San Joaquin Regional Transit District (RTD)

RTD Next Gen

October 2022







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RTD Next Gen

Executive Summary

Project Background and Approach

San Joaquin Regional Transit District (RTD) is the primary public transit system for most of San Joaquin County. RTD provides a mix of services including:

- Express service, modeled after Bus Rapid Transit (BRT) service principles
- Stockton Metropolitan Area (SMA Fixed Route)
- Commuter Services
- Microtransit (On-Demand Service)
- Americans with Disabilities Act (ADA)/Paratransit

Prior to March of 2020, RTD had been experiencing a multi-year decline in ridership that mirrored what was happening in similar systems across the United States. Then in March of 2020, the COVID-19 pandemic struck the US and resulted in massive changes to transportation patterns and habits throughout the country. The changes were especially devastating for public transit, where ridership on some systems declined by almost 90%.

In 2020, RTD Executive staff recognized that the system needed a fresh look if it was going to survive and thrive going into the next decade. The agency decided to undertake a Comprehensive Operations Analysis (COA) of its entire network. The goals of this process were:

- Attract new customers
- Grow RTD's ridership base
- Deliver transit services that are consistent with customer demand (in response to the changes from COVID-19)
- Provide efficient bus transit service with reduced funding

RTD hired Fehr & Peers in November of 2020 to undertake the System Redesign Study and provide RTD with recommendations for a new system that would be sustainable well into the next decade.

The System Redesign Study process was expected to take just over one year to complete. Areas of effort included:

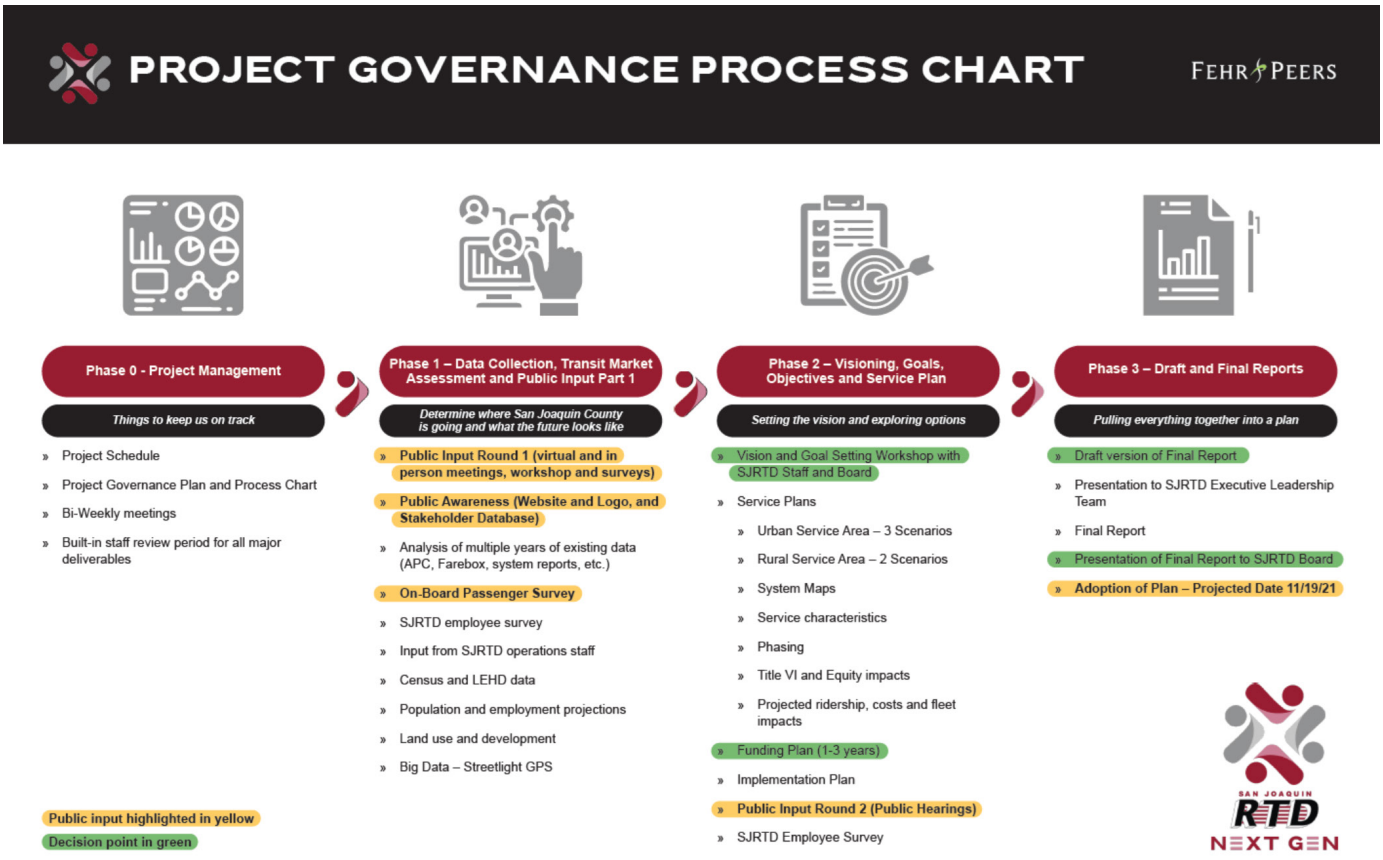
- An analysis of the existing transit system
- An assessment of the demand for transit service
- An extensive two-phase public engagement process
- A service planning phase and assessment of Title VI implications

A series of Working Papers and Reports for each project task were prepared and submitted to RTD. Those documents contain the detailed findings for each task. This final report presents a general summary of each task and adds the recommended next steps from the service plan. Readers who wish to find the detailed information should refer back to the individual Working Papers and Reports. The Working Papers are:

- Task 1 – Project Governance Plan and Summary of Accomplishments (February and June 2021)
- Task 2 – Outreach Phase 1 Report (July 2021)
- Task 3 – Transit System Existing Conditions Analysis (July and August 2021)
- Tasks 4 & 5 – Market Assessment and Visioning (June 2021)
- Task 6 – Service Redesign Plan (August 2021 and January 2022)[1]
- Task 7 – Financial Plan (completed by RTD staff)
- Task 8 – Outreach Phase 2 Report (December 2021)

Figure 1 presents a chart that visually depicts the flow of tasks for the project.

Figure 1: Project Flow Chart



[1]Comments gathered in the second phase of outreach were incorporated in the Final Redesign Plan.

Recommendations

The following provides a summary of the proposed RTD route and system changes included in the Preferred Network Concept:

Stockton Metro Area (SMA)

- No changes to the Express route network
- Route alignment adjustments and frequency increases on Local routes
- Reallocation of Metro Hopper resources into enhanced Local route network
- No changes to existing 300 series routes and implement new Route 367 to Trinity Parkway

Rural and Commuter Routes

- Increased Commuter route service levels to pre-COVID service levels as workers return to the office
- Modifications to Route 150 to serve only Stockton, Lathrop, and Dublin BART. A new Route 151 would serve Manteca, Tracy, and Dublin BART
- Increased County Hopper service levels between Stockton and Lodi, Manteca, Lathrop, and Tracy
    - › Routes 90 (Stockton-Lathrop-Tracy) and 93 (Stockton-Lodi) would be improved to 60-minute all-day service

VanGo! and On-Demand Service

- No changes to existing VanGo! service levels

Paratransit

- No changes to existing ADA paratransit service area

The daily weekday and weekend revenue hours, frequencies, and peak vehicle requirements for each route are presented in Section 4.

Implementation

The RTD Board of Directors approved a phased approach to implementation in August of 2022, that prioritizes a restoration of service levels equal to 2019 levels. The first phase aims to increase span of service, route frequency, and route realignments in residential neighborhoods to improve access to services, employment, and educational opportunities, with a particular emphasis on serving disadvantaged communities. The restoration of service to 2019 revenue hours will be implemented by January 2023, subject to operator availability.

- **Phase 1** aims to achieve restoration to pre-COVID levels service improving service span and frequencies in targeted disadvantaged census tracts. To support that objective, the budget for FY23 is sufficient in resources.

- **Phases 2 and 3** strive to expand services in disadvantaged communities further improving frequencies and service span, traveling deeper into disadvantaged neighborhoods. This goal will require the identification of resources and revenue hours which will require Board approval.

Route summaries prepared as part of this plan will serve as the framework that will guide implementation, and may be subject to modifications based on availability of operators, resources, and public input.


SAN JOAQUIN
RTD
Hop on to connect.... throughout Stockton and beyond.
6208
Ripon
Manteca
Stockton
Lodi
Lathrop
Tracy
San Joaquin RTD
Hopper
national express
CA 439360

Chapter

01

Transit System Existing Conditions Analysis

- Systemwide Performance
- Performance Statistics by Service Type
- Route-by-Route Profiles
- Summary of Findings from Existing System Analysis

For more detailed information please refer to the Technical Memorandum titled "Task 3 – Transit Existing System Analysis"

An analysis of the existing RTD system was conducted to provide an overview of the status of the following items:

- Recent fixed-route and demand-response system performance (2019 to present)
- RTD's 2019 community survey (done on-board buses)
- Recent input about issues for RTD's operations staff
- March 2021 on-board passenger survey
- Route-by-Route profiles for the entire fixed-route system
- Paratransit
- Van Go!

The information collected as part of this analysis, paired with the findings from the Transit Market Analysis, created the foundation for the service planning recommendations.

RTD currently operates seven types of transit service: 1) a fixed-route service within the Stockton Metropolitan Area (SMA), 2) two deviated fixed-route services serving destinations in the city of Stockton (Metro Hopper) and San Joaquin County (County Hopper/Intercity), 3) commuter service, 4) five-route bus Express bus system, 6) paratransit and 7) an on-demand rideshare service (Van Go!).

Systemwide Performance

Performance statistics are used to evaluate a system's productivity and financial effectiveness and are indicative of how well transit supply is matched to demand.

Table 1 summarizes the systemwide statistics for fiscal years 2019, 2020, and the first seven months of 2021, using the following performance indicators:

- Passengers – Total passenger boardings (i.e., unlinked trips).
- Revenue Hours – Hours traveled when the vehicle is in revenue service (the period that passengers can board the vehicle).
- Revenue Miles – Miles traveled when the vehicle is in revenue service (the period that passengers can board the vehicle).
- Revenue Miles per Revenue Hours – The rate that revenue service travels for every revenue hour, evaluates system efficiency.
- Operating Cost – The total operating cost for the system, including services, utilities, materials and supplies, salaries, and wages, etc.
- Passenger Revenue – Revenue earned from collecting passenger fares.
- Passengers per Revenue Hour–Evaluates how transit demand (i.e., total passengers) utilizes available transit supply (i.e., revenue hours).
- Operating Cost per Passenger – Cost of providing service for every unlinked trip provided.
- Operating Cost per Revenue Hour – Cost of providing service for every hour during revenue service, evaluates the effectiveness of revenue service.
- Passenger Revenue per Passenger – Total fares collected for every passenger boarding, evaluates the effectiveness of fare cost.
- Passenger Revenue per Revenue Hour – Total fares collected for every hour of revenue service, evaluates financial effectiveness of fare cost.
- Farebox Recovery Ratio – Percentage of operating cost that is recouped by passenger fare revenue.

Table 1: Systemwide Performance Statistics

System Performance Statistics	FY19	FY20	FY21 (July-Jan)
Passengers	3,664,728	2,997,202	798,562
Revenue Hours	217,058	210,032	85,951
Revenue Miles	3,204,807	3,186,541	1,220,757
Revenue Miles per Revenue Hours	14.8	15.2	14.2
Operating Cost	$38,909,728	$37,870,020	$18,297,820
Passenger Revenue	$3,114,222	$2,191,547	$559,807
Passengers per Revenue Hour	16.9	14.3	9.3
Operating Cost per Passenger	$10.62	$12.64	$22.91
Operating Cost per Revenue Hour	$179.26	$180.31	$212.89
Passenger Revenue per Passenger	$0.85	$0.73	$0.70
Passenger Revenue per Revenue Hour	$14.35	$10.43	$6.51
Farebox Recovery Ratio	8.0%	5.8%	3.1%

Performance Statistics by Service Type

The tables below compare statistics and performance indicators from fiscal years 2019, 2020, and the first seven months of 2021 for each of the service types.

Table 2: Express Performance

Express	FY19	FY20	FY21 (July-Jan)
Passengers	2,271,002	1,745,550	598,435
Revenue Hours	69,785	63,846	33,719
Revenue Miles	766,260	690,530	364,853
Percent of System Total Ridership	62%	58%	75%
Percent of System Total Revenue Hours	32%	30%	39%
Percent of System Total Revenue Miles	24%	22%	30%
Revenue Miles per Revenue Hours	11.0	10.8	10.8
Operating Cost	$14,558,458	$15,357,472	$8,558,568
Passenger Revenue	$1,364,614	$777,009	$272,636
Passengers per Revenue Hour	32.5	27.3	17.8
Operating Cost per Passenger	$6.41	$8.80	$14.30
Operating Cost per Revenue Hour	$208.62	$240.54	$253.82
Passenger Revenue per Passenger	$0.60	$0.45	$0.46
Passenger Revenue per Revenue Hour	$19.55	$12.17	$8.09
Farebox Recovery Ratio	9.4%	5.1%	3.2%

Table 3: SMA Performance

SMA Fixed Route	FY19	FY20	FY21 (July-Jan)
Passengers	753,221	634,011	99,869
Revenue Hours	49,423	37,062	17,770
Revenue Miles	583,385	434,566	198,398
Percent of System Total Ridership	21%	21%	13%
Percent of System Total Revenue Hours	23%	18%	21%
Percent of System Total Revenue Miles	18%	14%	16%
Revenue Miles per Revenue Hours	11.8	11.7	11.2
Operating Cost	$10,850,619	$8,910,233	$4,496,291
Passenger Revenue	$455,492	$300,913	$45,564
Passengers per Revenue Hour	15.2	17.1	5.6
Operating Cost per Passenger	$14.41	$14.05	$45.02
Operating Cost per Revenue Hour	$219.55	$240.42	$253.03
Passenger Revenue per Passenger	$0.60	$0.47	$0.46
Passenger Revenue per Revenue Hour	$9.22	$8.12	$2.56
Farebox Recovery Ratio	4.2%	3.4%	1.0%

Table 4: Metro Hopper Performance Performance

Metro Hopper	FY19	FY20	FY21 (July-Jan)
Passengers	232,196	205,934	29,853
Revenue Hours	26,708	20,276	10,602
Revenue Miles	261,617	199,857	102,823
Percent of System Total Ridership	6%	7%	4%
Percent of System Total Revenue Hours	12%	10%	12%
Percent of System Total Revenue Miles	8%	6%	8%
Revenue Miles per Revenue Hours	9.8	9.9	9.7
Operating Cost	$3,415,981	$2,404,142	$1,507,927
Passenger Revenue	$140,826	$103,357	$12,894
Passengers per Revenue Hour	8.7	10.2	2.8
Operating Cost per Passenger	$14.71	$11.67	$50.51
Operating Cost per Revenue Hour	$127.90	$118.57	$142.23
Passenger Revenue per Passenger	$0.61	$0.50	$0.43
Passenger Revenue per Revenue Hour	$5.27	$5.10	$1.22
Farebox Recovery Ratio	4.1%	4.3%	0.9%

Table 5: County Hopper Performance

County Hopper	FY19	FY20	FY21 (July-Jan)
Passengers	123,359	131,225	29,466
Revenue Hours	19,421	18,682	9,319
Revenue Miles	425,475	406,216	202,467
Percent of System Total Ridership	3%	4%	4%
Percent of System Total Revenue Hours	9%	9%	11%
Percent of System Total Revenue Miles	13%	13%	17%
Revenue Miles per Revenue Hours	21.9	21.7	21.7
Operating Cost	$2,613,522	$2,490,376	$1,382,663
Passenger Revenue	$74,280	$58,470	$14,257
Passengers per Revenue Hour	6.4	7	3.2
Operating Cost per Passenger	$21.19	$18.98	$46.92
Operating Cost per Revenue Hour	$134.57	$133.30	$148.37
Passenger Revenue per Passenger	$0.60	$0.45	$0.48
Passenger Revenue per Revenue Hour	$3.82	$3.13	$1.53
Farebox Recovery Ratio	2.8%	2.4%	1.0%

Table 6: Intercity Performance

Intercity	FY19	FY20	FY21 (July-Jan)
Passengers	48,452	48,877	
Revenue Hours	4,405	3,970	
Revenue Miles	71,777	64,676	
Percent of System Total Ridership	1%	2%	
Percent of System Total Revenue Hours	2%	2%	
Percent of System Total Revenue Miles	2%	2%	
Revenue Miles per Revenue Hours	16.3	16.3	
Operating Cost	$582,897	$473,113	*No Data Available*
Passenger Revenue	$31,726	$28,188	
Passengers per Revenue Hour	11	12.3	
Operating Cost per Passenger	$12.03	$9.68	
Operating Cost per Revenue Hour	$132.31	$119.17	
Passenger Revenue per Passenger	$0.65	$0.58	
Passenger Revenue per Revenue Hour	$7.20	$7.10	
Farebox Recovery Ratio	5.4%	6.0%	

Table 7: Commuter Performance

Commuter Services	FY19	FY20	FY21 (July-Jan)
Passengers	154,848	113,840	18,892
Revenue Hours	14,858	13,634	6,063
Revenue Miles	492,739	425,941	187,947
Percent of System Total Ridership	4%	4%	2%
Percent of System Total Revenue Hours	7%	6%	7%
Percent of System Total Revenue Miles	15%	13%	15%
Revenue Miles per Revenue Hours	33.2	31.2	31.0
Operating Cost	$2,133,613	$1,949,561	$987,898
Passenger Revenue	$789,421	$540,316	$101,710
Passengers per Revenue Hour	10.4	8.4	3.1
Operating Cost per Passenger	$13.78	$17.13	$52.29
Operating Cost per Revenue Hour	$143.60	$142.99	$162.93
Passenger Revenue per Passenger	$5.10	$4.75	$5.38
Passenger Revenue per Revenue Hour	$53.13	$39.63	$16.77
Farebox Recovery Ratio	37.0%	27.7%	10.3%

Table 8: Demand-Response Performance

Demand-Response	FY19	FY20	FY21 (July-Jan)
Passengers	66,628	60,150	13,603
Revenue Hours	18,342	17,428	2,131
Revenue Miles	430,270	387,208	59,778
Percent of System Total Ridership	2%	2%	2%
Percent of System Total Revenue Hours	8%	8%	2%
Percent of System Total Revenue Miles	13%	12%	5%
Revenue Miles per Revenue Hours	23.5	22.2	28.1
Operating Cost	$2,978,122	$2,704,693	$476,435
Passenger Revenue	$223,639	$229,902	$83,752
Passengers per Revenue Hour	3.6	3.5	6.4
Operating Cost per Passenger	$44.70	$44.97	$35.02
Operating Cost per Revenue Hour	$162.37	$155.19	$223.57
Passenger Revenue per Passenger	$3.36	$3.82	$6.16
Passenger Revenue per Revenue Hour	$12.19	$13.19	$39.30
Farebox Recovery Ratio	7.5%	8.5%	17.6%

Table 9: VanGo! Performance

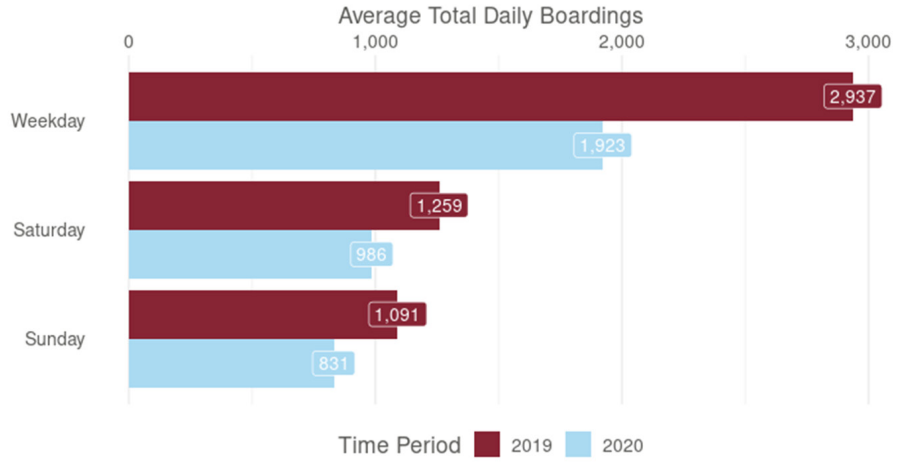
VanGo!	FY19	FY20	FY21 (July-Jan)
Passengers	15,022	57,615	8,444
Revenue Hours	14,116	35,134	6,347
Revenue Miles	173,284	577,548	104,493
Percent of System Total Ridership	0%	2%	1%
Percent of System Total Revenue Hours	7%	17%	7%
Percent of System Total Revenue Miles	5%	18%	9%
Revenue Miles per Revenue Hours	12.3	16.4	16.5
Operating Cost	$1,776,517	$3,580,431	$887,097
Passenger Revenue	$34,224	$153,392	$28,993
Passengers per Revenue Hour	1.1	1.6	1.3
Operating Cost per Passenger	$118.26	$62.14	$105.06
Operating Cost per Revenue Hour	$125.85	$101.91	$139.77
Passenger Revenue per Passenger	$2.28	$2.66	$3.43
Passenger Revenue per Revenue Hour	$2.42	$4.37	$4.57
Farebox Recovery Ratio	1.9%	4.3%	3.3%



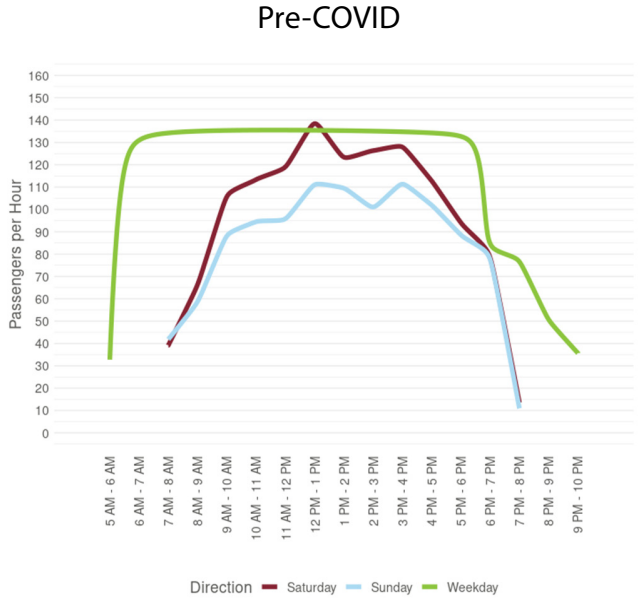
Route-by-Route Profiles

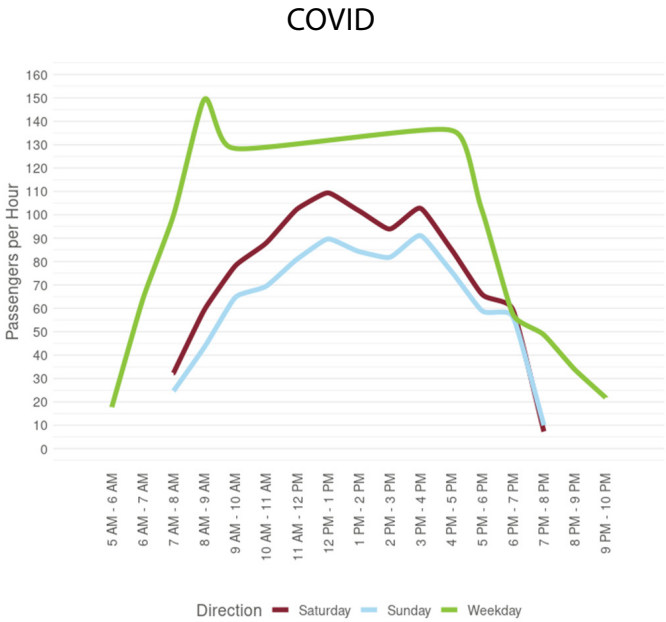
A series of online route-by-route profiles were created for each route/service in the RTD network. The profiles outline the schedule, service span, frequency, and route pattern, as well as the ridership by day of week and time of day. A sample of the route profile data from Route 40 Metro Express for a weekday during both Pre-COVID (July 1 – December 31, 2019) and COVID (August 16 – December 31, 2020) is provided below.

Table 10: Route 40 Metro Express: Ridership by Day



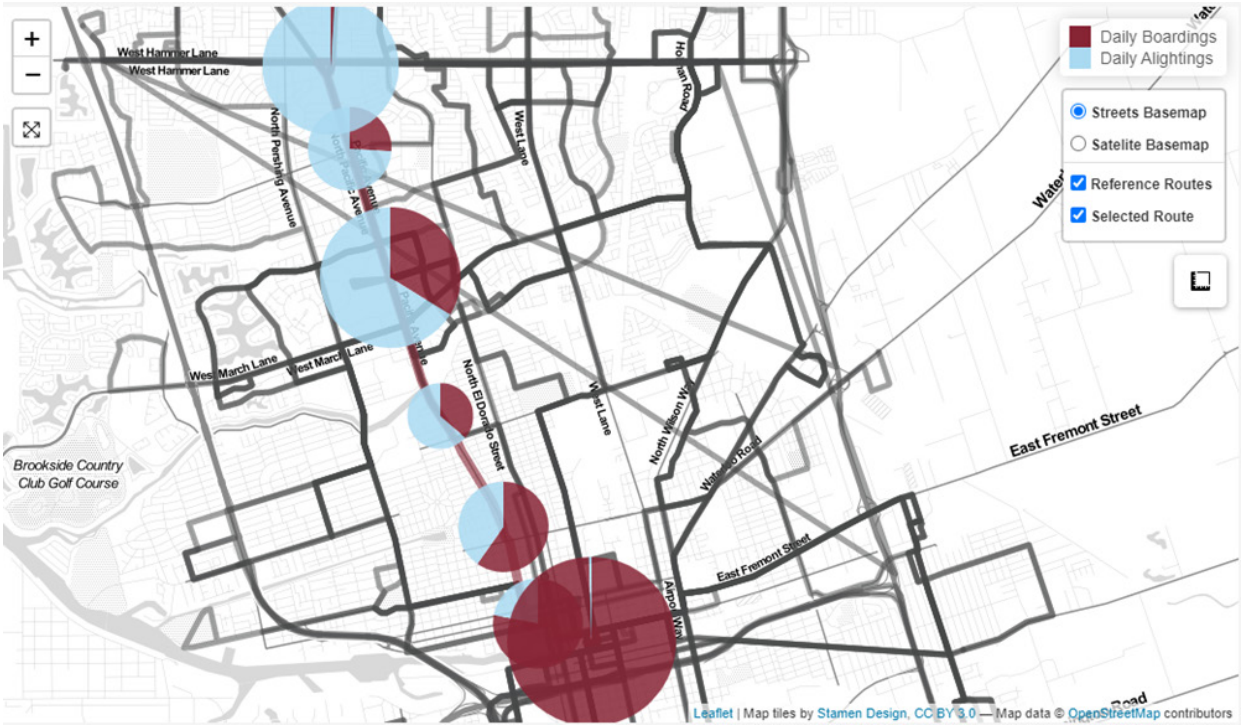
Route 40 Metro Express: Ridership by Hour



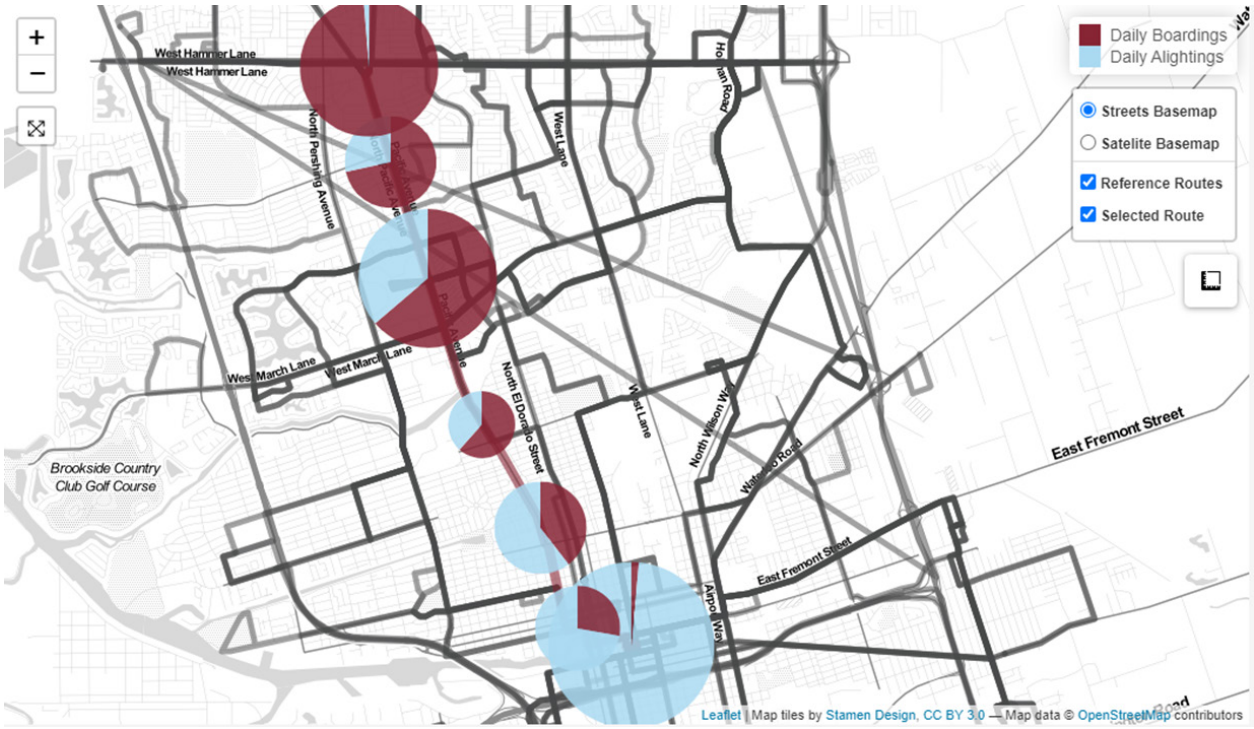


Route 40 Metro Express: Ridership by Stop

Northbound, Weekday, Pre-COVID



Southbound, Weekday, Pre-COVID



Northbound, Weekday, COVID

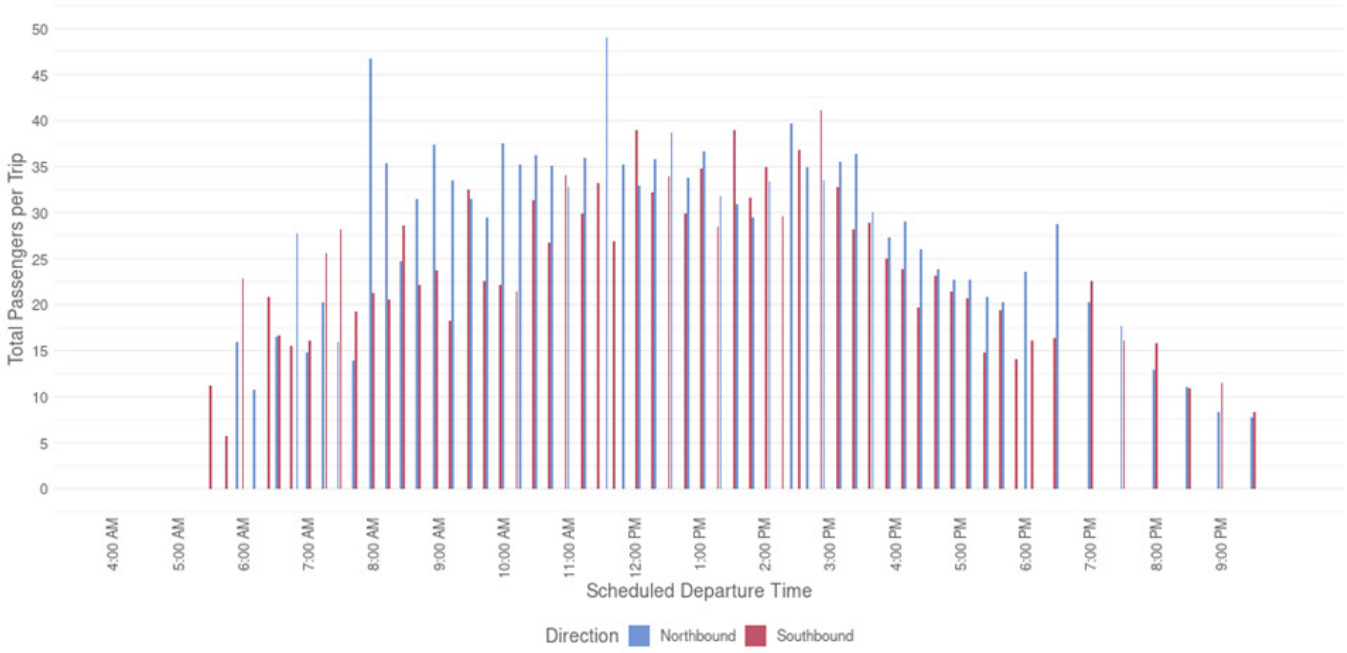


Southbound, Weekday, COVID

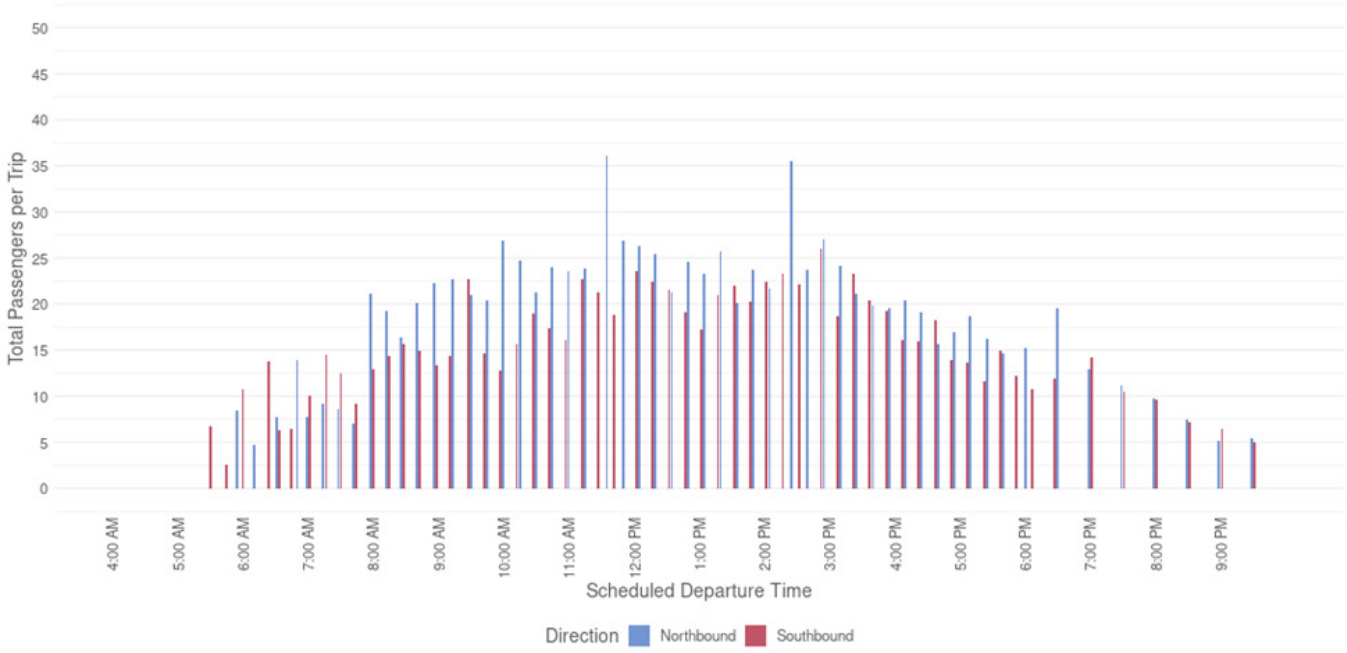


Route 40 Metro Express: Ridership by Trip

Weekday, Pre-COVID



Weekday, COVID



Summary of Findings from Transit System Existing Conditions

This section provides an overview of the key findings (by service category) from the Existing System Analysis.

Fixed Route

40-Series Routes (Express Bus Services)

- Route 40 is the backbone of the system. It carried 52% of all Express bus rides.
- Route 43, even with high weekday average boardings (pre-COVID), has low maximum point loads because there is a lot of passenger turnover on the route.
- Route 49, the shortest express route, has the lowest ridership of all the express routes. Even before COVID, it was carrying fewer than five people on every trip for most of the day, all days of the week.
- The highest ridership stops are often at transfer points. This suggests that a large percentage of people are either making transfers to get to their final destinations, or the transit centers are near major destination points, or in some cases both possibilities are true. For example, at the mall and downtown, both things are taking place.
- The high level of activity on all routes at the Downtown Transfer Center (DTC) speaks to the importance of transfers to the system, in particular at the DTC. This is true not only of Express routes, but SMA and city Hopper routes, as well.

700-Series Routes (SMA Weekend Local Services)

- As a route category, ridership on these routes tends to hover between 5 and 10 riders per hour and per trip.
- Weekend routes are better in terms of the route length being in harmony with hourly headways.

County Hoppers

- Route 97 had almost no ridership during COVID.
- Data is somewhat limited, but it is possible these routes are competing for the same riders as the Van Go! service. This raises the question of which is more convenient for customers and which service offers a more competitive and efficient travel experience.

500-Series Routes (SMA Local Services)

- Route 515's morning and afternoon peaks shifted one hour earlier because of COVID and yet it still carried over 20 passengers per hour.
- Route 525 ridership did not drop during COVID and was the only route in the 500-series routes to maintain ridership, until the route was eliminated.
- Many routes have headways that are just over one hour (worse than hourly). This type of infrequent service can be a problem when trying to attract and retain riders.
- The maximum loads on all 500-series routes indicate there is capacity on all routes at all times of the day. Operating on hourly headways (or longer) nearly ensures that will continue to be the case.
- Routes with consistent headways had higher ridership than routes that had trip-based service (not consistent throughout the day) during both time periods.
- If fares were not so different between Van Go! and regular service, these areas would be candidates for Van Go!
- Route names between weekdays and weekends are similar, but there is no consistency between routes that have the same alignments and those that are different.
- The differing alignments and route numbers likely contribute negatively to the rider experience by adding complexity to the system for most riders (on-board survey indicates very high proportionality of weekend riders are also weekday riders). This practice should be examined to ascertain if the level of complexity is worth the trade-off of cost versus customer experience.

300-Series (Supplemental School Service Routes)

- Only pre-COVID dates were analyzed because school-based services did not operate during COVID because classes were not open for in-person classes.

Commuter Routes

- Data for Route 150 suggests that some riders may be using the service to connect between Stockton and Tracy.
- Route 163 has very low ridership, with fewer than five riders per trip.
- People ride routes 150 and 152 in both directions, but ridership on Route 163 suggests people are not making round trips. That observation begs the question: are people using this more as an intercity-type bus route, or are daily commuters using another mode in one direction, such as a carpool?

Metro Hoppers

- Routes 4 and 5 generate the highest ridership among the Metro Hopper routes.
- Route 3 had the lowest ridership. The route has three loops and likely feels circuitous to riders on-board for one, or more, of those loops.
- Even pre-COVID, Hoppers appear to have capacity to carry more riders.
- The routes with high ridership overlap the hotspots of the Van Go! service, and it is worth considering whether the two services are competing for the same riders.
- It is hard to understand the deviations allowed on Hoppers based on the website map or schedule. If someone looks up the map or schedule, there is no link to figure out how to get the bus to deviate off the published route. There is also nearly no data in the manifests to suggest that deviations are being requested or utilized.
- The service span for the routes is very inconsistent. This can reduce the ability to transfer and increases the complexity of the system.
- The published Route 2 map shows two limited-service deviations, but the manifest data does not show any deviations. It is unclear whether that is because there was no ridership or whether there is an issue with the data.
- It is complicated for customers to understand that a route can deviate from a main route, and that it may have deviations at specific times of the day, such as on Route 4.
- Peak ridership for routes 1, 4, 6, 7, and 9 is from noon to 1:00 PM.



Paratransit

- As of February 2021, the number of unique riders was still less than half of pre-COVID riders but was increasing.
- Ridership continues to recover but is still under 2,000 trips per month.
- Fewer people are taking fewer trips than pre-COVID.
- Pre-COVID weekday trips peaked in the morning between 7:00 AM and 8:30 AM, and in the afternoon between 1:00 PM and 2:30 PM, whereas COVID travel times were more consistent between 7:00 AM and 1:00 PM. Weekend travel by time of day was similar during both time periods.
- Trip purposes, as indicated by top destinations, were more varied pre-COVID. During COVID, over half of the top 10 destinations were dialysis centers.
- Data from other transit systems that track actual trip purpose indicates that dialysis and cancer treatment trips have returned to 100% of pre-COVID levels; other medical trips are about 60% of pre-COVID levels with shopping and recreation trips at about 40 to 50% pre-COVID. Missing, by almost 100%, are trips to adult day health programs, trips to congregate meal and activity sites, and trips to supported employment sites. These three categories of trips usually represent the largest cohorts of paratransit users and make up most of the ridership. Actions that will restore the underlying services (re-start of adult day health programs at centralized locations, re-start of senior activity centers, supported employment activities) should be very carefully monitored as their re-start will have a significant influence on paratransit ridership levels and vehicle demands.

Van Go!

- The impact of COVID on ridership cannot be isolated due to changes in service policies during COVID, but there was a 93% drop during COVID.
- Van Go! riders predominately pay through cash or get fares or passes through an external source.
- There is a high cancellation rate on Van Go! which remained over 70% during both time periods.
- Pre-COVID, there were more trips booked by the mobile app than by calling in, but during COVID, more people called than used the mobile app. Cancellations followed the same patterns during both time periods.





Chapter

02

Transit Market Assessment

- Approach and Methodology
- Layer 1 – GPS Mobility Data
- Layer 2 – Socio-Demographic Data
- Layer 3 – Stakeholder Interviews
- Layer 4 – Population and Employment Growth Forecasts

For more detailed information please refer to the Technical Memorandum titled "Tasks 4 & 5 – Market Assessment and Visioning"

Early in the RTD Next Gen process, a Transit Market Analysis was conducted to answer and evaluate the following questions:

- What is the status of the RTD service area as a place?
- What type of growth is anticipated and where is it expected to occur?
- What are the current travel patterns within the service area?

The answer to these questions served as the foundation for the development of the Service Plan.

Approach and Methodology

Determining the actual demand for public transit services has tended to be more "art than science" for many years. In previous years, the primary tools for determining the need for services frequently included the following:

1. General projections from a regional four-step travel model (this is usually maintained by the respective regional planning agency)
2. Demographic data from the US Census (which can range from one to 10 years old)
3. Interviews with key stakeholders representing existing and potential transit users
4. County and city level population and employment projections from state agencies

Arrival of Big Data

One of the most dramatic changes in public transit planning and forecasting over the last few years has been the introduction of "Big Data" and the rollout of dynamic US Census data. Big Data refers to data sets that are so current and massive that they require new ways of analyzing and displaying information that were unfathomable a decade ago. One of these Big Data sets is the information collected from Global Positioning System (GPS) equipped cellular communication devices.

The arrival of Big Data coincides with a change in the way that US Census data are collected, interpreted, and displayed, making demographic data more useful at any given point in time rather than just within the first few years after it was collected. These new tools have significantly changed the way we think about the demand for public transit services, and for that reason our approach to determining the demand for service over the next two to five years is now built upon the creation of a series of "layers" with GPS data serving as the foundation.

- Layer 1 – GPS Mobility Data
- Layer 2 – Socio-Demographic Data
- Layer 3 – Stakeholder Interviews
- Layer 4 – Population and Employment Growth Forecasts

Layer 1 – GPS Mobility Data

Today in the US, approximately 97% of people own a cellular telephone, and over 85% own a smartphone equipped with GPS tracking services. Compare this with 2011, when Pew Research completed its first survey of cellphone ownership and found that only 35% of US citizens owned a smartphone. Though the level of ownership certainly varies by age, income level, and geographic location, it is safe to say that in 2021, most people around the US have access to a cellular smartphone. This distribution of cellular devices means it is now possible to track the real time movement of people, all day, every day, around the country, regardless of what mode they use to move about. GPS mobility data is generated not just by smartphones but also by any vehicle equipped with navigation software.

Sreetlight Analytics

The GPS data is collected by cellular service companies such as T-Mobile, AT&T, and Verizon, who then resell it to data aggregation/analysis services. One of the leaders in that field is StreetLight Analytics (www.StreetLightdata.com). Every month, StreetLight compiles, aggregates, indexes, and processes over 40 billion anonymized location records collected from smart phones, tablets, and navigation devices in connected cars and trucks. It then adds context from numerous other sources, like parcel data and digital road network data, to develop a comprehensive view of mobility across North America's vast network of roads, bike lanes, and sidewalks.

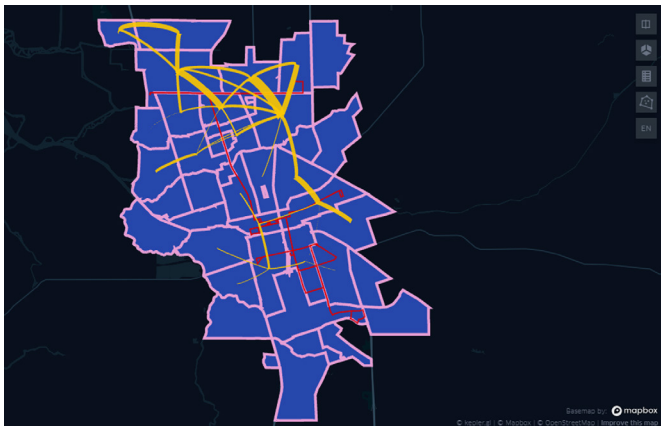
StreetLight data was collected for 2019 and 2021 and condensed down to create "typical days and time periods" and a series of 43 geographic analysis zones throughout the City. Several zones were also created outside of the SMA so that it would be possible to explore regional travel in addition to local travel within Stockton.

Data was examined from May 2019 (Pre-COVID) and May 2021 (COVID) and then aggregated into six time period data sets for service planning:

1. All day Weekday travel by hour of the day, including trips that stay within the same zone
2. All day Weekday travel by hour of the day, excluding trips that stay within the same zone.
3. Weekday AM peak period (7 AM to 9 AM)
4. Weekday PM peak period travel (4 PM to 6 PM)
5. Weekend Peak Period travel (12 PM to 2 PM)
6. Two-Way Master Spreadsheet including the following time periods:
    a. Weekday All Day, Peak AM (7 AM to 9 AM), Midday (1 PM) and Late Evening (8 PM to 11 PM)
    b. Saturday All Day and Late Evening (8 PM to 11 PM)
    c. Sunday All Day

The last step in the process involved moving the data into a visualization software program. A sample of a Kepler visualization, showing the top origin-destination pairs within the SMA, is shown in Figure 2.

Figure 2: Top-Origin Destination Pairs (Sample for illustration purposes)



Key Findings Within the Stockton Metro Area

On an average weekday, there are 1.3 million trips within the city of Stockton.

The top 10 zones based on the average daily number of trips are shown in Table 11, along with the overlap or intersection of any existing Express bus routes.

Table 11: Top 10 Zones by Average Total Daily Origins and Destinations

Zone Name	Average Daily Trips	Express Routes
East Stockton 1	88,556	43
Sherwood Manor/Hammer	73,724	43
Lincoln Center	66,013	40
Quail Lakes	62,826	--
Downtown	60,670	40, 44, 47 (DTC)
West Lane/Hammer	55,773	43
August	54,885	--
South Stockton 1	53,670	49
Cabral (East of Downtown)	50,547	47
Holiday Park	49,401	--

Source: StreetLight, Fehr & Peers, 2021.

Additional observations taken from the StreetLight GPS data set include the following:

- A high amount of activity takes place in the northern portion of Stockton north of Hammer Lane. Outside of Express Route 43, limited transit service connects this area to the rest of Stockton.
- East Stockton, inclusive of the West Lane corridor, experiences a high percentage of trips but, like the area north of Hammer Lane, has limited transit service.
- The high number of short trips (for example, from one zone to an immediately adjacent zone) that cannot be easily served by transit, underscores the need for improved bicycle and pedestrian connections to be made in tandem with the RTD route network.
- No Express bus service is currently in place along the March Lane corridor, which runs through or alongside multiple high activity zones.
- When assessing the trip activity among the top 20 O/D pairs in the SMA, none of the pairs include zones in south Stockton. At first this seemed very surprising; however, upon further examination, it was clear that travel activity tends to follow growth and development, and most of the development (residential and commercial) in Stockton over the past decade has been occurring in the areas a mile north and south of Hammer Lane.
- Two of the Express routes (40 and 43) travel through or adjacent to most of the high travel activity zone pairs.5 The other three routes (44, 47, 49) operate primarily in areas with much lower levels of O/D pair activity compared to north and central Stockton. This begs the question of whether RTD's marquee services are situated in areas where RTD is best able to utilize their resources. For example, RTD might wish to consider relocating low ridership Express services to areas with higher potential, such as the March Lane corridor.

Outside of Stockton Trip Data

StreetLight data was also acquired for trips between Stockton and the other incorporated communities within San Joaquin County, and from Stockton to a select number of regional commuter destinations. These intracounty and intercounty destinations include Lodi, Ripon, Escalon, Manteca, Lathrop, and Tracy within the county; and downtown Sacramento, downtown Modesto, the Livermore/Dublin/Pleasanton (Tri-Valley) area, the Dublin/Pleasanton Bay Area Rapid Transit (BART) station, and the Bishop Ranch business park in San Ramon. The largest destination within the county was Lodi, with 26,769 daily weekday trips. Outside of the county, the Tri-Valley area saw the most activity. A full listing of trip pairs can be found below in Table 12.

Table 12: Trip Destinations Outside of Stockton

Within the County Destinations			Out of County Destinations		
Destinations	Daily	AM Peak	Destinations	Daily	AM Peak
Lodi	26,769	4,097	Livermore, Dublin, Pleasanton	3,984	832
Manteca Middle/North of 120	6,973	1,035	Downtown Sacramento	668	255
Manteca North	5,471	637	Mountain House	718	172
Manteca South of 120	2,011	238	Downtown Modesto	451	149
Lathrop - East of I-5	6,930	1,344	Bishop Ranch	135	60
Lathrop - West of I-5	3,068	431	Dublin Pleasanton Bart Station	25	4
Tracy	8,385	1635			
Ripon	1,614	202			
Escalon	723	100			

Source: Fehr & Peers.

Layer 2 – Socio-Demographic Data

The following data was collected and processed by the project team to provide a sense of the socioeconomic and demographic characteristics of the RTD service area within Stockton. The data was imported into ArcGIS to provide a geospatial view of how these population characteristics relate to the existing routes operated by RTD. The information sources included the following:

- US Census - Median Household Income
- Us Census - Households with No Vehicles
- US Census - Population Density
- US Census - Households with Disabilities
- CalEnviroScreen (CES) Percentiles
- Health Places Index (HPI) Percentiles
- Schools with Free/Reduced Price Meals (Student Poverty)
- AB 617 Communities
- RTD's Existing Express Network

Figures for each census data point listed above can be found in the Appendix A.

In comparison to the state, and most of San Joaquin County, multiple neighborhoods within Stockton trigger one or more criteria for being disproportionately impacted by factors like air pollution, health indicators, poverty, and environmental burdens. The neighborhoods and census tracts that are highlighted in this analysis are almost in direct contrast to those zones showing the largest travel activity in Layer 1 – with a heavy concentration in south Stockton, particularly for indicators around poverty and environmental burdens. There are a few key findings:

- RTD has a large concentration of Express resources in the neighborhoods south of the Crosstown Freeway, which correlates to the disadvantaged community indicators under CES, HPI, and AB 617.
- Many neighborhoods in the eastern part of Stockton have a low median household income and are not currently served by Express.
- Numerous schools within Stockton experience a high degree of student poverty, as indicated by the rates of eligibility for free and reduced-price meals. Coordinating the times of fixed-route services with school start times could be beneficial for students.
- Several distinct areas of the city have higher concentrations of residents over the age of 65. This should be reviewed in greater detail when considering service planning.

Longitudinal Employer-Household Dynamics (LEHD)

The LEHD program is part of the Center for Economic Studies at the US Census Bureau (www.lehd.ces.census.gov). The LEHD program produces new, cost-effective, public-use information combining federal, state, and Census Bureau data on employers and employees under the Local Employment Dynamics (LED) Partnership. State and local authorities increasingly need detailed local information about their economies to make informed decisions. The LEHD program works to fill critical data gaps and provide indicators needed by state and local authorities. For this effort, the LEHD data gathered is specifically related to commute patterns from San Joaquin County to other locations. The data is available only at the county level and thus it was not possible to segregate it to specific communities within San Joaquin County. Nevertheless, LEHD data provides a valuable global overview of travel patterns emanating from San Joaquin County as a whole. At the time of data collection in 2018, the data sample included 298,649 people who lived in San Joaquin County and were working. A total of 10 commute destinations was listed in the data. A breakdown of the data, showing the places where San Joaquin County residents are employed, is shown in Table 13.

Table 13: Job Locations of San Joaquin County Residents

Employment Location	Job Count (2018)	Overall Share (2018)	Within/Outside of San Joaquin County
Stockton, CA	67,143	22.5%	Within
Tracy, CA	15,159	5.1%	Within
Lodi, CA	14,592	4.9%	Within
Manteca, CA	9,390	3.1%	Within
San Jose, CA	8,759	2.9%	Outside
Modesto, CA	8,445	2.8%	Outside
Livermore, CA	8,418	2.8%	Outside
Sacramento, CA	8,159	2.7%	Outside
San Francisco, CA	6,631	2.2%	Outside
Fremont, CA	5,529	1.9%	Outside
All Other Locations	146,424	49.0%	--

Source: LEHD, 2018; Fehr & Peers, 2021.

Of the San Joaquin County residents included in the data, 67,143 of them work within Stockton, with Tracy, Lodi, and Manteca being the next highest employment locations. Table 14 refines this data to look specifically at the job locations of people living within Stockton and indicates that 42,430 of those residents stay within the Stockton metropolitan area for work, with Lodi, Sacramento, and Tracy being the top specific job locations outside of the city.

Table 14: Job Locations of Stockton Residents

Employment Location	Job Count (2018)	Overall Share (2018)	Within/Outside of San Joaquin County
Stockton, CA	42,430	35.3%	Within
Lodi, CA	4,596	3.8%	Within
Sacramento, CA	3,734	3.1%	Outside
Tracy, CA	3,569	3.0%	Within
San Francisco, CA	2,976	2.5%	Outside
San Jose, CA	2,838	2.4%	Outside
Manteca, CA	1,968	1.6%	Within
Oakland, CA	1,896	1.6%	Outside
Modesto, CA	1,813	1.5%	Outside
Fremont, CA	1,764	1.5%	Outside
All Other Locations	52,626	43.8%	--

Source: LEHD, 2018; Fehr & Peers, 2021.

Layer 3 – Stakeholder Interviews

Staff from a variety of local agencies were interviewed to discuss projected growth in both residential and employment locations and gathered qualitative feedback about transit within the community. Conversations were held with departmental representatives from the City of Stockton, San Joaquin County, the San Joaquin Council of Governments, the San Joaquin Regional Rail Commission, and the Solari Ranch development project. Common themes expressed by interviewed staff include the following:

- Most commercial development activity within Stockton is occurring around the airport area: countywide, the south county and the area around Tracy are rapidly growing. This development activity includes additional large warehousing and distribution-type land uses.
- Connections with other transit providers will continue to be important; for example, potential service to ACE stations could be needed to mitigate parking challenges at those locations.
- As part of the I-205 Congested Corridor Study, the potential for a high occupancy toll (HOT) lane was identified. This would provide priority to transit, if constructed, and could make commuter routes more competitive with drive-alone trips. Unfortunately, any improvements to I-205 will not be operational until at least 2030, well beyond the timeframe of this Service Redesign Plan.
- The Affordable Housing Sustainable Communities (AHSC) Program may offer significant grant funding opportunities for transit.
- Employers, such as Amazon, have expressed interest in supporting new service to their facilities.
- Certain areas of Stockton feel devoid of transit options, such as northwest Stockton and the areas west of I-5 along the Benjamin Holt Drive corridor.
- Generally, there is a desire for greater coordination with local planning efforts, and a need for greater communication about RTD's future, such as plans for electrification or alternative fuel use, and the development of additional Express routes.
- It was noted that greater transparency and access to data around ridership and route performance would be useful to stakeholders.
- Regarding commuter services, there is interest in identifying an ideal way to capture strong markets to both the Sacramento and Bay Area regions. There was interest in understanding if adjusting the frequency, convenience, and timing of the routes could be optimized to help the commuter services be more competitive with auto travel (for example, would shifting Route 163 to I-5 help with ridership).
- Some of the municipal transit operators are concerned that Van Go! duplicates their own services and may be siphoning off some riders from the local systems. Greater coordination between the transit agencies may help alleviate this concern.
- Cabral Station in Stockton has a serious parking problem and ACE would like to explore better access options with RTD, including microtransit.
- ACE sees opportunities to partner with RTD for off-peak service to the Tri-Valley and Silicon Valley similar to Amtrak's Thruway midday bus service.
- ACE and RTD should be doing more to jointly market services and provide information to customers and perhaps implement a fare/transfer program.
- Mountain House seems to be the best opportunity for RTD and ACE two work together on cross-county services.
- ACE does not expect its commuter ridership to Silicon Valley to fully recover until late 2022.

Layer 4 – Population and Employment Growth Forecasts

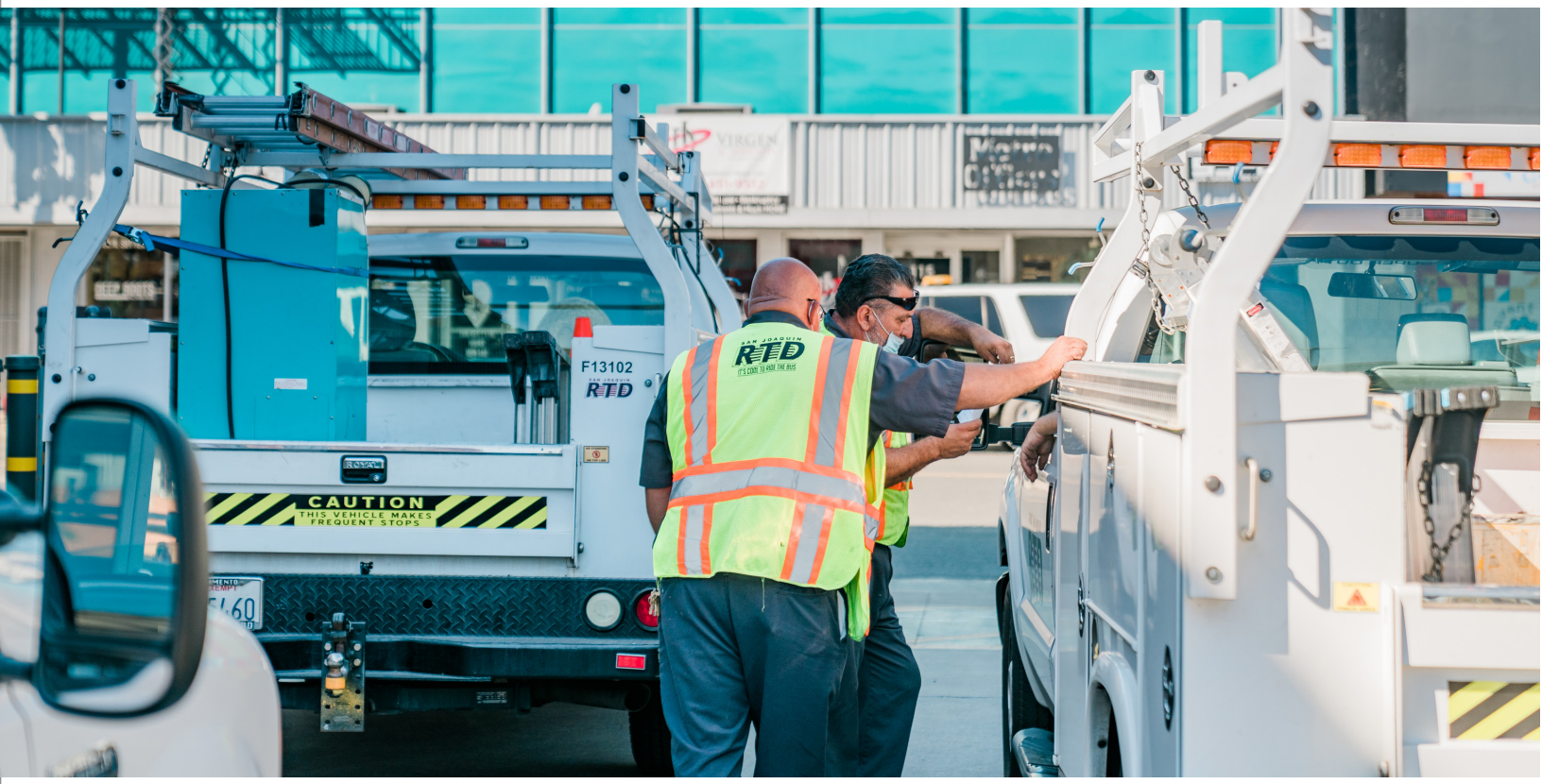
To assess the overall population and employment forecast, recent data was reviewed from the University of the Pacific Center for Business and Policy Research. The San Joaquin County Demographic and Employment Forecast (September 2020) was prepared to support the development of long-range planning efforts by SJCOG, such as the Regional Transportation Plan (RTP). A regional modeling software package is used to develop population and employment forecasts at the countywide level, which are then allocated to sub-county areas to account for current conditions and expected development within each area. The estimates are current enough that they consider some degree of expected economic contraction and job loss due to COVID-19. In general, the population of San Joaquin County is expected to grow by roughly 1.5%, on average, over the next five years, reaching 882,163 residents by the year 2030. Employment, meanwhile, is anticipated to see less than 1% annual growth in every year after 2022.

Within the local areas, the fastest growth is expected to occur within the south county, with Lathrop experiencing the highest rate of growth as the River Islands development is built out.

However, Stockton is anticipated to grow in population by approximately 16% through 2030 and will lead the county in absolute population growth. By 2030, the population is anticipated to reach 348,258 residents, roughly 40% of the county's total expected population.

In terms of employment, Stockton is expected to see job growth at a similar rate to the overall countywide trend. The number of jobs in healthcare and education is expected to increase at the highest rate, making up the largest employment sector within Stockton by the year 2030.

Early research also indicates that the Northern San Joaquin Valley (inclusive of San Joaquin, Stanislaus, and Merced counties) was the most resistant to COVID-related job losses within the northern California mega region that includes the San Francisco Bay Area.




SAN JOAQUIN
RTD
SAN JOAQUIN
RTD
OPERATOR

Chapter

03

Planning Process

- Public Outreach – Phase 1
- Board Workshop & Visioning
  - RTD Board Special Session
    - FY 2022 Revenue Hours and Revenue Miles
    - Urban Area
    - Rural/Intercity/Commuter Areas
- Service Plan Scenarios
- Public Outreach – Phase 2

This section describes the process used by the consultant to gather public input, establish planning objectives and parameters with the RTD Board of Directors and then create service planning options for meeting the objectives.

Public Outreach – Phase 1

For more detailed information please refer to the Technical Memorandum titled "Task – Outreach Phase 1 – Final Report"

The public engagement for this project was split into two phases: Phase 1 was completed prior to the service planning while Phase 2 was completed following the service planning. Phase 1 included the following outreach activities:

- Project Website (March 2021)
- Virtual Open House #1 (March 2021)
- Online Community Questionnaire (April 2021)
- RTD Staff Questionnaire #1 (April 30, 2021)
- Future Rider Questionnaire (May 10, 2021)
- Virtual Open House (June 2, 2021)

Phase 1 Summary of Findings

During Phase 1 of the community outreach process, the team obtained and evaluated input about passenger satisfaction with existing services, gaps in transit service, key destinations, barriers to transit usage and opportunities for improvement. The targeted audiences for the community outreach program consisted of current and potential transit riders, business leaders, other stakeholder group representatives throughout the RTD service area as well as RTD staff.

Passenger satisfaction with existing services

Generally, riders expressed overall satisfaction with RTD's existing services. Current riders expressed appreciation to the RTD staff for their professionalism and willingness to assist when the passengers have questions or need additional assistance due to a disability. Current riders also said they use the rider information services currently provided by RTD; however, they would like RTD to improve their information technology so that they can receive real-time data about service changes. Several riders said that they were not aware of some of the specialized transportation program offered by RTD such as Van Go! and the mileage redemption program and they suggested RTD implement a stronger community outreach and awareness campaign regarding these programs. Other areas of improvement focused on gaps in service (weekends and evening service) and more trips between cities which is highlighted in the next topic.

Gaps in service

Community members identified several key gaps in RTD's current services including weekend and evening service (particularly for the County Hopper service), and a desire to increase the availability of Van Go! Several geographic gaps were identified including service to and from Mountain House (particularly to areas outside of the County like San Jose, Pleasanton, etc.), a lack of reliable and efficient service between cities within San Joaquin County (i.e. between Lathrop and Manteca), the North Stockton region, a lack of long-distance connections to transit in the Bay Area, and not enough transit from downtown Stockton to other jurisdictions in San Joaquin County like Lathrop, Escalon, Ripon, Linden, Clements, Lockeford, Manteca, Tracy and Lodi.

Key destinations

Riders stated they often use transit for daily trips such as traveling to work, school, and running errands and also for medical appointments. Many people use transit to travel to Stockton from other areas of the County for essential work or medical trips. Community members who live in Mountain House often take transit to travel outside of San Joaquin County to the Bay area (San Jose, San Ramon, and Tri-Valley area). Riders also expressed a desire to use transit for "quality of life" experiences such as dining and entertainment but said that lack of weekend and evening service is a barrier to using transit for those trips.

Barriers to transit usage

Frequency and coverage were cited as the two main barriers to transit usage by community members. They specifically noted that they experienced long wait times for the bus service, bus service not running as late in the evening on weekdays, also that there are very few bus stops within a neighborhood thus requiring long walks to get to the bus stops, bus routes not taking riders where they need to get to, not enough service on weekends, lack of public information on service changes and updates, lack of reliability for Van Go! service, and not enough local service. Some participants said that RTDs buses lacked accessibility for those who have difficulty moving (seniors, those with disabilities etc.), specifically access for wheelchairs, better access to the back door of buses, and more space on buses for those who use walkers.

Opportunities for improvement

Community members noted several opportunities for improvement of RTD's service including more efficient bus routes (reducing the amount of stops that aren't as popular), making the services, maps, and information easier to understand, providing more local and Express service on the weekends and weekday evenings, providing a connector service from Mountain House to the neighboring counties, adding more stops for the County Hopper service through San Joaquin County, and increasing the volume of Van Go! service.

Board Workshop & Visioning

For more detailed information please refer to the Technical Memorandum titled "Tasks 4 & 5 – Market Assessment and Visioning"

RTD Board Special Session

On Thursday, May 6, 2021, Fehr & Peers shared the preliminary findings of the Transit Market Assessment with the RTD Board of Directors at a three-hour special working session. The objective of the session was to provide the directors with information about transit markets and relevant issues, and then obtain any feedback in advance of the upcoming service planning activities. The directors were presented with a variety of data sets and background information, including the following:

- Trends in national transit ridership
- Travel activity within the RTD service area
- Comparisons of bus/walk and auto travel times within the service area
- Data from the Transit Market Assessment (Kepler visuals)
- Demographic data
- Proposed service plan objectives
- An overview of the "toolbox" of choices for service planning

A selection of the comments and questions generated by the RTD Board are categorized below.

Service Planning – Decreasing Travel Times

- There was general support from the Board for any options that could lead to a decrease in bus/walk travel times along selected corridors within the Stockton Metro Area.

Service Planning - Metro Hopper Deviations

- The Metro Hopper routes are deviated fixed routes. They have extra time built into their schedules to allow them to deviate from their fixed route into adjacent neighborhoods to pick up passengers who might not be able to get to the fixed-route stops. They were designed to function as a service area "coverage" tool, and it was hoped that they would offload some of the strain on the ADA paratransit service. According to RTD operations staff, since their inception, the Metro Hopper routes have averaged very few deviations, if any, during a typical operating day.8The ADA paratransit service continues to fully cover the Metro Area. The Board, at the request of RTD staff, is willing to discontinue the practice of the Metro Hoppers making deviations.

Service Planning – Scalability

- The Board understood that service levels, as measured by revenue hours, will likely be lower than desired for the next few years due to service reductions associated with the COVID-19 pandemic. The Board wishes to improve services as quickly as possible, but it also recognized that all potential transit needs likely cannot be addressed in the next 2-3 years. For that reason, it asked the consultant to ensure that any service improvements recommended for the next few years be scalable so that service can be easily ramped up as additional operating and capital funds become available.

Service Planning – Regional and Intercounty Services

- RTD is willing to consider an expansion of service between cities, to rural areas, and along commuter routes, if the demand data supports it and if it can be balanced with available funding and bus operators.
- The consulting team should be mindful of any opportunities for improving efficiencies and connectivity with other service providers in the area.
- Should RTD rely on ACE to fully serve the travel markets to the SF Bay Area (as opposed to RTD continuing to run commuter bus service)? In addition, are there ways to differentiate RTD commuter routes from destinations serviced by ACE or by the future ValleyLink service (ValleyLink starts in 2025)? Any scenarios should be based on major findings from the data collection effort.
- The Board recognizes that continuing with service "as usual," even in RTD's pre-pandemic form, will likely not increase RTD's share of travel in the SMA above its current 1%, as based on 2019 travel demand data. The Board was not asked to pick a specific target for growth in terms of market share, but it did discuss the potential of trying to reach a 2% market share within the next few years. It asked the consultant to take this potential growth in market share into consideration during the service planning phase, but it specifically did not list it as an intended target.

Coverage versus Productivity

- The consulting team estimated that approximately 45% of the system's resources (2019 service levels) was allocated to productivity routes and 55% to coverage routes. Productivity routes are designed to maximize ridership while coverage services are designed to maximize access to transit. The Board did not pick a specific target ratio for coverage versus productivity services, the coverage vs productivity split for 2019 was estimated by: 1) assuming that certain types of service are logically either coverage or productivity based. For example, Express routes are always productivity based and demand-response routes are always coverage based. Local routes can be split into one group or the other based on the approximate design and frequency of the route. 2) dividing the total number of annual service hours by route type into the system's total annual revenue hours and then grouping the findings (percentages) into either coverage or productivity.

Other Topics ("Parking Lot")

The Board discussed several transit improvement/sustainability topics which, though not directly relevant to this Service Redesign Planning effort, are important in the long term and should be revisited later. These items include the following:

- RTD needs to look at how it can position itself for future funding that may fall outside the scope of traditional transit, including automation, bike/ped integration, and transportation network companies (TNCs).
- Working with the City of Stockton on updating curbside management policies/practices in central Stockton may help reduce some of the negative impacts of traffic operations on buses.
- RTD staff should consider integrating psychographic data and behavior change principles into future planning studies.
- Additional friction points may be uncovered as stakeholder outreach continues. The more we can increase coordination through this effort, the better.

Service Plan Objectives and Guidance

In mid-2020, the RTD Board and RTD staff developed a list of objectives to guide this study. They included the following:

What do we want to do?

- Attract new customers and grow RTD's ridership base
- Deliver transit services that are consistent with customer demand in response to changes from COVID-19

How do we want/need to do it?

- Provide efficient bus transit service
- Be cost-neutral with RTD's proposed FY 2022 budget
- Put RTD on a path to sustainability
- Be consistent with RTD's equity and Title VI requirements

These objectives were reviewed with the Board during the Special Presentation to determine if they needed any adjustment, if any should be removed from the list, or if any new objectives should be added. All the objectives were retained "as-is" with one exception: the Board determined that the objective "be cost-neutral with RTD's proposed FY 2022 budget," should be adjusted to say,

Be cost-neutral but also be scalable depending upon potential increases in operating and capital funds.

FY 2022 Revenue Hours and Revenue Miles

On June 24, 2021, the RTD Board approved its budget and revenue hours/mile for FY 2022. They are shown in Table 15.

Table 15: FY 2022 Revenue Hours and Miles

	FY 2022 Service Levels	Express	SMA Local	Metro Hopper	VanGo!	County Hopper	Commuter	Dial-A-Ride	UCP ADA
Annual Revenue Hours	191,865	60,580	39,928	23,393	26,518	15,359	10,844	11,211	4,032
Annual Vehicle Hours	210,509	63,738	44,110	24,734	30,535	18,786	13,211	11,323	4,072
Annual Revenue Miles	2,852,460	660,700	238,619	238,619	525,571	342,247	334,578	250,838	42,084
Annual Vehicle Miles	3,356,279	725,897	268,732	268,732	631,661	467,920	429,300	253,346	42,505

Urban Area

Assumptions

Every transit service planning process begins with several assumptions. The following list was developed based on recommendations from the consultant combined with input from the RTD Board and staff.

1. Primary Design Foundation - The design of the network will be based primarily on the following factors/layers:
   a. Layer 1 – GPS Mobility Data
   b. Layer 2 – Socio-Demographic Data and Surveys (on-board and public) via virtual workshops
   c. Layer 3 – Stakeholder Interviews
   d. Layer 4 – Population and Employment Growth Forecasts.

The layers were balanced for equity using the Title VI analysis.

2. Annual Revenue Hours – The annual revenue hours for FY 2022 through FY 2025 will be held constant (i.e., no annual increase) and will be based on the Board approved level for FY 2022.3.
3. Productivity – The productivity goal of the SMA portion of the system must increase above the FY 2019 rate of 20.2 passengers per revenue hour.
4. Service Reallocation – Without additional resources (i.e., annual revenue hours) it is almost certain that any increase in productivity will require reallocating resources from less productive uses to more productive uses.
5. Express - Some level of Express service should be retained but it is acceptable to alter the Express routes and service levels, as needed, to support demand patterns and the desire to improve system productivity.
6. Local Routes – Local routes may be designed in any manner necessary to support the demand patterns and the need to improve system productivity.
7. Metro Hopper – The Metro Hopper may transition to some type of non-deviation circulator/shuttle, as needed, to support the demand patterns.
8. Current Ridership – FY 2021 systemwide ridership is approximately 40% of FY 2019 levels.
9. Current Market Share – According to the StreetLight data, there are 1.3 million people trips (travel activity) occurring within the SMA on a typical weekday (24 hours). Approximately 1% (13,000) of these trips were being taken on RTD services as of 2019. The 1.3 million trips represent RTD's potential market.
10. Current Coverage vs Productivity – The 2019 coverage/productivity split is estimated to be 45%/55%.
11. "7-Day System" - It is acceptable to explore moving from weekday/weekend systems to a "7-day" system.
12. Fast Travel Corridors – It is acceptable to explore creating some "fast" travel time corridors. These are corridors that may have services with faster travel times and fewer stops compared to the existing Express services.

Rural/Intercity/Commuter Areas

Assumptions

1. Primary Design Foundation - The design of the network will be based primarily on the following factors/layers:
   a. Layer 1 – GPS Mobility Data
   b. Layer 2 – Socio-Demographic Data and Surveys (on-board and public) via virtual workshops
   c. Layer 3 – Stakeholder Interviews
   d. Layer 4 – Population and Employment Growth Forecasts.
   e. The layers were balanced for equity using the Title VI analysis.
2. Annual Revenue Hours – There will be no increase in annual revenue hours for the commuter service because of limitations on spending related to San Joaquin County Measure K. The hours allocated to commuter services for FY 2022-2025 will remain the same as 2021. For the intercity and rural area services, the annual revenue hours for FY 2022-2025 could increase up to 10% above the FY 2022 adopted budget. These additional hours will be contingent upon the preliminary findings of the financial plan.
3. Productivity – The productivity of the Rural/Intercity/Commuter12portion of the system must increase above the 2019 rate of 6.5 passengers per revenue hour.
4. Current Ridership – Rural/Intercity/Commuter 2021 ridership is approximately 28% of 2019 levels.
5. Current Market Share – Transit's current market share of typical weekday non-SMA travel (2019) is slightly less than 0.8.
6. "7-Day System" - It is acceptable to explore moving from weekday/weekend systems to a "7-day" system.

Service Plan Scenarios

For more detailed information please refer to the Technical Memorandum titled "Task 6 – Service Plan"

The planning process included the development of three service plan scenarios. Scenario planning was utilized to enable RTD staff and the consulting team to iterate through potential service modifications and to identify and discuss tradeoffs associated with different service planning approaches.

The three service plan scenarios were based on varying ridership and coverage/productivity objectives:

- Scenario #1 – Achieve 60 percent of 2019 ridership by the end of 2025. Project coverage versus productivity split would be approximately 50%/50%.
- Scenario #2 – Achieve 70 percent of 2019 ridership by the end of 2025. Project coverage versus productivity split would be approximately 40%/60%.
- Scenario #3 – Achieve 85 percent of 2019 ridership by the end of 2025. Project coverage versus productivity split would be approximately 30%/70%.

The development of the three service plan scenarios began in June 2021. First, the consulting team spent three days at the RTC in Stockton to explore the service area, examine density and development patterns, and observe multi-modal traffic flows. During this visit, the consulting team worked closely with RTD staff to understand the transit demand patterns and transit issues, and to outline ideas that would be incorporated into the three service plan scenarios.

After this visit, the consulting team spent several weeks preparing the more detailed components of the three service plan scenarios, including route alignments, service levels, and resource requirements. This process resulted in the following service plan scenarios:

- Scenario #1
  - Enhance express bus service on Pacific Avenue and Hammer Lane by combining Routes 40 and 43 (east of Pacific Avenue). Replace Route 43 west of Pacific Avenue with local bus service with service levels that better match ridership demand.
  - Modify local bus service alignments in East and South Stockton.
  - Convert underperforming local bus service north of Hammer Lane (Route 566) to VanGo! service.
  - No changes to Metro Hopper services.
- Scenario #2
  - In North Stockton, restructure network to emphasize express bus feeder services, improve crosstown connections, and increase access to major activity generators.
  - Increase frequencies on high-performing local bus corridors, including Route 520.
  - Convert Metro Hopper services to local bus services and/or VanGo! service.
- Scenario #3
  - In South Stockton, restructure network to improve crosstown connections and increase access to major activity generators.
  - Extend Route 520 into South Stockton to improve connectivity between South Stockton and major activity generators in Central and North Stockton.
  - Replace South Stockton express bus services with local bus services with increased access to major activity generators and service levels better matched to ridership demand.
  - Replace all-day bus service to Airport/Industrial area with commute-oriented service (e.g., vanpool).

Next, the consulting team presented the three service plan scenarios to the RTD Executive Team and worked with RTD service development staff and the Executive Team to refine the scenarios into a single Draft Network Concept. The purpose of this exercise was to weigh the tradeoffs associate with each of the scenarios and receive direction from RTD regarding the preferred future vision for the RTD system. Additionally, this exercise strived to arrive at a single Draft Network Concept for the purposes of soliciting input from a broader array of RTD staff, the RTD Board of Directors, stakeholders, and the public during community and stakeholder engagement activities conducted in Phase 2 of the public outreach process in Fall 2021.

Public Outreach – Phase 2

A series of stakeholder engagement activities were conducted in October and November 2021 to solicit input on the draft network concept. Engagement activities included eight stakeholder and advisory group meetings, two presentations to the RTD Board of Directors, and the deployment of an internal survey to RTD staff.

Feedback from stakeholders, the RTD Board, and the general public included the following:

- Support for proposed increased service levels on SMA Local routes.
- Support for proposed increased service levels on County Hopper and Commuter routes, particularly for connections to BART.
- Concern surrounding proposed changes to Metro Hopper routes and Route 566, particularly related to service coverage and fare implications for people with disabilities.
- Desire to learn more about proposed on-demand neighborhood services (fare, ride-matching logistics, coverage area, etc.). How would these differ from existing ADA paratransit and Van Go! services? What types of vehicles would be used? How would passengers arrange for rides?
- Interest in more information about how service recommendations would be implemented as circumstances surrounding COVID-19 pandemic continue to change.
- Request to consider extending Commuter service into Escalon and County Hopper service into Modesto.
- Questions regarding fleet considerations, particularly related to electric vehicles and associated charging infrastructure.
- Suggestion to increase marketing of RTD services to engage more potential riders.
- Suggestion to reduce fare/pass cost for students.

The following provides a summary of the input provided by RTD staff who responded to the internal staff survey:

- The vast majority of respondents think that the draft network concept would help to increase RTD ridership.
- Support for proposed increased service levels and reduced passenger wait times on SMA Local routes.
- Support for proposed changes to Metro Hopper routes. Some respondents noted that the Metro Hopper routes have extra schedule time built in for deviations, but that the deviations are not well-used.
- A blend of support and concern regarding proposed service coverage. Concern primarily focused on potential service coverage impacts for disadvantaged communities and people with disabilities.
- Concerns about proposed changes to fixed-route service to Trinity Parkway (Route 566).
- Suggestion for more on-demand neighborhood services in the Quail Lakes, Country Club, and Cherokee Road areas.
- Suggestion for more service to Manteca and Modesto.

Feedback received during the Phase 2 outreach activities was considered as the draft network concept, presented in the following chapter, was refined into a final set of recommendations.



Chapter

04

Recommendations

This section presents proposed service changes for the RTD system. These recommendations are informed by the existing transit service and market analyses the planning framework, and input received during the public and stakeholder outreach process. The Next Gen Study provides a closer examination of RTD's current services and suggests strategies to address the needs of the community, particularly disadvantaged communities.

RTD staff and the Executive Team provided Fehr & Peers with direction to prioritize the following service planning principles to guide the development of the Preferred Network Concept:

- Use a data-driven approach to service planning
  - Evaluate pre- and during COVID ridership to understand existing service performance
  - Review mobile device data to understand actual travel patterns
  - Review land use and socioeconomic data to understand underlying factors that support transit usage
  - Incorporate input from stakeholder interviews, including SJCOG, ACE, and San Joaquin County
  - Incorporate public feedback from first phase of outreach
- Emphasize Express service as the backbone of the system
  - RTD staff preferred to maintain the Express network largely as-is, with the exception of minor modifications to Route 49 alignment to better connect destinations in South Stockton
  - Configure the Local route network to "feed" the Express network to support ridership growth throughout the RTD system
  - Use the Final Plan to identify options for potential future modifications to the Express network to further drive ridership growth
- Make the fixed-route network faster and easier to use
  - Increase frequency and reduce passenger wait times, particularly on corridors with higher ridership demand:
    - Up to 15-minute frequency on more productive Express routes
    - 20- to 30-minute peak and 60-minute off-peak frequency on all local routes
  - Provide fast and direct connections to transfer centers and major activity centers:
    - More linear north/south and east/west routes
    - Connections to Express to facilitate travel throughout the network
    - Downtown, medical facilities, shopping centers, schools
  - Improve reliability for riders by improving system-wide on-time performance
- Explore alternative service delivery options in areas with lower ridership demand
- Create an initial recovery plan and new direction for RTD

RTD staff additionally provided Fehr & Peers with direction regarding detailed aspects of route alignments and frequencies.

The following provides a summary of the proposed RTD route and system changes included in the Preferred Network Concept:

Stockton Metropolitan Area

- 40 Series Routes (Express Bus Routes)
  - No changes to existing Express bus route alignments.
  - Extend weekday service span on all routes from 5 AM to 10 PM.
  - Increase to 15-minute peak frequency on Route 47.
  - Change to 30-minute all-day frequency on Routes 44 and 49.
  - In the long-term, explore consolidation of Routes 40 and 43 (east of Pacific Avenue) into a single Express bus route.
- 500 Series Routes (Local Bus Routes)
  - Introduce new Local bus routes as follows:
    - Route 502 would connect Cumberland Place, Delta College, the Mall Transfer Station, the Hammertown Shopping Center, and the Kaiser Permanente Medical Offices via Swain Road.
    - Route 505 would connect the Downtown Transit Center, CSUS Stockton Campus, St Joseph's Medical Center, and the Mall Transfer Station via California Street and El Dorado Street (existing Metro Hopper Route 5 alignment).
    - Route 509 would connect the Downtown Transit Center, the Wilson/Waterloo neighborhoods, the Big Wheel Mobile Home Park, and the Hammer Lane Walmart via Waterloo Road and SR 99 (extended Metro Hopper Route 9 alignment).
    - Route 541 would connect Brookside, Quail Lakes Shopping Center, Delta College, the Mall Transfer Station, Cesar Chavez High School, and the Hammer Lane Walmart via March Lane. In the long-term, explore operating Route 541 as an Express route.
  - Realign existing Local bus routes as follows:
    - Route 510 would connect the Downtown Transit Center, the Union Transfer Station, and San Joaquin General Hospital via Airport Way and Arch Airport Road. Existing Route 510 service on San Joaquin Street and Odell Avenue would be covered by Route 555.
    - Route 520 would connect the Downtown Transit Center, CSUS Stockton Campus, St. Joseph's Medical Center, the Hammertown Shopping Center, the Kaiser Permanente Medical Offices, and the Hammer Lane Walmart via California Street, West Lane, and Hammer Lane.
    - Route 545 would connect the Downtown Transit Center, Pixie Woods/Louis Park, Hoover Elementary School, University of the Pacific, Delta College, and the Mall Transfer Station via Acacia Street, Alpine Avenue, Pershing Avenue, and Robinhood Drive. Existing Route 545 service on Quail Lakes Drive would be discontinued.
    - Route 555 would connect the Downtown Transit Center, the Amtrak Depot, McKinley Park, and Weston Ranch via San Joaquin Street, Odell Avenue, Downing Avenue, Carolyn Weston Boulevard, and Henry Long Boulevard. Existing Route 555 service to San Joaquin General Hospital would be covered by Route 510.
    - Route 566 would connect Park West Place, Stonewood Shopping Center, the Hammer Triangle, Fox Creek, and the Hammer Lane Walmart via Trinity Parkway, Iron Canyon Circle, Thornton Road, Lower Sacramento Road, Hammer Lane, Tam O'Shanter Drive, Sandalwood Drive, Morada Lane, and Holman Road.
    - Route 576 would connect the Downtown Transit Center, Harrison Elementary School, the Wilson neighborhood, and the Hammer Lane Walmart via Wilson Way, Funston Avenue, Sanguinetti Lane, and SR 99.

      - » Route 578 would connect the Downtown Transit Center, Victory Park, University of the Pacific, Delta College, and the Mall Transfer Station via Acacia Street, Pershing Avenue, and March Lane.
    - › Extend weekday service span on all routes from 5 AM to 10 PM.
    - › Increase to 30-minute peak and 60-minute off-peak frequency on all routes, with the following exceptions:
      - » Routes 505, 520, and 578 would operate with 30-minute all-day frequency.
      - » Route 541 would operate with 15-minute peak and 30-minute off-peak frequency.
      - » Route 566 would operate with 60-minute all-day frequency.
- Metro Hopper Routes
  - › Discontinue all routes and reallocate resources into enhanced Local route network.
- 300 Series Routes (Local Bus Routes)
  - › No changes to existing 300 series routes.
  - › Implement new Route 367 that would provide peak-only service connecting the Hammer Transfer Station, Colonial Heights School, Sandman Park, O'Connor Woods, Creekside Elementary School, Bear Creek High School, Julia Morgan Elementary School, and Park West Place.

Rural and Commuter Routes

- 100 Series Routes (Commuter Bus Routes)
  - › Increase Route 150 (Stockton, Lathrop, and Dublin BART) and 163 (Stockton and Sacramento) service levels to pre-COVID service levels as workers return to the office.
  - › Modify Route 150 alignment to serve Stockton, Lathrop, and Dublin BART.
  - › Implement new Route 151 to serve Manteca, Tracy, and Dublin BART.
- County Hopper Routes
  - › No changes to existing County Hopper route alignments.
  - › Increase to 60-minute all-day frequency on Routes 90 (Stockton, Lathrop, and Tracy) and 93 (Stockton and Lodi).

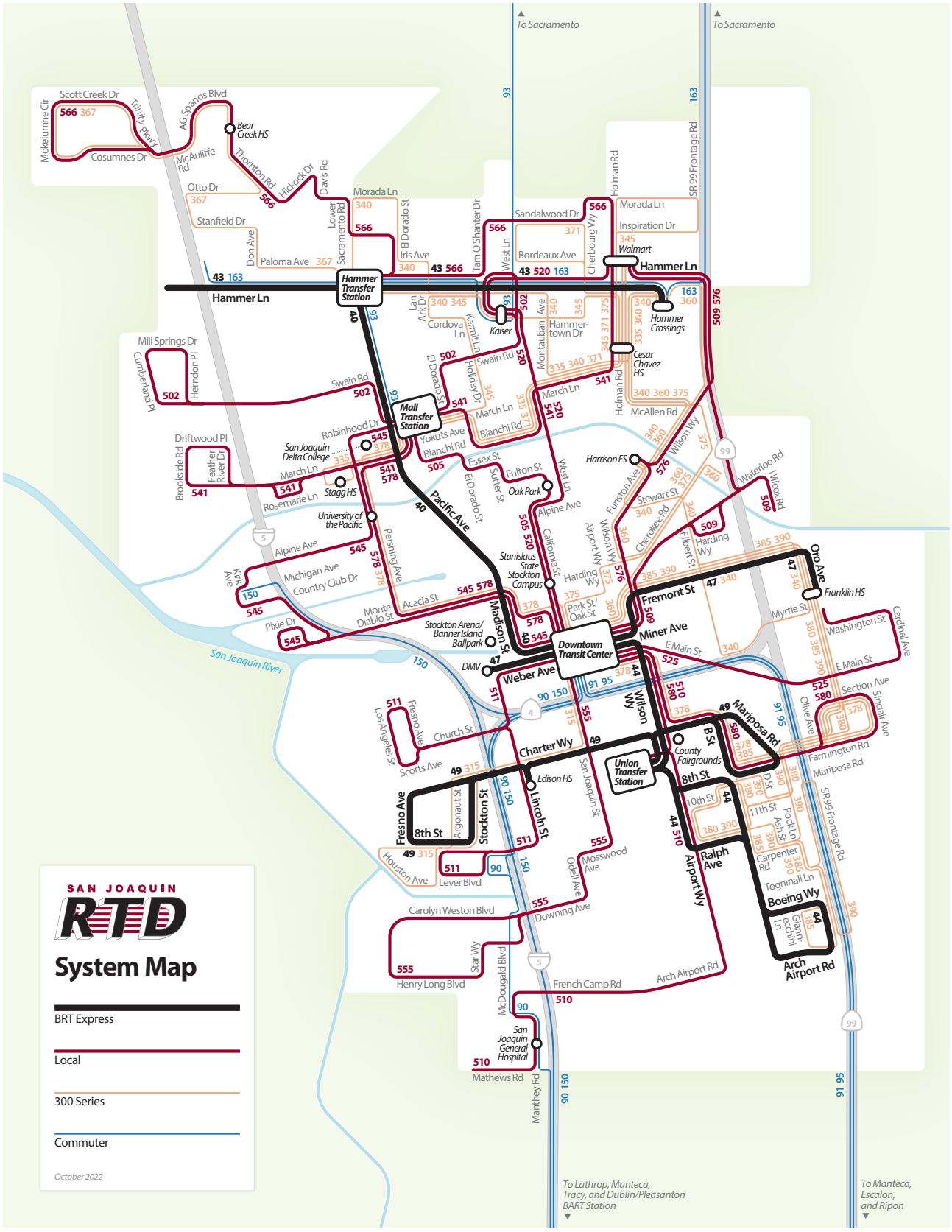
VanGo! and Paratransit Service

- No changes to existing VanGo! service levels.
- The proposed modifications to the RTD fixed-route bus network would not result in any changes to the existing ADA Paratransit service area.

Figure 3 illustrates the proposed RTD network map. The daily weekday and weekend revenue hours, frequencies and peak vehicle requirements for each route are displayed in **Table 16**.

The Appendix includes a route-by-route summary of proposed service changes included in the Preferred Network Concept.

Figure 3: Preferred Network Concept Map



Implementation

The RTD Board of Directors approved a phased approach to implementation in August of 2022, that prioritizes a restoration of service levels equal to 2019 levels. The first phase aims to increase span of service, route frequency, and route realignments in residential neighborhoods to improve access to services, employment, and educational opportunities, with a particular emphasis on serving disadvantaged communities. The restoration of service to 2019 revenue hours will be implemented by January 2023, subject to operator availability.

- **Phase 1** aims to achieve restoration to pre-COVID levels service improving service span and frequencies in targeted disadvantaged census tracts. To support that objective, the budget for FY23 is sufficient in resources.

- **Phases 2 and 3** strive to expand services in disadvantaged communities further improving frequencies and service span, traveling deeper into disadvantaged neighborhoods. This goal will require the identification of resources and revenue hours which will require Board approval.

Route summaries prepared as part of this plan will serve as the framework that will guide implementation, and may be subject to modifications based on availability of operators, resources, and public input.

The daily weekday and weekend revenue hours, frequences, and peak vehicle requirements for each route and implimentation scenario are displayed in Tables 16, 17, and 18.

Figure 16: Preferred Network Concept Route Sumary - Service Frequency

Type	Route	Service Frequency (min) Phase 1 Weekday Peak	Phase 1 Weekday Off Peak	Phase 1 Sat.	Phase 1 Sun.	Phase 2 Weekday Peak	Phase 2 Weekday Off Peak	Phase 2 Sat.	Phase 2 Sun.	Phase 3 Weekday Peak	Phase 3 Weekday Off Peak	Phase 3 Sat.	Phase 3 Sun.
Express	40	15	15	30	30	15	15	30	30	15	15	30	30
Express	43	15	15	30	30	15	15	30	30	15	15	30	30
Express	44	30	30	30	30	30	30	30	30	30	30	30	30
Express	47	30	30	60	60	15	30	60	60	15	30	60	60
Express	49	30	30	60	60	30	30	60	60	30	30	60	60
500 Series	502	60	60	0	0	30	60	0	0	30	60	0	0
500 Series	505	30	60	0	0	30	60	0	0	30	30	0	0
500 Series	509	60	60	0	0	30	60	0	0	30	60	0	0
500 Series	510	60	60	60	60	30	60	60	60	30	60	60	60
500 Series	515	60	60	0	0	30	60	0	0	30	60	0	0
500 Series	520	30	60	60	60	30	60	60	60	30	30	60	60
500 Series	525	60	60	60	60	30	60	60	60	30	60	60	60
500 Series	541	60	60	60	60	30	60	60	60	15	30	60	60
500 Series	545	60	60	0	0	30	60	0	0	30	60	0	0
500 Series	555	60	60	0	0	30	60	0	0	30	60	0	0
500 Series	566	60	0	0	0	60	60	0	0	60	60	0	0
500 Series	576	60	60	0	0	30	60	0	0	30	60	0	0
500 Series	578	60	60	0	0	30	60	0	0	30	30	0	0
500 Series	580	60	60	0	0	30	60	0	0	30	60	0	0
Metro Hopper	1	0	0	0	0	0	0	0	0	0	0	0	0
Metro Hopper	2	0	0	0	0	0	0	0	0	0	0	0	0
Metro Hopper	3	0	0	0	0	0	0	0	0	0	0	0	0
Metro Hopper	4	0	0	0	0	0	0	0	0	0	0	0	0
Metro Hopper	5	0	0	0	0	0	0	0	0	0	0	0	0
Metro Hopper	6	0	0	0	0	0	0	0	0	0	0	0	0
Metro Hopper	9	0	0	0	0	0	0	0	0	0	0	0	0
300 Series	315	Peak Only	0	0	0	Peak Only	0	0	0	Peak Only	0	0	0
300 Series	335	Peak Only	0	0	0	Peak Only	0	0	0	Peak Only	0	0	0
300 Series	340	Peak Only	0	0	0	Peak Only	0	0	0	Peak Only	0	0	0
300 Series	345	Peak Only	0	0	0	Peak Only	0	0	0	Peak Only	0	0	0
300 Series	360	Peak Only	0	0	0	Peak Only	0	0	0	Peak Only	0	0	0
300 Series	366	0	0	0	0	0	0	0	0	0	0	0	0
300 Series	367	Peak Only	0	0	0	Peak Only	0	0	0	Peak Only	0	0	0
300 Series	371	Peak Only	0	0	0	Peak Only	0	0	0	Peak Only	0	0	0
300 Series	375	Peak Only	0	0	0	Peak Only	0	0	0	Peak Only	0	0	0
300 Series	378	Peak Only	0	0	0	Peak Only	0	0	0	Peak Only	0	0	0
300 Series	380	Peak Only	0	0	0	Peak Only	0	0	0	Peak Only	0	0	0
300 Series	385	Peak Only	0	0	0	Peak Only	0	0	0	Peak Only	0	0	0
300 Series	390	Peak Only	0	0	0	Peak Only	0	0	0	Peak Only	0	0	0
Commuter	150	60	60	60	60	60	60	60	60	60	60	60	60
Commuter	151	0	0	0	0	Peak Only	0	0	0	Peak Only	0	0	0
Commuter	163	Peak Only	0	0	0	Peak Only	0	0	0	Peak Only	0	0	0
County Hopper	90	60	60	0	0	60	60	0	0	60	60	0	0
County Hopper	91	Peak Only	0	0	0	Peak Only	0	0	0	Peak Only	0	0	0
County Hopper	93	60	60	0	0	60	60	0	0	60	60	0	0
County Hopper	95	Peak Only	0	0	0	Peak Only	0	0	0	Peak Only	0	0	0
County Hopper	97	Peak Only	0	0	0	Peak Only	0	0	0	Peak Only	0	0	0

Figure 17: Preferred Network Concept Route Summary - Revenue Hours

		Revenue Hours								
		Phase 1			Phase 2			Phase 3		
Type	Route	Weekday (Daily)	Weekend (Daily)	Annual (Total)	Weekday (Daily)	Weekend (Daily)	Annual (Total)	Weekday (Daily)	Weekend (Daily)	Annual (Total)
Express	40	58	25	17,490	58	25	17,490	58	25	17,490
Express	43	56	21	16,548	56	21	16,548	56	21	16,548
Express	44	30	21	9,918	30	21	9,918	30	21	9,918
Express	47	39	10	11,025	39	10	11,025	39	10	11,025
Express	49	30	10	8,730	30	10	8,730	30	10	8,730
500 Series	502	34	-	8,670	40	-	10,200	40	-	10,200
500 Series	505	23	-	5,865	23	-	5,865	29	-	7,395
500 Series	509	17	-	4,335	23	-	5,865	23	-	5,865
500 Series	510	17	10	5,415	23	10	6,945	23	10	6,945
500 Series	515	17	-	4,335	23	-	5,865	23	-	5,865
500 Series	520	34	20	10,830	40	20	12,360	46	20	13,890
500 Series	525	17	10	5,415	23	10	6,945	23	10	6,945
500 Series	541	34	20	10,830	40	20	12,360	64	20	18,480
500 Series	545	34	-	8,670	46	-	11,730	46	-	11,730
500 Series	555	34	-	8,670	40	-	10,200	40	-	10,200
500 Series	566	18	-	4,590	51	-	13,005	51	-	13,005
500 Series	576	17	-	4,335	23	-	5,865	23	-	5,865
500 Series	578	17	-	4,335	23	-	5,865	29	-	7,395
500 Series	580	17	-	4,335	23	-	5,865	23	-	5,865
Metro Hopper	1	-	-	-	-	-	-	-	-	-
Metro Hopper	2	-	-	-	-	-	-	-	-	-
Metro Hopper	3	-	-	-	-	-	-	-	-	-
Metro Hopper	4	-	-	-	-	-	-	-	-	-
Metro Hopper	5	-	-	-	-	-	-	-	-	-
Metro Hopper	6	-	-	-	-	-	-	-	-	-
Metro Hopper	9	-	-	-	-	-	-	-	-	-
300 Series	315	1	-	319	1	-	319	1	-	319
300 Series	335	2	-	493	2	-	493	2	-	493
300 Series	340	2	-	479	2	-	479	2	-	479
300 Series	345	2	-	454	2	-	454	2	-	454
300 Series	360	1	-	314	1	-	314	1	-	314
300 Series	366	-	-	-	-	-	-	-	-	-
300 Series	367	3	-	653	3	-	653	3	-	653
300 Series	371	2	-	579	2	-	579	2	-	579
300 Series	375	2	-	620	2	-	620	2	-	620
300 Series	378	2	-	434	2	-	434	2	-	434
300 Series	380	2	-	416	2	-	416	2	-	416
300 Series	385	2	-	492	2	-	492	2	-	492
300 Series	390	1	-	370	1	-	370	1	-	370
Commuter	150	19	16	6,573	30	16	9,378	30	16	9,378
Commuter	151	-	-	-	15	-	3,825	15	-	3,825
Commuter	163	12	-	3,060	18	-	4,590	18	-	4,590
County Hopper	90	26	-	6,630	26	-	6,630	26	-	6,630
County Hopper	91	16	-	4,080	16	-	4,080	16	-	4,080
County Hopper	93	22	-	5,610	22	-	5,610	22	-	5,610
County Hopper	95	11	-	2,805	11	-	2,805	11	-	2,805
County Hopper	97	6	-	1,530	6	-	1,530	6	-	1,530
	TOTAL	**677**	**163**	**190,251**	**820**	**163**	**226,716**	**862**	**163**	**237,426**

Figure 18: Preferred Network Concept Route Summary - Peak Vehicles

Type	Route	Peak Vehicles					
		Phase 1		Phase 2		Phase 3	
		Weekday	Weekend	Weekday	Weekend	Weekday	Weekend
Express	40	4	2	4	2	4	2
Express	43	4	2	4	2	4	2
Express	44	2	2	2	2	2	2
Express	47	3	1	3	1	3	1
Express	49	2	1	2	1	2	1
500 Series	502	2	0	3	0	3	0
500 Series	505	2	0	2	0	2	0
500 Series	509	1	0	2	0	2	0
500 Series	510	1	1	2	1	2	1
500 Series	515	1	0	2	0	2	0
500 Series	520	2	2	3	2	3	2
500 Series	525	1	1	2	1	2	1
500 Series	541	2	2	3	2	6	2
500 Series	545	2	0	4	0	4	0
500 Series	555	2	0	3	0	3	0
500 Series	566	3	0	3	0	3	0
500 Series	576	1	0	2	0	2	0
500 Series	578	1	0	2	0	2	0
500 Series	580	1	0	2	0	2	0
Metro Hopper	1	0	0	0	0	0	0
Metro Hopper	2	0	0	0	0	0	0
Metro Hopper	3	0	0	0	0	0	0
Metro Hopper	4	0	0	0	0	0	0
Metro Hopper	5	0	0	0	0	0	0
Metro Hopper	6	0	0	0	0	0	0
Metro Hopper	9	0	0	0	0	0	0
300 Series	315	1	0	1	0	1	0
300 Series	335	1	0	1	0	1	0
300 Series	340	1	0	1	0	1	0
300 Series	345	1	0	1	0	1	0
300 Series	360	1	0	1	0	1	0
300 Series	366	0	0	0	0	0	0
300 Series	367	1	0	1	0	1	0
300 Series	371	1	0	1	0	1	0
300 Series	375	1	0	1	0	1	0
300 Series	378	1	0	1	0	1	0
300 Series	380	2	0	2	0	2	0
300 Series	385	1	0	1	0	1	0
300 Series	390	1	0	1	0	1	0
Commuter	150	3	2	4	2	4	2
Commuter	151	0	0	2	0	2	0
Commuter	163	2	0	3	0	3	0
County Hopper	90	3	0	3	0	3	0
County Hopper	91	3	0	3	0	3	0
County Hopper	93	2	0	2	0	2	0
County Hopper	95	2	0	2	0	2	0
County Hopper	97	1	0	1	0	1	0
	TOTAL	**66**	**16**	**83**	**16**	**86**	**16**


AWESOME

Chapter

05

Title VI



RTD must comply with Title VI of the Civil Rights Act of 1964 as a condition of RTD's grant agreement with the FTA. One aspect of Title VI compliance is that prior to implementing major service changes, RTD must prepare an equity analysis to determine if the proposed changes would be likely to result in disparate impacts on minority populations or disproportionate burdens on low-income populations.

It is anticipated that this plan would be implemented over a multi-year period as part of RTD's regular service change process. As such, it is recommended that as components of this plan are implemented, RTD consider the extent to which a Title VI equity analysis is necessary and prepare equity analyses as necessary.

As it relates to this plan, Title VI implications are likely to be most prevalent as a result of proposed service changes within the SMA. This is due to the proposed network restructuring that would change fixed-route service coverage and service levels within the SMA. According to the RTD Title VI Program, FY 2020-2021 to FY 2023-2024 (April 2020), virtually all of the SMA is comprised of low-income, minority, or both low-income and minority Census tracts. Additionally, all of the SMA routes are classified as minority routes and 97.9 percent are classified as low-income routes.

The proposed network restructuring would result in changes to service coverage within the following low-income or minority areas in the SMA:

- Portions of the Lincoln Village neighborhood, including segments of Kelley Drive, Plymouth Road, Meadow Avenue, and Pershing Avenue (currently served by Metro Hopper Route 2);
- Portions of the Quail Lakes neighborhood, including segments of Quail Lakes Drive (currently served by Route 545 and Metro Hopper Route 1);
- Portions of the Country Club neighborhood, including segments of Country Club Boulevard and Mission Road (currently served by Routes 545 and 578);
- Segments of Benjamin Holt Drive and El Dorado Street (currently served by Metro Hopper Route 3);
- Segments of Lorraine Avenue (currently served by Metro Hopper Route 6); and
- Segments of El Dorado Street, Clayton Avenue, and Odell Avenue (currently served by Route 510).

The proposed service level changes would result in increases to frequencies on numerous SMA local routes that operate within low-income or minority areas. Frequency increases on the SMA local routes would improve the quality of service for RTD passengers by reducing passenger wait times and by providing additional capacity to accommodate maximum passenger loads. This plan additionally recommends route alignment modifications to several SMA local routes, which would reduce route cycle lengths and have a positive effect on on-time performance and other operational metrics.


Bus Rapid Transit
San Joaquin RTD
Express
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ELECTRIC





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