposed Liberty Rd as a new STAA route connecting SR 99 and SR 88, as well as Peltier from I-5 to SR 99 and French Camp Rd between SR 99 and Jack Tone.
- No STAA route on Grant Line through Banta community.
- Proposed STAA connections to the State Highway System will require analysis to determine if the interchange/intersection can handle STAA trucks or if improvement will be needed to accommodate STAA trucks.
- Truck Parking – there is a regional shortage of truck parking; it is important to note that truck drivers need space for staging and parking to comply with Hours-of-Service regulations (***Figure 27***).

Figure 27. Truck Parking along the street on Arch Airport Road near the Airport

California Trucking Association (CTA)

There is a nationwide shortage of trucks, trailers, and truck drivers. Therefore, limitations on access to STAA trucks may impose extra cost to the shippers.

- Truck drivers dislike cutting through neighborhoods and residential streets. The streets are narrow, there is not enough room for maneuvering a large truck and higher safety concerns. They all appreciate having designated access where the roadway engineering can accommodate their truck safely. Lack of easy signage and continuity and connectivity of the STAA network is the issue especially for out of state drivers who are not familiar with the local roads and rely on navigator apps and signage to guide them.
- Eric Sauer suggested conducting a survey among truck drivers and fleet operators in the county to identify gaps and areas of concern regarding existing STAA routes.

Private sector developers (Prologis)

- It would be great to identify and receive specific goods movement projects in the RTP to help secure funding for them. For each project showing how it helps throughput, velocity, and

reliability and other performance measures would help state and federal grant application process. TDM, traffic control, signal coordination, etc. are also examples of potential projects.
- There is a need to review and discuss roundabouts. The strategic use of roundabouts is recommended.
- Potential monitoring programs to determine when and where trucks are traveling on roads, they are not supposed to might help to understand the needs for better truck route network and enforcements.

California Highway Patrol (CHP)

- Educating drivers to use the designated routes is the preferred enforcement approach.
- Like many other public services, CHP is under-staffed. How every they are supportive of this project and will participate in follow-ups to help with improving safe access for all users.
- In follow up one on one interviews, CHP officers were supportive of all STAA truck route improvements.

Meeting with Cohort 2

A hybrid (online conference call and in-person meeting) was conducted on January 24th, 2023. Representatives from Collings Electric and San Joaquin Business Council participated. An overview of the project and Tier 1 and Tier 2 recommended improvements were shared with participants. Following questions and concerns were discussed:

- Question - Is this study a plan that will get adopted by COG and jurisdictions? Answer - No. This study helps local jurisdictions understand the gaps and needs. The local jurisdictions have been involved in developing recommendations. It is at the discretion of each jurisdiction to finally adopt and implement the designations.
- Question - How do these designations get on the list? Answer - The Project team conducted a detailed analysis of the gaps and needs, shared the initial list of recommendations with cities, and refined the list further based on city and other stakeholder input and feedback.
- Question - How long does it take to designate these routes? Answer - Tier 1 projects are easy to implement. They only require signage and are within citiy jurisdictions. These projects can be implemented very fast. The other Tiers require funding to implement required infrastructure improvements before STAA designation. Therefore, the timing of designation depends on the availability of funds. Also, if the project requires coordination and approval from Caltrans, Caltrans staff may need 1-2 months (90 days is the limit) after they receive the application to complete the analysis, conduct a field review and draft a letter.
- Participants discussed the construction of new truck parking at Metro Drive and Arch Road, along with the challenges of getting STAA designation for 99 Frontage Road, Arch Road and Imperial Way (so the trucks can access the parking). When the project was approved by the County, the applicant was not informed about the STAA access limitations. It was recommended by participants that it would be helpful for developers to get information about the STAA truck access designation in advance, so that the project does not get hindered by an STAA designation.

Meeting with Cohort 3

A hybrid meeting (online and in-person conference call) was conducted on January 24th, 2023. Representatives from community-based organizations and the general public participated. An overview of the project and Tier 1 and Tier 2 recommended improvements were shared with participants. The following questions and concerns were discussed. There were additional follow-up conversations with some of the participants.

- Question – Is Austin Road a STAA route? – Answer – No.
- Daniels Street in Manteca was initially recommended to be designated as a STAA route under Tier 1 category. Residents noted that there is currently no industrial land use along Daniels Street. There are large retail stores (Costco, Kohl's, Ross, Petco, etc.), a water park and a sports arena. For most of the day, northbound traffic on Airport Way at Daniels Street, intending to turn left onto Daniels Street, is backed up to the Highway 120 westbound offramp (and many times daily it is backed up over the Airport Way/Highway 120 overpass all the way south on Airport Way, beyond the Highway 120 eastbound offramp blocking through traffic intending to go north on Airport Way). It was requested to remove Daniels Street from the recommended STAA list, as well as not designating Airport Way between CA-120 and Daniels Street as STAA. Answer -This request was discussed with City and it was recommended to move Daniels Street to Tier 3 category.
- Question - What will stop trucks from using Tillie Lewis Road to access Navy Drive and then the Boggs Tract neighborhood? There are businesses with heavy truck activity located adjacent to residential areas. Answer - The Project team is aware of challenges and concerns within the Boggs Tract area. The Port of Stockton is also working on these challenges, but there are no easy–to-implement solutions at this time. The recommendation, for designating Tillie Lewis Road to Navy Drive, will connect businesses along Tillie Lewis Road drive to CA-4 and would not impact the Boggs Tract neighborhood.
- Both ends of *Vanderbilt Circle and Bessemer Avenue* in Manteca connect to Industrial Park Drive. There is a recently built semi-truck parking yard, with an entrance from Industrial Park Drive and an exit onto Vanderbilt Circle. Per Google Map Streeview, a majority of trucks parking there are STAA trucks. The satellite view is during the day showing few trucks, since it is primarily an overnight parking yard for local drivers. It is requested that Vanderbilt Circle and *Bessemer Avenue* be considered for STAA designation. – Answer – The Project team reviewed Vanderbilt Circle for STAA designation. Detailed information is available in **Appendix E**. Even though STAA trucks may already be using the facility, the facility requires additional right-of-way to be qualified for STAA designation. It is classified as a Tier 3 project. Further study and evaluation is required for this segment prior to STAA designation.
- Regarding *McKinley Avenue*, the City of Lathrop only allows STAA trucks to travel east and west bound on Lathrop Road via McKinley Avenue. In anticipation of the McKinley/Hwy 120 Interchange being completed, and given that there are several very large manufacturing uses on McKinley just south of Lathrop Road, it is requested to initiate the process to designate McKinley Avenue as a STAA route between Lathrop Road on the north end and Highway 120

on the south end (so trucks can legally travel through the area via McKinley Avenue). - Answer – The Project team reviewed McKinley Avenue for STAA designation. Detailed information is available in **Appendix E**. Even though some STAA trucks may already use the facility, the facility requires major improvements and additional right-of-way to be qualified for STAA designation. It is classified as a Tier 3 project. Further study and evaluation is required for this segment prior to STAA designation.

- Roth Road, between I-5 and the Union Pacific (UP) entrance, is already designated as a STAA route. Just east of the UP entrance is a State of California sign disallowing STAA trucks to travel eastbound on Roth Road from that point. However, the City of Manteca intends for Roth Road STAA status to be extended to Airport Way and then north on Airport Way to French Camp Road, the latter of which is already a County-designated STAA route. It is requested to consider Roth Road and Airport Way for STAA designation. - Answer – This request was discussed with City and it was added to Tire 1 Category .
- The City of Manteca existing STAA route map does not show the Frontage Road west of SR-99, leading north from Lathrop Road, as a designated STAA route. It may be a simple matter of a state route (in green), SR-99, overlaying what should be a county route (in blue) on the Frontage Road. The Frontage Road received STAA designation a few years ago, extending from Lathrop Road up to the Delicato Winery where there is a turn-around specifically for longer trucks. Frontage Road is marked as STAA. As noted in the comments, the line is hidden due to proximity to the SR-99.

E. Truck Turning Exhibits

The following figures describe the STAA truck Auto Turn analysis for each of the Tier1, Tier 2 and Tier 3 Projects

F. Estimates for Tier 1 and Tier 2 Projects

The following tables provide information on cost estimates for tier 1 and tier 2 projects.

TRUCK PLANNING STUDY
RECOMMENDATION 8a - Engineer's Estimate

MARK THOMAS

ITEM No.	BEES ITEM NUMBER	ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	TOTAL
1	820840	ROADSIDE SIGN - ONE POST	EA	6	$400	$2,400
2		MOBILIZATION	LS	1	$1,000	$1,000
					SUBTOTAL=	$3,400
GRAND TOTAL						
					SUBTOTAL=	$3,400
					STAGE CONSTRUCTION (10%)=	$400
					CONTINGENCY (30%)=	$1,100
					GRAND TOTAL=	$4,900

TRUCK PLANNING STUDY
RECOMMENDATION 11a - Engineer's Estimate

MARK THOMAS

ITEM No.	BEES ITEM NUMBER	ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	TOTAL
1	820840	ROADSIDE SIGN - ONE POST	EA	6	$400	$2,400
2		MOBILIZATION	LS	1	$1,000	$1,000
					SUBTOTAL=	$3,400
GRAND TOTAL						
					SUBTOTAL=	$3,400
					STAGE CONSTRUCTION (10%)=	$400
					CONTINGENCY (30%)=	$1,100
					GRAND TOTAL=	$4,900

TRUCK PLANNING STUDY
RECOMMENDATION 14 - Engineer's Estimate

MARK THOMAS

ITEM No.	BEES ITEM NUMBER	ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	TOTAL
1	820840	ROADSIDE SIGN - ONE POST	EA	6	$400	$2,400
2		STRIPING IMPROVEMENTS	LS	1	$5,000	$5,000
3		MOBILIZATION	LS	1	$1,000	$1,000
					SUBTOTAL=	$8,400
GRAND TOTAL						
					SUBTOTAL=	$8,400
					MINOR ITEMS (15%)=	$1,300
					STAGE CONSTRUCTION (10%)=	$900
					CONTINGENCY (30%)=	$2,600
					GRAND TOTAL=	$13,200

TRUCK PLANNING STUDY
RECOMMENDATION 32- Engineer's Estimate

MARK THOMAS

ITEM No.	BEES ITEM NUMBER	ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	TOTAL
1	190101	ROADWAY EXCAVATION	CY	10	$100	$1,000
2	260203	CLASS 2 AGGREGATE BASE	CY	15	$115	$1,725
3	390132	HOT MIX ASPHALT (TYPE A)	TON	20	$130	$2,600
4	731504	MINOR CONCRETE (CURB AND GUTTER)	CY	5	$650	$3,250
5	731521	MINOR CONCRETE (SIDEWALK)	CY	10	$900	$9,000
6	731623	MINOR CONCRETE (CURB RAMP)	LS	1	$1,500	$1,500
7	731780	REMOVE CONCRETE SIDEWALK	SY	25	$75	$1,875
8	731840	REMOVE CONCRETE (CURB AND GUTTER)	LF	75	$32	$2,400
9	820840	ROADSIDE SIGN - ONE POST	EA	6	$400	$2,400
10	861301	RELOCATE TRAFFIC SIGNAL STANDARD	LS	1	$150,000	$150,000
11		MOBILIZATION	LS	1	$1,000	$1,000
					SUBTOTAL=	$176,750
GRAND TOTAL						
					SUBTOTAL=	$176,750
					MINOR ITEMS (15%)=	$26,600
					STAGE CONSTRUCTION (10%)=	$17,700
					CONTINGENCY (30%)=	$53,100
					GRAND TOTAL=	$274,200

TRUCK PLANNING STUDY
RECOMMENDATION 40- Engineer's Estimate

MARK THOMAS

ITEM No.	BEES ITEM NUMBER	ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	TOTAL
1	190101	ROADWAY EXCAVATION	CY	15	$100	$1,500
2	260203	CLASS 2 AGGREGATE BASE	CY	15	$115	$1,725
3	390132	HOT MIX ASPHALT (TYPE A)	TON	20	$130	$2,600
4	731504	MINOR CONCRETE (CURB AND GUTTER)	CY	10	$650	$6,500
5	731521	MINOR CONCRETE (SIDEWALK)	CY	10	$900	$9,000
6	731623	MINOR CONCRETE (CURB RAMP)	LS	1	$1,500	$1,500
7	731780	REMOVE CONCRETE SIDEWALK	SY	40	$75	$3,000
8	731840	REMOVE CONCRETE (CURB AND GUTTER)	LF	115	$32	$3,680
9	820840	ROADSIDE SIGN - ONE POST	EA	6	$400	$2,400
10	861300	RELOCATE LIGHTING STANDARD	LS	1	$50,000	$50,000
11		MOBILIZATION	LS	1	$1,000	$1,000
					SUBTOTAL=	$82,905
GRAND TOTAL						
					SUBTOTAL=	$82,905
					MINOR ITEMS (15%)=	$12,500
					STAGE CONSTRUCTION (10%)=	$8,300
					CONTINGENCY (30%)=	$24,900
					GRAND TOTAL=	$128,700

TRUCK PLANNING STUDY
RECOMMENDATION 41- Engineer's Estimate

MARK THOMAS

ITEM No.	BEES ITEM NUMBER	ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	TOTAL
1	190101	ROADWAY EXCAVATION	CY	15	$100	$1,500
2	260203	CLASS 2 AGGREGATE BASE	CY	15	$115	$1,725
3	390132	HOT MIX ASPHALT (TYPE A)	TON	20	$130	$2,600
4	731504	MINOR CONCRETE (CURB AND GUTTER)	CY	10	$650	$6,500
5	731521	MINOR CONCRETE (SIDEWALK)	CY	10	$900	$9,000
6	731623	MINOR CONCRETE (CURB RAMP)	LS	1	$1,500	$1,500
7	731780	REMOVE CONCRETE SIDEWALK	SY	40	$75	$3,000
8	731840	REMOVE CONCRETE (CURB AND GUTTER)	LF	115	$32	$3,680
9	820840	ROADSIDE SIGN - ONE POST	EA	6	$400	$2,400
10	861300	RELOCATE LIGHTING STANDARD	LS	1	$50,000	$50,000
11		MOBILIZATION	LS	1	$1,000	$1,000
					SUBTOTAL=	$82,905
GRAND TOTAL						
					SUBTOTAL=	$82,905
					MINOR ITEMS (15%)=	$12,500
					STAGE CONSTRUCTION (10%)=	$8,300
					CONTINGENCY (30%)=	$24,900
					GRAND TOTAL=	$128,700

TRUCK PLANNING STUDY
RECOMMENDATION 42 - Engineer's Estimate

MARK THOMAS

ITEM No.	BEES ITEM NUMBER	ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	TOTAL
1	820840	ROADSIDE SIGN - ONE POST	EA	6	$400	$2,400
2		MOBILIZATION	LS	1	$1,000	$1,000
					SUBTOTAL=	$3,400
GRAND TOTAL						
					SUBTOTAL=	$3,400
					STAGE CONSTRUCTION (10%)=	$400
					CONTINGENCY (30%)=	$1,100
					GRAND TOTAL=	$4,900

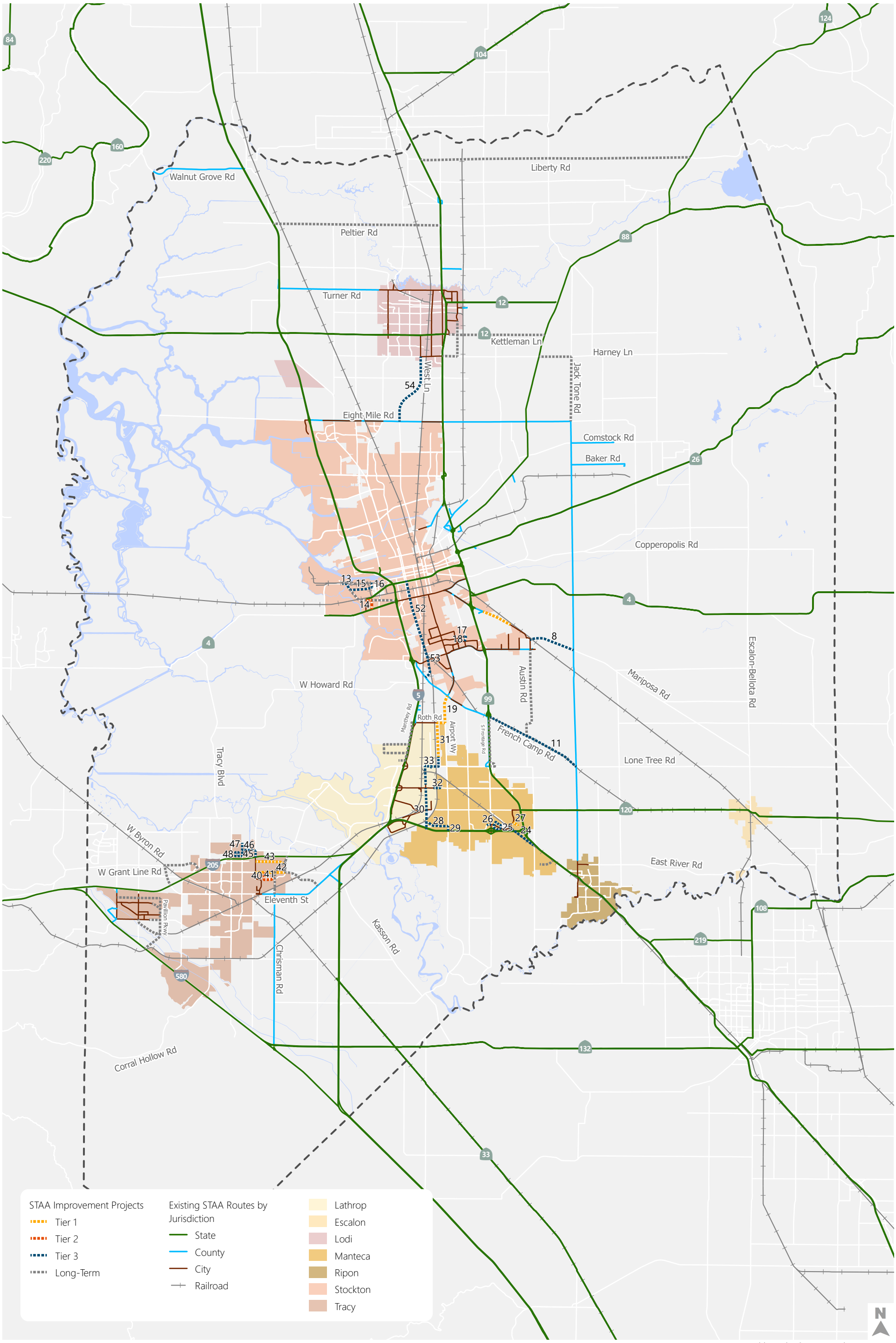
TRUCK PLANNING STUDY
RECOMMENDATION 43 - Engineer's Estimate

MARK THOMAS

ITEM No.	BEES ITEM NUMBER	ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	TOTAL
1	820840	ROADSIDE SIGN - ONE POST	EA	6	$400	$2,400
2		MOBILIZATION	LS	1	$1,000	$1,000
					SUBTOTAL=	$3,400
GRAND TOTAL						
					SUBTOTAL=	$3,400
					STAGE CONSTRUCTION (10%)=	$400
					CONTINGENCY (30%)=	$1,100
					GRAND TOTAL=	$4,900

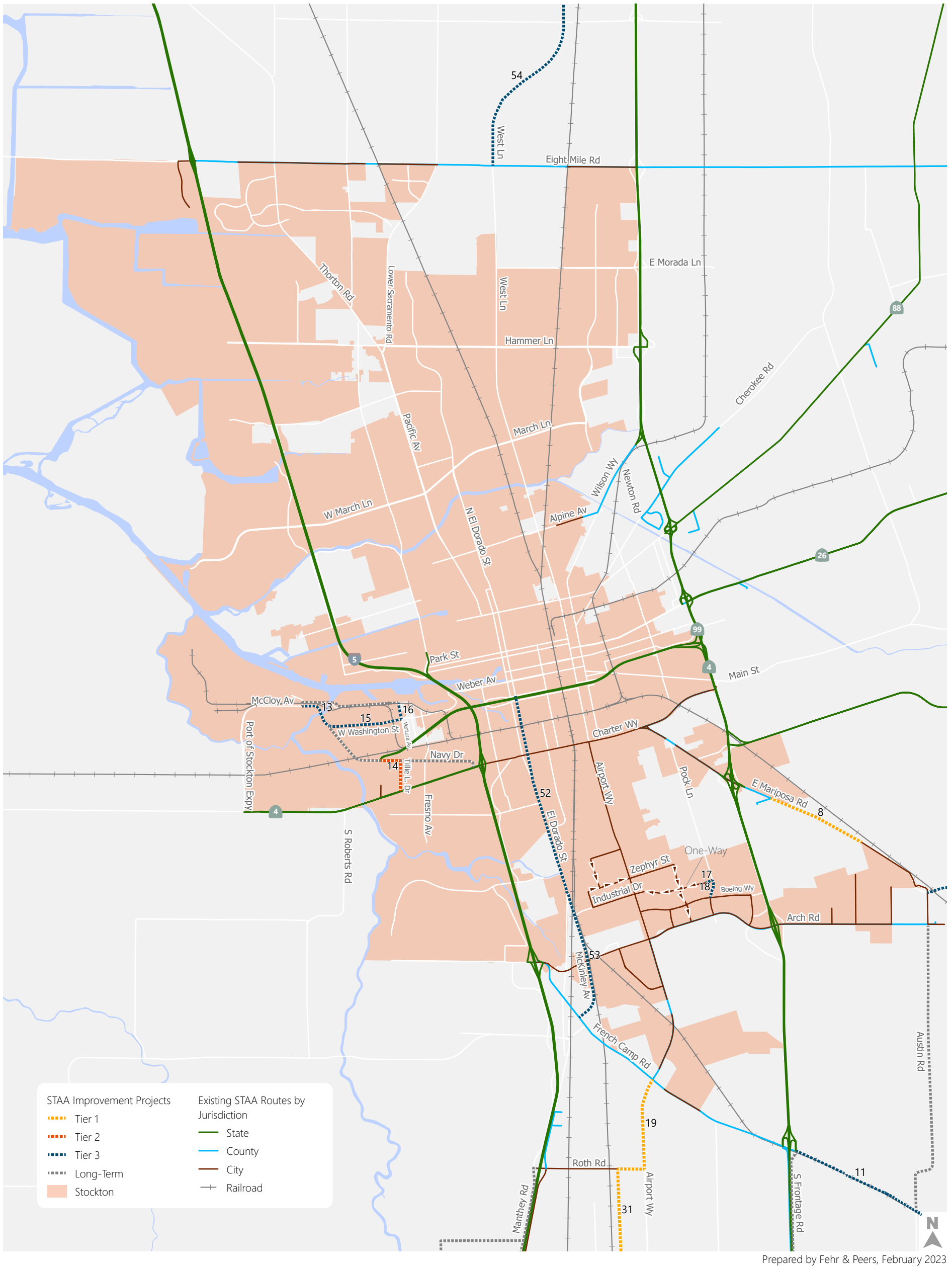
G. Long Term STAA Truck Route Maps

In the following pages, *Figure 28* to *Figure 32* presents the Tier 1, 2, 3 and long-term projects. The long-term projects were not evaluated in detail in this study. These projects are contingent on future developments.



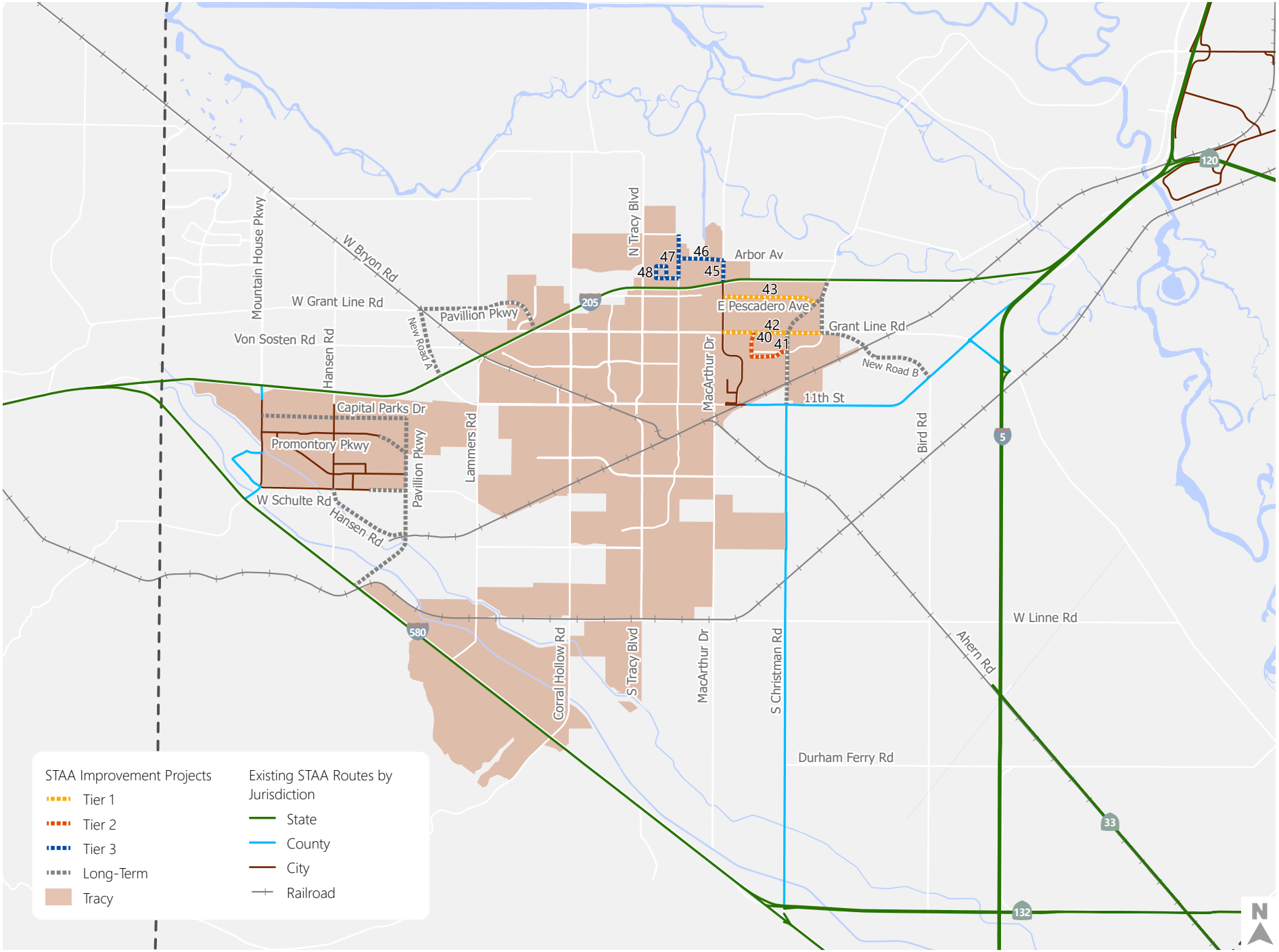
Prepared by Fehr & Peers, February 2023

Figure 28. STAA Truck Route Improvement Projects - San Joaquin County



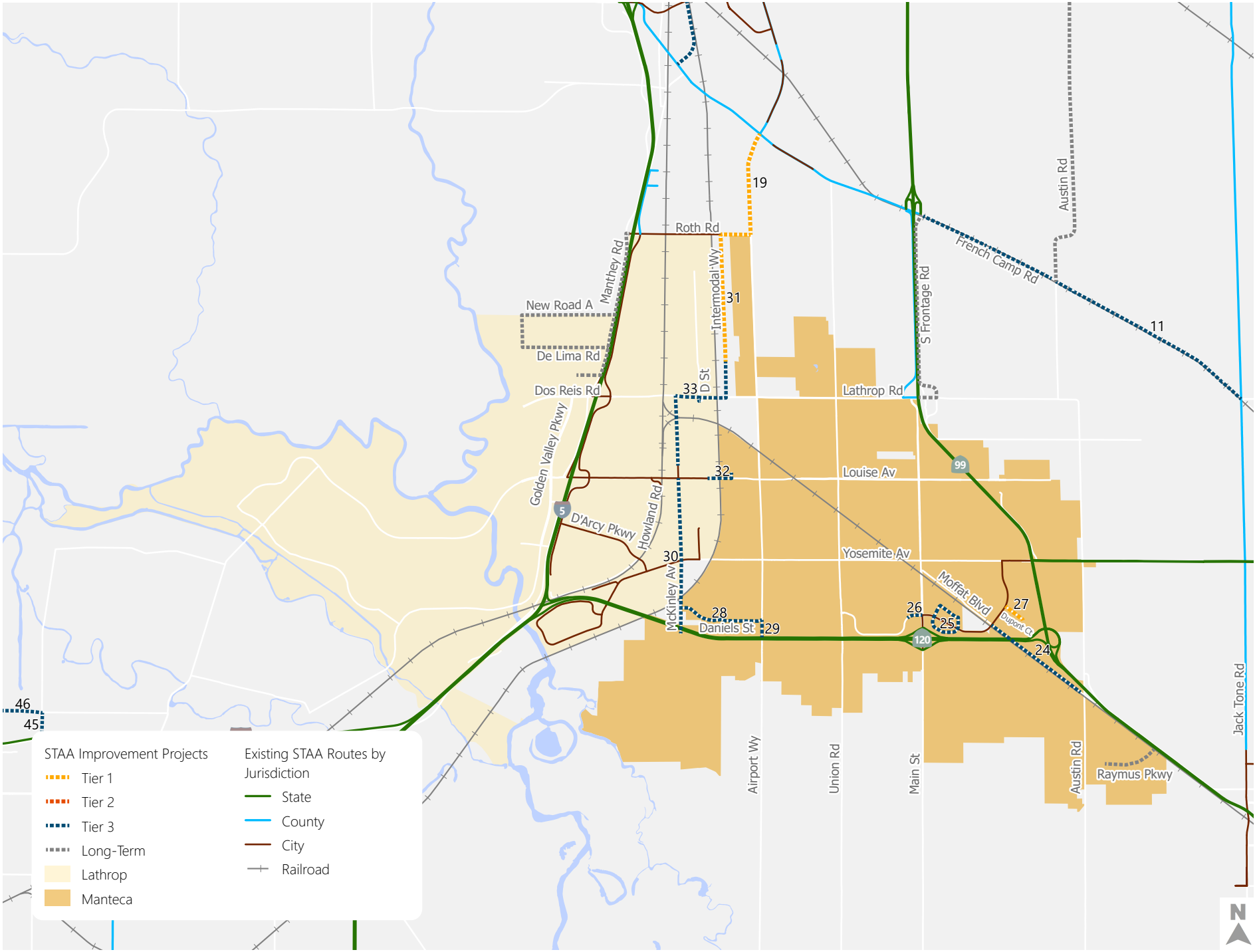
Prepared by Fehr & Peers, February 2023

Figure 29. STAA Truck Route Improvement Projects- City of Stockton



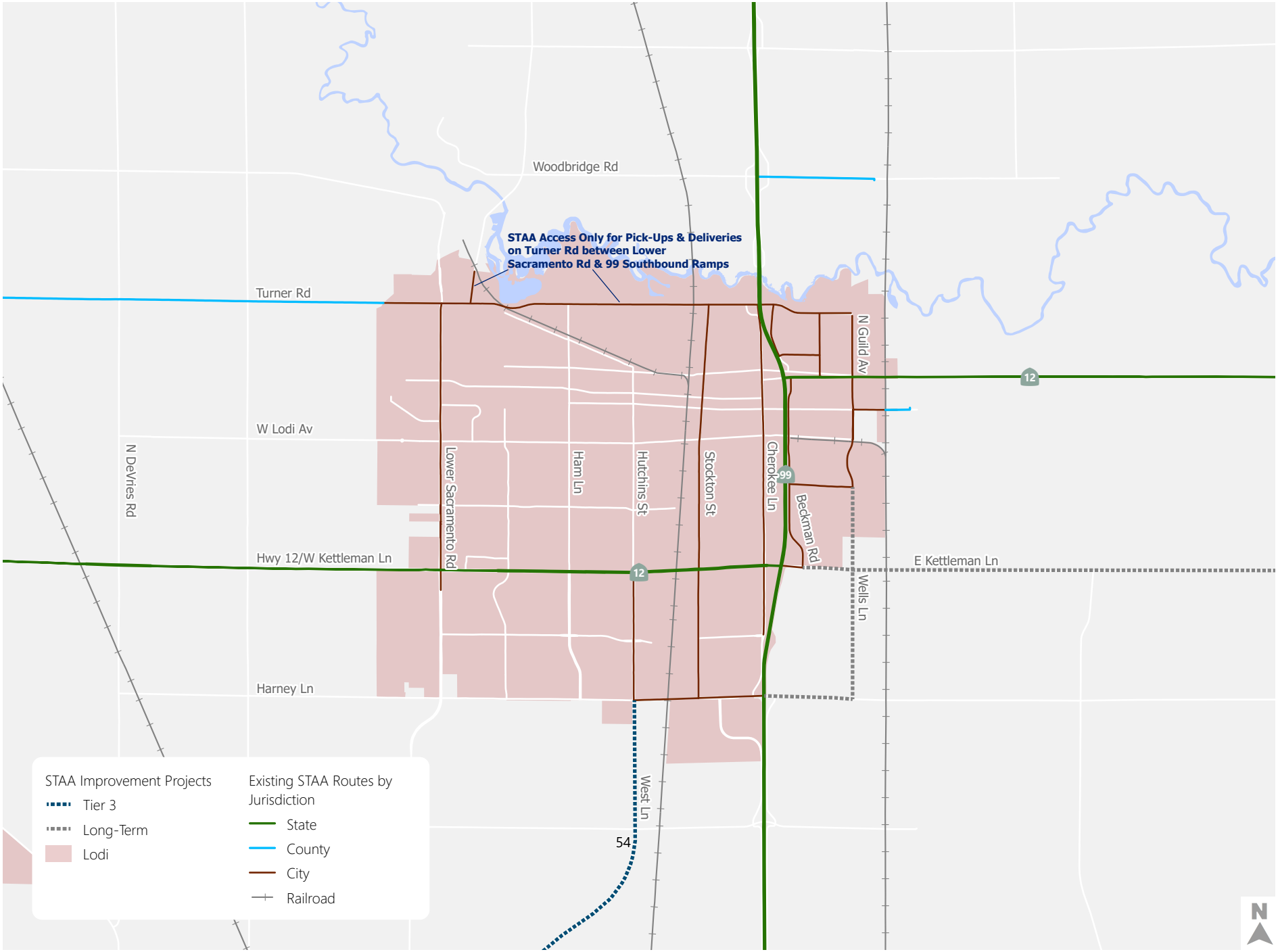
Prepared by Fehr & Peers, February 2023

Figure 30. City of Tracy STAA Truck Route Improvement Projects



Prepared by Fehr & Peers, February 2023

Figure 30. Truck Route Improvement Projects - City of Lathrop and Manteca



Prepared by Fehr & Peers, February 2023

Figure 30. Truck Route Improvement Projects - City of Lodi