Placer County Transportation Planning Agency

LINCOLN, CA PASSENGER RAIL FEASIBILITY STUDY

Prepared for:

PLACER COUNTY TRANSPORTATION PLANNING AGENCY

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JULY 31, 2023

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A CCJPA Train Crests San Francisco Bay (Wikimedia Commons)

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Introduction and Approach

The City of Lincoln is not named for President Abraham Lincoln but for Charles Lincoln Wilson, a Director of the California Central Railroad (CCRR). Shortly after the CCRR reached the site of Lincoln in 1861, the town enjoyed a boom period as a result of being the railroad's northern terminus. It is fair to say that, like many 19th century western settlements, Lincoln was born of the railroad. In the 1870's, after the CCRR mustered funding to continue construction further north to Yuba County, the initial boom period passed, but Lincoln was 'on the map.'

21st century California has changed the City of Lincoln more radically than any period in its history other than its founding, as it has grown by well over 300% in the last 20 years as seen in Figure 1. The COVID-19 epidemic, if anything, has amplified this trend across Placer County given the untenable property prices and changing work patterns found within the State's major metropolitan areas.

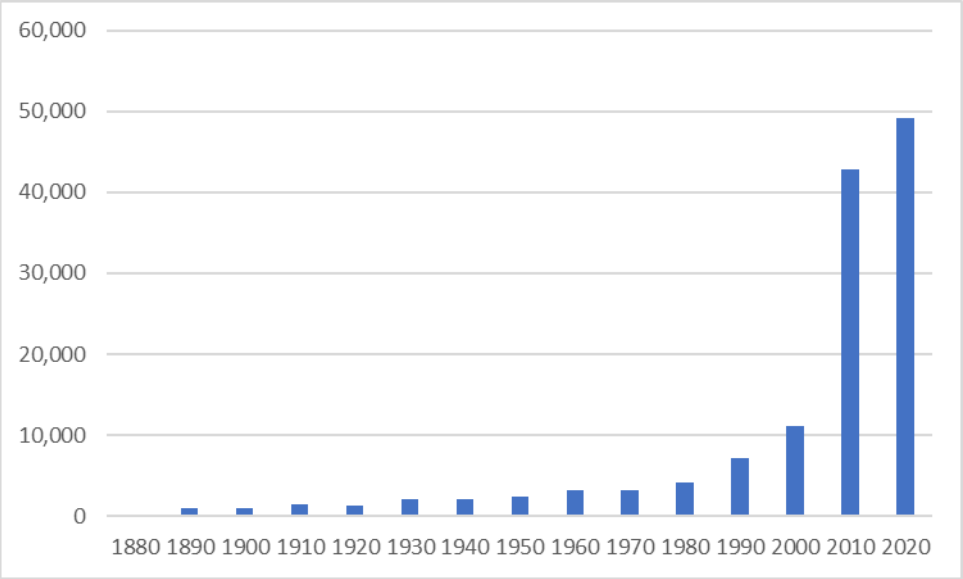

Figure 1: Growth in Lincoln, CA Population, 1880-2020

Reflecting shifting and growing demographics in Placer County have been a suite of recent transportation plans conducted, which have comprehended new and enhanced infrastructure and services. Interstate 80 through Placer County is slated to widen, new express buses connecting Lincoln better with Roseville and Sacramento have been planned and are in the process of being implemented, as have drastically increased levels of Amtrak Capitol Corridor service to and from nearby Roseville, CA via the Sacramento - Roseville 3rd Track (SR3T) project.

The 2018 California State Rail Plan (2018 CSRP) also acknowledged Placer County's growth (and Lincoln's specifically) with an anticipated connection via rail or bus to the national rail network on its vision map as seen in Figure 2. However, this connection was attached to no specific service outlined in the plan and existed only on the vision map (as a search term, "Lincoln" appeared nowhere in the plan text).

This feasibility study seeks to outline the opportunities and challenges of turning, what has been since 2018, a line on a map into a preliminary plan of how to include Lincoln on the national passenger rail network.

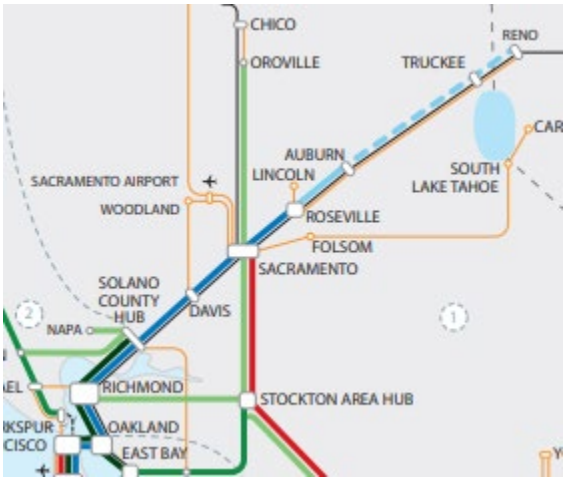

Figure 2: Excerpt of 2018 California State Rail Plan Vision Map, Showing Service To/From Lincoln

This line was classified on the vision map as manifesting either an "integrated rail transit or bus" option.

This study, contractually obligated to evaluate two operational alternatives, comprehends both options.

The feasibility of establishing a single passenger train frequency from/to Lincoln, a similar level of minimal operation that Roseville, Rocklin and Auburn have enjoyed since 1991, is evaluated. Lincoln also has the great fortune of being located in the close vicinity of Roseville, which per the SR3T Project and 2018 SRP may experience as much as a magnitude of order increase in rail service in the coming decade. The study authors believe that any CCJPA service from/to Lincoln would not come at the expense of service levels along the present route serving Rocklin and Auburn, but rather would be implemented as part of the coming increase in service frequencies enabled by the SR3T project.

An integral part of rail service best practices in California has been its dedicated Amtrak Thruway bus program, vastly extending the reach of every passenger rail corridor in the state. This study also explores the preliminary feasibility of such a connection from/to Lincoln.

Summary of Findings

Section I: The First and Most Critical Step Towards New Passenger Rail Service: Freight Railroad Access

More critical even than operational feasibility is the question of CCJPA and Amtrak access to host railroad infrastructure. Union Pacific Railroad (UPRR) declined to participate in this study to any extent, which should come as little surprise at this stage. It can and should be expected that UPRR could demand payment at or beyond the highest estimate contemplated in the rail capital infrastructure section of this study, if UP can be brought to the negotiating table in the first place.

Section II: Feasibility of Extending One CCJPA Passenger Train Daily between Lincoln and Roseville

Preliminarily results indicate that CCJPA service from/to Lincoln would be as fast or faster than driving between Lincoln and Sacramento. Given Lincoln's growing population and denser and longer Placer County commute patterns, a single, round-trip would garner between 8,000 and 20,000 passengers annually, boasting a farebox recovery ratio almost exactly comparable as other CCJPA operations Placer County serving Rocklin and Auburn. Given uncertainty surrounding future negotiations with UPRR concerning access to its Valley Subdivision, necessary capital expenditures to establish such service are estimated to range from $33.5M to $121.5M.

Section III: Present and Future Feasibility of Establishing Connecting Thruway Bus Service between Lincoln and the Roseville Amtrak Station

Overall, the successful transportation planning methods responsible for California's Intercity Passenger Rail System indicate that the SR3T project warrants connecting service to population centers beyond Roseville as the level of train service increases. In the near-term, before startup of the service levels that the completion of SR3T will trigger, Amtrak Thruway service from/to Lincoln may be accomplished to meet the present CCJPA single, round-trip frequency with little to no capital investment, thanks to extant transit fleets and investments being made to bring about Lincoln Express Bus service. In return for about $131,000 in annual operations costs plus a margin to Amtrak's national reservation system, Lincoln could be included in Amtrak's National Network by connecting to the single CCJPA train presently serving Roseville via Thruway bus and could attract an estimated range of 3,200-7,900 riders annually.

Section IV: Conclusions and Recommendations

A connection to the national railroad network and Lincoln, CA either through a train or thruway bus connection at Roseville, CA as stipulated in the 2018 California State Rail Plan is technically and operationally feasible.

Given this conclusion, three recommendations follow, which are elaborated upon in the Conclusions and Recommendations section:

1. Explore options with Amtrak to employ a Lincoln Transit "cutaway" bus to facilitate thruway bus service connections between Lincoln and the single CCJPA train presently serving Roseville, CA;
2. Study and coordinate expansion of Amtrak thruway bus service with the service frequency increases to come as the SR3T project evolves and
3. Consider submitting an application to the Federal Railroad Administration's Corridor ID program upon the issuance of its next Notice of Funding Opportunity (NOFO), in service of a passenger rail connection directly from/to Lincoln, CA.

I. The First and Most Critical Step Towards New Passenger Rail Service: Freight Railroad Access

The right of way between Roseville, CA and Lincoln, CA, is part of the Union Pacific Railroad (UPRR), a corporation that, much like the history of Lincoln, dates back to the first days of the State of California. Its status as the first transcontinental railroad to access the territory played a foundational role in the creation and settlement of the State. As such, its remaining property holdings enjoy substantial legal insulation, as do all railroads. With the single exception of the legislation that created Amtrak[1], there is no avenue by which railroads nor access to railroads in the United States can be condemned, or otherwise compelled to grant operating rights over a given line. This means that, absent Union Pacific's express consent, Placer County has only two proven avenues to establish passenger rail service on UPRR's Valley subdivision, those being negotiation with UPRR through CCJPA and Amtrak, the other being condemnation through Amtrak.

Two Options to Gain Access

Starting with the most extreme example, Amtrak's statutory right of condemnation has been exercised only once in its fifty-year history, in 1988 concerning the Connecticut River Line in Vermont.[2] The case went to the Supreme Court, and while it was successful in strengthening passenger rail access, it represented a significant and expensive effort. Apart from revenues earned as a result of its operations, Amtrak's source of funding throughout its existence has depended on annually awarded Federal grants, as opposed to the reliable and formulaic matching grants as enjoyed by highways and the aviation sector.[3] This variable funding source has not inspired confidence in service expansion without significant support from individual states, let alone Amtrak having to join or mount a lawsuit that, if won, would increase its funding obligations, and potentially risk challenging the precedent of the legislation that created it. Furthermore, in recognition of the ultimate scope of this conceptual project; a ten to eleven-mile extension of service including only one new station into the network, the risk/reward ratio would eliminate this approach as a viable option.

More typically, new service is obtained in tandem with Amtrak's right of access plus negotiated enhancements in infrastructure to avoid any material impact on existing and future freight operations and customers. Detailed operations and service planning development and host railroad capacity analysis comingle towards a negotiations process that may include agreements about necessary capital improvements and negotiated access fees above Amtrak's statutory rate of compensation to incentivize greater UPRR cooperation.

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[1] Rail Passenger Service Act of 1970, 49 U.S.C. §§ 24101 et seq.v

[2] The National Passenger Railroad Corporation – Conveyance of Boston and Maine Corporation Interests in Connecticut River Line in Vermont and New Hampshire (90-1419), 503 U.S. 407 (1992)

[3] "When Unlimited Potential Meets Limited Resources: The Benefits and Challenges of High-Speed Rail and Emerging Rail Technologies" Testimony by Congressman Peter DeFazio, May 6 2021, https://transportation.house.gov/committee-activity/hearings/when-unlimited-potential-meets-limited-resources-the-benefits-and-challenges-of_high-speed-rail-and-emerging-rail-technologies

While Amtrak's enabling legislation allows it access at rates far below market value, in practice the service rendered fits the old maxim: "you get what you pay for." Nationally, On-Time Performance (OTP) is famously low, with over 70% of delays caused by host railroad interference.[4] This legal and operational environment is why for much of its existence, the Capitol Corridor Joint Power Authority (CCJPA) has adopted a higher level of access payments than the base Amtrak rate[5] to induce better train handling from its host railroad, UPRR.

The CCJPA is the most likely operator of any initial rail operation serving Lincoln. Despite this arrangement, that generates tens of millions of dollars in incentive payments every year to UPRR, it declined to participate in this study to any extent. This behavior is not unusual in the realm of introducing new passenger rail service in the United States. If anything, it is indicative of the freight railroad industry's attitude toward the present status of Amtrak's ability to exercise its rights of access at well below market rates.

Amtrak Negotiation of Access Case Study: Passenger Trains on the U.S. Gulf Coast

Passenger rail service along the U.S. Gulf Coast between Louisiana and Florida was lost as a result of Hurricane Katrina in 2005 and, 18 years hence, passenger rail service is only just now being reintroduced. While service plans have been developed and host railroads have been engaged, there has been substantial conflict over service resumption. Following its own operational impacts study in 2016, CSX Transportation concluded that a $2.3 Billion investment in infrastructure enhancements would be required to support just two, daily, round-trips between New Orleans and Mobile.[6]

To provide perspective, CSX Transportation's entire annual capital expenditures budget comprehending its entire 20,000 mile[7] network is less than $1.7 Billion.[8] This requested sum represented nearly double the entire capital expenditure that has been invested in the Capitol Corridor since its introduction in 1991, rendering not two, daily, round-trips but more than ten times that number.[9]

Yet, CSX is perfectly within its rights to make such a demand given its status as a private, for profit, railroad. As such, Amtrak has been forced to employ some of its unique powers afforded by its governing legislation against its prospective, local host railroads, Norfolk Southern Railroad and CSX:

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[4] "Amtrak's Rights and Relationships with Host Railroads," Presentation, Jim Blair – Amtrak Director, Host Railroads, September 21, 2017.
[5] "Passenger Rail on Freight Rail Tracks," Presentation, Eugene Skoropowski – Brightline and CCJPA, Rail Passengers Association Meeting in Miami, October 20, 2018.
[6] "CSX, Southern Rail Commission battle it out over costs to restore passenger rail to Gulf Coast" July 13, 2019. https://www.al.com/news/mobile/2017/07/csx_southern_rail_commission_b.html
[7] "About Us" https://www.csx.com/index.cfm/about-us/company-overview/network-and-operations/
[8] "CSX 2020 Annual Report" https://s2.q4cdn.com/859568992/files/doc_financials/2020/ar/2020-CSX-Annual-Report.pdf
[9] "Capitol Corridor Passenger Rail Service Annual Business Plan FY 20-21, November 2020" page 5. https://www.capitolcorridor.org/wp-content/uploads/2020/12/CCJPA-Revised-ABP-FY20-21_Nov2020.pdf

"When a rail carrier does not agree to provide, or allow Amtrak to provide, for the operation of additional trains over a rail line of the carrier, Amtrak may apply to the Board for an order requiring the carrier to provide or allow for the operation of the requested trains. After a hearing on the record, the Board may order the carrier, within 60 days, to provide or allow for the operation of the requested trains on a schedule based on legally permissible operating times. However, if the Board decides not to hold a hearing, the Board, not later than 30 days after receiving the application, shall publish in the Federal Register the reasons for the decision not to hold the hearing."[10]

Under this statute, Amtrak filed a petition in April of 2021[11] to the Surface Transportation Board urging expedited consideration after agreement with the host railroads to conduct an operations impact analysis faltered. It was resolved through a settlement in November of 2022, one week before the STB was to render its decision and after weeks of contested hearings.[12] The price by this time had fallen by a magnitude of order to $223 Million, as indicated in Amtrak's application for financial assistance regarding the corridor in December of 2022.[13] This 17-year process is indicative of how difficult and combative employing Amtrak's statutory right of access can be and should underline both the significance and the unsurprising nature of UPRR's decision not to participate in this study. That said, should significant political and monetary capital focus on establishing rail service to/from Lincoln, this inertia can be overcome. The question is: at what cost ?

An Unprecedented Federal Transportation Reauthorization in terms of Intercity Passenger Rail

Another factor that could substantially affect service implementation to/from Lincoln is the fact that Amtrak's present authorizing legislation – The Infrastructure Investment and Jobs Act of 2021(IIJA) – includes a 486 percent increase in annual funding dedicated to rail transportation over what was available before.

To clarify the significance of this legislation, an authorizing act establishes or continues one or more Federal agencies or programs and the terms and conditions under which they operate. It authorizes the enactment of appropriations and specifies how appropriated funds are to be used. Authorization bills create, modify, and/or extend agencies and programs. However, these powerful pieces of legislation are limited in duration: again, the current Surface Transportation Act, which addresses Amtrak policies and appropriations, is due to expire in fiscal year 2026.

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[10] USCODE-2011 Title 49, Subtitle V, Part C, Chapter 243, Section 24308, "Use of facilities and providing services to Amtrak," subsection (e).

[11] Application Of The National Railroad Passenger Corp. Under 49 U.S.C. § 24308(E) – CSX Transportation, Inc. And Norfolk Southern Corporation, https://www.railwayage.com/wp-content/uploads/2021/04/Amtrak-Response-to-CSX-and-NS-Motion-to-Dismiss-PUBLIC.pdf

[12] "Agreement Reached in Amtrak Gulf Coast Dispute" Railway Age, November 23, 2022, https://www.railwayage.com/passenger/intercity/agreement-reached-in-amtrak-gulf-coast-dispute/

[13] Submitted Core Application – Gulf Coast Corridor, December 02, 2022, https://www.amtrak.com/content/dam/projects/dotcom/english/public/documents/corporate/foia/Submitted-Core-Application-Gulf-Coast.pdf

The bulk of passenger rail funding comprehended in the IIJA, at a pre-appropriated $36 Billion, not including a further authorized $7.2 Billion, is devoted to the new Corridor Identification and Development Program (Corridor ID).[14] Corridor ID includes four, specific eligible categories: 1) A new intercity passenger rail route of less than 750 miles; 2) the enhancement of an existing intercity passenger rail route of less than 750 miles; 3) the restoration of service over all or portions of an intercity passenger rail route formerly operated by Amtrak and 4) The increase of service frequency of a long-distance intercity passenger rail route. Service to/from Lincoln could be considered eligible under either of the first two categories. Furthermore, induction into the Corridor ID program is relatively simple as compared with other Federal grant programs, consisting of a fifteen-page narrative and a minimal number of standard forms. Most significantly, it requires no local funding during the feasibility stage and only a 10%-20% match during the Environmental, Engineering and Construction stages of project implementation.[15] If obtained, induction into the Corridor ID program would significantly alleviate local responsibility to fund the establishment of the service.

However, while the IIJA provides an explicit avenue and funding to develop new passenger rail services, earlier legislation virtually guarantees that its ongoing operations will be the responsibility of the State of California, if not a political body therein. As envisioned in this study, service to/from Lincoln would be operated by the CCJPA as an extension of *Capitol Corridor* service. Because it spans an ultimate distance of less than 750 miles, the *Capitol Corridor* is considered under prevailing policy[16] to be a state supported service. This means that the CCJPA, and by extension, the State of California, is responsible subsidizing all ongoing operating expenses not recovered through fare and associated revenues. (In contrast, funding services that operate *over* 750 miles, such as the Chicago - Emeryville *California Zephyr* that shares tracks with the *Capitol Corridor* at the western extreme of its journey, is a Federal responsibility).

Funding is only as important as achieving the consent of UPRR to allow the operation of passenger trains over a section of its network that presently does not host them. Concerning the UPRR Valley Subdivision between Roseville and Lincoln, this could manifest itself in a few different kinds of payments. Elevated access fees paid to UPRR encouraging better on-time performance as are paid by CCJPA now are most likely a given. Capital improvements could range from passing sidings to fully double tracking what is now, for the most part, a single-track line or, it could even represent publicly funded infrastructure improvements to the UPRR network elsewhere in the state. RLBA did not attempt to define the precise infrastructure UPRR might require to allow service on the line; to do so would establish an artificial "price floor" in the

[14] The Federal Railroad Administration issued the CID program establishment in the Federal Register on May 13,2022: https://www.federalregister.gov/documents/2022/05/13/2022-10250/establishment-of-the-corridor-identification -and-development-program

[15] Notice of Solicitation of Corridor Proposals and Funding Opportunity for the Corridor Identification and Development Program, https://www.federalregister.gov/documents/2022/12/20/2022-27559/notice-of-solicitation-of-corridor-proposals-and-funding-opportunity-for-the-corridor-identification

[16] Passenger Rail Investment and Improvement Act of 2008 (PRIIA) Section 209 and Section 212

process of negotiations that would be nearly impossible to lower. Instead, a range of infrastructure buildout is contemplated in section II of this study concerning capital costs.

RLBA can attest with high confidence that the Valley Sub presently hosts fewer than five daily trains on a line that could handle quadruple that amount of freight traffic as presently equipped. This means that there is presently capacity available to host a modest number of passenger trains on the line. However, through negotiation of access, provision may have to be made to add the equivalent capacity of the capacity consumed by even a single CCJPA train to/from Lincoln. The UPRR Valley Subdivision, the railroad's mainline between Roseville and Lincoln, is a strategically significant piece of infrastructure to UPRR. It not only provides redundancy as regards UP's Sacramento Subdivision (the other northerly mainline accessing Central California), the Valley Subdivision also directly connects UPRR's largest railyard in the vicinity of Sacramento, at Roseville. Finally, as shown in Figure 3, the Valley Subdivision boasts a higher gross weight classification (315k) than the Sacramento Subdivision (286k), an important factor considering that average freight trains have grown in recent years to unprecedented sizes.[19]

For all of these reasons, it can and should be expected that UPRR could demand payment at or beyond the highest estimate contemplated in this study. The estimates herein are grounded in a market-based reality that UPRR is not beholden to in this instance.

[19] The "Precision Schedule Railroading" (PSR) method of railroad management as developed in the early 2010's optimizes operations by consolidating freight loads into as few movements as possible; this results in trains that are often upwards of 10,000 feet in length. As a result, the resulting two-mile-long trains can be found across railroads that presently practice PSR; CN, CP, CSX, NS and UPRR.

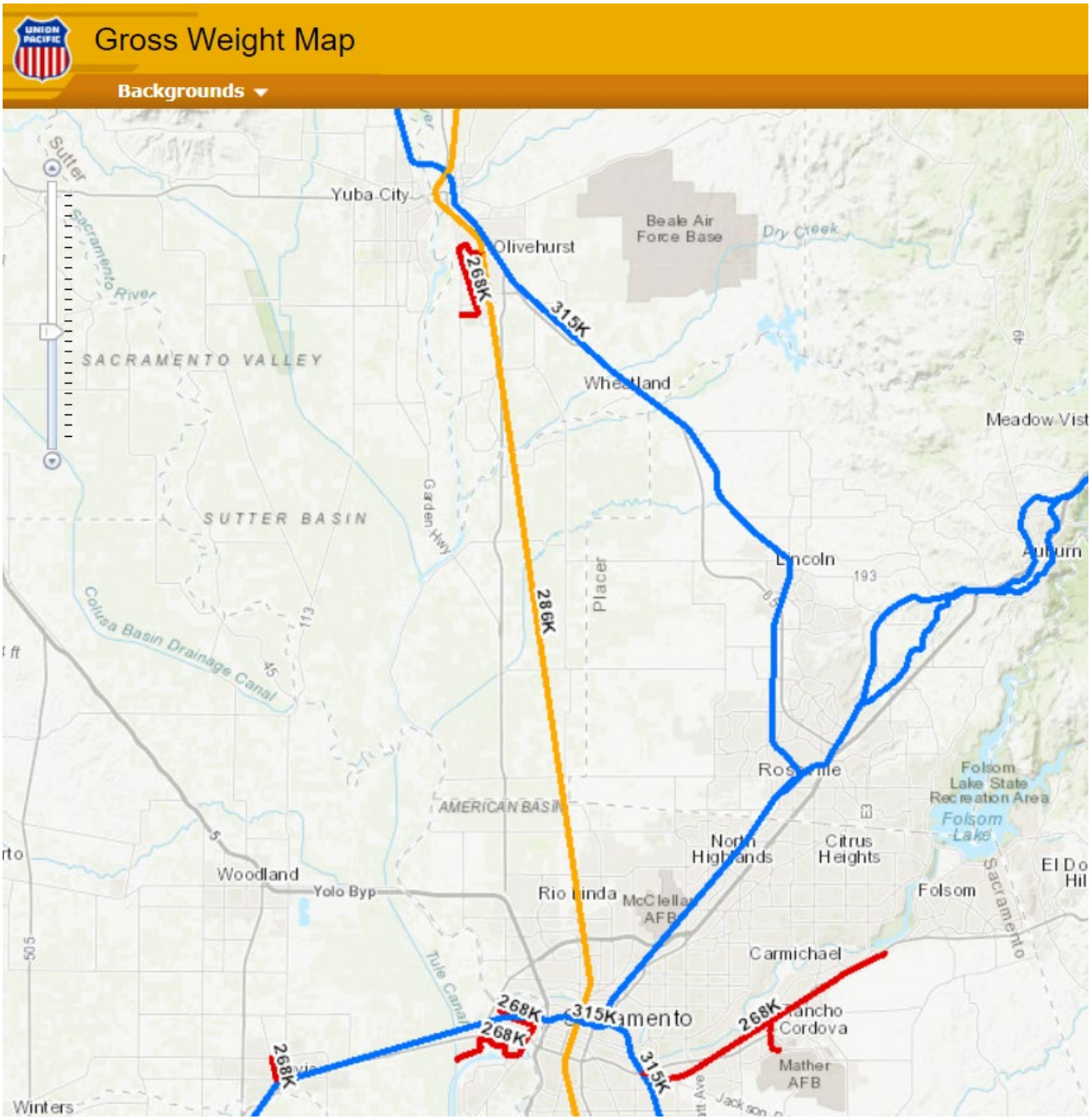

Figure 3: Local UPRR Gross Weight Map

II. Feasibility of Extending One CCJPA Passenger Train Daily between Lincoln and Roseville

This section satisfies the initial impetus of this study by exploring the feasibility of a single daily roundtrip made by a CCJPA train extending between Roseville and Lincoln. It comprehends 1) a projected timetable of the conceptual service, 2) projected ridership a single round trip might attract, 3) evaluation of four suggested station locations within Lincoln city limits, 4) an estimation of operational revenues and expenses and finally 5) a range of projected capital expenditures required.

Preliminarily results indicate that CCJPA service from/to Lincoln would be as fast or faster than driving between Lincoln and Sacramento. Given Lincoln's growing population and Placer County commute patterns, a single round trip could garner between 8,000 and 20,000 passengers annually and boast a farebox recovery ratio comparable to existing CCJPA service in Placer County serving Rocklin and Auburn. Given uncertainty surrounding future negotiations with UPRR concerning access to its Valley Subdivision, necessary capital expenditures to establish such service are estimated to range from $35.5M to $121.5M.

Projected Timetable

Conceptual service from/to Lincoln could be achieved by extending northward to Lincoln the origin of an existing CCJPA *Capitol Corridor* train, enabling operations between Lincoln and either San Jose or Oakland. Between Roseville and Lincoln, the UPRR Valley Subdivision consists of approximately 10.5 miles of single track, presently equipped with CTC and PTC to facilitate safe train operation. Generally, it is a level and straight right of way, with the exception of a speed restricted "Y" track serving as a connection between the UP Martinez Subdivision presently hosting CCJPA trains to the UPRR Valley Subdivision.

The time required by a passenger train to traverse a corridor is a function of both infrastructure, which comprehends geographical realities such as elevation and curvature changes, and the composition of the train itself, which comprehends the capacity of the motive power of a given engine and the size of the passenger car consist that it hauls.

Given that CCJPA trainsets are operating today, their characteristics are embedded in the timetable they presently serve. Typically, this means an EMD F59PHI or Siemens Charger locomotive hauling between four and six, bi-level "California Cars." An analysis was performed on the present CCJPA timetable to gauge the real-world performance of these trains and an analogous city pair to Roseville – Lincoln was identified in the Fremont and Santa Clara – Great America station pairing to prepare a conservative estimate of performance, as represented boxed in Table 1. Note that in Table 1, Northbound and Southbound times differ, generally increasing in time as a given train proceeds further along a corridor. This is typically to "pad" the schedule, to account against delays encountered while enroute; the longer a train travels, the likelihood of delay increases. The projected running time between Lincoln and Roseville in Table 1 includes such a "pad."

Table 1: CCJPA Elapsed Schedule Time

Stations	Miles	Elapsed Time SB (Trains 529 & 527) Min (Read Down)	Elapsed Time NB (Trains 536 & 538) Min (Read Up)	Southbound MPH	Northbound MPH
Lincoln - Roseville (Projected)	10.3	13	15	47.5	41.2
Auburn	0	0			
Rocklin	14	23	41	36.5	20.5
Roseville	4	9	8	26.7	30.0
Sacramento	17	25	22	40.8	46.4
Davis	14	15	15	56.0	56.0
Fairfield-Vacaville	21	20	20	63.0	63.0
Suisun-Fairfield	5	6	6	50.0	50.0
Martinez	18	18	18	60.0	60.0
Richmond	19	26	26	43.8	43.8
Berkeley	6	8	7	45.0	51.4
Emeryville	2	4	4	30.0	30.0
Oakland	5	23	8	13.0	37.5
Oakland Coliseum	5	9	6	33.3	50.0
Hayward	8	10	10	48.0	48.0
Fremont-Centerville	12	25	15	28.8	48.0
Santa Clara - Great America	11	17	16	38.8	41.3
Santa Clara - University Station	4	8	8	30.0	30.0
San Jose	3	22	5	8.2	36.0

The railroad distance between Fremont and Santa Clara Great America stations offer a corridor length within a mile of that between Lincoln and Roseville, as well as a speed restricted segment operating over a "Y" track linking two subdivisions, in that case the UPRR Coast and UPRR Niles Subdivisions. CCJPA trains accomplish that run between 16 and 17 minutes.

Table 2: UPRR Timetable Speed Restrictions: Fremont & Santa Clara, Lincoln & Roseville[20]

UP Coast 2003 Timetable			
Location	**MP**	**Segment Mileage**	**MPH Limit (Psgr)**
Santa Clara-Great America	40.74	3	60
	40 - 39.4	0.6	45
	39.4 - 38.7	0.7	70
	38.7 - 38.2	0.5	50
	38.2 - 35.2	3	79
CP Newark	35.2 - 31.0	0.6	70
Niles Subdivision	34.9-34.5	0.4	15
	34.5-32.2	2.3	79
Fremont Station	32	11.1	
UP Valley 2003 Timetable			
Location	**MP**	**Segment Mileage**	**MPH Limit (Psgr)**
CP East Roseville	106.4		
	106.4-107.1	0.6	30
	107.1 - 111.0	3.9	65
	111.0 - 116.4	5.4	70
	116.4 - 116.5	0.2	55
Lincoln City Limits	116.5	10.1	

The Fremont – Santa Clara run takes more time to operate than a run between Lincoln and Roseville would. The former suffers from the disadvantage of being .7 miles longer than the latter. The latter has a distinct advantage in that its most severe speed restriction is encountered in the immediate vicinity of the Roseville station, allowing a longer, unbroken period of operating at a high track speed, as opposed to having to slow down significantly almost three miles away from Fremont in the former. Given these relative advantages, RLBA estimates that trains could operate between the Lincoln city limits and the Roseville Amtrak station at a scheduled operating time of between 13 and 15 minutes, as seen in Tables 1 and 3.

[20] Note that the difference in distances contemplated between Roseville and Lincoln in Tables 1 and 2 at 10.3 and 10.1 miles reflect the distance between the ultimate evaluated station stop in downtown Lincoln (10.3 miles) and the recorded official UPRR designation of the Lincoln City Limits as reflected in its timetables (10.1 miles)

Table 3: Anticipated CCJPA Timetable from Lincoln to Oakland

Station		Westbound		Eastbound
		529		536
		Read Down		Read Up
Lincoln, CA	Dp	6:54	Ar	5:58
Roseville, CA		7:07		5:43
Sacramento, CA	Ar	7:32	Dp	5:21
	Dp	7:33	Ar	5:20
Davis, CA		7:48		5:05
Farifield-Vacaville, CA		8:08		4:45
Suisun-Fairfield, CA		8:14		4:39
Martinez, CA		8:32		4:21
Richmond, CA		8:58		3:55
Berkeley, CA		9:06		3:48
Emeryville, CA	Ar	9:10	Dp	3:44
	Dp	9:11	Ar	3:43
Oakland, CA (Jack London Sq.)	Ar	9:34	Dp	3:35

The trip between Lincoln and Sacramento would consume about 35 – 40 minutes; as fast as driving under ideal conditions[21] and faster than driving during any period of congestion. A CCJPA operation to/from Lincoln would be faster than any other transit options presently available or under development. For example, the planned Lincoln Express bus service contemplates a 59-minute running time[22] between Lincoln and its connection with the SacRT Blue Line light rail service at the Watt/I-80 station, which then takes another 20 minutes before crossing the American River into downtown Sacramento.

Projected Ridership

Given scope and budget limitations, RLBA utilized a ridership forecast created in service of the Lincoln Express Bus Study by WSP (Lincoln Express). A letter of no prejudice was obtained from WSP stating that its findings could be used in this study. However, the Lincoln Express study area comprehended origins and destinations solely between Lincoln, Roseville and Sacramento along the Highway 65 and I-80 corridors between those cities as shown in Figure 4.

[21] As calculated via Google Maps

[22] Lincoln Express Final Report, WSP p.20

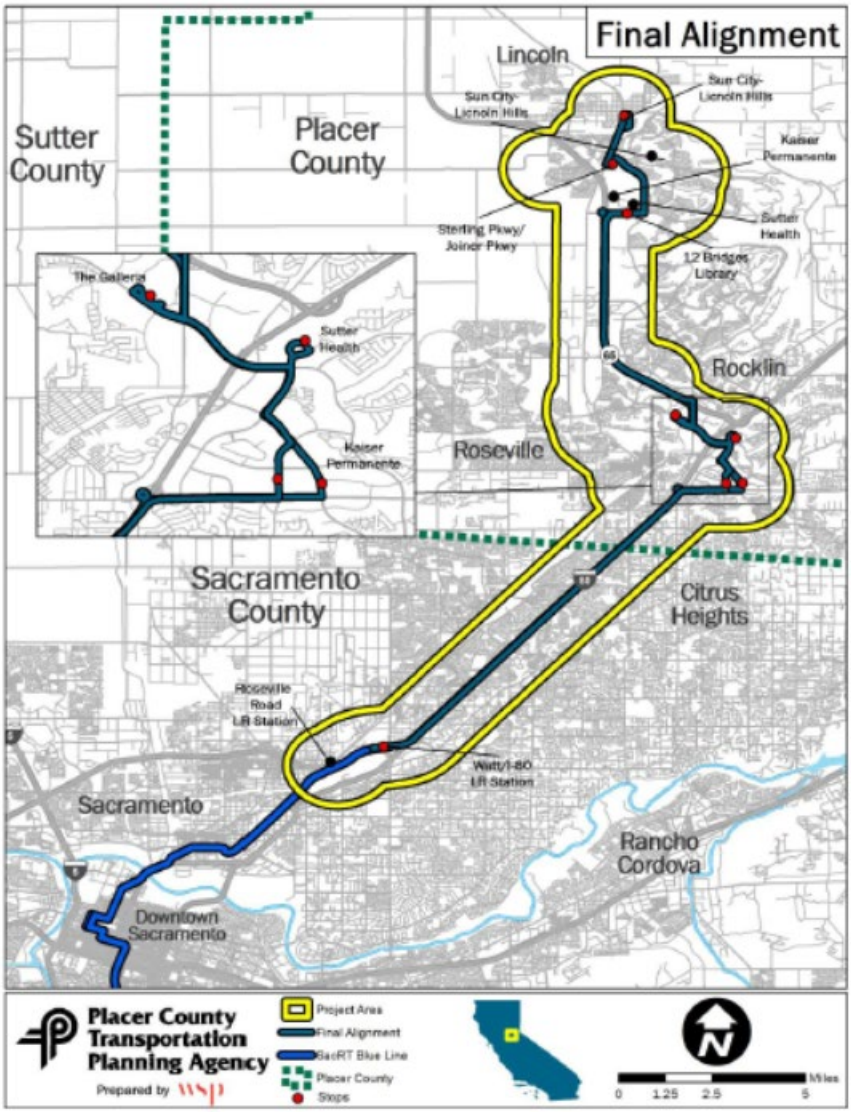

Figure 4: Lincoln Express Area Study

Well beyond the local focus contemplated in the Lincoln Express Service, extending CCJPA service from/to Lincoln extends the direct catchment area significantly to the entire CCJPA corridor, ranging as far south as San Jose as seen in Figure 5. Ridership dynamics from extant CCJPA ridership data on trains and buses operating in Placer County were also factored into the ridership estimate. This study comprehends the potential of the inclusion of Lincoln into the national rail network insofar as a direct extension to/from the Bay Area. Furthermore, if Lincoln gains service from the CCJPA in the form of a train or Thruway bus, it will gain inclusion into the *national* rail network, meaning that passengers from anywhere else in Amtrak's national network could book a ticket to/from Lincoln with a single reservation. That option represents a conceptually seamless portal to anywhere else served by Amtrak or CCJPA in the State of California, as represented in Figure 5, or indeed, the continental United States. Given the unavailability of linked ridership numbers from Amtrak, this effect is therefore not included in this working ridership estimate. However, the fact that establishing such service would again "put Lincoln on the map" should not be overlooked.

Figure 5: CCJPA Service Area Map Showing Connections Elsewhere on the Amtrak National Network Map

Lincoln Express Ridership Estimation

Per the 2018 5-Year American Community Surveys, the transit mode share is 1.2% in Placer County and 2.6% in Sacramento County. WSP estimated that the Lincoln Express service would garner 164 unlinked daily commutation trips from passengers working along the Express service route and SacRT's Blue Line to which the Express Service will offer a direct connection. Given the relatively high frequency planned on behalf of the Lincoln Express Bus service, WSP estimated that an additional 25 unlinked trips would be drawn from present transit services. Finally, from over 18,000 trips taken by passengers in connection with educational, medical and recreational trips added an additional 438 unlinked trips. Altogether, WSP forecasted 627 unlinked daily passenger trips, qualified as a conservative preliminary estimate. Of the 627 daily trips new transit service from/to Lincoln was estimated to generate in the Lincoln Express Study, 26% of those passengers were commuting within the service area to work, 4% were drawn from other transit service given service frequency and 70% were derived from non-work trips.

Annually, given only weekday service, the Lincoln Express is projected to carry 159,885 passengers. The Lincoln Express schedule assembled in the study comprehended a half-hourly schedule and 28 round-trip frequencies, resulting in a total of 56 trips. This renders a projected average passenger load of 11 passengers, not compensating for expected peak demand periods.

Even though a CCJPA operation cannot be expected to garner the same work commutation figures given that the local professional corridors served will differ (the UPRR right of way and station stops do not align

with that of the SacRT Blue Line nor will major Roseville destinations be served apart from its train station), this daily load should be considered a floor below CCJPA ridership, given regional commutation patterns as seen in Table 4 and the nature of CCJPA service, as recorded by present ridership trends in Table 5.

As reported in the 2018 Roseville Transit Short Range Plan (seen in Table 4), Placer County residents commute far outside of the Sacramento metropolitan area, including a few thousand travelling to the vicinity of the San Francisco Bay area. This pattern of regional commutation should be expected to grow and become more significant given the cost of living in coastal California, a trend that has accelerated during the COVID-19 pandemic that allowed many workers an unprecedented flexibility to work from where they choose. A general migration in California from west to east has resulted in Placer County growing by 14% in the past decade, twice as fast as compared to the State as a whole.[23] However, even the most recently available Census data as of writing (2018) will fail to capture the effects of the COVID-19 pandemic on the County's population. Better access to the county from the State's major population centers through new transportation options will serve to help capture these new residents as permanent members of the tax base, as opposed to simply offering them shelter from the turbulent years of quarantine.

These commutation patterns occur largely over the region's major highways, in particular I-80 between Sacramento, Roseville and points west. From the Annual Average Daily Traffic (AADT) numbers collected by Caltrans, it is clear that Highway 65 between Roseville and Lincoln can be included as a major branch of this corridor. Lincoln is responsible for adding an average of between 60,000 and 80,000 AADT each way between Roseville and the I-80 interchange, aiding and abetting I-80's more than 200,000 AADT once entering Sacramento County.[24] North of Lincoln, AADT numbers fall off considerably, to about 23,600. Present CCJPA ridership figures as summarized in Table 5 also suggest that some of this traffic continues well beyond Sacramento to points southwest.

[23] "A Golden State on the eve of new population numbers" Wilson, Scott, The Washington Post April 24, 2021.
[24] Caltrans GIS Data, https://gisdata-caltrans.opendata.arcgis.com/datasets/f71f49fb87b3426e9688fe66039170bc_0/explore

Table 4: Places where Placer County Residents Work[25]

Location	Count	Share
Roseville, CA	22,193	16.1%
Sacramento, CA	19,034	13.8%
Rocklin, CA	7,902	5.7%
North Auburn CDP, CA	5,238	3.8%
Arden-Arcade CDP, CA	4,109	3.0%
Folsom, CA	3,985	2.9%
Auburn, CA	3,757	2.9%
Lincoln, CA	2,828	2.7%
San Francisco, CA	2,525	2.1%
Citrus Heights, CA	2,230	1.8%
Carmichael, CA	1,897	1.6%
Granite Bay, CA	1,724	1.4%
North Highlands, CA	1,690	1.3%
San Jose, CA	1,496	1.2%
West Sacramento, CA	1,434	1.1%
Loomis Town, CA	1,412	1.0%
Stockton, CA	1,047	1.0%
El Dorado Hills, CA	884	0.8%
Elk Grove, CA	881	0.6%
Oakland, CA	831	0.6%
Grass Valley, CA	773	0.6%
Yuba City, CA	745	0.5%
Gold River, CA	672	0.5%
Antelope, CA	666	0.5%
All Other Locations	43,752	31.8%

Present CCJPA Ridership Characteristics

Intercity Passenger Rail service (and by extension, bus trips that lead to train trips) is not a perfect substitute for other modes of transportation, local transit included. In addition to independence from highway congestion, CCJPA service generally offers more space and creature comforts that cannot be found on other modes, such as the ability to work or read, tabled workspaces, accessible bathrooms and concession sales. This differentiation is born out in from where trains derive their ridership. Data from Amtrak passenger ridership as seen in Figure 6 in California shows that only 7% of ridership comes from passengers that otherwise would ride a bus the entirety of their journey. 27% of rail passengers in California would otherwise fly if train service were not available, contributing to lowering carbon footprints. A majority, 55%, of passengers are drawn out of automobiles, helping trains directly reduce Vehicle Miles Traveled (VMTs). Finally, 11% of ridership in California is induced; without train service, these trips generate economic activity that otherwise would not take place.

[25] Reproduced from 2018 Roseville Transit Short Range Plan, p. 35

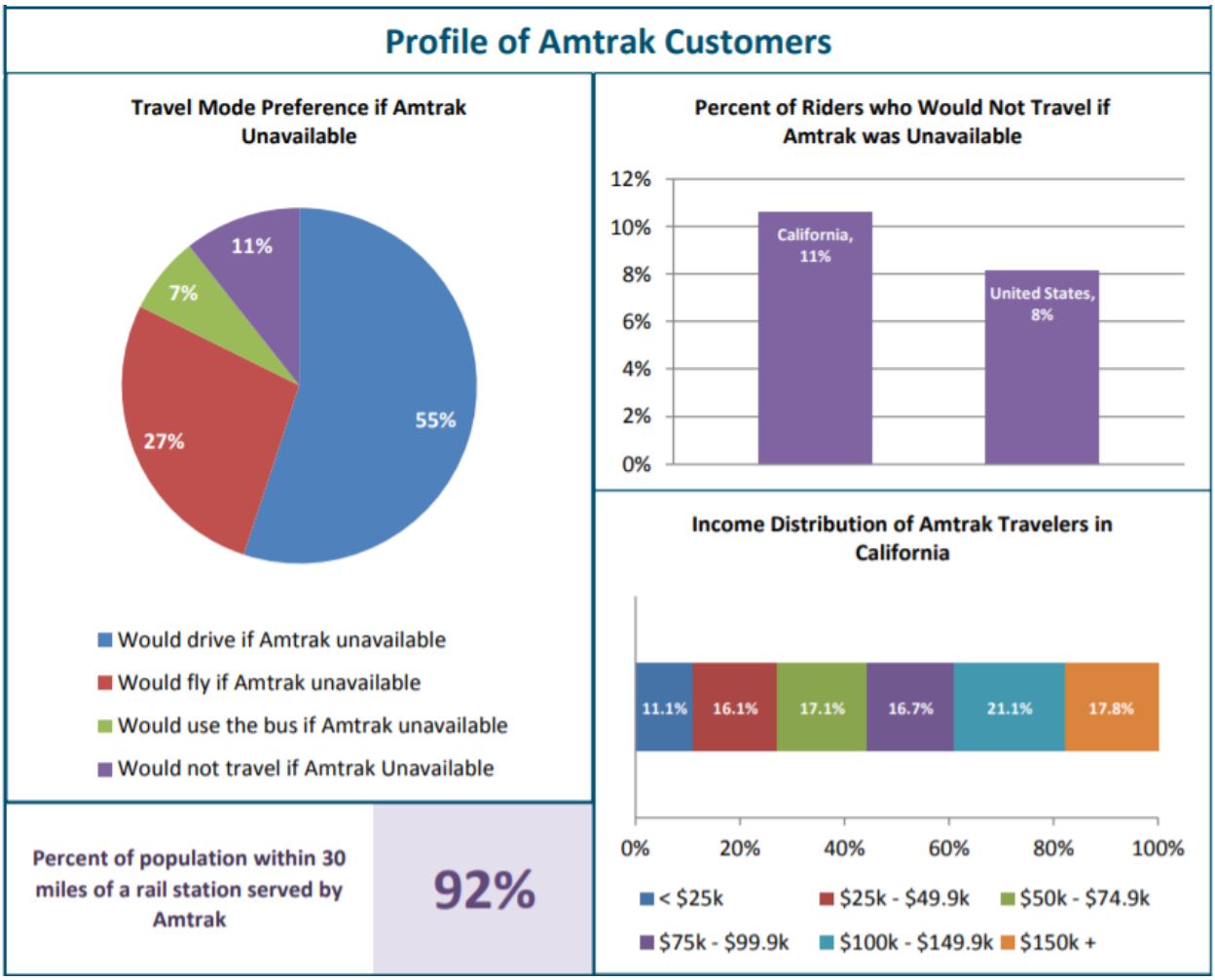

Figure 6: California Passenger Profile[26]

As of the drafting of this report, CCJPA operates one round trip daily train in Placer County, originating in Auburn, serving Rocklin and Roseville on its way to Sacramento and points southwest. It also operates three to seven daily thruway busses along the same route as is best practice in corridor development elsewhere in the State.[27]

Understanding system usage in Placer County as it exists today as seen in Table 5 is essential to bridge the gap left between localized ridership projections devised in service of the Lincoln Express bus service, and how performance on CCJPA's trains and charter thruway buses differ.

[26] Amtrak State Economic Impact Brochure, California https://www.amtrak.com/content/dam/projects/dotcom/english/public/documents/corporate/stateeconomicimpactbrochures/California-fy16.pdf.

[27] "Amtrak Thruway Service" LOSSAN Board of Directors Presentation, May 21 2012

Lincoln Ridership Estimation

Table 5: CCJPA Placer County Ridership by Origin and Destination

Station	Average	Origin			Destination		
		Auburn	Rocklin	Roseville	Auburn	Rocklin	Roseville
Auburn	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%
Rocklin	0.0%	0.1%	0.0%	0.1%	0.0%	0.0%	0.0%
Roseville	0.1%	0.1%	0.0%	0.0%	0.1%	0.2%	0.0%
Sacramento	41.0%	43.1%	45.6%	42.1%	35.0%	43.8%	36.6%
Davis	11.2%	6.3%	14.0%	14.3%	5.6%	13.8%	13.5%
Fairvield/Vac.	0.3%	0.2%	0.2%	0.3%	0.3%	0.2%	0.9%
Suisun	2.0%	0.6%	2.3%	3.0%	0.7%	2.7%	3.0%
Martinez	4.8%	4.4%	3.8%	4.2%	5.9%	4.0%	6.2%
Richmond	7.3%	9.3%	6.8%	6.3%	9.3%	6.5%	5.9%
Berkeley	4.4%	4.6%	3.7%	3.9%	6.0%	4.3%	4.1%
Emeryville	17.3%	19.6%	14.7%	16.1%	21.2%	14.1%	17.9%
Oakland (JLS)	7.9%	7.9%	5.9%	5.9%	11.9%	7.7%	8.3%
Oakland (Col.)	0.7%	1.0%	0.4%	1.0%	1.0%	0.4%	0.6%
Hayward	0.3%	0.2%	0.3%	0.3%	0.2%	0.3%	0.2%
Fremont/Cent.	0.3%	0.3%	0.3%	0.3%	0.2%	0.3%	0.3%
Stanta Clara (GA)	0.9%	0.7%	0.9%	1.1%	0.7%	0.7%	1.2%
Santa Clara	0.2%	0.2%	0.2%	0.2%	0.4%	0.1%	0.3%
San Jose	1.1%	1.5%	0.9%	0.9%	1.4%	1.0%	1.0%
Total: South of Sacramento	58.8%	56.7%	54.3%	57.8%	64.9%	55.9%	63.3%
Totals	**100.0%**	**9,792**	**10,903**	**21,329**	**7,650**	**8,616**	**18,836**

From Placer County destinations served by CCJPA, Sacramento is the single strongest market, capturing a plurality of about 41% of all passenger boardings and alightments on the single, presently operating train. However, the remaining majority of passengers, 59% in 2019, were headed beyond Sacramento, especially to or from the major Bay Area destinations of Oakland, Richmond, Emeryville and Berkeley with strong loads to Davis and Martinez as well.

Table 6: CCJPA Train Ridership at Auburn, Rocklin and Roseville

	ARN	RLN	RSV
Annual Ridership	17,442	19,519	40,165
Average Daily Ridership	24	27	55

As seen in Table 6, average passenger loads in and out of Placer County destinations per train were about 24 in Auburn, 27 in Rocklin (RLN) and 54 in Roseville (RSV). Lincoln has an estimated population of 48,996, with an AADT on nearby Highway 65 of 70,000. It compares favorably to Auburn (ARN), with its significantly lower estimated population of 14,205 and slightly higher AADT on parallel highway I-80 of about 90,000.[19]

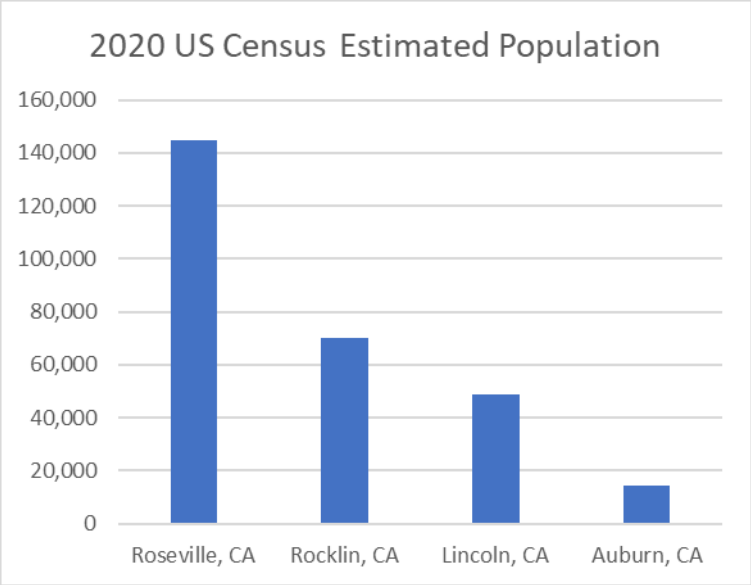

Figure 7: Lincoln Population in Context with other CCJPA Destinations in Placer County

Anticipating a similar level of rail operation while leaning on the floor established by the WSP Lincoln Express ridership estimate of 11 passengers per trip, it does not seem reasonable that Lincoln would realize less than half of the ridership experienced at other CCJPA destinations in Placer County, as shown in Table 6. Again, this figure was estimated specifically within the local corridor of service between Lincoln, Roseville and East Sacramento. The average projected load of a single Lincoln Express bus forms a "low" estimate at 11 passengers (or 8,030 annual passengers). This "low" estimate is assumed to be only 41% of the ridership a CCJPA corridor train originating in Lincoln might generate, as it would in any other city presently served in Placer County with an ultimate destination of Sacramento. Given the network effect of CCJPA service extending past Sacramento to at least to the San Francisco Bay, the Lincoln Express daily ridership estimate is therefore inflated by 59% to an average of 27.5 daily passengers per CCJPA operation to/from Lincoln, extending to an annual "high" estimated ridership at Lincoln, CA of 19,710. This aligns well with passenger ridership characteristics observed by past CCJPA service, as shown in Tables 5 and 6.

Given the relatively short distance between Lincoln and Roseville and the planned expansion in rail service at Roseville, a single frequency was considered adequate given the scope and budget allotted to this study. While it would be worthwhile to conceptually develop passenger rail service on the UPRR Valley subdivision beyond Lincoln north to Yuba County to allow comingling with the planned northern expansion of Amtrak's San Joaquin service on the UPRR Sacramento Subdivision, given time and budget limitations this was not explored in this study.

Station Locations

Potential station locations were chosen and evaluated through employment of RLBA's own station criteria and also through direct recommendations from CCJPA and referring to its station policy. CCJPA station policy is directly intended to guide the implementation of new in-line stations, as opposed to new termini as is conceptualized in this study, however the basic tradeoffs remain the same. New stations open new

customer bases to the corridor but also increase operational complexity and running times which degrade the value passengers experience in the overall corridor.

However, per the preliminary operational analysis, the segment between Lincoln, Roseville and Sacramento is extremely competitive with private automobile travel, meaning that the tradeoff is instead primarily felt in a CCJPA service frequency serving Lincoln in place of both Rocklin and Auburn. As the CCJPA corridor north of Sacramento is slated in the future to enjoy a tenfold increase in service, this tradeoff will be less and less severe as various elements of the SR3T plan materialize.

The basic *facility requirements* that will have an effect on geographic location include:

- Minimum platform length of 800 feet;
- Minimum five mile distance from nearest station;
- Access that ensures passengers will never cross a mainline track at grade;
- Adequate parking provisions;
- Sustainable and supportive land use adjacent to the site that can accommodate growing ridership;
- Local law enforcement patrols and
- Intermodal transit connectivity.

The basic *performance requirements* per CCJPA standards require the use of the present best practices intercity passenger rail ridership demand model, or an approved model acceptable to the CCJPA to develop ridership forecasts under three scenarios:

- A base case, no build scenario;
- A station built with no regard to increased travel times it imposes upon the corridor and
- A station built with mitigations to offset any increased travel time.

As a new terminal station, travel time increases may not apply to a station at Lincoln. CCJPA requires new stations that serve less than 20 trains a day must serve at least 7 daily passengers in the first year, 8 in the second and 12 by the fifth year of operations. The initial ridership projection considered in this preliminary feasibility study meets these requirements within a comfortable margin of error. However, scope and budget limitations prevented the application of an intensive ridership model as stipulated by CCJPA, meaning that the ridership numbers projected in this preliminary feasibility study will be subject to verification before being accepted.

However, garnering CCJPA approval and achieving official station status is not simply a matter of ridership and service potential. The local jurisdiction, in this case Placer County or the City of Lincoln must fund 100% of the improvements, inclusive of those requested by both the CCJPA and UPRR. It also must take an active role in promoting the new station and is responsible for maintaining it, inclusive of providing adequate coverage by local law enforcement.

RLBA's own station evaluation criteria nests well into this context but expands beyond impacts regarding CCJPA and into the community the station intends to serve. A station should manifest a majority of the below criteria:

- **Close to trip origins and destinations** – be convenient to passengers and enjoy an existing or planned pedestrian network;
- **Mindful of community impacts** regarding long range land use planning and traffic patterns;
- **Provide access to highways** to make them regionally relevant;
- **Provide space for parking**, bus turnarounds, park & ride and kiss & ride passengers (space for drop-offs);
- **Mindful of costs**, including land acquisition and
- **Mindful of host railroad agreements** insofar as tangent tracks, separation from crossovers, turnouts, etc.

Ultimately, four potential station locations in Lincoln were considered in this study, two suggested by CCJPA and two suggested by RLBA staff. All were subjected to evaluation to the above-listed criteria.

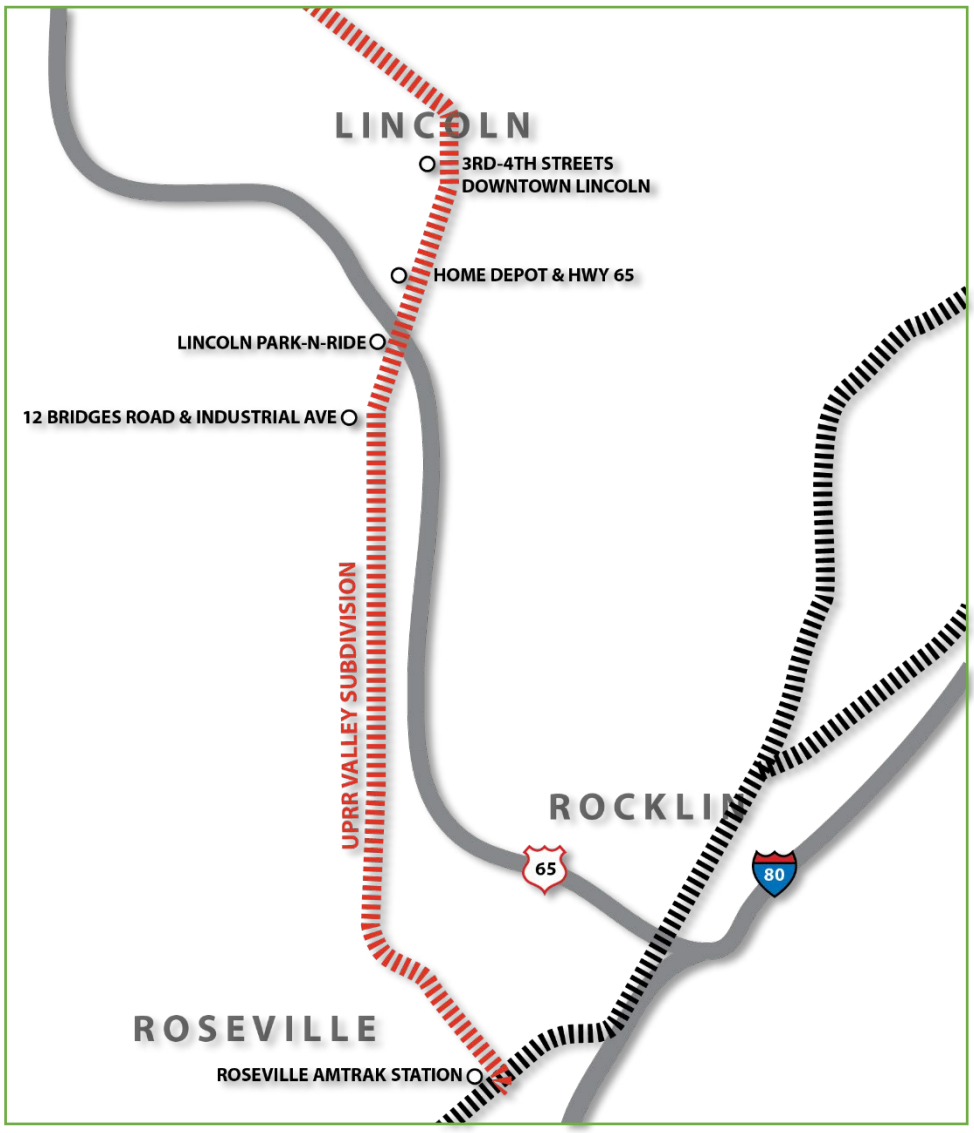

Figure 8: Map of Project Area Including Four Potential Stations,

CCJPA Suggested Station Sites[28]

1. *Downtown Lincoln, between 3rd and 5th Streets*

Figure 9: Downtown Lincoln Station Vicinity (yellow line represents required platform length)

Downtown Lincoln is the location of the densest population in the study area and inclusive of a large minority population.[29] It is far and away the best location of the four considered regarding pedestrian access, practically centered on Lincoln's heritage street grid. It is in the interest of reinforcing this historically pedestrian-friendly built environment and maximizing accessibility to Lincoln's densest neighborhood adjacent to Lincoln Boulevard that this station location is attractive. Partly this is owed to the fact that this location is in the vicinity of Lincoln's original 19th century depot on this line (as pictured on the cover page), built by the Southern Pacific Railroad at the present location of the parking lot of the Family Dollar store located at 720 5th Street, just to the north of the suggested location across 5th street.[30]

The station complex at Auburn, CA that presently serves as a CCJPA terminal to accommodate the same CCJPA operation proposed at Lincoln, appears to fit well within the present contemplated envelope of the

[28] "Lincoln Rail Study" Jim Allison email communication to James Zumwalt, November 3, 2020.
[29] Lincoln Express Final Report p.56.
[30] 1893 Sanborn Map of Lincoln, https://www.loc.gov/resource/g4364lm.g4364lm_g006371884/?r=-0.676,-0.074,1.802,0.854,0.

pictured vacant lot, parking included. However, were there not sufficient space in the pictured vacant lot, highly visible property acquisition will be required in the densest part of the city.

The location along the UPRR Valley Subdivision between 3rd and 5th Streets would place the station within two blocks of PCT Lincoln Circulator service at 3rd and F streets, and within three blocks of the coming Lincoln Express service slated to stop at 3rd and E streets.

This location is perhaps the least accessible to Highway 65 of the four suggested locations, the present right of way of that highway north of Lincoln being called the "Lincoln Bypass" for good reason. Motorists headed south who intend to ride any train from Lincoln at this location, would require a diversion and a two-mile drive north (backtracking) from the nearest convenient highway exit at Lincoln Crossing. Likewise, connectivity to the residents in the newer sections of Lincoln to the south and southeast of downtown is lacking as it will require travel to the north to take the train south again.

2. *The vicinity of Home Depot and the Highway 65 Overpass*

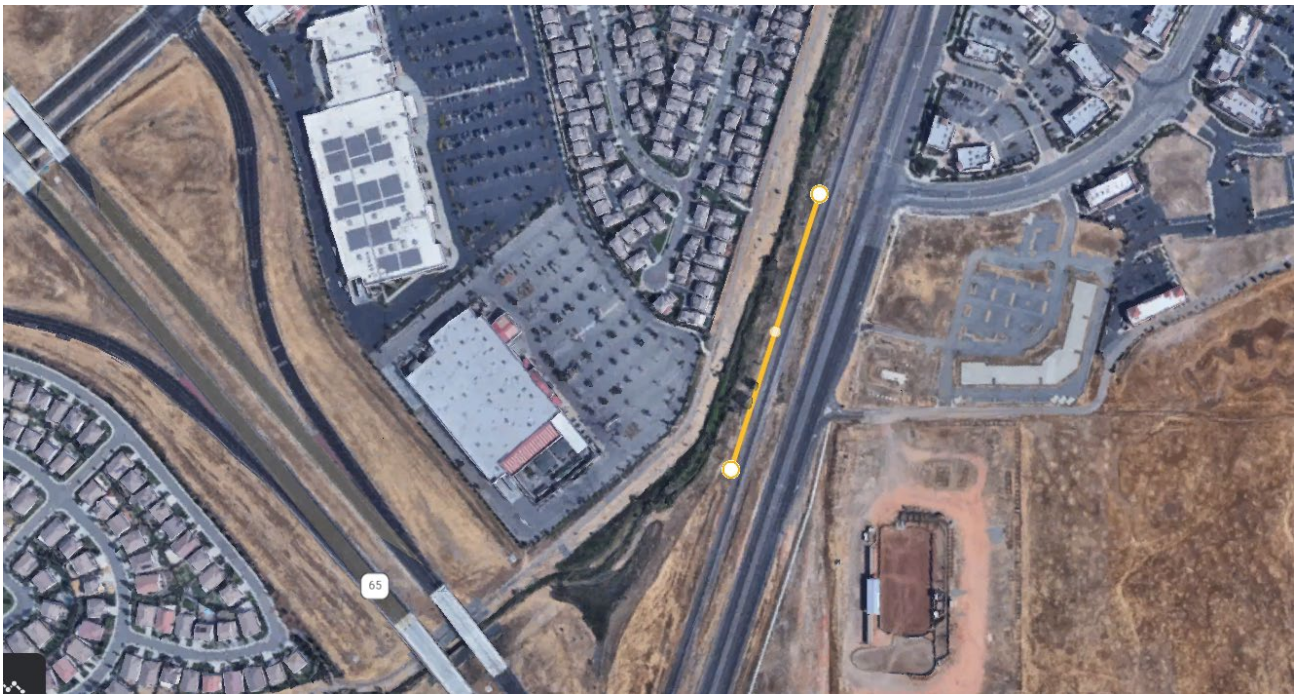

Figure 10: Home Depot & Highway 65 Vicinity Station Site (yellow line representing required platform length)

Located in the Lincoln Crossing neighborhood, this prospective station location represents the opportunity to comingle with extant development as it is adjacent to the "big box" locations of Home Depot and Target within the Lincoln Crossing Marketplace development, offering opportunities to arrange parking and combine with City services already on site.

The Lincoln Crossing Marketplace parking lot is directly adjacent to the interchange with Highway 65, equating to convenient highway access. PCT's Lincoln Circulator bus stops on the extreme end of the

Lincoln Crossing Marketplace development on the side of the Highway 65 interchange, offering transit service within a quarter mile of the location. Bifurcating the UPRR Valley Subdivision right of way and the Home Depot parking lot is a bicycle and pedestrian trail connecting much of the Lincoln Crossing development, offering direct pedestrian access to the site.

However, also between the Home Depot parking lot and the UPRR right of way is a major flood channel (seen in Figure 11) that poses a significant environmental challenge to placing access to the tracks from the vicinity of the Lincoln Crossing development. Placing access to the UPRR right of way on the opposite side offers little improvement, as a passenger crossing of Industrial Boulevard would have to be facilitated to access the tracks, which at this point is a six-lane road. This would render a cost-sensitive at-grade solution nearly impossible. Any direct connection to Lincoln Crossing would have to be facilitated by a grade-separated, pedestrian crossing over the flood channel, if not over the UPRR tracks, depending on the ultimate location of the platform.

Figure 11: Flood Map of Highway 65 and Home Depot with Station Site Encircled

RLBA Suggested Sites:

3. *The Lincoln Park-n-Ride on Industrial Boulevard*

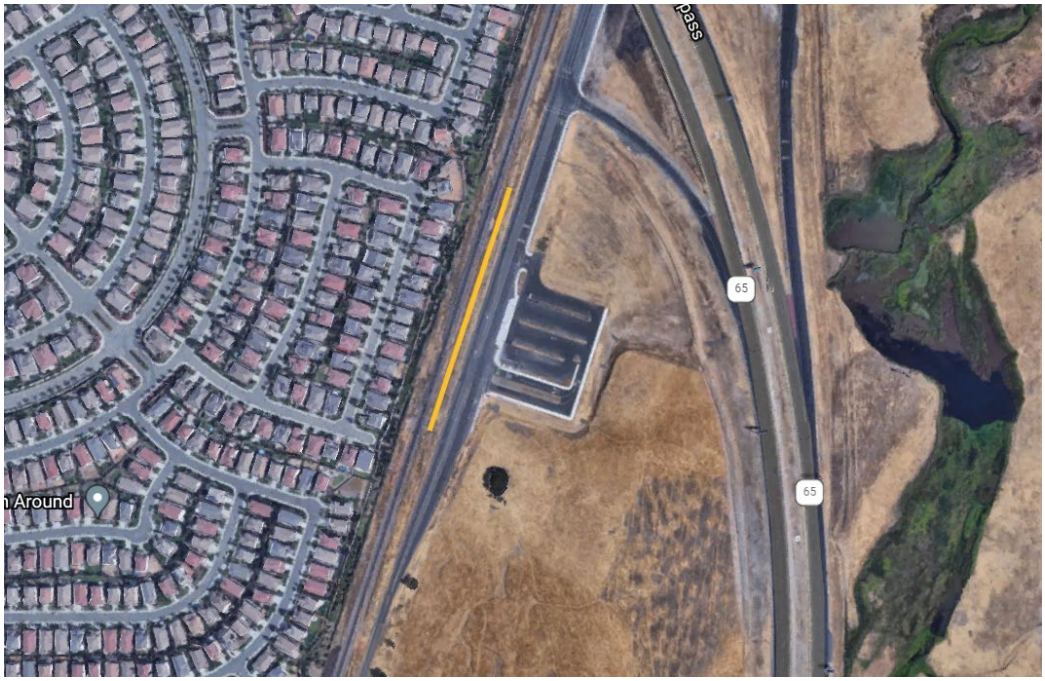

Figure 12: Map of Lincoln Park-n-Ride Station Site (yellow line represents required platform length)

Located on land already in public ownership through rights of way that overlap between Highway 65 and Industrial Boulevard, the Lincoln Park & Ride offers an appropriate, existing parking lot directly adjacent to the UPRR Valley Subdivision across Industrial Boulevard. Given cost sensitivity, the study would be remiss not to list this location as a prospective site of a railroad station in Lincoln.

While the parking lot is directly across Industrial Avenue from the UPRR Valley Subdivision, at this point, Industrial Boulevard is a four-lane road with a large median which will require substantial provision to accommodate a pedestrian crossing.

Also, presently, there is no activity within the vicinity of the Park-n-Ride. There is no scheduled transit service within walking distance of the lot and the nearest Highway 65 exits are only accessible to traffic headed to or coming from the south.

The City of Lincoln already maintains police presence on the site; given a lack of adjacent businesses and 'eyes on the street' the lot has at the time of this report experienced enough unwanted activity to warrant it.[31] While train service could create a welcome burst of diversified activity, the single daily frequency

[31] Reported during meeting with Placer County Transit, May 5th 2021.

conceptualized in this study may not represent enough to transform the present nature of the site without other developments coming online with the train operation.

There is a local precedent of coordinated development working with new train operation; the newest CCJPA station at Fairfield-Vacaville was designed to include a large Transit-Oriented-Development component[32], an attractive concept that the tracts of adjacent vacant land to the Lincoln Park-n-Ride may not be able to accommodate given that it is constrained by a floodway to the south and by the Highway 65 overpass to the north.

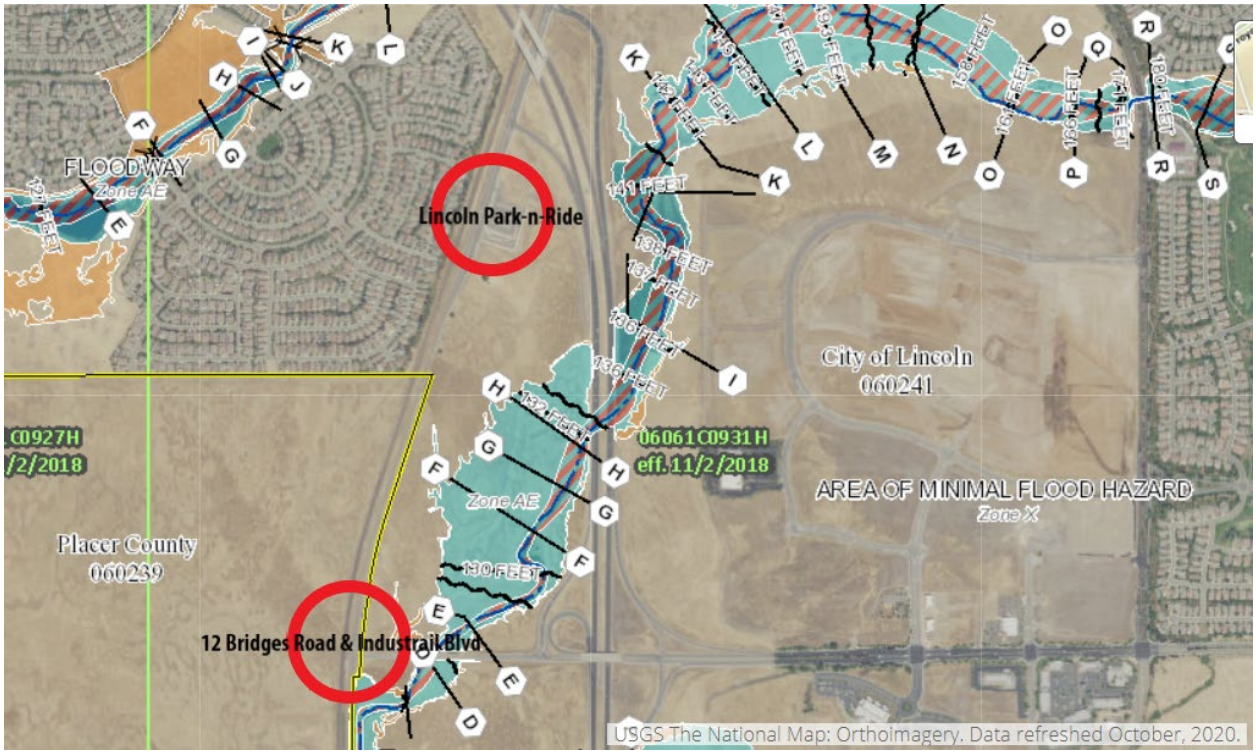

Figure 13: Flood Map of Area Surrounding Lincoln Park-n-Ride and 12 Bridges Road & Industrial Boulevard

[32] https://sites.google.com/view/solanofuturo/fairfield/train-station-specific-plan

4. 12 Bridges Road and Industrial Boulevard

Figure 14: Map of 12 Bridges Road and Industrial Boulevard Station Site (yellow line represents required platform length)

Only three-quarters of a mile south of the Lincoln Park-n-Ride is a vacant site directly adjacent to a bi-directional Highway 65 interchange. Across this interchange, the location is within a mile of the Lincoln Public Library and the Twelve Bridges High School. This location offers perhaps the most logistically compelling place at which to locate a station outside of Lincoln's downtown if regional access by automobile to the station is the prime consideration.

The location is .3 miles away from the present route of the PCT Lincoln Circulator and from the final alignment of the Lincoln Express bus service (Figure 4) and could be served with a minimal route deviation by either – approximately 3 to 5 minutes deviation round trip, as opposed to almost 10 minutes to the Lincoln Park-n-Ride. However, pedestrian access, like at the Lincoln Park-N-Ride, is nonexistent, the nearest location of any activity being the Lincoln Public Library about .8 miles east of the location on 12 Bridges Road.

A lane of linear or angle parking may be able to be accommodated to the west of Industrial Boulevard adjacent to a platform. If there is not sufficient space, a parking facility could be placed on the east side of the Boulevard while a pedestrian crossing could be comfortably facilitated given that, at this point, Industrial Boulevard is only two to three lanes wide.

Development opportunities, like the Lincoln Park-n-Ride are constrained by the nearby flood plain and the Highway 65 right of way, though there appear to be about 40 acres adjacent to Industrial Boulevard that could be the site of future planned development (see Figure 13). For the time being, the primary advantage of this site over the Lincoln Park-n-Ride is proximity to both the Highway 65 interchange, extant and planned transit routes and the new and growing communities in the vicinity of 12 Bridges Road.

Operations Revenue

Operations expenses were derived using the only appropriate source available, Amtrak financials. The definition of Amtrak's corporate structure is atypical; one part, for-profit corporation; one part, public agency and "unlike [purely] public entities, Amtrak is not subject to the Government Performance and Results Act of 1993, the Federal Managers Financial Integrity Act of 1982, or various other reporting and accountability requirements established in law or regulation."[33] However, as it requires direct subsidies from the Federal Government, Congress requires it to provide annual reports concerning the financial performance of each train it operates.

These annual reports do not resemble railroad industry best practices accounting. As recommended by CCJPA[34], the following estimates an average per-mile operating cost of a Capitol Corridor train in service of estimating the cost of operating trains to/from Lincoln. This cost will be placed in the context of a direct extension of a train that, otherwise, would truncate at Roseville, and also a train that, otherwise, would have run via Rocklin and Auburn.

Basing costs and operations on pre-pandemic levels in 2019, totals of ridership, operational expense and revenue experienced by the Capitol Corridor was obtained from Amtrak's General and Legislative Annual Report & Fiscal Year 2021 Grant Request, partially reproduced in Table 7.

Table 7: FY 2019 Annual Operations Report – Capitol Corridor Line Excerpt[35]

Name	Ridership	State % of Operating Sources	Adjusted Allocated Operating Sources ($)	Adjusted Allocated Operating Uses ($)
Capitol Corridor	1,777,136	39%	$63,219,009	$72,729,790

To 'build out' the price of a new operation, per-mile operations expenses and average ticket prices per passenger were derived from the totals listed in Table 7 and through CCJPA service timetables to assemble estimated total train miles operated. Revenues were derived from totals in the same reported source and drew upon ridership figures both provided by CCJPA and estimated in this study.

Amtrak reports that in 2019, the percentage of contract revenue paid by the State of California, or "State % of Operating Sources" at 39%, with "Adjusted Allocated Operating Sources" at $63.2 M. "Adjusted Operating Sources" will primarily consist of ticket revenue and State contract operating revenue paid as dictated through PRIIA 209 policy, as discussed in Section I. Furthermore, it reports ridership experienced in that year aboard *Capitol Corridor* services at 1.77 Million. Therefore, average revenue per passenger was estimated as (63,219,009 X .39) / 1,777,136 = **$21.70.**

[33] Amtrak Management: Systemic Problems Require Actions to Improve Efficiency, Effectiveness, and Accountability, United States Governmental Accountability Office, October 2005, p.17.
[34] Meeting with CCJPA staff, November 9th, 2020.
[35] Amtrak General Report and Legislative Request FY2021, Table 10, p.45.

Per the ridership estimate bound of 11 to 27 average passengers per train on a single round trip totaling to between 8,030 passengers and 19,710 annual passengers (riders per train X 2 daily trains X 365 days of service), annual revenue derived from a single CCJPA frequency to/from Lincoln was estimated as 8,030 and 19,710 X $21.70 = **$174,251 to $$427,707**

Operations Expense

Operations expense was estimated using a fully loaded cost per mile of operations to measure what it would cost to operate CCJPA trains between the approximately 10.5-mile one-way trip between Lincoln and Roseville in addition to the corridor presently served. Table 7 reports adjusted allocated operating expenses as $72.7 M. The 2019 CCJPA timetable was used to parse this expense out to a per-mile figure.

There are five different permutations of scheduled CCJPA trains running within the entire 168-mile corridor between Auburn and San Jose. Of the 30 weekday frequencies and 21 weekend frequencies, only one weekend frequency (Train 729) was scheduled to make the entire 168-mile run. Every other CCJPA train ran some fraction of that distance. Each train's mileage was tabulated to calculate the total mileage of *Capitol Corridor* trains in 2019, as shown in Table 8.

Table 8: CCJPA Frequencies and their Endpoints

City Pair	ARN-SJC	ARN-OKJ	SAC-OKJ	SAC-OAC	SAC-SJC
Miles	168	125	90	95	133
# Weekday Trains	0	2	12	2	14
# Weekend Trains	2	0	7	1	12

Assuming that, per the 2019 calendar year, each weekday frequency ran 261 times and each weekend frequency ran 104 times (261 weekdays +104 weekend days = 365 days in the year), total mileage was determined by each type of trip through multiplication (Miles X Trains X Frequency = Total Miles) as displayed in Table 9.

Table 9: Miles per Frequency Type

	ARN-SJC	ARN-OKJ	SAC-OKJ	SAC-OAC	SAC-SJC	Totals
Weekday	0	65,250	281,880	49,590	485,982	
Weekend	34,944	0	65,520	9,880	165,984	
Totals						1,159,030

A total of 1,159,030 miles travelled, at an overall operations cost of $72,729,790 results in a fully-loaded operations cost per mile as reported in Table 9 of $72,729,790/1,159,030 = **$62.75 per mile.**

A flat, per-mile expense was deemed sufficient in this analysis both in terms of scope and time limitations but also because conceptual operations to Lincoln likely reflect many characteristics of service already in operation by CCJPA. Present service to Auburn, as an example, is operated as an "away" terminal that requires the crew to taxi to a hotel subsequent to tying down the train after its evening return run, and the present costs of service reflect this arrangement. These conceptual operations include no innovations from

services operating today that might affect average operational costs, apart from the actual origin/destination terminal served.

Assuming a run of 10.1 miles between the Lincoln city limits and Roseville, the base operational costs of a CCJPA train extending from/to Lincoln would be $62.75 X 10.1 = $646.32 per single frequency. That extends to $1,292.65 per round trip and **$471,817** per year.

Given estimated ticket revenue, farebox recovery is estimated in the vicinity of $174,251/$471,817 = **37%** and $427,707/$471,817 = **91%** which compares very favorably against other local transit services, such as Placer County Transit's reported farebox recovery of 10.1% in that Agency's short range transit plan.[36]

Comparative Expense

In addition to operating as a pure extension of CCJPA service from Roseville, in the interest of placing the run in local context, the run from/to Lincoln is compared here to a run between Roseville, Rocklin and Auburn.

Per the CCJPA timetable, the distance between Roseville and Auburn is 18 miles, which will cost more than Lincoln's 10.1 miles. Per the average per-mile cost, each frequency today running beyond Roseville and on to Auburn costs $62.75 X 18 = 1,129.50. Each round trip extends to $2,259 per round trip and **$824,535** annually.

However, in that distance the train makes two stops. In 2019 per Table 6, Auburn hosted 17,442 passengers and was served by two daily trains. (17,442/2)/365 = 24 average daily passengers. In the same year, Rocklin served 19,519 passengers and was served by the same, two, daily trains, averaging (19,519/2)/365 = 27 daily passengers. Together, these 51 passengers would pay the average ticket price of $21.70, or about $1,099, which over the course of the year annualizes to about **$401,027.**

$401,027/$824,535 = **48%.** Estimated revenues covered 48% of estimated operations costs, representing a margin well within the range projected in connection with an operation of one, round-trip train daily to/from Lincoln.

Capital Expense

Summary of UP Valley Subdivision

The UPRR Valley Subdivision extends 214 miles between Roseville and Dunsmuir, CA. North of Marysville, CA, the line is part of Union Pacific's "I-5 Corridor," the company's primary north-south corridor on western seaboard of the United States, connecting Los Angeles, CA and Seattle, WA. South of Marysville, the line provides a more direct connection between the I-5 Corridor and Roseville Yard, a major facility located in Roseville. The line is governed by Centralized Traffic Control (CTC), a popular method of train traffic control employed on higher volume lines. The line is also equipped with Positive Train Control (PTC), a Federally-mandated safety system required on rail lines which regularly host passenger trains, high

[36] Placer County Transit 2018 Short Range Transit Plan, p.96.

volumes and/or certain types of hazardous material. The line is primarily single track, with periodic sidetracks, allowing trains to pass one another.

In the study area (between Roseville and Lincoln), the Valley Subdivision consists of approximately 10.3 miles of single track, equipped with CTC and PTC. There is a single, approximately 8,000-foot sidetrack between CP VP111 and milepost CP VP113 in Whitney, CA. RLBA currently estimates that less than five UPRR freight trains utilize the line through the study area in a 24-hour period. These volumes can be considered low, especially considering the infrastructure (CTC and PTC) installed along the line. Depending on the specific operational requirements, a line with comparable infrastructure to the Valley Subdivision in the study area could potentially host as many as 15-20 freight trains per day.

Capital Improvements to Support CCJPA Service from/to Lincoln

Some level of investment into constructing new, or improving existing, infrastructure would be required to introduce CCJPA service from/to Lincoln. The specific level of said investment would be heavily influenced by the requirements of UPRR. As the current owner of and only operator over the line, UPRR could be considered the most important stakeholder in any proposed expansion of passenger rail operations on the line. While current freight volumes on the Valley are estimated to be relatively low and excess capacity may exist, significant precedents as explored in Section I suggest that UPRR would require some level of - perhaps significant - improvement to the existing track infrastructure to mitigate impacts on its operations incurred by the prospective new CCJPA operation, to be paid by an entity other than UPRR.

Absent the benefit of input from UPRR[37], three, high-level, conceptual scenarios were developed to dimension the level of capital investment which may be required to both introduce CCJPA operations from/to Lincoln and mitigate their impacts on UPRR freight operation fluidity in the study area. Each of the scenarios considers the four, prospective station locations in the Lincoln area identified by CCJPA and RLBA,[38] as summarized in Table 10.

[37] UPRR declined to participate in this study. As such, none of the scenarios nor the station locations proposed in this study have been reviewed or accepted by UPRR. Any introduction of new passenger service and/or capital improvement would need to be accepted by UPRR, which may or may not insist upon additional requirements not captured in this study. The scenarios and associated capital costs advanced in this study are designed to provide a conceptual, order of magnitude estimation of what it might take to introduce CCJPA operations from/to Lincoln. None of the values in this report are advanced as final and/or binding.

[38] For purposes of this high-level, conceptual study, generalized costs were used regarding each station location; specific costs were not developed to reflect the unique physical characteristics of each station location. As such, the cost associated with each station location are the same; any variation in cost between prospective station locations within a specific scenario are associated with track infrastructure improvements. Additionally, no cost was assumed to acquire additional land at any prospective, station locations.

Table 10: Summary of Capital Improvements to Support CCJPA Service To/From Lincoln

	Miles from Roseville	Low Build/Cost	Medium Build/Cost	High Build/Cost
Likelihood of UP Acceptance		Least	Medium	Most
12 Bridges	7.45	$ 34,301,881	$ 44,442,463	$ 91,980,878
Lincoln P&R	8.14	$ 33,471,168	$ 43,611,750	$ 96,517,520
Highway 65	8.63	$ 33,471,168	$ 43,611,750	$ 100,356,393
Downtown Lincoln	10.30	$ 35,532,410	$ 45,672,992	$ 121,501,212

Capital Improvement Scenarios

Generally, the less new infrastructure assumed, the lower the overall amount of capital investment required but also the lower the likelihood that the scenario would be accepted by UPRR. Conversely, the more infrastructure assumed, the higher the overall amount of capital investment required but the higher the likelihood of its acceptance by UPRR. Material and labor cost were developed based on comparable recent projects. UPRR engineering and contingency values were developed based on those observed as part of the 2019 Coast Subdivision Siding Improvement project in Santa Clara, CA, lead by CCJPA.

The three scenarios include:

- **Low Build Scenario (Table 11)** – reflects the assumption that a minimal amount of new infrastructure would be required to introduce CCJPA operations from/to Lincoln without regard to the impacts on UPRR freight operations. This scenario reflects the assumed construction of a station facility comparable to the existing Auburn/Conheim Amtrak Station; specifically, a basic station platform, supporting facilities and a remote-controlled 1,500-foot sidetrack adjacent to the main track to allow CCJPA trainsets to lay over between runs while not blocking traffic on the main track. No infrastructure improvements outside of the station and sidetrack were assumed in the Low Build Scenario. While the infrastructure improvements in the Low Build Scenario would be sufficient to support CCJPA operations from/to Lincoln, this scenario also would have the most potential impact on UPRR freight operations. As such, it is unlikely UPRR would accept the infrastructure improvements in the Low Build Scenario as sufficient to accommodate expanded CCJPA operations.
- **Medium Build Scenario (Table 12)** – reflects the assumption that a certain amount of new infrastructure and improvements to existing infrastructure would be required to introduce CCJPA operations from/to Lincoln and mitigates, to some degree, impacts to UPRR freight operations. This scenario reflects the assumed construction of the same station facilities as in the Low Build Scenario. It also reflects the assumption that the existing, remote-controlled, approximately 8,000-

foot sidetrack between CP VP111 and milepost CP VP113 in Whitney is extended to 14,000-feet[39]. Existing train control systems and PTC would be extended and employed on the new track infrastructure. Extending the sidetrack in Whitney to 14,000-feet would allow the longest trains expected to be operated by UPRR in the foreseeable future to allow traffic to pass in the opposing direction, adding some degree of operational flexibility. The infrastructure improvements in the Medium Build Scenario may, to some degree but not completely, mitigate the impacts to UPRR freight operations incurred by the CCJPA operation from/to Lincoln. As such, it is likely that UPRR would be more likely to accept the infrastructure improvements in the Medium Build Scenario than in the Low Build Scenario but might still deem them insufficient.

- **High Build Scenario (Table 13)** – reflects assumptions that the amount of new infrastructure and improvements to existing infrastructure required to both introduce CCJPA operations from/to Lincoln and mitigates, to the extent reasonably possible, impacts to UPRR freight operations. This scenario reflects the assumed construction of the same station facilities as in the Low Build Scenario. It also reflects the assumption that the entirety of the line between Roseville and the respective prospective station locations in Lincoln is double tracked, with two crossover tracks (allowing trains to switch tracks) interspaced between the two stations. Existing train control systems and PTC would be extended and employed on the new track infrastructure. Double tracking the line would allow continuous operations on the line in both directions, as well perhaps an opportunity by which faster and/or higher priority trains could overtake slower and/or lower priority trains in the same direction of travel. The infrastructure improvements in the High Build Scenario would provide a significant degree of operational flexibility to UPRR, including the opportunity to essentially isolate CCJPA operations to one of the two tracks, thus mitigating the impacts to UPRR freight operations to the maximum degree reasonably possible. As such, the high build scenario represents a scenario most likely be accepted by UPRR.

[39] It was assumed that all track improvements could be contained within the existing right-of-way. ROW acquisition costs were assessed for all four station locations utilizing the Placer County Parcel Map (https://www.placer.ca.gov/5863/Locate-a-Parcel-Map).

Table 11: Estimate of Capital Improvements - Low Build Scenario[40]

		12 Bridges Road		Lincoln P&R		Highway 65		Downtown Lincoln	
	Unit Cost ($/LFt)	Quantity	Cost	Quantity	Cost	Quantity	Cost	Quantity	Cost
Track Construction (rail, OTM, ties, ballast and surfacing)	$ 245.21	1,500	$ 367,817	1,500	$ 367,817	1,500	$ 367,817	1,500	$ 367,817
Grading/Site Work	$ 316.72	1,500	$ 475,080	1,500	$ 475,080	1,500	$ 475,080	1,500	$ 475,080
Powered Main Line Turnout (each)	$ 472,040.00	1	$ 472,040	1	$ 472,040	1	$ 472,040	1	$ 472,040
Signaling	$ 222.74	1,500	$ 334,117	1,500	$ 334,117	1,500	$ 334,117	1,500	$ 334,117
Control Point (each)	$ 331,168.15	1	$ 331,168	1	$ 331,168	1	$ 331,168	1	$ 331,168
PTC	$ 189.00	1,500	$ 283,500	1,500	$ 283,500	1,500	$ 283,500	1,500	$ 283,500
Grade Crossing (improved, each)	$ 144,375.00	-	$ -	-	$ -	-	$ -	-	$ -
Bridges (DPG)	$ 10,000.00	-	$ -	-	$ -	-	$ -	-	$ -
Station (including stop, shelter, mall, terminal, platform - LS)	$ 7,893,415.80	1	$ 7,893,416	1	$ 7,893,416	1	$ 7,893,416	1	$ 7,893,416
Off-site improvements (including roadway and traffic - LS)	$ 2,937,254.77	1	$ 2,937,255	1	$ 2,937,255	1	$ 2,937,255	1	$ 2,937,255
Surface Parking Lot (1,000 spaces - LS)	$ 9,037,705.20	1	$ 9,037,705	1	$ 9,037,705	1	$ 9,037,705	1	$ 9,037,705
Assessed Property Value			$ 549,291		$ -		$ -		$ 1,362,952
Engineering (% of total)	9.07%		$ 2,057,202		$ 2,007,381		$ 2,007,381		$ 2,131,001
Contingency (% of total, excluding Engineering)	25.96%		$ 5,888,089		$ 5,745,493		$ 5,745,493		$ 6,099,315
Inflationary Factor (2021-2023)	12.00%		$ 3,675,202		$ 3,586,197		$ 3,586,197		$ 3,807,044
Grand Total Costs			**$ 34,301,881**		**$ 33,471,168**		**$ 33,471,168**		**$ 35,532,410**

Note: Depending on funding source(s) and project lead, CCJPA may need require additional compensation for staff time involved in supporting the project

12 Bridges Inputs		Lincoln P&R Inputs		Highway 65 Inputs		Downtown Lincoln Inputs	
Item	Quantity	Item	Quantity	Item	Quantity	Item	Quantity
Track (LFt)	1,500	Track (LFt)	1,500	Track (LFt)	1,500	Track (LFt)	1,500
Turnouts	1	Turnouts	1	Turnouts	1	Turnouts	1
Control Points	1	Control Points	1	Control Points	1	Control Points	1
Grade Crossings	-	Grade Crossings	-	Grade Crossings	-	Grade Crossings	-
Bridges (LFt)	-	Bridges (LFt)	-	Bridges (LFt)	-	Bridges (LFt)	-

[40] Estimates reflect only material, labor, and contingencies to UPRR. Depending on funding source(s) and project oversight, additional budget may be required for public sector oversight of the project at additional cost to that shown in estimates.

Table 12: Estimate of Capital Improvements - Medium Build Scenario

		12 Bridges Road		Lincoln P&R		Highway 65		Downtown Lincoln	
	Unit Cost ($/LFt)	Quantity	Cost	Quantity	Cost	Quantity	Cost	Quantity	Cost
Track Construction (rail, OTM, ties, ballast and surfacing)	$ 245.21	7,077	$ 1,735,311	7,077	$ 1,735,311	7,077	$ 1,735,311	7,077	$ 1,735,311
Grading/Site Work	$ 316.72	7,077	$ 2,241,364	7,077	$ 2,241,364	7,077	$ 2,241,364	7,077	$ 2,241,364
Powered Main Line Turnout (each)	$ 472,040.00	3	$ 1,416,120	3	$ 1,416,120	3	$ 1,416,120	3	$ 1,416,120
Signaling	$ 222.74	7,077	$ 1,576,320	7,077	$ 1,576,320	7,077	$ 1,576,320	7,077	$ 1,576,320
Control Point (each)	$ 331,168.15	2	$ 662,336	2	$ 662,336	2	$ 662,336	2	$ 662,336
PTC	$ 189.00	7,077	$ 1,337,515	7,077	$ 1,337,515	7,077	$ 1,337,515	7,077	$ 1,337,515
Grade Crossing (improved, each)	$ 144,375.00	-	$ -	-	$ -	-	$ -	-	$ -
Bridges (DPG)	$ 10,000.00	-	$ -	-	$ -	-	$ -	-	$ -
Station (including stop, shelter, mall, terminal, platform - LS)	$ 7,893,415.80	1	$ 7,893,416	1	$ 7,893,416	1	$ 7,893,416	1	$ 7,893,416
Off-site improvements (including roadway and traffic - LS)	$ 2,937,254.77	1	$ 2,937,255	1	$ 2,937,255	1	$ 2,937,255	1	$ 2,937,255
Surface Parking Lot (1,000 spaces - LS)	$ 9,037,705.20	1	$ 9,037,705	1	$ 9,037,705	1	$ 9,037,705	1	$ 9,037,705
Assessed Property Value			$ 549,291		$ -		$ -		$ 1,362,952
Engineering (% of total)	9.07%		$ 2,665,368		$ 2,615,547		$ 2,615,547		$ 2,739,167
Contingency (% of total, excluding Engineering)	25.96%		$ 7,628,770		$ 7,486,174		$ 7,486,174		$ 7,839,996
Inflationary Factor (2021-2023)	12.00%		$ 4,761,692		$ 4,672,688		$ 4,672,688		$ 4,893,535
Grand Total Costs			**$ 44,442,463**		**$ 43,611,750**		**$ 43,611,750**		**$ 45,672,992**

Note: Depending on funding source(s) and project lead, CCJPA may need require additional compensation for staff time involved in supporting the project

12 Bridges Inputs		Lincoln P&R Inputs		Highway 65 Inputs		Downtown Lincoln Inputs	
Item	Quantity	Item	Quantity	Item	Quantity	Item	Quantity
Track (LFt)	7,077	Track (LFt)	7,077	Track (LFt)	7,077	Track (LFt)	7,077
Turnouts	3	Turnouts	3	Turnouts	3	Turnouts	3
Control Points	2	Control Points	2	Control Points	2	Control Points	2
Grade Crossings	-	Grade Crossings	-	Grade Crossings	-	Grade Crossings	-
Bridges (LFt)	-	Bridges (LFt)	-	Bridges (LFt)	-	Bridges (LFt)	-

Table 13: Estimate of Capital Improvements - High Build Scenario

		12 Bridges Road		Lincoln P&R		Highway 65		Downtown Lincoln	
	Unit Cost ($/LFt)	Quantity	Cost	Quantity	Cost	Quantity	Cost	Quantity	Cost
Track Construction (rail, OTM, ties, ballast and surfacing)	$ 245.21	32,391	$ 7,942,685	36,036	$ 8,836,480	38,643	$ 9,475,745	47,461	$ 11,637,920
Grading/Site Work	$ 316.72	32,391	$ 10,258,941	36,036	$ 11,413,385	38,643	$ 12,239,074	47,461	$ 15,031,785
Powered Main Line Turnout (each)	$ 472,040.00	8	$ 3,776,320	8	$ 3,776,320	8	$ 3,776,320	8	$ 3,776,320
Signaling	$ 222.74	32,391	$ 7,214,969	36,036	$ 8,026,874	38,643	$ 8,607,570	47,461	$ 10,571,644
Control Point (each)	$ 331,168.15	3	$ 993,504	3	$ 993,504	3	$ 993,504	3	$ 993,504
PTC	$ 189.00	32,391	$ 6,121,937	36,036	$ 6,810,842	38,643	$ 7,303,565	47,461	$ 8,970,091
Grade Crossing (improved, each)	$ 144,375.00	1	$ 144,375	1	$ 144,375	1	$ 144,375	4	$ 577,500
Bridges (DPG)	$ 10,000.00	395	$ 3,950,000	395	$ 3,950,000	395	$ 3,950,000	755	$ 7,550,000
Station (including stop, shelter, mall, terminal, platform - LS)	$ 7,893,415.80	1	$ 7,893,416	1	$ 7,893,416	1	$ 7,893,416	1	$ 7,893,416
Off-site improvements (including roadway and traffic - LS)	$ 2,937,254.77	1	$ 2,937,255	1	$ 2,937,255	1	$ 2,937,255	1	$ 2,937,255
Surface Parking Lot (1,000 spaces - LS)	$ 9,037,705.20	1	$ 9,037,705	1	$ 9,037,705	1	$ 9,037,705	1	$ 9,037,705
Assessed Property Value			$ 549,291		$ -		$ -		$ 1,362,952
Engineering (% of total)	9.07%		$ 5,516,410		$ 5,788,488		$ 6,018,719		$ 7,286,846
Contingency (% of total, excluding Engineering)	25.96%		$ 15,788,975		$ 16,567,713		$ 17,226,674		$ 20,856,288
Inflationary Factor (2021-2023)	12.00%		$ 9,855,094		$ 10,341,163		$ 10,752,471		$ 13,017,987
Grand Total Costs			**$ 91,980,878**		**$ 96,517,520**		**$ 100,356,393**		**$ 121,501,212**

Note: Depending on funding source(s) and project lead, CCJPA may need require additional compensation for staff time involved in supporting the project

12 Bridges Inputs		Lincoln P&R Inputs		Highway 65 Inputs		Downtown Lincoln Inputs	
Item	Quantity	Item	Quantity	Item	Quantity	Item	Quantity
Track (LFt)	32,391	Track (LFt)	36,036	Track (LFt)	38,643	Track (LFt)	47,461
Turnouts	8	Turnouts	8	Turnouts	8	Turnouts	8
Control Points	3	Control Points	3	Control Points	3	Control Points	3
Grade Crossings	1	Grade Crossings	1	Grade Crossings	1	Grade Crossings	4
Bridges (LFt)	395	Bridges (LFt)	395	Bridges (LFt)	395	Bridges (LFt)	755

III. Present and Future Feasibility of Establishing Connecting Thruway Bus Service between Lincoln and the Roseville Amtrak Station

Inspired both by uncertainty regarding obtaining access to the UPRR Valley Subdivision on acceptable terms and the coming of additional train service through Roseville via the Sacramento - Roseville Third Track (SR3T) project, this section outlines an alternative method of tying Lincoln into the CCJPA service area and national rail network: a connection at Roseville via Amtrak Thruway bus service. Therefore, this section explores: 1) how the Sacramento - Roseville Third Track (SR3T) project will represent a paradigm shift in rail transportation serving Placer County and present an opportunity to residents of nearby Lincoln; 2) a suggested route and timetable of service; 3) projected ridership of suggested bus service and 4) estimated operational and capital costs of establishing such service as compared with the present day, single daily train frequency serving Roseville.

Overall, cutting edge transportation planning trends indicate that the SR3T project warrants connecting service to population centers beyond Roseville as the level of train service increases. In the near-term, before startup of the service levels that the completion of SR3T will trigger, Amtrak Thruway service from/to Lincoln may be accomplished to meet the present CCJPA single, round-trip frequency with little to no capital investment, thanks to extant transit fleets and investments being made to bring about Lincoln Express Bus service. In return for about $131,000 in annual operations costs, Lincoln could be included in Amtrak's National Network by connecting to the single CCJPA train presently serving Roseville via thruway bus and could attract between 3,200 and 7,900 riders annually.

Further study to meet the coming increasing service at Roseville is highly recommended as the details of the coming SR3T trains become finalized and was not conducted in this study so as not to duplicate planning efforts. Doing so could create a virtuous cycle; increasing frequency in train service leads to exponential ridership growth. This growth should continue in-kind to connecting transit services. Such connecting services were found to bolster train services, as 80-90% of present thruway ridership would not otherwise choose to take the train. This means that the majority of Thruway ridership are, as shown in figure 6, passengers actively choosing not to drive or fly, directly contributing to meeting the county and state's goals of VMT and carbon emissions reduction.

SR3T: A Transformative Project in Roseville Represents a Big Opportunity to Lincoln Residents

Today, the CCJPA has a joint ticketing arrangement with Placer Commuter Express and Roseville Transit, to share operating costs that benefit all agencies and their riders[41], however those connecting trips amount to only 1% of Roseville Transit's (RT) Commuter ridership[42] and 0.7% of western Placer Transit's commuter ridership.[43] These low numbers should be no surprise given the quality of the transfer, which itself, is largely

[41] CCJPA FY 21-22 Revised Business Plan, p. 3.
[42] 2018 Roseville Transit SRP, p.54.
[43] 2018 Placer County Transit SRP, p.169.

dependent on the present, extremely low level of Amtrak operations in Placer County: two daily trains, a single round trip frequency.

Frequency is a vital factor to passenger rail performance as it enables the operation to transcend making sense only relating to trips taking place at a fixed time of day. Frequency and ridership therefore enjoy an exponential relationship as seen in Figure 15; as trains run more often, they convert a growing number of passengers from other modes. This effect has been measured across other state-supported services like CCJPA's *Capitol Corridor* service. The implications of this effect are exciting in view of the Sacramento - Roseville 3rd Track (SR3T) project. While CCJPA's *Capitol Corridor* service is close to the top of the curve as one of the best performing routes in North America, CCJPA service in Placer County is presently in the bottom left-hand corner of the curve, along with every other, single, round-trip service. The SR3T project represents Roseville's future ascension of the observed exponential curve to an ever-growing number of passengers per train serving the County. As a contributor to this virtuous cycle, connecting thruway bus service could expand the power of these frequencies by spreading their reach further. A distinct population center eleven miles distant from Roseville, Lincoln represents a promising origin/destination of such service.

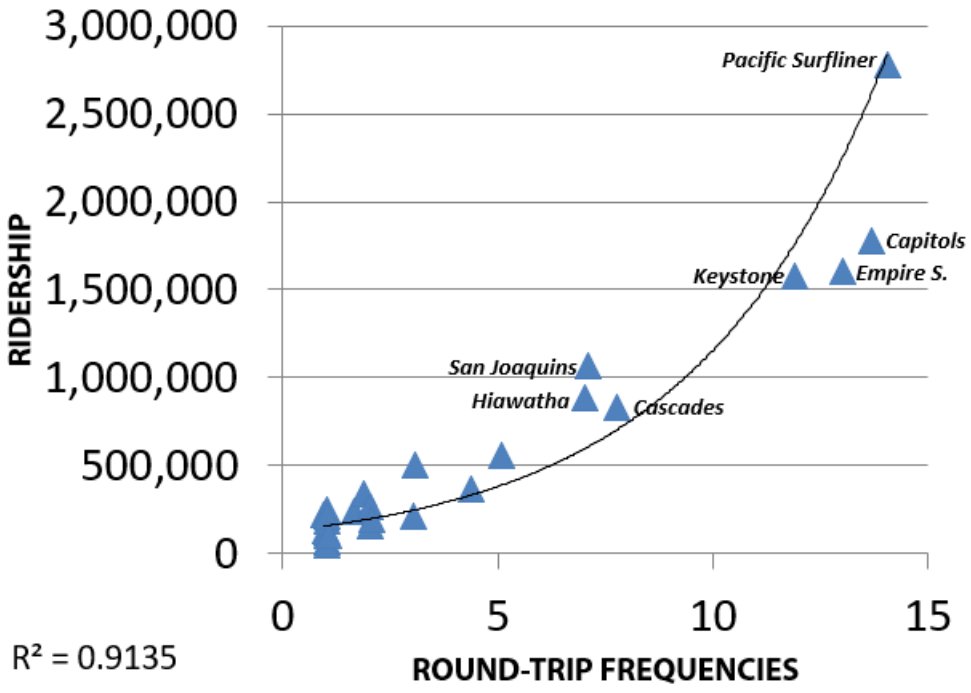

Figure 15: Ridership and Frequency on Amtrak's State Supported Corridors

Intercity frequency has enjoyed, perhaps counterintuitively, renewed importance in the wake of the COVID-19 Pandemic. Legacy commuter rail systems in Philadelphia and Boston have joined Toronto and Los Angeles in embracing a new service model to maintain their relevance in a time when historically vital peak commute traffic has suffered a drastic reduction. While only 8% of workers were remote before 2020,

that number could grow as high as 25% in the next four years. In response, these systems are deemphasizing the peak period by spreading train frequencies throughout the day, turning a commuter system into a regional extension of the transit network, enabling a new diversity of all-day intraregional use.[44] It is for these reasons too that the SR3T project is exciting, as it is well suited to its coming era of implementation. The first iteration of planned SR3T service is slated to add ~187,000 passengers to the CCJPA corridor from two new frequencies travelling only as far north as Roseville. Subsequent planned improvements bringing that number up to 10 frequencies will usher in a transformative accessibility to/from Placer County and with it will come an exponential ridership as compared to today – certainly including many opportunities for the residents of Lincoln, be it in the form of rail or connecting bus service.

Adding dimension to this opportunity is the present gap in local transit service at the focal point of this new service, Roseville station. There is no convenient transfer from/to local transit at present, as expressed fully in the 2018 Roseville Transit Short Range Plan:

The nearest existing Roseville Transit stop is at Main Street/Washington Boulevard, approximately a 900 foot walk away from the train station. However, this stop is only served hourly in the northbound direction, requiring almost a full hour to connect with other transit routes at the Civic Center Transfer Station. This Transfer Station is approximately 1,000 feet walk distance from the train station (only 100 feet more), which is less than a five-minute walk (though not a particularly pleasant walk along a sidewalk through a long underpass).[45]

The 2018 Roseville Transit Short Range Plan recommended subsidized Transportation Network Company usage (such as Uber or Lyft service) in the vicinity of Roseville station, given the difficulty of serving the station site in the context of the greater transit network.[46] The planned Lincoln Express service contemplated including the Amtrak Roseville station as a stop but did not include it on the final service alignment given the aforementioned TNC recommendation[47] and that serving it would have added almost 15 minutes to the schedule.[48] Insofar as service from/to Lincoln itself is concerned, it is of note that the average TNC trip is 5.2 miles,[49] approximately only half way to most origins/destinations in Lincoln.

At present, while Roseville Transit has identified network changes it could make to better serve the station, at time of writing, there is no plan comprehending a formal transit connection between Lincoln and Roseville Amtrak Station as mapped in the 2018 California State Rail Plan (See Figure 2).

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[44] "Taking the 'Commuter' Out of America's Rail Systems," *Governing* April 23, 2021.
[45] 2018 Roseville Transit SRP, p.116.
[46] 2018 Roseville Transit SRP, p.117.
[47] Lincoln Express Final Report p.63.
[48] Meeting with Roseville Transit, May 6th, 2021.
[49] "Uber and Lyft are increasing car traffic in Seattle. How much? 94 million miles" The Seattle Times, August 15th 2018. https://www.seattletimes.com/seattle-news/transportation/uber-lyft-boosted-car-travel-by-94-million-miles-in-seattle-last-year-study-says/.

Concurrently, there exists between the CCJPA and the City of Roseville a Memorandum of Understanding that passenger rail service will not be expanded until sufficient parking and vehicle circulation is made available at the Roseville Amtrak Station.[50] That strategy could benefit from evaluating Thruway connections to the projected catchment area of the Roseville station, alleviating some of the need for parking, especially given that the CCJPA will most likely be responsible for funding Thruway service as well.

Extending the reach of, and in some cases parallel to, every passenger rail corridor in California is a system of connecting Thruway busses. These buses have served as a critical component of California's passenger rail system. On the *Capitol Corridor*, RLBA estimates that ridership on Thruway bus services at CCJPA-served stations equates to about 1 in 5 passengers. The key to this success is in seamless travel booking; one ticket covers endpoint to endpoint travel and connections are timed, offering "one-stop shopping,"[51] a different value statement as compared to TNC services.

Suggested Route and Timetable

There is a direct route between Lincoln and the Roseville train station facilitated via Washington Boulevard which feeds directly into Highway 65 or Industrial Avenue. This route was not an option available to the Lincoln Express, given that service's need to serve the Galleria Transit Center to the southeast. In Lincoln itself, Amtrak Thruway service could be a beneficiary of the route planning provided by the Lincoln Express and use the same route and stops (as seen in Figure 16) to maximize coverage.

[50] SR3T FEIR, p. 191, 3-6.

[51] "Amtrak Thruway Services" Presentation at LOSSAN Joint Powers Board Meeting, Los Angeles, CA May 21, 2012, slide 11.

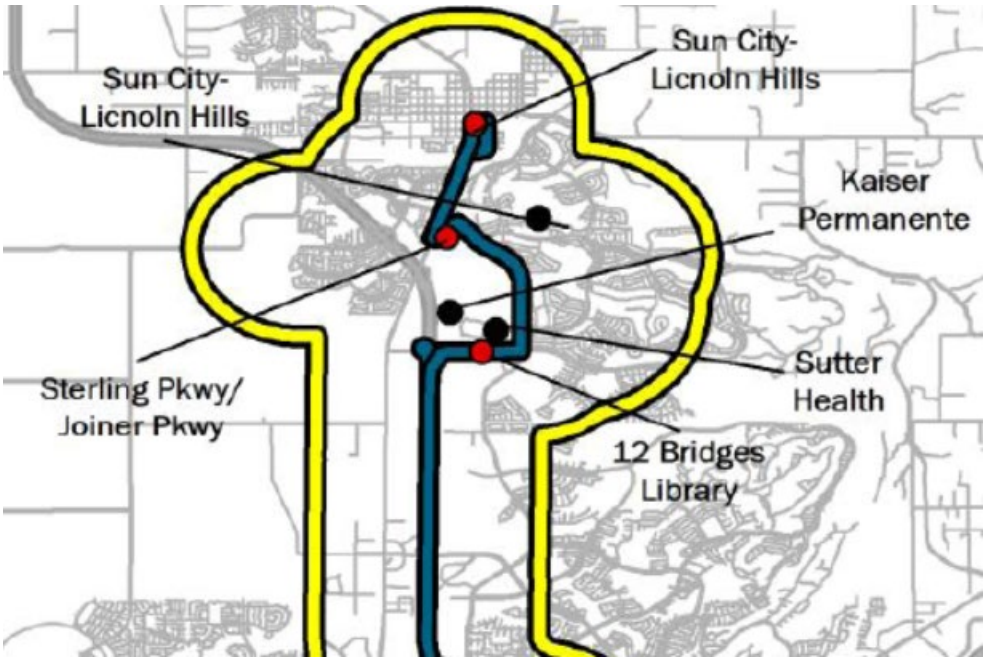

Figure 16: Lincoln Excerpt from the Final Alignment of Lincoln Express Service

In Lincoln, the route would replicate that of the Lincoln Express, deviating only in the exit taken from Highway 65. Given its singular destination at the Roseville Amtrak Station after exiting Lincoln city limits, depending on traffic patterns, Thruway service alternatively could use Industrial Avenue to avoid highway congestion.

Therefore, the route could assume the following directions southbound from downtown Lincoln, as shown in Figure 17:

- Continue on 3rd Street;
- Right on E Street;
- Use first exit at the traffic circle on Gateway Drive;
- Left on Lincoln Boulevard;
- Left on Sterling Parkway;
- Right on E Joiner Parkway;
- Right on Twelve Bridges Drive;
- Merge on to Highway 65 South (*Alternatively, Left onto Industrial Avenue*);
- Exit Highway 65 South using exit 309 for Washington Boulevard (*Alternatively, Right onto Washington Boulevard from Industrial Avenue*) and
- Follow Washington Boulevard to Roseville Amtrak Station.

The projected timetable of Lincoln Express service completes its stops in Lincoln and arrives at the interchange with Highway 65 at 12 Bridges Drive in 11 minutes.[52] Assuming Thruway service can achieve the same performance on the same alignment, the remainder of the trip between the interchange and the Roseville Amtrak station should be completed in between 15 and 17 minutes using the average speeds expected on the Lincoln Express.[53] This renders a one-way trip, making three stops in Lincoln within a half hour, as estimated in Table 14.

Table 14: Projected Travel Time of Lincoln-Roseville Amtrak Thruway Service

Northbound	Between Downtown Lincoln and 12 Bridges Road*	Between 12 Bridges and Galleria (Lincoln Express*)	Between 12 Bridges Road and Roseville Amtrak	Lincoln-Roseville Thruway Travel Time
Miles	3.7	7.2	8.4	
Estimated Time (Google)	11:00	13:00	15:20	26 Min
Fastest Time (Google)	8:00	8:00	15:00	
Average MPH	20.6	33	33	
Southbound				
Miles	4	7.3	8.4	
Estimated Time (Google)	12:00	15:00	17:22	29 Min
Fastest Time (Google)	9:00	12:00	14:00	
Average MPH	20	29.2	29.2	

* Source: Lincoln Express Final Report, p.69

[52] Lincoln Express Final Report, p.16.
[53] Lincoln Express Final Report, p.69.

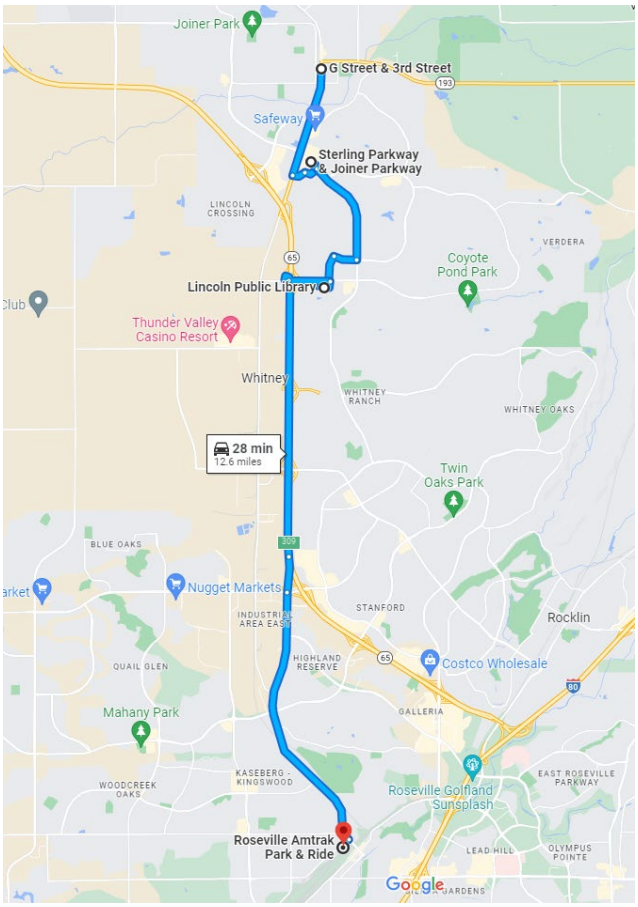

Figure 17: Southbound Route of Thruway Bus, as shown via Google Maps

Thruway services depend on meeting trains directly, which is facilitated through timed connections. Present Thruway service in Placer County parallels the CCJPA corridor and includes stops in Roseville, Rocklin and Auburn. The primary emphasis of present-day Thruway service is meeting trains at the Sacramento Valley Station, where all eastbound CCJPA trains terminate, save for the single roundtrip serving the aforementioned, three stops. Thruway services in Placer County differ greatly in length; one bus only goes as far as Roseville, while four travel between Sacramento and as far as Reno, Nevada. Ultimate trip length is a factor determining the margin of time needed to guarantee a transfer. Another connection time factor is the facility served; the tracks at Sacramento Valley Station have been relocated 500 feet away from the train station resulting in a walk consuming several minutes, necessitating more time to facilitate a transfer. The transfer times between buses and trains at Sacramento in Table 15 therefore offer an extremely conservative example for the tolerances of a connecting Thruway service.

Table 15: CCJPA Thruway Bus and Train Connections at Sacramento Valley Station

Eastbound

Train/Bus#	524	530	532	538	540	542	546	720	728*	736
Train Arrive	9:46	2:13	3:24	6:17	6:48	7:21	8:50	10:13	1:09	6:10
Bus Depart	10:00	2:30	3:45	6:25	7:00	7:30	9:00	10:20	2:30	6:25
Transfer Time	0:14	0:17	0:21	0:08	0:12	0:09	0:10	0:07	1:21	0:15

Westbound

Train/Bus#	523	525	537	543	549	553	727*	737	743	749
Bus Arrival	5:20	6:05	11:50	3:20	6:30	10:00	6:05	11:50	3:20	7:10
Train Depart	5:35	6:22	12:14	3:38	7:00	10:30	8:08	12:12	3:46	7:38
Transfer Time	0:15	0:17	0:24	0:18	0:30	0:30	2:03	0:22	0:26	0:28

Average Transfer Train to Bus	0:12
Average Transfer Bus to Train	0:23

*Excluded from average as an outlier

Transfers to/from Thruway service at Roseville should require only the minimum amount of time presently scheduled at Sacramento, namely train-to-bus, westbound service '720' at 7:00 minutes, and bus-to-train westbound service '523' of 15:00 minutes. This is given that: 1) total travel time estimated for Thruway service between Roseville and Lincoln is nearly equaled by the present average transfer time from bus to train at Sacramento; 2) that it enjoys a redundant route on Industrial Avenue in the case of heavy congestion on Highway 65 and 3) that the Roseville station facility is far more compact than the Sacramento Valley Station.

Services adhering to this service profile ideally would be scaled with train service; in the short-term, one round-trip to meet the single train serving Roseville today, three round trips to meet the mid-term initial SR3T train round trips, up to 10 round trips in the long-term following the ultimate horizon of the SR3T project and, eventually, every half-hour to meet the service levels envisioned in the 2018 California SRP. A projected timetable of the very first iteration of this service, meeting today's train 529 which presently has no connecting Thruway connections in Placer County is shown in Table 16.

Table 16: Estimated Lincoln Thruway Schedule

Station		Westbound		Eastbound
		529		536
		Read Down		Read Up
Lincoln, CA	Dp	6:23	Ar	6:16
Roseville, CA	Ar	6:52	Dp	5:50
	Dp	7:07	Ar	5:43
Sacramento, CA	Ar	7:32	Dp	5:21
	Dp	7:33	Ar	5:20
Davis, CA		7:48		5:05
Farifield-Vacaville, CA		8:08		4:45
Suisun-Fairfield, CA		8:14		4:39
Martinez, CA		8:32		4:21
Richmond, CA		8:58		3:55
Berkeley, CA		9:06		3:48
Emeryville, CA	Ar	9:10	Dp	3:44
	Dp	9:11	Ar	3:43
Oakland, CA (Jack London Sq.)	Ar	9:34	Dp	3:35

Projected Ridership

Present Thruway service to Placer County uses existing Amtrak stops within the county at Auburn, Rocklin and Roseville, oriented towards meeting trains at Sacramento. The portion of travel between Roseville and Sacramento alone is scheduled at 50 minutes to an hour. With schedule padding to facilitate transfers, the Thruway trip connecting through Roseville to Sacramento from Lincoln is contemplated at accomplishing the same trip into the heart of Sacramento in as much time, as seen in Table 16. While the present-day Roseville Thruway bus service is not time competitive with driving, the contemplated schedule concerning passengers originating in or destined to Lincoln is time competitive when peak period traffic is taken into account.[54] It follows that Thruway services from/to Lincoln should be able to attract ridership.

To temper projections, generally, transfers can reduce demand for transit by 10% - 40%, depending on the quality of the transfer. A timed transfer of less than 5 minutes will reduce demand by 15%-20%, while a transfer of 5-10 minutes can result in a 25-30% reduction in demand.[55] This service already contemplates a 15 minute wait incurred by westbound frequencies, so the maximum 40% reduction is applied to the range of 11 to 27.5 passengers per frequency baseline estimated in service of a single rail frequency to arrive at a range of 4.4 to 11 passengers per trip.

[54] Google Maps typically estimates driving time between the Sacramento Valley Station and Lincoln, CA at between 30 and 50 minutes, with estimates rising to an hour during peak periods.

[55] "Impact of Transfers on Transit" K. Vaga and J. H. Shortreed, TRB TRID database, https://trid.trb.org/view/174502.

Contemplating the present schedule of one, revenue round-trip daily, this would equate to 3,200 to 7,900 annual passengers at Lincoln.

Capital Costs, Operational Costs and Revenues

Thruway service between the Roseville Amtrak station and Lincoln would benefit greatly from the painstaking route planning conducted in the context of the Lincoln Express Final Report, taking advantage of much of the same capital investment. Thruway service could use the same new ADA compliant stops at Sterling Parkway and Twelve Bridges Drive at Colonnade Drive being built in service of the Lincoln Express.[56] Given that the Roseville Amtrak station already has facilities serving existing Thruway services paralleling the present CCJPA right of way, no additional capital investment in bus stops would be necessary to facilitate thruway service beyond what is already planned.

Insofar as equipment, while the Amtrak Thruway brand may be most commonly associated with chartered intercity motorcoaches, in practice, it can provide variable amounts of service. In view of the ridership projections contemplated in the previous section, as seen in Figure 17, a vehicle like Arboc Mobility buses, such as those Roseville Transit utilizes to facilitate Dial-a-Ride service would be appropriate to introduce service.

[56] Lincoln Express Final Report, p. 97

Figure 18: Alternate Amtrak Thruway Service Vehicle

If the service were operated by Roseville Transit or Placer County Transit, given the limited duration of the service at two trips a day each conservatively consuming about an hour's time, it may be feasible to reassign one of those agency's existing Dial-a-Ride vehicles on the limited basis that initial thruway service would require. Such a vehicle could even be branded as an Amtrak Thruway connecting service using temporary magnetic signs.

In such a case, operating cost can be based on Placer County Transit's fully burdened cost per hour of $179.56.[57] It is assumed that a vehicle serving Dial-a-Ride customers could continue revenue service on either end of completing a shuttle from/to Lincoln and back to meet with a CCJPA train. This contemplated service would therefore require $179.56 per hour X 2 hours X 365 days = $131,078 annually to sustain operations, plus an unspecified margin to gain inclusion into the national Amtrak reservation system.[58]

Tickets between Roseville and Sacramento typically cost $11[59], which across the approximately 19 miles between those two points extends to about 57 cents per passenger-mile. The trip between Roseville and Lincoln is approximately 10.4 miles, rendering an average fare of $6 at the same rate. Within the projected range of ridership , this would garner between $19,200 and $47,400 in fares, earning a service cost recovery ratio of between approximately 15 and 36%.

[57] Lincoln Express Final Report, p.99. – updated by email from Rick Carter 6/14/23
[58] Meeting with Adam Krom of Amtrak Thruway Services, March 26 2021
[59] Fare between Roseville and Sacramento when booked on www.amtrak.com across multiple dates.

Conclusions:

A connection to the national railroad network and Lincoln, CA either through a train or thruway bus connection at Roseville, CA as stipulated in the 2018 California State Rail Plan is technically and operationally feasible. Furthermore, conditions regarding local travel patterns of congested local highways and far-flung patterns of occasional commutation, are generally conducive to the addition of a rail option.

That said, it can and should be expected that UPRR could demand payment at or beyond the highest estimate contemplated in this study. The estimates herein are grounded in a market-based reality that UPRR is not beholden to in this instance given its extensive legal protections.

Recommendations:

1. *Explore options to employ a Lincoln Transit "Cutaway" bus to meet present rail service at Roseville*

This study contemplated leveraging the extant assets of local transit fleets and the Roseville Amtrak station, as well as the developing infrastructure in service of implementing South Placer Express service, to create a thruway connection to the single CCJPA train serving Roseville today. This concept, or another along these lines, should be explored with Amtrak Thruway services given the relatively low forecasted costs of implementation. Accomplishing this first connection, along with appropriate advertisement and promotion, would serve several goals. First, it would be a concrete first step in connecting Lincoln to the national passenger rail network. Second, it would demonstrate adherence to extant statewide rail plans. Third, it would act to demonstrate a portion of extant demand for rail service such as it exists today and provide a platform providing real data upon which the following two recommendations could build.

2. *Study expansion of Thruway bus service in concert with the development of the SR3T project*

PCTPA staff should collaborate with CCJPA staff to define the level and nature of connecting Thruway bus service to match additional CCJPA service levels enabled by the SR3T project. Scaling initial Thruway bus service to meet the coming SR3T trips is inherently worthy of further analysis when the timetables of those trains become finalized. Such effort is worthwhile as the exponential ridership increase that Roseville is likely to experience with expanded rail frequencies should be experienced in-kind on any connecting service. Doing so also would benefit the SR3T project itself, as on average 80-90% of Thruway ridership would not otherwise utilize the train service were it not for the bus connection.[61] Coordination when the SR3T schedules are finalized will allow full understanding of service cadence and result in an accurate projection of capital expense (how many busses will be required, should the route suggested in this study be adopted).

[61] "RE: Thruway Service to Lincoln, CA?" Email message from Adam Krom to James Zumwalt, May 4th 2021

3. *Consider submitting an application to the Corridor ID program to implement passenger rail service from/to Lincoln*

The Corridor ID program is intended to be an ongoing program, with the next Notice of Funding Opportunity (NOFO) expected in early 2024. Previous applications to the Corridor ID program were relatively simple as compared with other Federal grant programs, consisting of a fifteen-page narrative and a minimal number of standard forms. Most significantly, it required no local funding during the initial feasibility stage and only a 10%-20% local match during the Environmental, Engineering and Construction stages of project implementation. Upon award of the initial application, if the next NOFO generally follows the form of the last, the applying entity would receive $500,000 at no match to perform a comprehensive feasibility assessment – a magnitude of order more than was available to fund this effort.

Conceptually, a Corridor ID application aiming at extending rail service from/to Lincoln might consider the development of passenger rail service on the UPRR Valley subdivision beyond Lincoln north to Yuba County to allow comingling with the planned northern expansion of Amtrak's San Joaquin service on the UPRR Sacramento Subdivision. This would provide the application with a larger corridor, more new trip pairs and more compelling potential impacts.