CITY OF SAN JOSE
CAPITAL OF SILICON VALLEY

Memorandum

TO: HONORABLE MAYOR AND CITY COUNCIL

FROM: John Ristow
Mukesh (Mookie) Patel

SUBJECT: **See Below**

DATE: February 18, 2025

Approved 

Date: 2/26/2025

COUNCIL DISTRICT: Citywide

SUBJECT: San José Diridon Station to Airport Connector Feasibility Validation Report and Phase 2a Recommendation

RECOMMENDATION

Adopt a resolution authorizing the City Manager or her designee to:

(a) Negotiate and execute an amendment to the pre-development agreement, task orders, and change orders with San José Connection Partners to refine ridership and revenue forecasting, develop a funding strategy, and develop a preferred alignment for the Base Project and the Optional Intra-airport Extension Project in an amount not to exceed $14.7 million, subject to the appropriation of funds; and

(b) Secure funding for the project, including the negotiation of a new funding agreement with the Valley Transportation Authority for Phase 2a project planning, subject to the appropriation of funds by the Valley Transportation Authority.

SUMMARY AND OUTCOME

Through a Pre-Development Agreement (Agreement)[1] with San José Connection Partners (Connection Partners), a Feasibility Validation Report (Report)[2] for the Diridon to Airport Connector project (Connector) was completed. The Report provides a detailed assessment of the Connector, including technical, commercial, and financial aspects, along with a cost-benefit analysis. The Report studies two operating segments as separate projects: 1) Diridon Station to Terminal B (Base Project) and 2) an optional extension to Terminal A and the Economy Parking Lot/Optional Intra-Airport Extension Project (Extension Project).

[1] https://www.sanjoseca.gov/home/showpublisheddocument/97960/638201013257230000
[2] https://www.sanjoseca.gov/home/showpublisheddocument/117760

The Report found that the technical and commercial elements of the Connector projects are feasible. Findings from the financial analysis are complex and vary depending on the assumptions employed. When using historical growth rates for Airport passengers for the Base Project, ongoing operating subsidies may be needed either from Connection Partners and/or from a non-City government entity such as Valley Transportation Authority (VTA), the state government, and/or the federal government. Higher growth rates and/or including the Extension Project would increase the operating cash flow, decreasing and potentially eliminating the need for subsidies. However, the Extension Project also has a more significant physical impact on the Airport and, similar to the Base Project, any gaps in operating revenue would need to be supported either by Connection Partners and/or by a non-City government entity such as VTA, the state government, and/or the federal government.

The benefit-cost analysis shows a similar pattern. Using historical growth rates for Airport passenger growth, the Base Project has costs exceeding benefits. With higher growth rates and/or the Extension Project, benefits exceed the costs.

As with most large-scale public transportation projects, both projects assume capital funding is provided through non-City entities, including but not limited to VTA Measure A funding and/or state and/or federal funding.

Based on these findings and associated assumptions, 2000 Measure A voter approved projects, and previous City Council direction, staff recommends additional study for the Base Project and Extension Project. This additional study, referred to as Phase 2a, will refine ridership estimates and transit utilization assumptions, progress funding plans, finalize a preferred route, and identify a list of initial key business terms for Connection Partners, the VTA, and other entities as appropriate. Phase 2a is estimated to cost up to $18.5 million and last 12 months when all funds are secured. Given the historical timeframe and complexity of these projects, alternative policy options and summary implications are included at the end of the Analysis section for City Council consideration.

BACKGROUND

Public transit to San José Mineta International Airport (Airport) has long been a priority for local voters and officials. In 2000, voters approved a people mover—one of 14 projects in the Measure A tax measure—to improve airport transit. The Envision San José 2040 General Plan and Climate Smart San José set targets to reduce single-occupancy vehicle trips by 50% and per capita vehicle miles by 40% by 2040, emphasizing improved transit links among the Airport, VTA light rail, Caltrain, and Bay

Area Rapid Transit (BART). The City's 2022 Move San José plan further stressed that high-capacity transit routes are key to advancing its climate, safety, quality of life, and equity goals.

The Connector—a direct, on-demand, point-to-point transit system linking Diridon Station and the Airport—supports these policy objectives. Diridon Station itself is undergoing a major redesign to accommodate growth from 17,000 to over 65,000 daily riders with new and expanded services, including BART, California High-Speed Rail, electrified Caltrain, intercity rail, and VTA bus and light rail. Additionally, planned developments around Diridon Station, such as Google's Downtown West (which has allocated $200,000 for the Connector in its development agreement with the City), could further boost ridership by adding tens of thousands of people daily to the station area.

Project History

- **November 2000:** The voters in Santa Clara County approved Measure A, a 30-year half cent sales tax devoted to specified public transit capital improvement projects and operations passing by a 70.3 percent majority. One of the 14 projects included providing connections from the Airport to BART, Caltrain, and VTA light rail.
- **Pre-2012:** Early proposals linked the Airport to major transit nodes (First Street/Metro Airport Light Rail and Santa Clara Caltrain).
- **2010 - 2012:** The City takes on responsibility for the planning of the Connector projects as agreed with the VTA. The first City study on an automated transit network feasibility study for the Airport.
- **2017:** A City study favored a Diridon Station–Airport route for higher ridership and better service integration given the aggregation of transition solutions planned at Diridon Station.
- **March 2019:** The City Council directed staff to issue a request for information for the Connector, seeking novel technology and financing approaches.
- **June 2019:** The City enters into a funding agreement with VTA for $2.5 million for project planning.
- **August 2020:** Staff presented a request for information analysis to City Council, which then mandated pursuing the project via two parallel approaches: a traditional public project and a public-private partnership.
- **June 2021:** Staff awarded a contract to Arup North America Ltd. and engaged legal advisor Ashurst to develop a Request for Proposals for a pre-development agreement.
- **April 2022:** City Council approved an ordinance authorizing alternative procurement methods—including design-build-finance-operate-maintain—to save money or expedite completion.
- **April 2023:** City Council awarded a pre-development agreement to Connection Partners (led by Plenary Americas Inc.), whose proposal featured emerging

personal rapid transit for an automated, grade-separated point-to-point service. During the same meeting, City Council directed staff to explore a feasibility study for the West San Carlos/Stevens Creek Corridor.

- **December 2023:** Staff integrated an optional intra-airport extension study into Phase 1 as directed by City Council.
- **January 2024:** Staff recommended including the Stevens Creek Corridor Study in Phase 2 or later to assess ridership potential and engineering feasibility of workers and residents.
- **December 2024:** Current funding agreement with VTA for project planning expired.

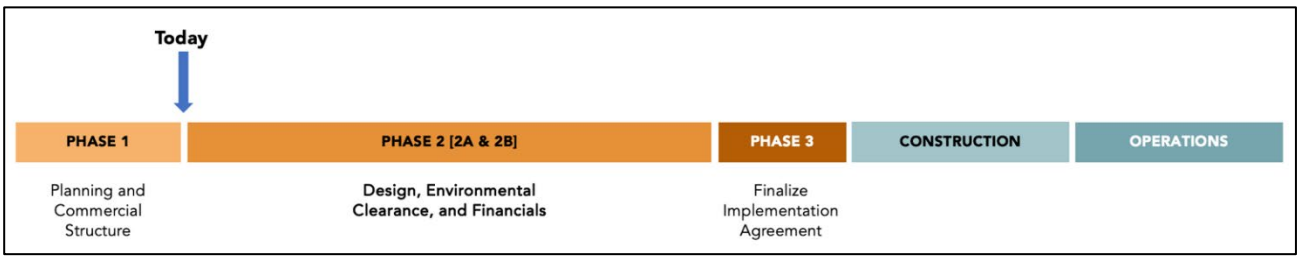
Pre-Development Agreement

The City is developing the Connector through a public private partnership governed through a tailored Pre-Development Agreement.[3]

The Agreement currently encompasses three phases, with the City Council reviewing progress and deciding whether to proceed at the end of each phase as shown in Figure 1 below.

- Phase 1 evaluates the technical, commercial, and financial feasibility of the project(s). This phase has delivered an outline project plan and the Report.
- Phase 2 focuses on project(s) development, including refinements of ridership, alignment, and financial plans, preliminary design, environmental review, and detailed cost estimation.
- Phase 3 will involve negotiating an implementation agreement.

Figure 1 Connector Project Timeline



[3] https://www.sanjoseca.gov/your-government/departments-offices/transportation/transit/airport-connector

ANALYSIS

The analysis in this memorandum is divided into two sections: 1) the staff recommendation and analysis of Phase 1 of the Connector Projects; and 2) the changes to the Agreement that would best advance the recommendation.

Phase 1 Findings

Since entering into the Agreement in 2023, Connection Partners, City staff, and consultants have assessed and advanced Connector technology, route alignment, commercial structure, project management plan, and financial feasibility. The Report, laid out in the Agreement, was developed by Connection Partners with strong guidance from the City to document key findings. The Report has four areas of evaluation listed below.

- Financial Feasibility Assessment
- Technical Feasibility Assessment (Technology and Feasibility Alignment)
- Commercial Structure
- Benefit-Cost Analysis

In summary, the Report found that the Connector has a feasible technological solution expected to meet the needs of passengers and a commercial structure capable of delivering, operating, and maintaining the Projects.

The financial findings are more complex. Capital costs for the Projects will require significant public funding, much like a traditional transit expansion project, but at a much lower cost-per-mile than other transit and/or airport people mover projects. The Report also found that operating costs may or may not be covered by revenues. Based on this uncertainty, staff recommend the City focus on producing an investment grade ridership study, updating the route, and developing a robust funding plan as initial steps (Phase 2a) for the Base Project only. Staff will return to City Council with the findings from Phase 2a before advancing further.

The following sections detail each element of the Report and include specific areas for further development and/or focus that will require attention in the next phase of work.

Financial Feasibility Assessment
The Financial Feasibility Assessment evaluates the financial feasibility of the proposed transit solution. It consists of estimated construction costs, ridership and revenue projections, and operating cost projections.

The Connector had a goal to operate based on farebox and ancillary revenue streams without requiring City or Airport subsidies, which is feasible under some scenarios, namely with higher airport growth assumptions. Estimated design, construction,

operations, and maintenance costs are notably lower than benchmarked light rail transit and automated people mover projects in North America.

However, the Connector will need to rely primarily or wholly on public funding for capital costs, depending on refined revenue and ridership assumptions. An investment grade revenue forecast is key to reducing uncertainties and concerns around ridership and revenue generation. A full funding plan outlining local, regional, state, and/or federal funding will also advance the City's understanding, identify the financial responsibilities, and pursue final design and construction funding, including any City or local funding obligations.

Estimated Costs and Revenues

Total Project costs, including escalation and contingency, range from $489.6 to $591.8 million for the Base Project and $707.7 to $821.5 million, including the Extension Project (see Table 1 Connector Construction Costs). These figures compare favorably to other automated people mover systems in California, which are typically around $500 to $800 million per mile, while the Connector is estimated to cost $137 to $158 million per mile(see Table 2 Transit Cost Comparison).

Table 1 Connector Construction Costs

	Base Project Cost Estimates (in Millions)	**Base Project with Extension Project** Cost Estimates (in Millions)
Project Costs (Year of Expenditure Dollars)	**$489.6 - $591.8**	**$707.7 - $821.5**

Table 2 Transit Cost Comparison

Project	Cost per Mile
LAX People Mover	$1.034 Billion
OAK Connector	$203.9 Million
Eastridge Light Rail	$272.1 Million
Connector	**$137 - $158 Million**

The financing plan for construction explores the potential of a mix of equity from Plenary Americas, Inc., private-sector debt, and public-sector progress payments, with public funding expected to cover most or all capital costs, depending on revenue scenarios. Private contributions to capital costs have not been determined at this early stage but could be from zero to $72 million.[4] The financing mix will be refined during Phase 2a as part of the funding plan effort to balance costs and manage risks effectively.

[4] Feasibility Validation Report Volume 3, page 49 (page 618 of PDF)

The Report assesses 30-year farebox and auxiliary revenue estimates generated for six scenarios for the Base Project (see Table 3 Growth and Revenues Base Project – Key Ridership, Revenue, and Operating Findings by Scenario) and Base Project with the Extension Project (see Table 4 Growth and Revenues Base Project with Extension Project – Key Ridership, Revenue, and Operating Findings by Scenario). For the Base Project scenarios 1-4, which were developed pre-COVID-19 and before the resulting systemic shift in air travel, generated positive operating income; in light of recent travel shifts, City staff added scenarios 5 and 6 (based on the Airport's historical passenger growth over the past 30 years), which have an annual operating loss of $9.4 million and $53 million, respectively. All scenarios present positive net operating income when including the Extension Project under the current assumptions. These models do not include debt service. All scenarios are informed by ridership and revenue modeling and estimates by Steer on behalf of Connection Partners.

Another potential source of funding for operations is the payment the City currently makes to VTA to support the VTA Route 60 bus (approximately $400,000 per year). While the Connector would connect to the transit hub at Diridon Station, riders would need to transfer to another transit line/system to continue their journey beyond the Diridon area. There are questions about how removing the Route 60 payment would impact service level. Further project phases will include discussions with VTA on the future of Route 60. The Report also outlines some possible funding scenarios for the Extension Project in the form of an annual intra-airport "service payment" comprising a portion of the Airport's bus operating costs. This payment comprises a fixed portion reflecting the approximate existing bus budget and a variable $3.81 - $4.64 per-passenger charge to account for capacity above the approximate existing ridership of 1.5 million passengers. Additional funding scenarios need to be explored in Phase 2a, which will include the overall aviation and transit environment and any funding constraints.

Operating subsidies from the Base Project farebox revenue have not been explored and will be included in Phase 2a as an additional option to explore as part of ensuring the Airport and the Airlines are not burdened with any potential operating cost losses.

There is a clear correlation between future airport demand and the project's ridership and revenue. While further growth trends are inherently difficult to project, staff favors the estimates that align with the Airport's historic passenger growth trends. Events like economic shifts and global crises can greatly impact demand, with COVID-19 being the latest example. While the Airport saw tremendous growth from 2015 through 2019, it is uncertain when or if that level of passenger traffic will rematerialize. The Airport's passenger traffic grew by 1.25% annually over 30 years. Scenarios 5 and 6 align closest to this trend. Furthermore, the ridership figures developed for the Report contain utilization assumptions that staff and our consultants believe to be too high and need to be more deeply investigated, which, if true, would likely decrease the expected ridership on the Connector.

Table 3 Key Ridership, Revenue, and Operating Findings by Scenario

Growth and Revenues Base Project							
Scenario	**1**	**2**	**3**	**4**	**5***	**6***	**Type of dollars**
Assumed Airport Annual Growth Rate	4.80%	3.70%	2.70%	2.40%*	1.25%*	0.50%*	
2040 Ridership	3,747,000	2,955,000	1,743,000	1,659,000	1,369,000	1,180,000	
2040 Revenue	$30M	$23M	$16M	$15M	$13M	$11M	*2024$ in millions*
30-year Revenue	$951M	$742M	$492M	$481M	$399M	$328M	
30-year Operating Costs	$727M	$589M	$427M	$424M	$400M	$382M	
Cumulative Operating Surplus / (Deficient)	$224M	$153M	$64M	$57M	($1M)	($54M)	

**Scenarios 5 and 6 are closest to historical growth trends.*

Table 4 Key Ridership, Revenue, and Operating Findings by Scenario

Growth and Revenues Base Project with Extension Project							
Scenario	**1**	**2**	**3**	**4**	**5***	**6***	**Type of dollars**
Assumed Airport Annual Growth Rate	4.80%	3.70%	2.70%	2.40%*	1.25%*	0.50%*	
2040 Ridership	7,645,000	6,190,000	4,423,000	4,207,000	3,472,000	2,993,000	
2040 Revenue	$49M	$37M	$26M	$25M	$20M	$17M	*2024$ in millions*
30-year Revenue	$1,509M	$1,174M	$813M	$795M	$656M	$530M	
30-year Operating Costs	$1,100M	$833M	$537M	$526M	$469M	$445M	
Cumulative Operating Surplus / (Deficient)	$409M	$341M	$277M	$269M	$186M	$85M	

**Scenarios 5 and 6 are closest to historical growth trends.*

Phase 1 work has highlighted areas of refinement that staff would prioritize in Phase 2a efforts. In Phase 1 the project team generated two separate ridership studies: one commissioned by the City through Arup and another commissioned by Connection Partners through Steer. These two studies, which largely agree on their outcome, underpin the financial analysis represented in the Report. Recognizing the critical role these numbers play in the project's financial model, staff commissioned a critique of them by aviation consultant Landrum & Brown (see Attachment A – Technical Review of San José Connection Partners Ridership Study), to inform further refinement in Phase 2a. Example areas that Phase 2 refinements will investigate include what utilization rate

of the Connector by Airport patrons should be used, if fares are set at a competitive rate with comparable services, how post-COVID-19 travel patterns could affect utilization and competitiveness with other services, and how land use uncertainties in the Diridon Station area and downtown development should be reflected in ridership modeling.

Optional Intra-Airport Extension Project Findings

After carefully considering the information prepared by Connection Partners for the optional intra-airport extension, staff has significant concerns on both the financial and technical feasibility of the Extension Project.

Extension Project Financial Concerns
Federal Aviation Administration regulations limit using Airport revenues for purposes other than Airport capital and operating expenses – those funds could not be used to subsidize non-Airport segments of the system. Any initial and ongoing funding gaps in capital and operating expenses would need to be subsidized by the Connection Partners, VTA, or other governmental agency.

Technical Feasibility Assessment

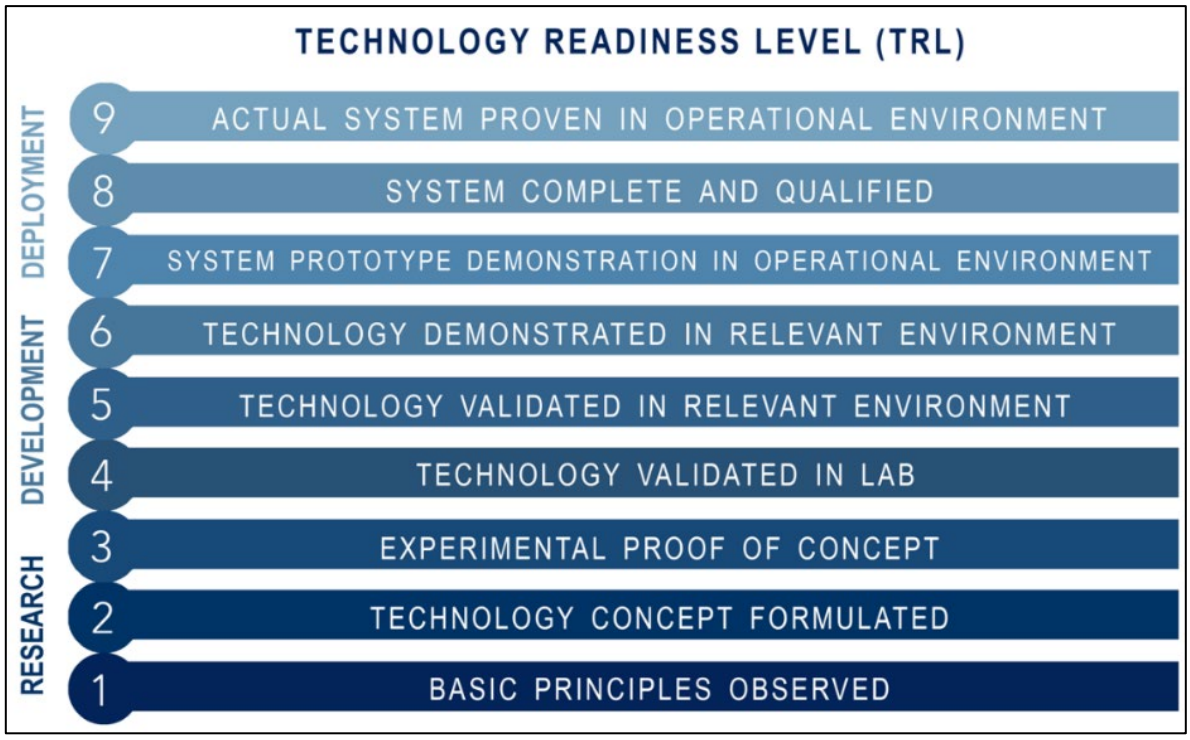
The Technical Feasibility Assessment evaluates 1) the proposed Glydways transit technology and 2) the Connector's physical feasibility through the development of a conceptual design along an initial alignment, known as the feasibility alignment.

Technology

The Projects include ambitious goals for construction costs, operating costs, and revenue generation. These goals include construction costs that are less than half that of standard people mover systems as well as operating costs and revenue that don't require a subsidy. Meeting these goals requires the use of innovative transit technologies currently under development. To evaluate technological maturity, the City applied the Technology Readiness Level (TRL) system, a widely recognized framework used by NASA, the Federal Highway Administration, and the Department of Defense.

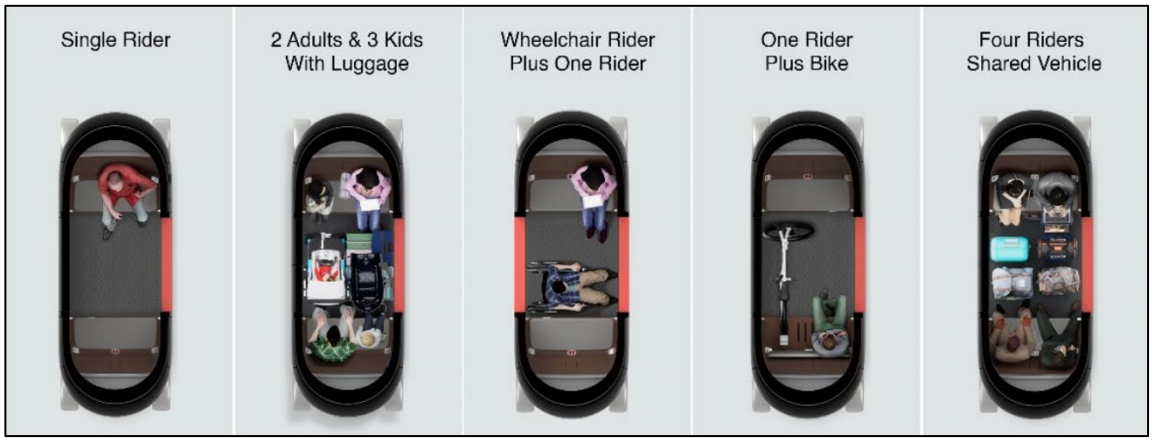
Figure 2 displays the nine-level technology development assessments of the TRL system. When initially proposed, the Glydways transit system was at TRL 6, indicating that a prototype had been demonstrated in a relevant environment. Since then, Connection Partners have made significant progress, including completion of key design and testing phases and the ongoing development of a dedicated test facility. The team is advancing through the design, production, and testing of its beta vehicles with plans to reach TRL 8, or production-ready status, by 2027.

Figure 2 Technology Readiness Level



The Report concludes that the Glydways transit solution remains on track to be operationally ready by the target date of 2029. Progress to date indicates that the system is meeting technical requirements and project objectives. The vehicles are designed to accommodate various party sizes up to four full size adults, types of users, and luggage needs, with features such as bike clasps to support diverse passenger requirements. Figure 3 shows the vehicle design and the way different riders and their needs are meet.

Figure 1 Glydcar Interiors Renders



The Glydways system complies with industry and federal technical requirements and design standards for public transit and automated people mover systems.[5] Glydways' design exceeds the requirements of the Americans with Disabilities Act by incorporating universal design principles and engaging in workshops with the disability community. The technology meets system capacity requirements set out in the Agreement, including peak moment, such as when multiple planes arrive at the same time bringing large crowds into the system. The system also has shown that it can operate within the stringent passenger travel times (11 minutes from Diridon Station to Terminal B) and wait times (no more than three minutes from ride request to entering a vehicle) set out in the Agreement.

The Connector system involves hundreds of vehicles operating in coordination across the network. Glydways has developed this control software, which has been tested with prototype vehicles and in simulations of a full-scale system. Analysis of Glydway's simulations by the City's consultant Arup indicates that "the system is designed to meet the Projects' Technical Requirements," as detailed in the Arup Memorandum (Attachment B).

Phase 1 work has highlighted elements of the technology development process that staff must pay particular attention to going forward.

- Monitor the development of the beta vehicles closely, ensuring that any technical challenges encountered are addressed promptly to avoid delays.
- Collaborate with key stakeholders including emergency services, federal agencies, the California Public Utilities Commission, and Caltrans. In particular, staff needs to continue the process for projection certification with the California Public Utilities Commission.
- Ensure the ability to utilize alternate vehicles on the guideway if Glydways is not successful or falters as a company after launch.

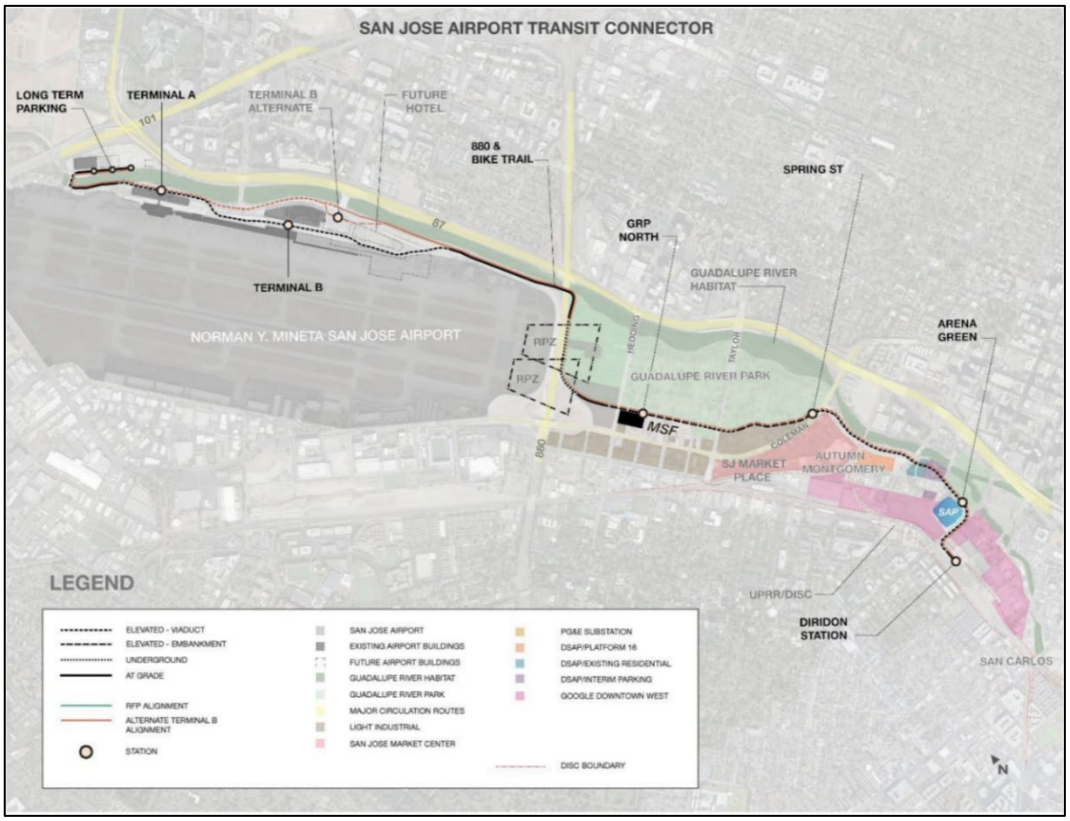
[5] Applicable design standards are:
a. Automated People Mover Standards, ANSI/ASCE/T&DI 21-21
b. Standard for Fixed Guideway Transit and Passenger Rail Systems, NFPA 130
c. Americans with Disabilities Act (ADA) Standards for Transportation Facilities, US Department of Transportation as well as all applicable regulations and guidelines

Feasibility Alignment

The conceptual design work in Phase 1 produced a feasibility alignment shown in Figure 4. The feasibility alignment is not intended as the final route for the Connector. Instead, it gives enough information for the project team to:

1. Demonstrate a possible alignment connecting the Airport to Diridon Station;
2. Identify potential areas of overlapping jurisdiction, conflicts and impacts, right-of-way requirements, and infrastructure needs; and
3. Estimate construction costs, operating costs, and travel times.

Figure 2 Feasibility Alignment



The design also covers potential station locations, maintenance facilities, and connections to existing utilities. Supporting design memorandums provide additional details on structural, civil engineering, and system components, as well as renderings of key stations and areas.

The system is designed to be flexible, allowing for future expansions and easy integration with other transit modes, bike paths, and pedestrian walkways.

As part of Phase 2a, staff will lead a public process to establish a preferred alignment for the Project(s) using the lessons learned from Phase 1. This work will continue the coordination already established in Phase 1 with major agency and public stakeholder groups including the Federal Aviation Administration, Transportation Security Administration, the Santa Clara Valley Water District, Caltrans, the Guadalupe River Park Conservancy, Sharks Sports & Entertainment, the Diridon Station Partners (VTA, Caltrain, Metropolitan Transportation Commission, and California High-Speed Rail), and area landowners like Google.

Key areas that will require significant attention during Phase 2a include the potential to avoid the Airport's Runway Protection Zone, addressing and mitigating impacts to sensitive environmental habitats like those along the Guadalupe River, coordinating with Caltrans near Interstate 880, refining alignment and phasing assumptions near Diridon Station and at the Airport, and siting the maintenance facility.

Commercial Structure

The proposed commercial structure outlined in the Report details a corporate framework for operating the Connector if built. It covers risk allocation, construction, and long-term financing, adhering to public-private partnership standards for a revenue-risk, performance-based design-build-finance-operate-maintain model, in line with the City's Project and Procurement Objectives. The City and Connection Partners would negotiate a final commercial structure in Phase 3 of the Connector's process.

Key strengths include a clearly defined partnership framework across the project's designer, builder, technology provider, operator, and maintenance provider. Plenary Americas Inc., as the sole equity partner in Connection Partners, will serve as the single point of contact for the City, holding full responsibility for delivering an operational transit system that meets City performance standards.

A key focus for Phase 2b will be ensuring fair distribution of risks, including utility relocations and revenue-sharing from ridership. The Agreement requires Connection Partners to develop a comprehensive commercial structure plan, specifying roles, responsibilities, and how risks will be managed across construction and operations while aligning with project goals. This plan also details funding sources, construction and long-term financing, and financial risk management.

The proposed commercial structure aligns with the City's risk management goals, with Connection Partners assuming major responsibilities throughout all project phases:

- *Design and Construction*: Connection Partners will take on risks for design, permitting, utility relocations, construction, system implementation, commissioning, certification, and passenger readiness. The City retains risk for environmental reviews, city-owned right-of-way assignments, utility upgrades, and unforeseen

ground conditions or hazardous materials. The City will also have oversight and a role in construction and certification.

- *Operations and Maintenance*: Connection Partners will manage nearly all operational risks, including transit vehicle operation and maintenance, fare collection, revenue risk, rights to ancillary revenue (e.g., advertising, retail), as well as station and guideway maintenance, customer service, and performance compliance. The City's responsibilities will include law enforcement and governance, including informing fare policy and ownership of the built infrastructure.

Benefit-Cost Analysis

The benefit-cost analysis shown in Table 5 highlights a thorough evaluation of Connector economic benefits, such as travel time savings and carbon emission reductions, supported by a persona analysis focusing on diverse user experiences. Certain improvements are necessary to enhance the analysis's transparency and assumptions. Key improvements include providing detailed macro-level context and baseline data, documenting quantities that underpin cost-benefit calculations, and including specific metrics to ensure the necessary robustness required for future federal funding applications.

The analysis concluded with a benefit-cost ratio that varies, depending on the Airport travel growth scenario.

Table 4: Summary of Key Economic Metrics for the Core Analysis

Scenario	**1**	**2**	**3**	**4**	**5**	**6***
Airport Passenger Growth Level	High Growth	SJC Master Plan	TAF (FAA forecast)	2.4% Growth Scenario	1.25% Growth Scenario	0.5% Growth Scenario
Benefit-Cost Ratio	1.7	1.5	1.1	1	0.9	Not Modelled*
Net Present Value	$852m	$591m	$83m	$42m	-$100m	

*Scenario 6 was not modeled in the benefit-cost analysis as it was added to the financial analysis after work had been completed on the Benefit-Cost Section. All scenarios will be added to future Benefit-Cost Analyses.

Amendments to the Agreement

Staff proposes to segment Phase 2 into sub-phases to better manage project costs and risks as shown in Table 6. Staff also proposes certain changes to the Agreement itself to better align costs, payments, and incentives moving forward, given the findings from Phase 1.

The work performed by Connection Partners during the first phase was completed "at risk." The Connection Partners undertook all work without a guarantee for payment and are only partially compensated – up to an agreed to limit – if the City decides to stop the project without cause (early termination). This structure means that Connection Partners

must finance the work that they and their consultants undertake. For Phase 1, the City would compensate the Connection Partners an early termination payment of $950,000. Funds for an early termination payment have been allocated and reserved in the City's budget.

Staff recommends modifications to the Agreement to better manage the financial risks and expected funding moving forward. The Agreement's at-risk structure increases the finance costs for Connection Partners because of the length of time between when they incur costs and when those are paid. Rather than negotiating an overall budget for Phase 2 and funding the entire phase upfront, staff and Connection Partners propose to change the structure to one where the City would make progress payments that are detailed in task orders. Connection Partners would receive compensation if they meet their agreement milestones. This would reduce the financing costs for Connection Partners, allow for incremental funding to be used to progress the project, and reduce the exit payment overhead of the project.

Table 5 Pre-Development Agreement Phases

Agreement Phasing and Duration	Scope	Work Products	City Council Actions
Agreement Phase 1 April 2023 **(complete)**	Business Case Development – evaluates technical, commercial, and financial feasibility	The Report	Accept Validation Amendment
Agreement Phase 2a Est 1 year	Project Development – refinement of ridership and funding plans, preliminary design, key business terms	Additional ridership analysis Project Funding Plan Conceptual design for Alternatives Analysis	Develop Preferred Route
Agreement Phase 2b Est 1- 2 year(s)	Project Development – environmental review, and cost estimation.	Environmental Clearance, Preliminary Design	Approval of final environmental documents
Agreement Phase 3 Est. 6 months	Negotiate Implementation Agreement	Implementation Proposal	Signing of long-term implementation agreement
Final Implementation Agreement	Project delivery and operations	Project Funding Plan, Construction Plan, Operating Franchise Agreement	

Phase 2a

Phase 2a work will refine ridership forecasts, solidify a federally accepted project life cycle funding plan, work with the public and stakeholders to define a proposed preferred and feasible route alignment, update cost estimates, and do preliminary design work necessary to prepare for environmental clearance for the Base Project only. This phase of work will culminate in a return to City Council for a decision on whether to proceed with the project.

Phase 2a is expected to cost up to $18.5 million. There is $3.8 million existing funding to cover City staff costs to begin work on initial milestones as part of Phase 2a. Staff is working to secure the remaining funds to undertake the remainder of Phase 2a, as outlined above. This funding is a combination of VTA Measure A, a federal innovation grant, and previously allocated City Capital Improvement Program funding. In January 2025, staff applied for $12.9 million more in funding from the federal Better Utilizing Investments to Leverage Development (BUILD) grant program and is working with regional partners to identify and secure the remaining needed funds.

If City Council chooses to advance the project beyond Phase 2a, further Phase 2 work (Phase 2b) will advance the project through environmental clearance and design, and prepare the needed business and legal elements of the project to enter into negotiation for an implementation agreement (Phase 3). The cost for Phase 2b is estimated at $20 million in today's dollars. Funding for this work is expected to come primarily from grant sources. Staff work in Phase 2a and 2b is supported by third-party outside consultants to ensure the highest quality work and bring in best practices and innovations. The City currently contracts with Arup, a worldwide planning and engineering firm with a public-private-partnership practice, and Ashurst an outside council also with a specialization in public-private-partnership.

Policy Alternatives

Alternative #1: Phase 2a for Only Base Project – Conduct Phase 2a for the Base Project only while the Airport evaluates need and solutions for future intra-airport transit.

- **Pros**: Less physical impact on the Airport; lower cost and duration of Phase 2a.

- **Cons:** Lower estimated riders; the user experience requires walking or taking bus/alternate intra-airport transportation to the Connector.

- **Reason for not recommending:** Previous City Council direction to explore the Extension Project requires additional technical and funding gap analysis. There is less value to the transit user with a mixed user experience and less value to a public-private partnership.

Alternative #2: Pause All Projects – Place efforts on hold for 24 months and negotiate the pause with Connection Partners.

- **Pros:** Allows City staff to focus/shift resources on higher priorities; allows further developments in other higher priority local transit projects; allows monitoring of other Glydways projects including, but not limited to, the East Bay and Atlanta Hartsfield International Airport.

- **Cons:** Further delays progress on Measure A voter approved project; may trigger the early termination payment if pause negotiations are unsuccessful.

- **Reason for not recommending:** Previous City Council direction to continue exploration of the Projects was given as early as 2023 when the post COVID-19 normalization environment and airport impacts were known. Pausing the Projects would be contrary to previous City Council direction, Measure A Voter expectations, and historical funding agreements with VTA. A pause on the Projects could reduce the City's influence in any future VTA Airport connector project. A pause could trigger the early termination payment.

Alternative #3: Stop All Projects – Finalize Phase 1 documentation and provide to VTA for utilization in a VTA future Airport transit connection project. The City would then pay the early termination payment.

- **Pros:** Allows City staff to focus/shift resources to higher priorities, allows further developments in other higher priority local transit projects.

- **Cons:** Further delays progress on Measure A voter approved project; triggers early termination payment.

- **Reason for not recommending:** Previous City Council direction to continue exploration of the Projects was given as early as 2023 when the post COVID-19 normalization environment and airport impacts were known. Stopping the Projects would be contrary to previous City Council direction, Measure A Voter expectations and historical funding agreements with VTA. Stopping the Projects could reduce the City's influence in any future VTA Airport connector project. A stop would trigger the early termination payment.

It should be noted that the VTA Board of Directors is responsible for implementation of the Measure A Program and for all policy-related decisions, including the composition, implementation schedule, and funding level of projects. Measure A voters did approve a connection from the Airport to BART, Caltrain and VTA light rail. Should the City Council decide to pause or stop both Connector Projects, there is no legal responsibility between the City and VTA nor the City and the Measure A voters.

Racial Equity Impact Analysis

The Connector Projects have the potential to improve transit equity through several key measures in its Request for Proposals:

1. **Seamless Fare Payment** – The operator must use regional and statewide common fare systems, reducing barriers for low-income and racially diverse communities reliant on cohesive transit networks.

2. **Low-Income Fare Discounts** – Participation in a regional program offering 50% fare reductions for public benefit recipients will enhance affordability.
3. **Unbanked Access** – Alternative payment methods will accommodate those without credit or bank cards, ensuring financial inclusivity.
4. **Airport Employee Transit Pass** – While an employee pass similar to the VTA SmartPass is proposed, the current $45 monthly fee per worker is unaffordable to the City. Negotiations aim to reduce costs for equitable worker access.

The Connector will link Diridon Station and the Airport, enhancing regional connectivity. However, shifting City funding from Route 60—which serves Winchester/Santana Row, Santa Clara Caltrain, VTA light rail, and Milpitas—could disrupt current riders, particularly low-income and racially diverse populations. The project will assess and mitigate these impacts through alternative transit options or maintaining existing VTA service.

Equitable design is also a priority. The Glydways team has worked with disability advocates to implement universal design features, including:

- **Level boarding** for wheelchair accessibility;
- **Larger cabins** to accommodate mobility devices; and
- **Accessible app and kiosk design** for visually impaired users.

By expanding affordable, reliable transit options and engaging equity-priority communities, the Connector aims to advance racial and transportation equity. Ongoing community engagement and careful service planning will be essential to meeting these goals.

Climate Smart San José Analysis

The Connector aligns with and contributes to implementing the Climate Smart San José Plan. The project connects two important regional transportation hubs through electrically propelled, automated transit vehicles. By providing high-frequency transit service on a new dedicated guideway, this transit system will reduce vehicle miles traveled and create a mobility choice other than single-occupancy, gas powered vehicles. The Connector is estimated to result in a reduction of up to 26 million vehicle miles traveled per year. A reduction of vehicle miles traveled leads to reduced greenhouse gas emissions, decongestion of the street network, reduced vehicular collisions, and reduced local air pollution. Additionally, this project would result in job creation within the San José limits through construction, operation, and maintenance. The recommendation in this memorandum aligns with multiple Climate Smart San José energy, water, or mobility goals.

EVALUATION AND FOLLOW-UP

As outlined in the Analysis section, the multi-step agreement includes several decision points for both the City and Connection Partners to assess progress and determine whether to advance the project. The proposed resolution will authorize staff to transition into Phase 2a. Staff will return to the City Council with additional funding acceptance and obligation actions and, upon the completion of Phase 2a, to present findings and seek direction on the next steps. Additional City Council action will be required for subsequent Phase 2b project development steps, namely beginning environmental review. Phase 3 negotiations will be required to make a final decision on an implementation agreement and whether to proceed with construction.

COST SUMMARY/IMPLICATIONS

The proposed resolution would authorize the City Manager to pursue additional external funds to proceed with portions of Phase 2a, which is expected to require up to $14.7 million more than is currently available. Should additional funding be secured, staff will return to the City Council for approval to receive and allocate those grants toward unfunded portions of Phase 2a.

COORDINATION

This memorandum was coordinated with the City Attorney's Office and the City Manager's Budget Office.

PUBLIC OUTREACH

This memorandum will be posted on the City's website for the March 11, 2025 City Council meeting. The City has conducted outreach with potential alignment stakeholders, the labor community, members of the public, and Bay Area Rapid Transit Silicon Valley community working groups.

Staff hosted a community meeting on September 20, 2023 at the Rose Garden Branch Library. The goal of the meeting was to inform the community about the Connector's progress and to receive feedback and input from residents. This feedback was received by the project partners and incorporated into the Report. Information about these meetings can be found on the San José Airport Connector Project web page.[6] Timeline, updates, and resources regarding this project have been regularly posted to the project website.

[4] https://www.sanjoseca.gov/your-government/departments-offices/transportation/transit/airport-connector

COMMISSION RECOMMENDATION AND INPUT

The Connector was presented to the Airport Commission on November 18, 2024. In addition, this report will be the subject of a special meeting of the Airport Commission the week of March 3, 2025. A supplemental memorandum with the Airport Commission's recommendation and input will be included in the amended March 11, 2025 City Council meeting agenda

CEQA

Statutorily Exempt, File No. PP17-001, CEQA Guidelines Section 15262, Feasibility and Planning Studies.

PUBLIC SUBSIDY REPORTING

This item does not include a public subsidy as defined in section 53083 or 53083.1 of the California Government Code or the City's Open Government Resolution.

/s/
John Ristow
Director, Department of Transportation

/s/
Mukesh (Mookie) Patel
Director, Department of Aviation

For questions, please contact the Department of Transportation, Brian Stanke, Senior Transportation Specialist, at brian.stanke@sanjoseca.gov or (408) 795-1834.

ATTACHMENTS

A. Landrum and Brown Ridership Report
B. Arup Memorandum

Attachment A

Landrum & Brown, Incorporated
4445 Lake Forest Dr., Suite 700
Cincinnati, Ohio 45242
513.530.5333

To: San José Mineta International Airport (SJC) Executive Management Team

Date: September 6, 2024

Re: Airport Connector - Summary of SJCP Ridership Study and Project Evaluation

Attached: Technical Review of San José Connection Partners Ridership Study and Project Evaluation

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The attached technical report provides Landrum and Brown's (L&B's) review of the San José Connection Partners (SJCP) Draft Feasibility Study, primarily focusing on the ridership study completed by Steer and an evaluation of impacts to Airport development. L&B was founded in 1949 to support the development commercial air passenger service at airports. L&B has developed industry practices for landside analyses and has evaluated countless airport transit connections since its inception. Most recently, we have been engaged by the San Diego County Regional Airport Authority to assist with the evaluation of proposed transit alternatives developed by the San Diego Association of Governments.

This cover letter provides L&B's overall evaluation of the proposed transit project in which both challenges and potential flaws are identified along with summarizing the findings of our review of the ridership study to San José Mineta International Airport (SJC) staff.

Project Evaluation

SJCP defines the project as either full build, from Diridon Station to the Long-Term Parking Lot, or as the segment from Diridon Station to Terminal B. This implies a preference that the entire project should be constructed at one time, an approach that raises some concerns. The vehicle technology that SJCP is proposing to use is unproven and carries a greater risk of "teething issues" or failure than a conventional automated people mover (APM). If the technology does fail, the guideway that is being constructed will not be designed to support conventional APMs or buses. Additionally, the on-airport service that it would replace provides better access and shorter walking distances to the Long-Term Parking Lot for SJC's customers. The existing bus service also mostly consists of zero-emission battery powered vehicles and is more flexible to future facility changes, as SJC is further developed.

There are currently no funded proposals to further densify the use of Long-Term Parking Lot parcel, beyond the existing parking garage as additional infrastructure would require a new bridge over the Guadalupe River. Any fixed-guideway transit service should be planned in conjunction with future land use changes and integrated into the development to minimize walking distances and maximize the benefits of the investment. For these reasons, **L&B recommends that SJC pause on any extensions of the SJC Connector beyond Terminal B** until its technology is proven and plans for the northeastern quadrant of the airport are funded and those plans integrated with the proposed transit improvements. While L&B believes there is merit in exploring the first segment from Diridon Station to Terminal B, it is recommended that **SJC should proceed with caution**.

Ridership Estimates Review and Evaluation

The lack of City of San Jose transit model documentation, and inability to review the final Steer spreadsheet model, raises questions regarding its overall precision in estimating airport trips. There are limited current data/surveys for SJC, with most of the data over a decade old, resulting in outdated model inputs and assumptions. However, it is L&B's understanding, that many of these concerns will be addressed in future modeling efforts. The model is covered in more detail in the attached study.

Top Line Findings & Recommendations

- Almost all the benchmark cities/airports in the Steer report are of significantly greater size, density and have much higher airport landside volumes than SJC.
    - **Recommendation:** L&B is more confident with a benchmark transit mode share target in a range of 4 to 5%, similar to OAK and PDX, as it is more achievable than Steer's 11% transit share and would still represent a significant increase over the existing 1 to 2% transit share.
- AM Peak matrices are overstating the impact of congestion on auto travel and the attractiveness of transit.
    - **Recommendation:** L&B recommends the development of new matrices or some hybrid of the existing AM Peak and Midday matrices be used instead.
- A 20-minute SJC Connector buffer time discount is too generous, and a half-mile walk shed is too far of a walk for most air passengers with luggage.
    - **Recommendation:** L&B recommends that walk-shed alternatives of a one quarter and one third mile be tested, along with reducing or eliminating the buffer time entirely.
- The future Diridon Station land use and transit improvement assumptions appear aggressive, potentially in scale and timing, both with impact to the ridership estimates.
    - **Recommendation:** Aside from various ridership estimation issues previously identified by L&B, there are also concerns over if/when the proposed transit improvements and land use changes around the 80-acre Diridon Station site will materialize. L&B also recommends that the City of San Jose explore ridership scenarios without California High Speed Rail (CHSR), due to its highly speculative nature.

The following sections summarizes the analyses on which L&B's recommendations are based. Additional details can be found in the attached *Technical Review of San José Connection Partners Ridership Study* (Technical Review).

Benchmarks

The Steer transit share benchmarking included 10 airports, aside from OAK, that were not directly comparable to SJC. The remaining 9 airports are located in much denser metropolitan areas, handle far greater trip volumes on their landside (O/D enplanements), and are more centrally located or directly integrated with their regional transit systems.

To identify more suitable benchmarks, L&B reviewed the full list of 33 medium hub airports in the country and assessed their area population densities and O/D enplanements, in which 4 airports were selected and OAK was added from the Steer analysis based on its similarity to SJC. The complete analysis can be found in the attached Technical Review. The table below (on the next page) presents the transit mode shares for each of the benchmarked airports.

The average transit modal share for the five airports surveyed was 4% - the highest being 5% and the lowest 1%. This is substantially less than the 11% average transit modal share calculated by the SJCP analysis. However, several of the airport's surveyed (PDX, CLE and STL) provide direct one-seat rides

to their region's central business district – providing more direct access for tourist and business travelers than the SJC Connector would.

Transit Shares for Five L&B Benchmark Surveyed Airports

Airport	City	Transit Agency	Transit Type	Transit Mode Share
OAK	City of Oakland	BART	Rail	4%
PDX	Portland	TriMet	Rail	5%
STL	St. Louis	Metrolink	Rail	4%
CLE	Cleveland	RTA	Rail	4%
BUR	Burbank	BUR Airport	Bus/Rail	1%
			Average Transit Mode Share	**4%**

Source: Data collected from the Airports and the various transit Agencies Serving them, Such As: BART, BUR Airport, Port of Portland

Congested Roadways and Higher Transit Frequencies

The higher levels of roadway congestion and more frequent transit services defined in the AM Peak matrices would not be experienced by most air travelers. Airport departure and arrival peaks do not completely align with the commutation periods, as highlighted in Figure 1 of the attached Technical Review. The AM peak period only accounts for 18% of all departing air travelers that are accessing the airport, with the remaining 82% traveling to the airport either before or after the AM peak period. This pattern is similar for SJC's arrival-hours (arriving passengers) as well. It is L&B's assessment that, that the combination of longer auto travel times and higher transit frequencies unduly bias the SJC Connector over auto and for-hire vehicle alternatives.

Land Use and Transit Developments

The Steer model assumed transit improvements that include extension of Bay-Area Rapid Transit (BART) Silicon Valley Berryessa Transit Center to Diridon, along with a stop for CHSR. The Downtown West Mixed-Use Plan, a partnership between the City of San José and Google was also assumed. This would result in up to 7.3 million gross square feet (GSF) of office space; 5,900 units of new housing; up to 500,000 GSF of active uses (retail, cultural, arts, etc.); 100,000 GSF of event space, hotel use (up to 300 rooms), and limited-term corporate accommodations (up to 800); and 15 acres of parks and open space. The half-mile walkshed assumed by SJCP in the model will place much of the development within walking distance of the SJC Connector. All these improvements are assumed in the SJCP ridership model.

The BART extension recently was awarded state and federal funding grants, which makes this project more of a reality even though its timing is still uncertain. The Downtown West redevelopment timing is also unclear since Google has slowed its investment, as it struggles with rightsizing its business post-COVID. Finally, realizing the full intercity benefits of CHSR from San Francisco to Los Angeles is far from certain since the program is not fully funded and there is no official completion date. Plans for an initial operating segment (IOS), from Merced to Bakersfield might open by 2033, but would not include HSR service to Diridon Station. These transportation and land use improvements likely have a substantial impact on the ridership estimates and scenarios should be developed for various transit (similar to CHSR) and development outcomes/timings.

SJC SAN JOSE MINETA INTERNATIONAL AIRPORT

SJC Transit Connector

Technical Review of San José Connector Partners Ridership Study and Project Evaluation

Final – September 2024

PREPARED FOR

San José International Airport

PRESENTED BY

Landrum & Brown, Incorporated

Contents

Page

1 Purpose of Document

Landrum & Brown (L&B) was retained by San José Mineta International Airport (SJC) to review the San José Airport Connector Ridership Forecasts developed by the consulting firm Steer ("Steer Report") for San José Connection Partners (SJCP)[1], released in March of 2024. L&B was founded in 1949 to support the development commercial air passenger service at airports. We are experts on the airside/airfield, terminals, and landside. L&B has developed industry practices for the landside analyses and has evaluated countless airport transit connections since its inception. Most recently, we have been engaged by the San Diego County Regional Airport Authority to assist the evaluation of proposed transit alternatives developed by the San Diego Association of Governments. This document provides a concise critical review of the Steer Report's ridership analysis including the tools/models used, inputs, assumptions made and benchmarks.

2 Summary of Findings & Recommendations

The primary findings from L&B's review of Steer's Ridership Study, completed for San José Connection Partners, are the following:

- The lack of City of San Jose model documentation, and inability to review the final Steer spreadsheet model, raises questions regarding its overall precision in estimating airport trips. It is our understanding, that many of these concerns will be addressed in future modeling efforts.
    - There are limited current data/surveys for San José Mineta International Airport (SJC), with most of the data over a decade old, resulting in inaccurate model inputs and assumptions.
- The project should be constructed in phases – not as the proposed full-build – and initially without the intra-airport segment. The intra-airport segment requires additional planning and coordination with the Airport's overall future development. In addition, the risk associated with the technology should initially be limited to an initial minimal operating segment.
- Almost all the benchmark cities/airports in the Steer report are of significantly greater size, density and have much higher airport landside volumes than SJC. Additionally, the Steer estimated average of 11% transit modal share is more than twice what L&B found at more comparable airports (4%).
- The future Diridon Station land use and transit improvement assumptions appear aggressive in scale and timing, both have the potential to impact the final transit ridership estimates.
- The AM Peak matrices may be overstating the impact of congestion on auto travel and the attractiveness of transit.
- The 20-minute SJC Connector buffer time discount is too generous. A one-half mile walk shed is not a feasible for most air travelers with families and/or luggage.

[1] San Jose Connector Partners is a consortium selected by the City of San Jose in 2023 to develop a transit connection between SJC Airport and the future transit hub at Diridon Station.

3 Steer Report Structure & Project Background

The Steer Report, prepared for the project feasibility study, is organized into eight chapters as followings:

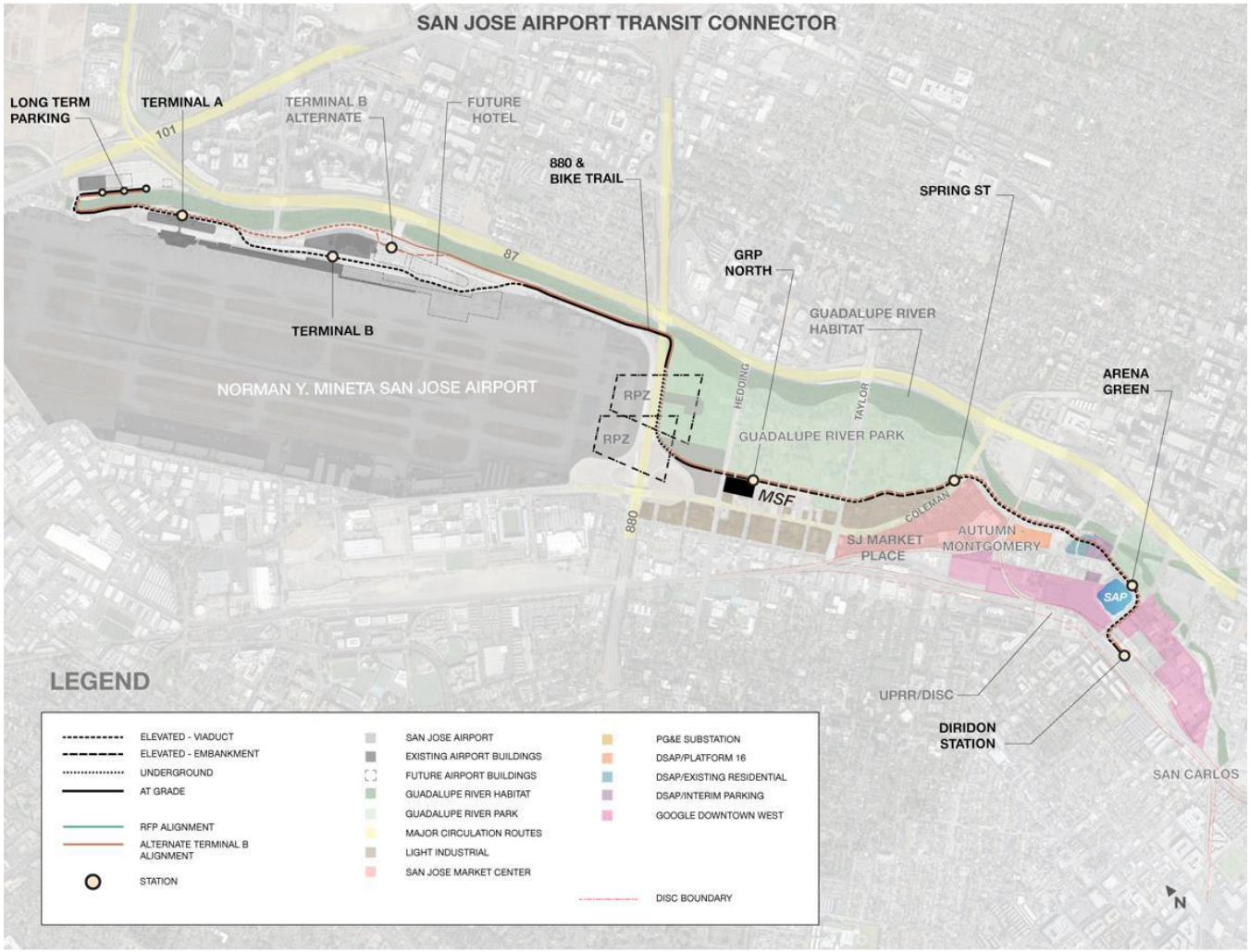
- Chapter 1 providing background information on the project itself.
- Chapters 2 through 4 focus on model inputs, the forecasting tool, and modal choice analysis.
- Chapter 5 overviews the California High-Speed Rail project and its potential impacts.
- Chapter 6 arrays the results of the forecast model.
- Chapter 7 details the benchmarks that were used.
- Chapter 8, the final chapter, discusses next steps that the Steer team will take to further refine the forecasts to a “financial grade” level.

The authors of the Steer Report make it clear from the outset that this a “planning-level” forecast that, “cannot be relied upon as a basis for making financing decisions.” Based on L&B’s review, the L&B team agrees with this statement.

The project evaluated in this ridership study consists of a grade-separated autonomous on-demand personal rapid transit system, which is referred to as an automated transit network (ATN). This system would connect SJC to Diridon Station, an existing transit station offering commuter and intercity rail services along with connections to the City of San José light-rail and bus services. Diridon Station is also the site of a future underground BART station, an extension from Berryessa, and will be a future stop for California’s High-Speed Rail (CHSR). The ATN vehicles, developed by Glydways, would have a maximum capacity of four passengers.

The base system of the project (or SJC Connector) would run from Diridon Station to Terminal B at SJC, mostly along an elevated viaduct, and then return to the surface with an at-grade station at the Airport, either behind a future garage at the Consolidated Rental Car Facility or at the Terminal B Ground Transportation Island. The project also includes an option to extend the SJC Connector to Terminal A at SJC and then to the Long-Term Parking Lot, which would have three stops. Moving forward this will be referred to as the intra-airport option. There could also be several intermediate stations between Diridon Station and SJC Airport, as shown in the following project map.

Project Alignment and Stops with Intermediate Stations



Source: HNTB

4 Review by Section

The following contains our critical review of each of the Steer Report chapters and their respective subsections.

4.1 Chapter 2: SJC Connector Features

This chapter articulated the assumptions used by Steer for the SJC Connector pricing, in-vehicle travel times to and from the airport to Diridon Station and connection walk times between various modes at Diridon Station. L&B also provides feedback on the viability of the on-airport extension of the project, which would replace the existing internal circulator bus service.

4.1.1 Fares

The first table in Chapter 2 of the Steer Report details the various fare offerings for the SJC Connector, including the intermediate stops. For the purposes of this review, we are only focusing on the fare from the Airport, which ranges from $13.00, if a traveler is reserving the entire ATN vehicle, to $6.50, if a traveler is willing to share its occupancy with other riders.

Table 1 arrays the fare from nine benchmark airports with existing transit connections. The four bolded airports are the new benchmarks L&B identified (see **Section 4.6** for more details) and the remaining five are selected airports from the earlier Steer study. The average of these nine fares is $4.77, but this figure is overstated. The fares for Portland International Airport (PDX), St. Louis Lambert International Airport (STL), Cleveland Hopkins International Airport (CLE), and Hollywood Burbank Airport (BUR) are trips from each airport's respective city centers – a distance greater than the approximately three-miles covered by the SJC Connector. If these fares were adjusted to account for this disparity, the average fare would be closer to $4.00. The highest fares are the AirTrain services at Newark Liberty International Airport (EWR) and John F. Kennedy International Airport (JFK), which connect users to a dense and far-reaching transit network, and San Francisco Bay Oakland International Airport (OAK), which is operated by a third-party. The SJC Connector's effective fare collection (per vehicle) would range from $13.00 to $26.00 (assuming the system would try to fill at least two seats in every vehicle when sharing is selected, which is the same as the solo fare). Another issue that requires attention is fare discounts. Most cities offer these for low-income households, seniors or mobility challenged persons, which is currently not discussed in the Steer Report or the other related financial feasibility documents.

Table 1: Fare Comparison of Existing Airport Connecting Transit Services

Airport	Transit	Fares	Without AirTrain
JFK	AirTrain	$ 8.50	-
EWR	AirTrain	$ 8.50	-
DCA	Metro Rail	$ 2.50 *	$ 2.50
ORD	L Train	$ 2.50	$ 2.50
OAK	Airport Connector	$ 7.10	$ 7.10
PDX	TriMet Max Rail	$ 2.80 *	$ 2.80
STL	MetroLink	$ 3.00 *	$ 3.00
CLE	RTA	$ 2.50 *	$ 2.50
BUR	Metro Link	$ 5.50 **	$ 5.50
	Average	**$ 4.77**	**$ 3.70**

*These systems – Ronald Reagan Washington National Airport (DCA), Portland International Airport (PDX), St. Louis Lambert International Airport (STL) and Cleveland Hopkins International Airport (CLE) – do not have airport fare surcharges and reflect the fare from the city center to the Airport.
**The Metro Link system at Burbank has two rates depending on the line used and the destination/ entry gate of the airport. The charge from union station to the Southern terminal of the airport is $ 4 and the fare for the northern terminal is $ 6. Therefore, a midpoint of $5.50 is considered for this comparative study.
Source: Various public transit agencies

4.1.2 Travel Time

We are not in a position to dispute the estimated travel times since we do not have the details of the simulation model used to generate them. However, a quick calculation indicates that for a vehicle to traverse the distance (based on the approximately 3.5-mile alignment) between Diridon Station and SJC in 9 minutes, it would need to operate at an average speed of 23 miles per hour (mph), which appears reasonable.

4.1.3 Diridon Station Transit Transfer/Connection Times

It is difficult to assess the validity of average walking time used between arrival on transit at Diridon Station and then walking to the SJC Connector access point within the multi-modal complex (transfer walk time) without additional details on the station configuration, which are not provided in this study.[2] This transfer time will vary based on proximity of the service (which will again, likely vary since there will be several) and whether it is at the same level or require one or more level changes to access. In addition, the varying degrees of customer mobility needs to be considered and evaluated, accordingly, when developing this assumption. The two minutes used is likely at the low end of the potential range

[2] Vol 1 of the Feasibility Study does contain some initial site plans for the Diridon ATN Station; however, it is not completely clear how the circulation between this station and the rest of the complex will be organized. In addition, the ATN station is located on the northeastern corner of the station at the far end of the platforms, adjacent to the bus bays but further from the Caltrain, Amtrak and LRT services. It is also unclear how the new underground BART station would be connected to the ATN or future CHSR.

and should be evaluated as more details of the station design elements are provided and the desired market surveys completed.

4.1.4 SJC Connector Station Access, Maximum Walking Distance

The maximum walkshed for SJC Connector stations was set at a one-half mile distance. While this is the industry standard for most public transit, Steer should consider the practical reality that most airport users will be carrying/rolling luggage and will be less willing to traverse a distance of this extent. Steer should undertake a sensitivity analysis (or as a part of a future survey) to evaluate one-quarter of a mile and one-third of a mile walksheds.

4.1.5 Intra-Airport Segment of the Transit Connector

When reviewing the plans for the intra-airport option of the transit connector, the L&B team had several concerns beyond the proposed availability payments and SJC's capacity to support them. L&B does not dispute the internal circulation ridership estimates, except for the higher master plan enplanement forecasts used, which we understand is being adjusted and will likely result in overall lower ridership figures. This is a captive market, and it is reasonable to assume that ridership will shift from the existing bus/shuttle circulator service to the intra-airport option of the Connector. We also understand the attractiveness of moving ahead with the base project plus intra-airport segment instead of breaking it into phases, which includes capital cost (construction staging) savings and more attractive financing, due to captive ridership and larger definitive (availability) payments. However, there are several reasons why this might not be the appropriate time for SJC to replace the internal circulator system and why it could result in a degraded level of service (LOS) for long-term parkers.

4.1.5.1 Lack of Alignment Between Land Use and Proposed Transit Service

The Long-Term Parking Lot is an over 10-acre site that has been used for surface parking since the 1990s. In 2020, SJC allocated roughly two acres of property for the construction of a multi-story parking deck. This left approximately 8 acres still allocated for surface parking. While it is considered in the SJC Airport Master Plan, there are no formal redevelopment plans for these remaining acres, as additional infrastructure would require an additional bridge over the Guadalupe River. The proposed intra-airport option plans would result in three transit stops placed in areas that could be suboptimal to support the future redevelopment of the site. There should be an integrated planning process to determine the future "best and highest use" for the site and incorporate the fixed-guideway transit service in way that would complement the redevelopment plan. There are several examples of this in California, which include:

- San Francisco International Airport (SFO)'s new APM service to/from their Central Terminal Area (CTA) that serves a new structured long-term parking deck and consolidated rental car facility, which are both located on airport property.
- Los Angeles International Airport (LAX)'s new APM service connects multiple structured parking facilities, regional transit services and a consolidated rental car facility, most on-airport property.

The above are examples of projects that developed a new transit service to an empty service lot with a clear development plan that would densify its future use. However, if it's ultimately decided that the

long-term lot and garage as currently configured meets the airport's future needs, and there is no additional need to support growth through greater densification of this site, then the extension of the inter-terminal option would be impractical. The costs of constructing, maintaining, and operating the infrastructure would likely be excessive for such a low-density use. Over time, as autonomous vehicles enter the market and mature, these technologies could be applied to replace the current conventionally operated mix-traffic electric shuttle buses to further lower transportation costs to serve this facility.

4.1.5.2 Accessibility Impacted for Long-Term Parking Customers

The current internal circulation shuttle bus serves six stops located within the Long-Term Parking Lot that are spaced out evenly along its perimeter. The SJC Connector will have only three stops on just one side of the lot, parallel to the existing Guadalupe River Bike Trail. SJCP has stated that the increased frequency and greater speed of the Connector will mean that overall travel time is improved. However, this will substantially increase the walking distances for roughly half of the long-term parkers. While this will be a serious impediment for those with impaired mobility, it is also a safety concern for many that will be accessing the lot, especially for arriving passengers later in the evening.

4.1.5.3 Electric Buses Eliminate Environmental Justice (EJ) Concerns

One element that typically makes a fixed-guideway system attractive is their use of electrically powered vehicles, which eliminates the noxious emission of diesel bus services that they have historically replaced. Yet, in this particular case, SJC has already electrified the majority of their bus fleet, eliminating the majority of local green-house-gas (GHG) emissions and operating with reduced noise.

4.2 Chapter 3: Forecasting Tool Development

The CSJ travel demand model appears to have been calibrated using all trips in the region, and therefore does not capture the uniqueness of airport access trips, which differ in many respects, including baggage carrying, group travel, friends and family driving of airport passengers, non-repetitive trips, etc. L&B requests a copy of the travel demand model to review and comment on its applicability to airport access trips.

4.2.1 Modal Shares

The Steer team is clear about the model's imprecision and lack of recent traffic and survey data. We agree that that modal data in table six, on page 13, of the Steer Report is out of date and needs to be updated. The transit share is likely around 1% (assuming a post-pandemic decline, similar to what we have seen in other systems[3]), based on Steer's review of the ridership. However, we do have concerns with arbitrarily tripling of rideshare modal share. No recent survey of air passengers has been

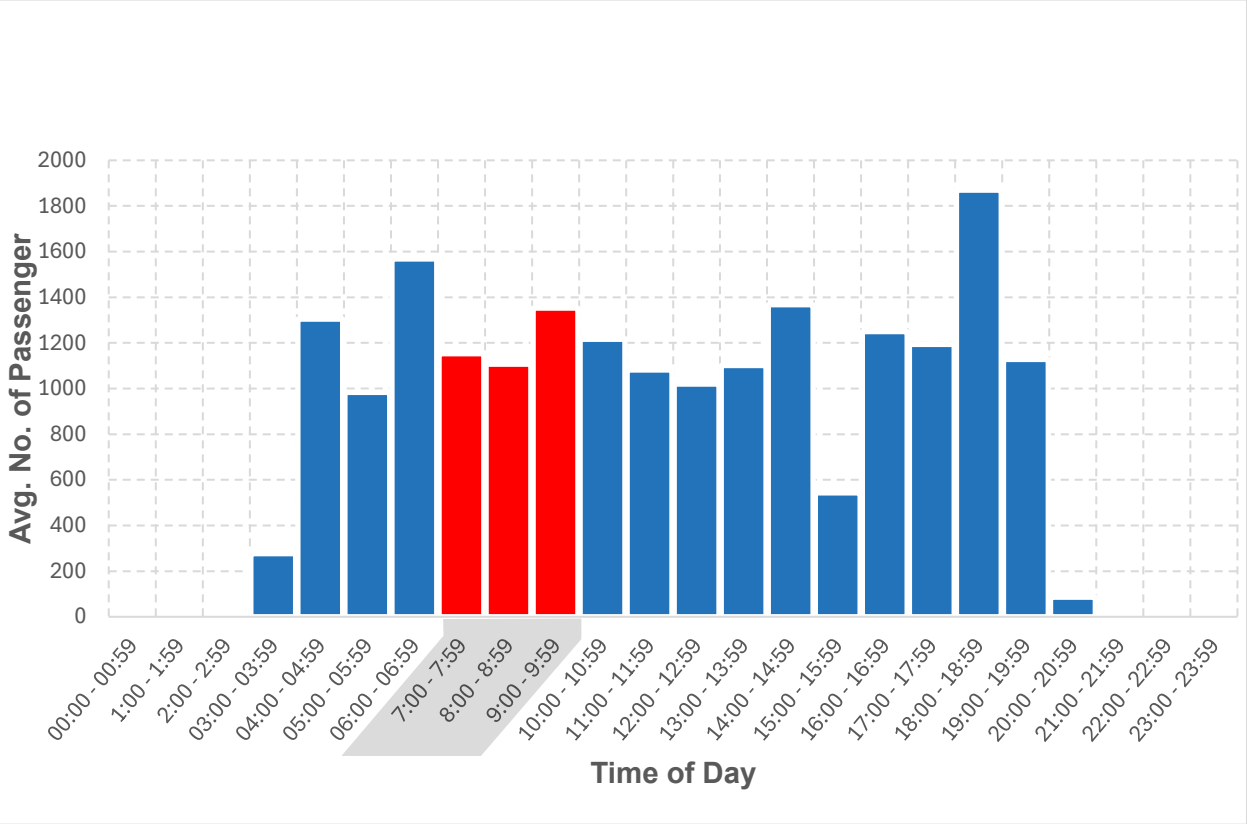
[3] Since COVID-19 transit systems in the United States have struggled to return to ridership levels that existed prior to the pandemic. According to recent report released by the American Public Transportation Association, public transit ridership nationally has rebounded to just 79% of pre-pandemic levels. In the San Francisco Bay Area, the recovery has been far slower, as of June 2024 the BART system's average weekday ridership had only reached 40% of pre-COVID levels. Public transit directly feeds airport transit connections, so when these systems are perceived as less attractive and safe by many users it further depresses the use of transit to airports.

performed, and therefore the report does not have enough data required to estimate the raise of app-based rideshare and other impacts post-pandemic.

4.2.2 Travel Times and Costs

The use of peak period auto travel times, along with peak-transit frequencies, for the entire day is too aggressive. Airport departure and arrival peaks do not completely align with the commutation periods. The extended commuter AM Peak period has traditionally spanned from 7:00am to 10:00am. While the post-pandemic travel behavior changes have blurred the lines – with some commuters shifting further into the shoulders – the majority of those still commuting to an office travel during these times. As shown in **Figure 1** below, SJC's peak departure-hours are 6:00pm to 7:00pm followed by 6:00am to 7:00am – with passengers traveling to SJC to depart to their destinations throughout most of the day, including the AM Peak. The AM peak period only accounts for 18% of all departing air travelers that are accessing SJC, with the remaining 82% traveling to the airport either before or after the AM Peak period.

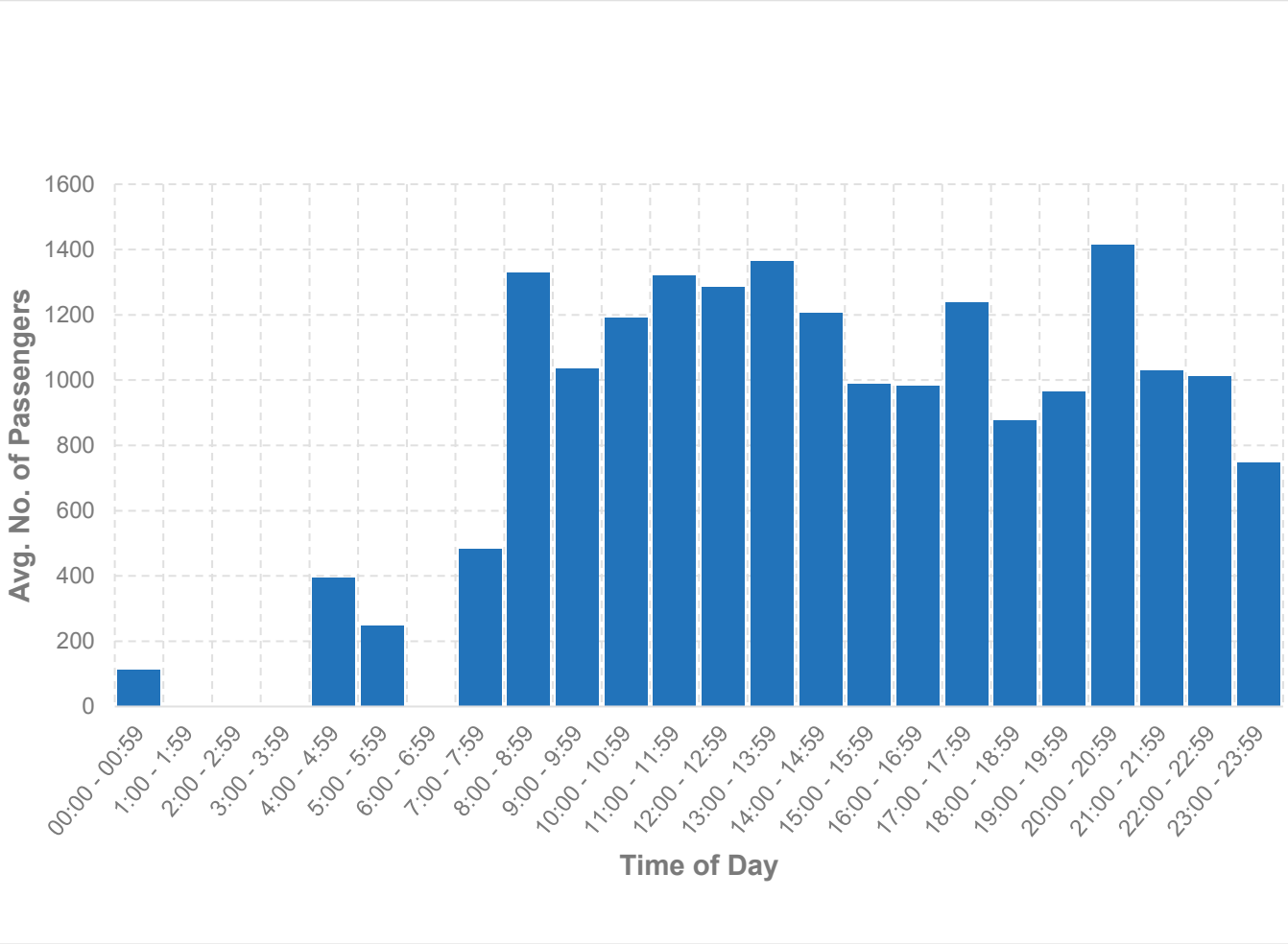
Figure 1: Departing Air Passengers by Hour (Scheduled Peak Day, Summer 2024)



Source: San José Mineta International Airport (SJC)
Notes: Load factor used was 79%, based on the Load Factors of the recent years procured from transtat.bts.gov.

As shown in **Figure 2**, the peak-arrival hour is from 8:00pm-9:00pm, with another busy arrival period occurring during the Midday. The AM Peak period only accounts for 15% of all arriving air travelers that are leaving the airport, with the remaining 85% leaving the airport either before or after the AM Peak period. These data show that level of congestion represented by the AM Peak matrices would not be experienced by most air travelers. In addition, many of these travelers are departing and arriving the airport during times of lower transit frequencies or when transit is not even available. It is our assessment that the combination of the longer auto travel times and higher transit frequencies associated with the applied AM Peak matrices, unduly bias the SJC Connector over auto and for-hire vehicle alternatives.

Figure 2: Arriving Air Passengers by Hour (Scheduled Peak Day, Summer of 2024)



Source: San José Mineta International Airport (SJC)
Notes: Load factor used was 78%, based on the Load Factors of the recent years procured from transtat.bts.gov.

However, we do understand this was the only data available and do agree with Steer that additional surveys are needed. L&B recommends that a sensitivity analysis be conducted to assess the relative impact of the AM Peak and Midday matrices on ridership.

4.2.3 Travel by Airport Staff

This overall analysis is sound based on available information. However, as noted by the Steer team, we are concerned that the span of operation and frequencies of most of the existing and planned connecting transit services at Diridon Station will not align with airport employee shift changes. This has been a problem at airports across the U.S., including SFO.[4] The SJC Connector might run 24 hours a day, 7 days a week, but most of the regional transit services will not. The coverage, span of service, and its frequency are critical factors in an employee's decision to shift modes.

4.2.4 Captive or Unserved Travelers

The methodology and logic applied in this section on captive or unserved SJC Connector travelers raises some questions. Why would a group larger than four (the capacity of the ATN vehicles) not reserve two or more vehicles? For example, couldn't three of the passengers take one vehicle and the remaining two call another? Similar to how larger parties will call two or more for-hire vehicles? While we would accept the 2% reduction to account for parties of 5 or more due to the imprecision of the model, we do not see the applicability under real world circumstances.

Based on our analysis in **Section 4.3.3,** using 5% for unserved passengers, passengers traveling to the airport when there is no meaningful transit, is likely understated. A passenger survey would help determine a more accurate factor for future forecasts.

4.3 Chapter 4: Mode Choice

The mode choice chapter is organized into three sections – group vs. solo travel, travel time and costs and mode choice parameters. Some of what is discussed here we have covered in **Section 4.2** on Chapter 3 but will be included for completeness.

4.3.1 Group vs. Solo Travel

As part of their efforts to account for group and solo travel, Steer references a study conducted by SFO in 2014. As we note in the benchmarking comparison, SFO's landside is not comparable to SJC's. The density of the areas surrounding (and served by) the airport along with the greater volume of trips makes the applicability of the study's findings to SJC questionable. The non-business traveler group size is likely overstated, albeit this would likely have a marginal impact on the ridership estimates.

4.3.2 Travel Time and Costs

As noted in **Section 4.2**, we do not believe that the AM Peak matrices are applicable throughout the day. We learned through a discussion with Steer that they performed a sensitivity analysis using the Midday matrices which, according to them, substantially impacted the ridership estimates (the specific output of this sensitivity analysis was not readily available during our call). It was noted by both parties on the call, that some compromise between the two available matrices (AM Peak and Midday) would

[4] August 12_2024 WDAY Service for Richmond to Millbrae (Red) Line.pdf (bart.gov)

likely be the more accurate way to proceed moving forward. Steer advises that air passengers would be conservative in estimating the time it would take them to arrive at the airport to justify the across-the-board use of the AM Peak matrices, but one could also argue that transit users typically add time to their trips as well, due to lack of reliability and frequency of most transit services in the U.S.

4.3.3 Mode Choice Parameters

The section reviews the mode choice parameters arrayed in table nine (pages 22 and 23) of the Steer Report.

- *Value of time*, no issues with the source used.
- *Weight on access time, wait time, transfer time*, L&B disagrees with applying such a high factor to rideshare trips, the wait time for most of these on-demand services are no longer (1.5x) than the in-vehicle trip time. The factors should be calibrated to the individual modes. The wait time for ridership, existing transit and the SJC connector will likely all vary.
- *Transfer penalty,* L&B agrees that the penalty should be increased for group travel vs. solo travelers. However, we would recommend a sensitivity analysis to evaluate various transfer penalties, even though we do agree that 15 minutes is common industry practice. One question that arises is why is the penalty applied to both transit and transit + connector? The existing transit, bus service, does not require a transfer for all riders – did the ridership analysis consider how many riders did transfer between the VTA Route 60 and other transit services (BART, LRT, other buses, etc.)?
- *Buffer time,* the addition of the buffer time on top of the application of the AM Peak matrices aggressively penalizes auto travel times. In addition, a 20-minute discount has been arbitrarily added to the Transit + Transit Connector travel time, due to the higher frequency/reliability of the SJC Connector. In combination, these actions favor the SJC Connector and further reduces the attractiveness of auto travel mode.
- *Constants and coefficients: L&B has not* reviewed the actual model and cannot assess the role of the modal constants used. As stated in the report “the mode shares have not been validated against recent data.” The study does note the constants and coefficients were referenced from the regional MTC travel model, which does not appear to be calibrated for airports.

4.4 Chapter 5: Impact of California High-Speed Rail (CHSR)

The inclusion of CHSR transfers is highly speculative. The result suggests that the volume of these passengers using the SJC Connector will be relatively high, and the revenue will be a high portion of total revenue, about one-third. This is of particular concern since the revenue estimates may be especially overstated and color any financial analysis if high-speed rail (HSR) does not occur. It is already telling that the CHSR Authority has recently lowered their demand forecasts by 35%, a substantial reduction in daily ridership.

4.4.1 Share of CHSR passengers picking up rental cars at the airport

We agree that it is highly unlikely that a large share of CHSR passengers will use SJC rental car facilities for the same reasons articulated by Steer. If most of this demand is served offsite, it would reduce the CHSR ridership on the SJC connector and associated revenues.

4.4.2 Share of CHSR passengers parking at the airport

The parking demand at SJC is insignificant (18 spaces) relative to other attractors of demand, L&B agrees with the study's review and recommendation.

4.4.3 Central Valley residents using CHSR to reach bay area airports

L&B has the same concerns as Steer and would caution against using these assumptions. We also would recommend sensitivity analyses around the ratio assumption as well. Furthermore, the CHSR is planned to directly stop at the SFO Millbrae station, and we seriously question whether Central Valley users would choose SJC when SFO, with its far greater density of air service offerings, is just one stop (20 to 30 minutes) further along the line.

4.4.4 Reduction in flights and passengers on San José – Los Angeles/Anaheim trips

The diversion of short-haul trips to CHSR will result in freed-up capacity for longer-haul domestic and international service, which in the long-term could be a positive development. However, this is unlikely to materialize for decades, if ever, if the connection to Los Angelos and points further south is never made. We agree with Steer's decision to not include a reduction factor in the model.

4.5 Chapter 6: Forecasts for Model Year 2040

The ridership model developed by Steer is a planning tool that was developed from CSJ Regional Travel Demand model and then modified to more closely reflect airport user travel behavior. However, this model relied on surveys over a decade old and other data that are not localized to SJC. Of note, the mode choice model is based on equations derived in a 1986 academic paper. SJCP does recognize these shortcomings and plans to substantially refine the models in the next phase of the project.

The output of the Draft Feasibility Study arrayed four scenarios, which are detailed in the **Table 2** below. The table reflects the full build estimates, the passenger and staff ridership numbers are lower on the partial build estimates (by 100-200K trips), CHSR impacts remain unchanged.

Table 2: Draft Feasibility Report, SJC Connector Ridership Estimates

Scenario	1	2	3	4
CAGR	**3.7%**	**4.8%**	**~ 3%**	**3.7%**
Summary Description	Baseline Scenario	High Growth	Conservative	Alternate Terminal B/C access point location
Passengers	1,962,000	2,682,000	1,745,000	1,912,000
Staff	294,000	366,000	206,000	288,000
CHSR impacts	894,000	949,000	N/A - No CHSR Phase 1 in scenario 3	949,000
Intra-airport movements	3,307,000	3,968,000	2,927,000	3,415,000
Total with intra-airport connector	6,457,000	7,966,000	4,878,000	6,564,000

Source: SJCP/Steer

It is important to note that the CHSR ridership, using the methodology from the Authority's Business Case, accounts for almost a third of the ridership. L&B's finds this ridership to be extremely speculative (discussed further in technical report) and recommends that it not be included in the estimates.

Out of the four initially presented scenarios, it was scenario #3/Conservative without the intra-airport movements that was the most reasonable of the four. While the elimination of CHSR ridership might be considered extreme, we do feel it is extremely speculative given the financial challenges the program is facing. We also feel the more conservative passenger and employee SJC Connector ridership were more reasonable. Scenario 4 is like the Baseline with some marginal differences and Scenario 2 is far too aggressive but serves its purpose as the high estimate.

After consultation to SJCP and their consultant Steer, we learned that the team had been conducting additional sensitivities to more accurately reflect the concerns of SJC staff and the slower compound annual growth rates (CAGR) that the Airport has experienced post-pandemic. The revised forecasts are shown in the **Table 3** for the full-build estimates.

Table 3: Revised SJC Ridership Estimates (as of 7/24/2024)

Scenario	1	2	3	4	5
CAGR	**3.7%**	**2.7%**	**4.8%**	**2.4%**	**1.25%**
Summary Description	Baseline Scenario	Adjusted Baseline Scenario	High Growth	Reduced Growth	Further Reduced Growth
Passengers	1,962,000	1,609,000	2,682,000	1,531,000	1,264,000
Staff	294,000	242,000	366,000	230,000	190,000
CHSR impacts (riders)	894,000	N/A - no CHSR Phase 1	949,000	N/A - no CHSR Phase 1	N/A - no CHSR Phase 1
Inter-terminal movements	1,722,000	1,456,000	2,066,000	1,385,000	1,143,000
Long term parking	1,318,000	1,115,000	1,582,000	1,061,000	875,000
Total with intra-airport connector	6,190,000	4,423,000	7,645,000	4,207,000	3,472,000

Source: SJCP/Steer

Under the revised estimates, Scenario 1 is unchanged. The high-growth scenario, Scenario 3, is the same as the earlier Scenario 2 from the Draft Feasibility Study. Scenarios 2, 4, and 5 are new and each use lower compound annual growth rates (CAGR) and do not include ridership from CHSR. One noteworthy change is how the results are arrayed compared to the earlier analysis, SJCP split the intra-airport movements into two ridership buckets: inter-terminal movements (between Terminals A and B) and trips to the Long-Term Parking Lot. It is L&B's recommendation that SJC further explore Scenarios 2, 4, and 5 without the inter-terminal and long-term parking options.

Another issue of concern that L&B identified was the land use and transit improvements that were assumed for the 80-acre Diridon Station site. Aside from the already known assumed CHSR and BART Silicon Valley Extension improvement, which are open for scrutiny as to when or if they will occur, we also learned that the full development of the site was also assumed, which includes:

- Up to 7.3 million gross square feet (GSF) of office space;
- 5,900 units of new housing;
- Up to 500,000 GSF of active uses (retail, cultural, arts, etc.);
- 100,000 GSF of event space, hotel use (up to 300 rooms), and limited-term corporate accommodations (up to 800);
    - 15 acres of parks and open space

These transportation and land use improvements will have a substantial impact on the ridership estimates. The half-mile walkshed assumed by SJCP in the model will place much of the development within walking distance of the SJC Connector. Yet, the Downtown West redevelopment timing is unclear since Google has slowed its investment, as it struggles with rightsizing its business post-pandemic.

The BART extension was recently awarded a state grant of $375 million along with a federal grant of $5.1 from the Federal Transit Administration (FTA). However, this still leaves a funding gap of $700 million, making the timing of the project still uncertain.[5] Finally, realizing the full intercity benefits of CHSR from San Francisco to Los Angeles is far from certain since the program is not fully funded and there is no official completion date. Plans for an initial operating segment (IOS), from Merced to Bakersfield might open by 2033, but would not include HSR service to Diridon Station.

Questions:

- The data indicates that 97% of the O/D counties are Santa Clara, San Mateo, and Alameda counties. Is there great geographical detail (more than county level) or the origins/destination of the airport trips?
- It is not explicitly stated, from what we could see, whether the ridership was developed estimating both for boardings and disembarking passengers or doubled? It is a two–way/bidirectional ridership estimate – correct?

4.6 Chapter 7: Benchmarking

Steer's efforts to validate the results by benchmarking included cities/airports that are larger, denser and more transit-oriented than the city of San José and its surrounding environs. As shown in **Table 4**, only OAK has a similar volume of origin/destination (O/D) enplanements and a surrounding population density as SJC. The remaining nine airports benchmarked by Steer are located in more dense areas, have far greater trip volumes on their landside (O/D enplanements) and are more centrally located or directly connected to their regional transit systems.

[5] VTA announces billions of dollars in federal funding for BART to San Jose (transittalent.com)

Table 4: Evaluation of 10 Steer Benchmarks

Airport Code	City	Population Density	% Connecting	O/D Enplanements	Hub	MHI	Transit Type	Dedicated ROW
SJC	**City of San José**	**5,684**	**9.0%**	**5,087,025**	**M**	$136,010	**Bus**	**No**
OAK	City of Oakland	7,878	21.0%	4,349,923	M	$94,389	AirTrain to Regional Transit	Yes
MDW	City of Chicago	12,059	41.8%	5,616,464	L	$71,673	Direct Rail	Yes
IAD	Washington DC	11,280	30.9%	7,094,030	L	$101,722	Direct Rail	Yes
DCA	Washington DC	11,280	19.2%	9,335,511	L	$101,722	Direct Rail	Yes
LGA	New York City	29,303	14.3%	12,312,916	L	$76,607	Bus	Partial
SFO	City of San Francisco	18,629	20.2%	16,288,313	L	$136,689	Direct Rail + Airtrain	Yes
EWR	New York City	29,303/ 12,059	19.8%	17,463,301	L	$76,607	AirTrain to Regional Transit	Yes
ORD	City of Chicago	12,059	37.3%	20,766,537	L	$71,673	Direct Rail + AirTran	Yes
JFK	New York City	29,303	19.6%	21,832,528	L	$76,607	AirTrain to Regional Transit	Yes

Sources: Steer, US Census and FAA T-100, L&B Analysis

In an effort to identify more suitable benchmarks, L&B reviewed the full list of other medium-hub airports in the country and assessed their area population densities and O/D enplanements. Out of the 33 medium hub airports, only five have rail connections with exclusive rights-of-way. The remaining 28 airports or mostly served by buses operating in mixed lanes of traffic, with a handful having buses to adjacent rail services located along the perimeter of the airport, outside of the CTA. **Table 5** shows the results of the survey.

Table 5: Benchmark Identification from 33 Medium Hub Survey

Selected Benchmark	Airport Code	City	Population Density	O/D Enplanements	Transit Type	Dedicated ROW
Yes	PDX	Portland	4,889	6,691,499	Direct Rail	Yes
Yes	STL	St. Louis	4,885	5,038,519	Direct Rail	Yes
Yes	CLE	Cleveland	4,793	4,038,619	Direct Rail	Yes
No	SMF	Sacramento	5,323	5,479,027	Bus	No
No	RDU	Raleigh-Durham	3,178	5,498,685	Bus	No
No	SNA	Santa Ana/John Wayne	4,689	5,303,788	Bus	No
No	RSW	Fort Myers	2,168	4,906,855	Bus	No
No	MCI	Kansas City	1,255	4,412,758	Bus	No
No	SAT	San Antonio	2,875	4,271,697	Bus	No
Yes	BUR	Bob Hope	6,198	2,856,172	Direct Rail	Yes
No	BDL	Bradley International	6,965	2,773,595	Bus	No
No	MKE	General Mitchell International	6,001	2,588,471	Shuttle to Direct Rail	Partial

Sources: Steer, US Census, Various Public Transit Sources and FAA T-100, L&B Analysis

Four airports from the above table were selected for benchmarking – PDX, STL CLE and BUR. OAK, from the Steer analysis, was also added as the fifth airport based on its similarity to SJC. L&B reached out to the airports and their local transit authorities to collect transit ridership data, along with any survey data that would allow us to distinguish between air passengers and employees. The results of the L&B benchmarking survey are shown in the **Table 6**.

Table 6: Five Revised Benchmarked Airports

Airport	City	Transit Agency	Transit Type	Transit Mode Share
OAK	City of Oakland	BART	Rail	4%
PDX	Portland	TriMet	Rail	5%
STL	St. Louis	Metrolink	Rail	4%
CLE	Cleveland	RTA	Rail	4%
BUR	Burbank	BUR Airport	Rail	1%
			Average Transit Mode Share	**4%**

Sources: BART, BUR Airport, Port of Portland, GCRTA.

Similar to the SJCP analysis, the transit mode share was calculated by dividing daily boardings by daily enplanements. Because the daily boardings counts also include employees along with air passengers, the transit modal shares are overstated. An airport station ridership survey provided by CLE indicates that approximately half of the riders taking public transit were airport workers – not air passengers. This would result in an adjusted transit mode share of 2% for CLE. This trip purpose split is in line with information that L&B has collected through its interviews with other transit agencies and airports.

The average transit modal share for the five airports surveyed was 4% - the highest being 5% and the lowest 1%. This is substantially less than the 11% average transit modal share calculated by the SJCP analysis. **L&B believes that a modal share closer to 4-5%, like OAK and PDX, is more achievable which would be a considerable increase over the existing 1-2% transit share.** However, several of the airport's surveyed (PDX, CLE and STL) offer direct one-seat rides to their region's central business district – providing more direct access for tourist and business travelers. If all surveyed airports were adjusted using the CLE trip purpose shares, the **average transit mode share would be closer to 2.3%.**

4.7 Chapter 8: Next Steps

The next steps outlined by Steer are all reasonable and highlight many of the issues we saw throughout our review. Our main takeaways and concerns about the ridership analysis are, in rank order:

- Based on our discussions with Steer, while the CSJ model was initially designed and calibrated for regional travel, it does include an airport zone where the model was adjusted to more accurately estimate airport ground trips. Steer also made some additional adjustments using available surveys to further account for the particularities of airport users. However, the lack of CSJ model documentation, age of the available surveys and inability to review the final Steer model, still raises questions regarding its overall precision in estimating airport trips. It is our understanding, that many of these concerns will be addressed in future modeling efforts.
  - There are limited current data/surveys for SJC, with most of the data over a decade old, resulting in inaccurate model inputs and assumptions.
- Almost all the benchmark cities/airports are of significantly greater size, density and have much higher airport landside volumes than SJC, the Steer estimated an average of 11% transit modal share is more than three-times what L&B found in more comparable airports (3%).

- The future Diridon Station land use and transit improvement assumptions appear ambitious, both in scale and timing, which could impact the ridership estimates.
  - AM Peak matrices are overstating the impact of congestion on auto travel and the attractiveness of transit.
  - The 20-minute buffer time discount for the SJC Connector is too generous, and half-mile walk is too far for most air travelers with luggage.

Apart from variation of the enplanement forecast scenarios and the two SJC Connector configurations (base and intra-terminal), there is no documented sensitivity analysis. As we noted throughout the review, L&B suggests that Steer fully document sensitivity analyses on various modelling assumptions, some of which are noted below:

- AM Peak versus Midday travel time matrices
- Higher transfer penalties (arriving passengers)
- Shorter walksheds including one-quarter mile and one-third of a mile distances
- Lower buffer time discounts such as 10 and 15 minutes

Attachment B

ARUP

Analysis and Evaluation Memorandum

To	Ramses Madou – City of San José Annalee McManis – City of San José Brian Stanke – City of San José
Date	October 11, 2024
Copies	
Reference number	
From	Arup Diridon Station-San José Airport Connector Project Team
File reference	
Subject	Diridon Station to San José Airport Connector (the Project) – Developer's September 25th, 2024, Feasibility Validation Report (the Final FVR or Report) Analysis and Evaluation

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This memorandum presents Arup's assessment of the Feasibility Validation Criteria, as well as Arup's findings and recommendations with respect to the Final Feasibility Validation Report submitted by San José Connection Partners (SJCP or the Developer) on September 25, 2024. Arup's assessment focuses on SJCP's compliance with requirements established in Exhibit 5 of the Predevelopment Agreement (PDA) and specifically with the Feasibility Validation Criteria in Section 3.8 of such exhibit. Arup also highlights key merits of the Developer's submission and presents relevant project development considerations for the City's attention moving forward into Phase 2A. This submission by SJCP aligns with milestone 1.4 as per Exhibit 3 of the PDA for Phase 1. The City of San José (City) and SJCP executed the PDA on October 4, 2023, which was amended on August 29, 2024.

1. Executive Summary

The Report complies with PDA's Exhibit 5 requirements and showcases a feasible Project from a technical perspective, with a sounding commercial structure that is financially viable, specifically from a CapEx and OpEx perspective considering the expected public funding contribution and the projected revenue stream based on farebox (ridership) and ancillary revenues. The Project brings economic benefit according to the BCA analysis. The Business Case outlined in the Report supports a robust and feasible Project. With the non-material exceptions outlined in Appendix C, the Report meets all PDA Exhibit 5 requirements, and achieved all elements of the Section 3.8 Feasibility Validation Criteria.

Feasibility Validation Criteria
As summarized in Table 1 and elaborated upon in the main body of this memorandum and Appendix B, the Report meets the Feasibility Evaluation Criteria established in Section 3.8 of Exhibit 5 of the PDA.

Table 1: SJCP Compliance with the Feasibility Evaluation Criteria, as Established in Exhibit 5 of the PDA (Section 3.8)

Feasibility Validation Criteria	Assessment	Pass/Fail
The Developer has demonstrated the Financial Viability of the Business Case.	SJCP demonstrates the Financial Viability of the Business Case through a viable Transit Solution delivered by an appropriate Commercial Structure that aligns with P3 industry best practices, a sounding financial analysis framing operational sustainability across various growth scenarios, and a positive BCA.	✓
The Developer has demonstrated the technical viability of the Transit Solution.	SJCP's solution showcases a transit technological solution supported by a feasible Concept Design that is technically viable, capable of achieving TRL 8 by Implementation, beneficial to society, and on-track with meeting the Technical Requirements[1] and Project Objectives[2] at this feasibility stage.	✓
The Transit Solution and Business Case achieve the Project Objectives.	SJCP's Transit Solution and Business Case confirm that, at the current feasibility stage, none of the Project Objectives are compromised.	✓
The Developer has demonstrated that the Transit Solution and Business Case are responsive to the Technical Requirements.	SJCP's submission indicates that, at the current feasibility stage, the Transit Solution on which the Business Case is based is responsive to the Project Performance and Technical Requirements[3].	✓
The Transit Solution and Business Case offer the best value to the City and to the Project over the long term.	SCJP's submission indicates that at the current stage of Project development (Feasibility), the City is positioned to achieve best value with a transit technological solution that aligns with the Project's Technical Requirements and Objectives, is notably cheaper than benchmarked Light Rail Transit (LRT) and Automated People Mover (APM) projects in North America and offers societal benefits.	✓
The Developer has demonstrated a proposed approach to carrying out the PDA Phase 2 Work and PDA Phase 3 Work that is efficient, clear, transparent, complete and logical.	SCJP's submission clearly outlines the scope of work and cost cap for the subsequent Project development Phase 2A under the PDA, aligning with expected costs for similar scopes in comparable projects.	✓
The Developer has demonstrated an ability to effectively partner with the City during PDA Phase 2 and PDA Phase 3 and the PDA Cost Cap for subsequent PDA Phases is acceptable to the City.	SCJP's submission outlines the scope for Phase 2A and a proposed schedule for its execution, which is achievable through a collaborative approach between the City and SJCP.	✓

Volume 1 - Technical Review

The Report demonstrates that SJCP has achieved significant progress, suggesting the proposed transit technological solution is technically viable and on-track with meeting the Technical Requirements and

[1] As set out in Part C (Project Performance and Technical Requirements) of Exhibit 5 (PDA Work Requirements) of the PDA.
[2] As set out in Section 2.2 of Part A (Scope of PDA Work) of Exhibit 5 (PDA Work Requirements) of the PDA.
[3] As set out in Part C (Project Performance and Technical Requirements) of Exhibit 5 (PDA Work Requirements) of the PDA.

Project Objectives at this feasibility stage. However, as the Project continuous to be developed the City must continuously monitor the compliance with Technical Requirements while building confidence towards CPUC approval. This includes coordinating effectively with relevant Project stakeholders, like emergency service for safe system operation, and Caltrans for planning around the proposed I-880 Crossing. The City and SJCP must work collaboratively towards achieving an optimal risk allocation based on more design development and more clarity on the Project's revenue generating capacity for which an investment-grade forecast is key. Additionally, several of the initial environmental concerns require further investigation, as they may potentially result in revisions to the Project's design and alignment. Addressing these issues will enhance the Project's robustness as it moves forward.

Volume 2 - Commercial Structure

The proposed commercial structure adheres to P3 industry standards and best practices for a transit revenue risk performance-based DBFOM delivery. It complies with the City's Project and Procurement Objectives. Notable strengths include a well-defined contractual and partnership structure among designer, builder, technology provider, operator and maintenance provider, with Plenary as sole equity member of SJCP, who will be the single point of contact and counterparty to the City for the delivery of the Project. SJCP will assume full responsibility for delivering an operational transit system that meets the City's performance indicators. Key considerations for the next Phase 2A involve ensuring equitable distribution of critical risks (such as utility relocations and ridership revenue sharing), and addressing the technology risks that could impact funding and financing as well as Project development schedule.

Volume 3 - Financial Feasibility – Business Case

The Project's financial viability is demonstrated following P3 industry standards and best practices for a transit revenue risk performance-based DBFOM project. The Project is based on a farebox and ancillary revenue streams supported by sounding figures from a ridership study undertaken by SJCP, without requiring City or Airport subsidies. The estimated Design & Construction (D&C) and Operations & Maintenance (O&M) costs were developed using industry-standard methodologies and are notably lower than benchmarked light rail transit (LRT) and automated people mover (APM) projects in North America. However, the Project's financial viability is heavily contingent on its access to upfront Public funding and its revenue and ridership assumptions. As the Project progresses to Phase 2A, the City should start the processes and applications for securing federal, state, and local funding for its public contributions while assessing the impact on Project costs of the more developed Project design and the impact of more accurate ridership studies on the revenue stream.

Volume 4 - Benefit-Cost Analysis (BCA)

The BCA highlights a thorough evaluation of Project economic benefits, such as travel time savings and carbon emission reductions, supported by a persona analysis focusing on diverse user experiences. While the developed analysis adheres to latest USDOT guidelines over a 30-year period with a 3.1% discount rate, certain improvements are necessary to enhance the analysis's transparency and assumptions. Key recommendations include providing detailed macro-level context and baseline data, documenting quantities that underpin cost-benefit calculations, and including specific metrics to ensure the necessary robustness required for future Federal funding applications.

2. Information Reviewed

Arup's findings and recommendations are based on the following documentation submitted by SJCP on September 25, 2024.

- Final Feasibility Validation Report Volumes:
  - 1 Technical Feasibility
  - 2 Commercial Structure
  - 3 Financial Feasibility – Business Case
  - 4 Benefit-Cost Analysis
- Glydways' 4500pphpd System Video (*Attachment F.6 – Glydways 4500pphpd System Video.mp4)*
- Glydways' B1 Summary Video *(Attachment F.7 – B1 Testing Video.mp4)*
- Glydways' System Simulation Video *(Attachment F.8 – SJC Sim Video.mp4)*

3. Scope of Review

This memorandum presents Arup's key findings and recommendations. Arup based its review on the July 5, 2023, scope letter with the City. Appendix A contains a detailed description of the scope of Arup's review. Arup's scope does not include the review of legal or environmental inputs by the City for the Developer's work. At request, Arup is pleased to provide more detailed comments through a commented version of the submittals issued by SJCP, along with an updated Comment Log that includes feedback on previous submissions and responses from SJCP

4. Key Findings

This section focuses on each volume of the Report presenting the main findings, merits of the Developer's submission, and considerations and recommendations for subsequent Phase 2A of the Project.

4.1. Volume 1 - Technical Feasibility

Arup assessed the current state of technical development of the Transit Solution as presented in the Report and found that SJCP has made significant progress. Given the present phase of overall project development, the evidence presented suggests that the proposed Glydways system is technically viable and may effectively respond to the Technical Requirements while meeting the Project Objectives.

However, there are some outstanding issues that should be addressed by the City collaboratively with SJCP as the Project moves into Phase 2A and subsequent phases. Key among these are:

- **Technology Readiness Level (TRL) and Regulatory Approval (CPUC):** Glydways, a new technology transit solution not commercially operative, requires CPUC certification for TRL 8. Glydways' current testing facilities are not sufficient for validating regulatory readiness, but plans for a new facility are in place to conduct necessary operational tests.

- **Emergency Services Coordination:** Coordination with emergency services is critical for safe system operation but has not yet occurred. Addressing this component is essential to avoid Project development issues related to emergency access.
- **Proposed I-880 Crossing:** This requires significant planning and collaboration with Caltrans. Early attention is warranted due to its potential impacts.
- **Ridership and Revenue Risk:** Current ridership studies are preliminary. Arup recommends caution in allocating risk until a comprehensive, investment-grade forecast is conducted and reviewed by a qualified and independent third party expert.
- **Environmental Concerns:** The Report identified several Environmental Concerns that need further investigation, as they may require revisions to the Project design and alignment. Key concerns include aesthetics, impacts on biological resources, hydrology, and location within Guadalupe Gardens.

4.1.1. Merits of Developer Submission

Arup acknowledges the following merits of the Technical Feasibility.

- **Compliance with Technical Requirements:** The Report shows the results of extensive simulations of relevant operational parameters associated with the proposed system. These simulation results indicate that the system is designed to meet the Project's Technical Requirements. One important caveat to note is that some claims of technical compliance rely on Glydways' proprietary simulation models, which should undergo validation by a qualified and independent third-party expert (see Section 4.1.2 for further discussion).

- **System Layout and Network Design:** In line with Project Objectives (a), (c), and (d), the overall system layout—including station locations, station design, and conceptual frameworks—appears practical and aligns with the intent of the connector service. The overall network design is rational, incorporating offline Access Points, dedicated Trunk Lanes, Utility lanes, general horizontal alignments and vertical profile, station general arrangement, and inclusion of a Maintenance and Storage Facility (MSF). Arup previously reviewed the Concept Design submitted by SJCP on February 9, 2024, and issued a memorandum to the City on February 27, 2024. Arup understands that the Concept Design included in this Final submission of the FVR has not changed; therefore, Arup's comments from our February 27, 2024 memorandum stand. With the exceptions noted in the memorandum, Arup finds that the engineering details developed at this early stage adequately address all major design criteria, systems, alignment data, and architectural features.

- **Vehicle Design and Testing:** Consistent with Project Objective (a), SJCP demonstrated significant efforts in detailing vehicle layout and design. Notably, prototype vehicles have already undergone initial testing and piloting. The vehicle cab size, ergonomics, and usability have been thoughtfully considered, and user feedback workshops have been conducted to refine the design further. The vehicle accommodates multiple party sizes and types of users. Additionally, the ADA Compliance Report included in Appendix F.5.2, which Arup understands is the same as that submitted in the draft version of the FVR, provides an independent assessment confirming that the Transit Solution meets all ADA requirements.

- **User and Rider Experience:** Aligned with Project Objectives (a), (d), and (e), SJCP provided detailed insights into the concept and functionality of the system's ticketing and ride request system. The overall user and rider experience is well defined. For example:
  - The user interface enables both "Shared Rides" and "Private Rides."
  - Consideration has been given to fare payment methods, including integration with regional transit cards (Clipper) and fare payment verification.

- **Operator Flexibility:** In line with Project Objective (b), the proposed hard infrastructure (guideway, stations, etc.) should be usable by other types of vehicles, thereby providing operator flexibility for the City, subject to certain limitations on size, weight, and configuration, which could be further studied. Additionally, the compatibility of the installed communications and electronic systems with future systems warrants further investigation.

- **Future Expansion:** In line with Project Objective (c), the proposed system shows good potential for future expansion. As elaborated in subsequent sections, considerations regarding station size and infrastructure connections should be made during the initial system design to maximize this potential. For instance, if there are plans to extend the system to Stevens Creek Blvd, the layout of the Diridon station should accommodate a future spur that runs further south.

4.1.2. Considerations as the Project Moves Forward

As the Project progresses into Phase 2A and subsequent development phases, Arup highlights to the City the following areas for improving the certainty of the overall technical compliance of the Project.

- **Technology Readiness Level (TRL) and Regulatory Approval (CPUC):** Arup acknowledges that Glydways represents a completely new transit solution that is not currently commercially operative. Regulatory approval (CPUC certification), necessary for achieving TRL 8, is issued only for the final operating system, not for systems running on test tracks.

  SJCP's current test facilities and prototypes are insufficiently scaled and complex to validate that the Transit Solution can achieve TRL 8 and secure all necessary regulatory approvals. SJCP outlined plans for a new test facility that will enable larger-scale operational tests and demonstrations, allowing them to conduct tests analogous to those on the final system. This step is crucial for confirming that the Technical Requirements will be met and for building confidence in obtaining CPUC approval for the final system.

  As part of the early stages of PDA Phase 2A, SJCP should provide an exhaustive schedule including a detailed list of the testing required for CPUC approval. This is crucial to demonstrate that a TRL 8 can be achieved within the schedule provided in the Report. This should clarify whether equivalent tests (not for actual approval) can be conducted at the new test track or if testing can only occur on the final system, which poses ongoing risks. They should also provide a timeline and program for conducting these tests at the new facility. Arup strongly recommends tracking progress against this timeline in PDA Phase 2A.

- **Simulation Model Validation:** SJCP demonstrated the system may be able to meet all of the Technical Requirements. However, as noted above, the scale of the test facility is currently limited and the potential to achieve compliance with some of the Technical Requirements heavily relies on simulation results. It is critical to confirm the Technical Requirements can be met through live, physical tests. The expanded test facility that SJCP described will provide opportunities for critical larger-scale tests.

  Additionally, some Technical Requirements may not be demonstrable in a test facility, such as travel times across the full-scale network. In these instances, simulations can provide a degree of confidence that requirements can be met. However, assertions regarding compliance with certain capacity requirements rely on proprietary simulation models that have not been validated for complex interactions. Therefore, Arup recommends that Glydways' simulation tool undergo independent validation by a qualified and independent third-party expert to bolster confidence in its findings.

- **Capacity and Operational Performance**
  - Vehicle “turnover” times at Access Spots are still depicted as short as 60 seconds. This timeframe includes vehicle approach, passenger alighting and boarding (particularly with luggage), and the vehicle's departure. Such a brief turnover period appears unrealistic and may significantly impact capacity calculations and simulation assumptions. This concern was brought up in the draft FVR review. Although SJCP maintained these values in the Report, future testing and phases should include realistic, situational operational testing of transition times to either confirm SJCP’s assumptions and modelling or settle on a different value.
  - The overall process for riders queuing, waiting, and boarding vehicles at stations, especially during peak demand periods, is still unclear. Further analysis of passenger flow variations throughout the day is needed, along with documentation of vehicle loading and route selection processes, particularly for the Diridon station during peak times. These insights should be integrated into simulations to evaluate the system's capacity and performance.

- **Emergency Services Coordination:** Coordination with emergency services—including response details and impact on operations during emergencies—has not yet occurred. While this is not a “fatal flaw” at this stage, it is critical for ensuring the safe operation of the system, and should be addressed, developed, and pursued before going too much further. Failure to adequately address this component could render the system infeasible if emergency service access restrictions arise.

- **Service Disruptions**
  - Given the system's layout (a single route) and the central barrier between guideway lanes, questions arise regarding how trajectories for subsequent vehicles can be updated in the event of obstructions. It is essential to simulate and test these service disruption scenarios to evaluate the resulting delays and recovery periods for the system.
  - Additionally, SJCP should provide further evidence that the system will meet the following Operational Performance Requirements outlined in the PDA, including:
  - Requirement #8: 99% of passengers waiting within 3 minutes.

- Requirement #16: 95% of services operated "on-time" (trips completed within 1 minute of the travel time threshold).
- This could involve additional simulations of incident scenarios (e.g., a disabled vehicle) and durability testing for the vehicles and other system components, including assessments of recovery time to return to normal operations after specific incidents.

- **Proposed I-880 Crossing:** The Report indicates that the proposed I-880 crossing will necessitate "effective coordination" with Caltrans. This crossing is likely to be a significant design feature requiring joint planning with Caltrans, rather than mere coordination. Given its potential impact on cost and schedule, substantial planning and design collaboration should commence as early as possible. While this is not considered a "fatal flaw" at this stage, it is likely to be a critical controlling feature of the overall project, meriting prompt attention.

- **Expansion and Scalability**
  - SJCP mentions the potential of future operation on public roads. This will require the vehicle to comply with Federal motor vehicle design standards, which may necessitate significant redesign, particularly regarding crashworthiness.
  - When designing the guideway infrastructure, it's essential to consider how future expansions could connect to the initial system. This includes ensuring that the design at Diridon Station allows for potential extensions.
  - Potential Expansion to Stevens Creek Boulevard: SJCP has proposed conceptual ideas for extending the system south of Diridon Station. These concepts may have significant implications for both Diridon Station and the Downtown West area, potentially requiring elevated guideways. Arup recommends conducting additional design studies and local coordination as part of the work of Phase 2A to evaluate the feasibility of this extension.

- **Operations, Human Factors and Ease of Use:** SJCP has conducted user testing to understand how individuals interact with prototype vehicles. This type of testing should be expanded to other system components, including processes for assigning passengers to Access Spots, as well as shared vehicle matching, assignment, and boarding. User-facing features, such as reservation/payment apps and dynamic wayfinding signage, should also be subjected to testing.

- **Ridership and Revenue Risk:** The current ridership and revenue forecasts completed to date are preliminary in nature, which can be expected at this stage of project development and are sufficient to determine Project feasibility. Arup recommends that the City exercises particular caution in allocating ridership and revenue risk until a more comprehensive, investment-grade forecast is developed, and reviewed by a qualified and independent third-party expert.

- **Environmental Concerns:** The Report identified several Environmental Concerns that need to be considered during project development (Table 9 in Volume I). Arup recommends that the City and SJCP conduct further investigation into these concerns early in the next Project's development phase, as some may necessitate significant revisions to the Project concept, such as alignment changes, which could impact viability. Specific elements of the Project, like extensive elevated

guideway structures, may raise public concerns. Ultimately, it may be necessary for the lead agencies to consider certifying project environmental documents with overriding considerations for significant and unavoidable impacts, which could risk Project approval. Key concerns include:

- Aesthetics: The Transit Solution features a substantial amount of elevated guideway structures.
- Biological Resources: There is potential for impacts on trees, nesting/migratory birds, and riparian habitats.
- Hydrology and Water Quality. Portions of the alignment may be within flood zones and adjacent to the Guadalupe River, including crossings.
- Section 4(f). Portions of the Project are located within Guadalupe Gardens and adjacent to the Guadalupe River Trail.

4.2. Volume 2 - Commercial Structure

SJCP's proposed commercial structure for the Project follows standard P3 industry best practices for revenue risk performance-based DBFOM projects. It effectively aligns with the City's Project and Procurement Objectives and meets the requirements of the Predevelopment Agreement (PDA).

However, there are some considerations that should be prioritized as the Project advances into subsequent development phases, including:

- **Federal Funding:** The Project's reliance on federal funding introduces additional complexity and risks that will require the City to further analyze and proactively manage.
- **Risk Allocation Review:** The City should ensure that the allocation of critical risks is clearly defined and equitably distributed between Project parties.
- **Technology Risk:** The Project technology has yet to be fully validated, which presents additional risks related to development and financing that should be better understood.

4.2.1. Merits of Developer Submission

Arup acknowledges the following merits of the Commercial Structure.

- **Risk Allocation and Contractual Structure:** SJCP's proposed risk allocation is consistent with industry standards for P3 projects, with SJCP assuming full responsibility for delivering a fully operational transit system that meets all agreed key performance indicators (KPIs). This includes accountability for ridership revenue generation, ongoing operations, major maintenance, lifecycle replacement, and mitigation of technological obsolescence. Additionally, the proposed commercial structure is consistent with SJCP's RFP response.

- **Project Financing:** SJCP's proposed financing appears reasonable given Project characteristics and current market conditions. Project financing will be raised on a revenue-risk basis, dependent on positive operating cashflow, with tax exempt surface transportation Private Activity Bonds providing pricing and structural benefits. Furthermore, the gearing (debt/equity) ratio is appropriate for a revenue risk project of this nature.

4.2.2. Considerations as the Project Moves Forward

As the Project advances into Phase 2A of the PDA, Arup highlights several items that the City should keep in consideration, to abate uncertainties around risk and financing.

- **Federal Funding:** The Project's reliance on federal funding introduces additional complexity. While these potential impacts are acknowledged in the Final FVR further analysis is required to assess the full impact of federal requirements on the Project's financing strategy.

- **Risk Allocation Review:** The City should ensure that the allocation of critical risks – such as utility relocations, unknown ground conditions, hazardous materials, fare collection policies, and ridership revenue sharing – is clearly defined and equitably distributed between SJCP and the City. Additionally, considerations around vehicle lifecycle replacements and upgrades warrant particular attention, as the City and Airport may wish to retain a degree of control over these decisions.

- **Technology Risk and Financing:** A major financial risk arises from the uncertainty surrounding the readiness of the proposed transit technology. The Project relies on technology that has not yet been fully validated, and this may present significant concerns for long-term lenders. Delays in achieving TRL 8 could adversely impact the Project's financing timeline and overall feasibility.

- **Subsurface Utilities and Cost Uncertainty:** The potential for cost escalations related to subsurface utilities and ground conditions presents a significant risk to the Project. The current Design & Construction (D&C) cost estimates do not fully account for the necessary improvements to underground infrastructure, which may result in substantial budget overruns.

- **Expansion Planning:** While future expansion into the Stevens Creek Corridor remains a strategic goal, the City should prioritize the successful implementation of the core Airport Connector Project. Expansion plans should be evaluated separately and pursued during Phase 2A as additional funding becomes available.

4.3. Volume 3 - Financial Feasibility – Business Case

Volume III successfully demonstrates the financial viability of the Project throughout the business case, given the present phase of overall Project delivery. The proposed financial analysis is supported by D&C and O&M costs, and revenues linked to farebox/ ridership for the Project following standard P3 industry best practices and based on revenue risk performance-based DBFOM precedent projects.

However, there are some areas that should be taken into consideration as the Project moves forward into subsequent phases. Key among these are:

- **Revenue and Ridership Dependency:** The Business Case shows that the Project's viability relies heavily on upfront public funding to primarily cover CapEx, as well as on revenue and ridership assumptions to address OpEx. SJCP's ability to secure private financing depends on revenues covering operating costs throughout the Project term, independent of capital costs.
- **Funding Feasibility:** As the City moves to Phase 2A, it should assess the feasibility of obtaining federal, state, and local funding for its upfront public contributions.

- **D&C Cost Estimate Exclusions:** The Design and Construction cost estimate highlights several exclusions, such as environmental impacts, design code changes, and landscaping, that need further review to ensure adequate contingency funds are allocated.

4.3.1. Merits of Developer Submission

Arup acknowledges the following merits of the Business Case.

Financing Review

- SJCP's proposed Project on a revenue risk basis is consistent with the City's Procurement Objective # 1. SJCP estimates in its base-case scenario (Scenario 2-3,7% CAGR) with 2,955,000 passengers per year (Terminal B) and 6,190,000 ppy (Full Project), that operations can be revenue supported with no City or Airport subsidy.

- SJCP's Project's financial and macroeconomic assumptions, as well as the financial methodology to determine the funding requirements, are reasonable and appropriate for a revenue risk performance-based project. The financing assumptions (including the debt pricing, equity return and capital structure assumptions) are appropriate and reflect current market conditions.

- The consolidated farebox and ancillary revenue estimate of $16M (Terminal B) and $18M (Full Project) is based on reasonable assumptions and similar projects' data (SFO and OAK). The farebox is based on an initial standard fare for different categories of ridership:
  - (i) $6.70/person/ride to/from SJC,
  - (ii) $2.06/person/ride to/from non-airport location,
  - (iii) $13.39/vehicle/ride to/from SJC, and
  - (iv)$45/person/month for SJC staff (monthly pass).
  - Annual fares' growth rate is CPI+0.5%.

- The ancillary revenue sources, primarily through advertising and carbon offsets, are appropriate and have precedent across North American and global transit projects. While Arup has not attempted to quantify these revenue sources, it is worth noting that SJCP have adopted conservative assumptions for advertising (limited land availability and Airport restrictions) and carbon credit pricing. Ancillary revenues account for approx. 5.53% and 7.93% of total revenue in the ultimate operating year, in line with precedent transit projects, and are not core revenue drivers.

- SJCP's private sector contribution of $18M (Terminal B) or $88M (Full Project) is supported by SJCP's current financial modeling excluding any availability payment and limiting airport payments to the equivalent of current bus operating costs. This equates to private financing covering approx. 0.15% and 8.35% of the total project costs for Terminal B, and the Full Project, respectively (under Scenario 3, and not considering the impacts of value engineering).

- Based on SJCP's anticipated levels of private investment mentioned above, the Project will require a D&C Period Public Contribution on the order of ~$510M to ~$620M (Terminal B) and from ~$668M to ~$789M (Full Project).

- SJCP's analysis indicates private investment is not likely as ridership drops below the base case (Scenario 3 – 2.7% CAGR, Payment Mechanism A) for Terminal B, with operating cashflows marginal (in the case of Scenario 4 – 2.4% CAGR) or negative (Scenario 5 – 1.25% CAGR and Scenario 6 – 0.5% CAGR). The Full Project is far more robust with all growth scenarios demonstrating positive operating cashflows, and subsequently the ability to raise capital.

- An annual intra-airport service fee ('SJC Service Payment') would be charged to provide passenger service among intra-airport stations (Terminal B, Terminal A and long-term parking), equivalent to current bus operating costs. This Service Payment has been divided into a 'Fixed' portion (reflecting a reallocation of the current Intra Terminal Buses budget), and a 'Variable' portion (to account for additional capacity once the existing ridership of 1.5 million passengers is reached)

- An annual availability payment could be considered reduce the City's up-front public funding contributions and increase SJCP's private sector capital contributions to the Project.

- SJCP has split the scope of work for Phase 2 into two sub-phases, Phase 2A and Phase 2B, with Phase 2A deliverables focused on environmental clearance for the Project with an optimized alignment with more developed ridership and costs estimates over an 18-month period for the Full Project.

- SJCP's estimate for PDA Phase 2A Allowed Costs ("ACs") are $18.9M minus $1.85M of reduced cost associated with SJCP's staff time and associated financing, totaling $17.08M. In general, this amount represents 2-3% of the upfront Project cost, which is aligned with predevelopment costs for infrastructure projects of similar size and complexity.

- Volume III confirms that none of the Project Objectives are compromised and that the Business Case solution aligns with the Project Performance and Technical Requirements outlined in Part C of Exhibit 5 of the PDA. It indicates that, at the current feasibility stage, the City is positioned to achieve the best value. The volume also clearly outlines the scope of work and cost cap for the upcoming Phase 2A, consistent with expected costs for similar projects. Additionally, it emphasizes that the proposed schedule for Phase 2A is achievable only through a collaborative approach between the City and SJCP. It is recommended that Phase 2A initiates re-evaluating the schedule and fronting the Alterative Analysis task.

Cost Estimates

- The DTBO configuration shows a Project Design & Construction (D&C) Costs estimated at $407M to $492M in Base Date dollars (November 2022) and considering 2.7% CAGR. The difference of $85M being the result of Value Engineering ("VE"). The estimate therefore complies with the City's Procurement Objective #6 of a total Project cost of no more than $500M.

- Arup finds the D&C cost estimating methodology to be in-line with industry standards for a project in the early stages of design completion, using a mixture of top-down and bottom-up cost estimating along with expert judgement. The D&C cost algorithm for the line-item costs appears to be sufficient and in-line with what would be expected. The D&C cost estimate is presented with a

list of exclusion for a series of changes that may occur based on further environmental analysis, design development, and engagement with regulatory bodies. This approach to stating exclusions is appropriate for this stage of development. The D&C cost estimate must be read in-line with these exclusions.

- Compared to industry benchmarks, SJCP's total D&C costs are lower than other light rail transit (LRT) and automated people mover (APM) projects built in North America. It is expected to see savings compared to other transit projects given the characteristics of the Glydways systems and the Project. These features include smaller, more flexible station sizes, a design that primarily stays within the public right-of-way, and an alignment proposed by SJCP that is approximately 40% at-grade.
  - Compared to other LRT projects with both at-grade and elevated guideways built in the USA, after value engineering, SJCP's total D&C cost is about 15% lower than benchmarked projects.
  - When considering other APM projects built within the USA and Canada, SJCP's total D&C cost per mile of guideway is 43% to 50% lower prior and after value engineering, respectively. A significant cost savings here is expected as each of the APM benchmarked systems have fully elevated guideways which require significant infrastructure.

- The unit rates for concrete, steel, and asphalt, which account for majority of the capital scope, calculated in the detailed D&C cost estimates align with current market prices in the San José area. While the market rates may fluctuate, SJCP's does include an inflation risk assigned to SJCP to manage within the risk register and therefore contingency funds may be allocated based on potential market changes.

- The Operations & Maintenance (O&M) estimating methodology includes referencing industry benchmarks, internal benchmarks and industry pricing for some labor rates, which aligns with industry standards at this level of design. At a high-level, the O&M cost estimates are reasonable and align with other public transportation projects in North America. The percent of average annual O&M expenditure to total capital expenditure considering 2.7% CAGR results in a percent annual O&M to D&C costs of 2.25% which is less than other monorail and automated people mover projects in the USA at 3.4% for the same ratio. Similarly, SJCP's average annual O&M cost per mile considering the full project costs at 2.7% CAGR results in an average O&M expenditure of $5.2 million per mile, which aligns with the $5 million per mile benchmark for other monorail and automated people mover project built in the USA.

4.3.2. Considerations as the Project Moves Forward

While Volume III supports the Project's progression to PDA Phase 2A, Arup highlights the following areas for City's consideration throughout the subsequent development phases.

- **Revenue and Ridership :** the Business Case demonstrates that the financial and economic viability of the Project is highly dependent on its revenue and ridership assumptions, as SJCP's ability to raise private financing is predicated on Project revenues covering operating costs over the life of

the Project term, independent of capital costs. Arup recommends that additional diligence on ridership and fare structure is prioritized.

- **Full Project Option:** When considering different growth scenarios, the Full Project is more robust and can absorb lower growth scenarios compared to Terminal B only. This is due to the increase in revenue (particularly associated with the SJC Service Payment) relative to the operating cost structure (with many O&M costs 'fixed' and equal across both options)

- **Risk Monitoring:** SJCP's Risk Register and Risk Allocation section complies with PDA requirements. However, there is no specific narrative on how risks with a Risk Assessment Code (RAC) of 8 or higher will be actively managed. The City should closely monitor these risks in Phase 2A

- **City additional contributions:** SJCP have provided various City contribution schemes to the Project, including several configurations of Intra Airport services payments and capacity based availability payments, to demonstrate the impact on the Project's ability to raise private investment. In general, higher and more certain revenues will improve the bankability and terms of the Project. While this effectively transfers part of the City's upfront funding commitment across the term of the Project, it should be considered in line with the City's affordability constraints and the benefits of the Project across the broader transport network.

- **Performance Security Requirements:** SJCP has proposed waiving performance security requirements to lower costs in Phase 2A. This proposal requires further analysis and negotiation to assess its feasibility and impact.

- **Environmental Process:** Further planning is required to determine a realistic period for environmental clearance, considering the extent of public outreach required, and ensuring that stakeholder expectations are met through the Alternatives Analysis. SJCP have proposed an timetable that might not be sufficient for a City project therefore in Phase 2A it is worth assessing an extension of this schedule. It is also recommended that Phase 2A initiates re-evaluating fronting the Alterative Analysis task.

- **Funding Feasibility:** As the City proceeds to Phase 2A, it should evaluate the feasibility of securing federal, state, and local funding to cover the expected public contributions of $510M to $620M for Terminal B and $668M to $789M for the Full Project.

- **Progress Payments and Capital Contributions:** The City must confirm that its charter, regulations, business practices, and capital investment guidelines permit making the proposed progress payments ranging from 60% to 80% of Project costs during construction.

- **Gain-Share Mechanism:** The City may wish to negotiate a gain-share mechanism to capture additional revenue (farebox and ancillary) that exceeds forecasted projections, as a means to offset the public contribution.

- **D&C Cost Estimate Exclusions:** There are a series of exclusions called out in the Design and Construction cost estimate which need to be estimated/reviewed to ensure that adequate contingency is held for them such as environmental, design code changes, landscaping, and SJC Airport impacts during construction. It is unclear whether the design and construction contingency included in the estimate includes the costs associated with these exclusions. If the contingency does not include these costs, an allowance can be established to ensure adequate costs are reserved for these scopes. This item should be monitored.

4.4. Volume 4 - Benefit-Cost Analysis (BCA)

The BCA concludes that the Project offers comprehensive benefits coverage. The study is notably enhanced by the inclusion of a persona analysis. In line with the latest guidelines of the U.S. Department of Transportation (USDOT), the analysis spans a 30-year period and employs a discount rate of 3.1%.

However, as mentioned in the Executive Summary and further detailed below, some areas require improvement to increase the transparency and compliance of the analysis.

- **Macro-Level Context**: Provide more detailed macro-level context and baseline data.
- **Documentation**: Thoroughly document all quantities and assumptions across the Base Case and all Scenarios.

Future versions of the BCA are expected to address these information gaps, ensuring it can function as a standalone document to support funding applications for federal and state grants.

4.4.1. Merits of Developer Submission

Arup acknowledges the following merits of the BCA.

- **Coherent Evaluation of Time Horizon and Discount Rate:** Consistent with the latest guidance from the U.S. Department of Transportation (USDOT), the BCA provides an analysis that covers a 30-year period and uses a discount rate of 3.1%.

- **BCA Coverage:** The BCA comprehensively addresses primary Project benefits, such as travel time savings and carbon emission reductions, while monetizing additional relevant benefits, including service reliability improvements, decongestion, road safety, and air pollution. It also evaluates costs, including negative externalities during the construction phase, offering a fuller spectrum of the Project's societal impacts throughout its lifecycle.

- **Equity Considerations and User-Centric Analysis:** The persona analysis enriches the BCA by describing the costs and travel time benefits experienced by various personas, thus providing a more user-centric perspective. This approach connects quantifiable aspects of the BCA to qualitative equity impacts. Focus is given on potentially mobility-disadvantaged users in Santa Clara County, thereby highlighting equity concerns and the Project's potential to foster a more equitable transport landscape.

4.4.2. Considerations as the Project Moves Forward

As the Project advances into Phase 2A and subsequent development phases, Arup highlights the following areas for strengthening the analysis to improve overall transparency, robustness, and technical coherence of the BCA. Addressing these areas will ensure alignment with best practices in economic evaluation and enhance the BCA's ability to support federal and state grant applications.

- **Macro-Level Context:** While the BCA provides an overview of population and economic growth, historical enplanements, available transit services, transit mode share for accessing the airport, and trip purpose distribution, Arup recommends including a discussion of key macro-level metrics as required by the PDA (Exhibit 5, Section 3.d.iii.A). These metrics are essential for understanding economic and planning trends within which the Project will operate.
  - Baseline economic development projection trends, including planned real estate development, jobs growth, and capital investments.
  - Planning and infrastructure improvements unrelated to the Project that are expected to influence travel demand patterns.
  - Baseline travel demand and travel patterns, incorporating forecasts for economic development and other planning and infrastructure improvements.

- **Baseline Information:** In line with the PDA (Exhibit 5, Section 3.d.iii.B), Arup recommends including micro-level information on baseline conditions. Providing these inputs is crucial for establishing a solid reference point for evaluating the Project's impact and enhancing the credibility and transparency of the BCA analysis.
  - Weekday peak, off-peak and weekend demand.
  - Number of trips by trip purpose and mode.
  - Travel times (vehicle-hours or person-hours).

- **Documentation of Quantities Underpinning the Benefit-Cost Calculations:** The Report begins with a summary of results for both benefits and costs, alongside key economic metrics. Appendix B includes formulas and unit values, including monetization factors. However, consistent with standard BCA practices, Arup recommends including detailed quantities (for both the Baseline and the Project Situation), along with corresponding monetized values and savings that form the basis for cost and benefit calculations in each scenario considered. This is essential for ensuring the BCA is methodologically robust and transparent. For example:
  - **Benefits from Travel Time Savings and Transport Cost Reduction:** The Report presents travel time savings values and percentage shares of trips by purpose but lacks data on the number of trips by purpose and the estimated costs for each case (Baseline vs. Project Situation).
  - **Benefits from Reduced GHG Emissions and Air Pollution Impacts:** While emission factors and monetization values per ton are provided, the Report does not include the number of emissions generated in the Baseline vs. Project Situation, including assumptions like vehicle miles traveled.

- **Road Safety Benefits:** The Report references a monetization factor for car crash incidents and provides assumptions for calculating crash rates per mile but does not specify the number of crashes assumed in the Baseline and Project scenarios.

Appendix A - Scope of Review

Volume 1 – Technical Feasibility

Arup's scope is based on the understanding that the Transit Solution is still in the prototype phase and is not yet operative, therefore it has not achieved any regulatory approval to operate as public revenue service in California. Elements of the proposed system, such as the vehicles, vehicle guidance and control systems, and user interfaces will continue to be under development throughout the PDA beyond Phase 1. Arup will review and comment on the deliverables provided by SJCP. Given the current level of technology Arup will assist the City in evaluating Glydways' progress against their milestones. This includes both real world validation of prototypes and the certification of the system. This will include a review of the plan they provide for achieving regulatory approval and the evolution of the Transit Technology's Maturity and progress against the Technology Development Plan that was submitted by SJCP as part of the PDA Proposal. Evaluation of development and technical feasibility of the system and its ability to achieve regulatory approval will be limited to the portion of the Technology Development Plan that occurs during Phase 1.

The Technical Feasibility FVR includes review and commentary with consideration to:

a) Updated Transit Technology's Maturity (Technology Readiness Level) documentation;
b) Updated Compliance with the Technical Requirements as presented in the PDA Proposal, including the Systems Performance Thresholds;
c) Feasibility and suitability of the Concept Design, including general layout, alignment, engineering plans and drawings (civil, structural, architectural, typical cross-sections);
d) Right-of-way impacts and interfaces, including but not limited to impact on public and private spaces, easements, and existing utilities;
e) Proposed approach for design of structural and civil engineering systems, foundations, structures, and related elements;
f) Proposed strategy for Stevens Creek Blvd systems expansion, including any indicative alignments and station locations;
g) Review of all due diligence undertaken as part of the Technical Feasibility Assessment likely to include site investigations and other engineering studies
h) High-level review of the SJCP's Project Alternative Ridership scenario, developed per section 3.3(c)(v)(B) of Exhibit 5 of the PDA.

The review and commentary will be provided to the degree possible considering the information provided by SJCP. Arup's scope and review are an expert review of information provided by Glydways and their third-party testing and validation effort of the Transit Solution and is not a standalone independent third-party testing service.

Arup's scope does not include the review of CEQA and NEPA preliminary analyses; it is assumed that the City will engage environmental advisors for this purpose. See *Section H* for *Critical Tasks by Others / Exclusions*.

Volume 2 – Commercial Structure and Volume 3 – Financial Feasibility

The Commercial and Financial Support includes review and commentary to the Commercial Structure and Financial Feasibility with consideration to:

a) Suitability and feasibility of the commercial structure, including any changes to the proposed Project Company and subsidiaries from the PDA Proposal;
b) Suitability and feasibility of the proposed DBFOM delivery option;
c) Benchmarking of design-build and O&M costs including direct, indirect, and soft costs and contingencies;
d) Suitability of the financial structuring including expected capital structure, cost of capital, and associated macroeconomic assumptions (interest rates and inflation);
e) Completeness, consistency, and soundness of the Project funding gap analysis;
f) Adequacy of the PDA Phase 2 and PDA Phase 3 allowed costs;

Volume 4 – Benefit-Cost Analysis

The Benefit-Cost Analysis FVR includes review and commentary with consideration to:

a) Accuracy and consistency with the Economic Methodology provided Section 3.3 of the PDA (Exhibit 5).
b) Review of the supporting evidence for any additional benefits that SJCP may choose to include such as impact on property prices, agglomeration benefits and others.

Arup's scope does not include the review of neither legal nor environmental inputs by the City for SJCP's work. It is assumed that the City will engage specialized legal and environmental experts for this purpose. In addition, Arup's support does not include reviewing or developing travel demand forecasts for the Project.

Appendix B – Feasibility Validation Criteria and RFP Requirements

Feasibility Validation Criteria

In evaluating and determining whether to accept the Feasibility Validation Report and to proceed to PDA Phase 2, the City will consider the extent to which:

a) The Developer has demonstrated the Financial Viability of the Business Case;
b) The Developer has demonstrated the technical viability of the Transit Solution;
c) The Transit Solution and Business Case achieve the Project Objectives;
d) The Developer has demonstrated that the Transit Solution and Business Case are responsive to the Technical Requirements;
e) The Transit Solution and Business Case offer the best value to the City and to the Project over the long term;
f) The Developer has demonstrated a proposed approach to carrying out the PDA Phase 2 Work and PDA Phase 3 Work that is efficient, clear, transparent, complete and logical, and
g) The Developer has demonstrated an ability to effectively partner with the City during PDA Phase 2 and PDA Phase 3 and the PDA Cost Cap for subsequent PDA Phases is acceptable to the City.

The RFP (DOT 10183) issued on May 10, 2022, required the proposals from bidders to satisfy the following Project Scope and Features, Project Objectives, and Procurement Objectives.

Project Scope and Features

Project scope and features are to include:

a) an off-line maintenance and storage facility ("MSF");
b) defined Project Site and modifications, sitework, utilities, and other work necessary to deliver the Project;
c) long-term operations and maintenance ("O&M");
d) station and facilities design that is coordinated and compatible with the buildout of the Diridon Integrated Station project, currently in project development;
e) intuitive transfers that integrate Diridon Station and SJC as a single facility from a passenger perspective to create a seamless travel experience for all passengers, including those with luggage and varied accessibility needs;
f) Universal Design including, at a minimum, ADA requirements;
g) quick and level boarding for passengers with luggage; and
h) faster travel connections between downtown San José (Diridon Station) and SJC.

Project Objectives

The City seeks to collaborate with a private partner to develop a Project that achieves the following objectives. Proposals should demonstrate, to the extent possible, how the Proposal aligns with these objectives. The City seeks to implement a Transit Solution for the Project that:

a) is capable of being certified for passenger operations/revenue service and is ADA-accessible;
b) provides for operator flexibility for the City over the long term (i.e., an ability to repurpose the system and any permanent infrastructure from one operator to another);
c) is scalable to allow for future system growth;
d) provides safe, fast, frequent, and reliable service for passengers that is separated from mixed traffic; and
e) integrates Diridon Station and SJC as a single facility from the passenger's perspective and creates a seamless travel experience for passengers with luggage.

Procurement Objectives

The City seeks to:

a) implement a technically and commercially viable revenue risk Project;
b) focus on goals and outcomes so as to create space to leverage private-sector expertise and innovation for early Project decisions (i.e., with respect to the Transit Technology, the cost of the Transit Solution, and the approach to Project risks such as interfaces, stakeholder/third-party/community engagement, ROW, utilities, etc.);
c) leverage schedule savings by (i) conducting technical and commercial feasibility in parallel with the environmental review process and Project design and (ii) identifying early work packages for implementation of the Project, with the goal to align the Project schedule with the SJC Capital Improvement Program and Diridon Station capital improvement schedule;
d) use a competitive procurement to engage a long-term private-sector partner to deliver the Project through its entire life-cycle, from Project development, financing, and construction through long-term operations and maintenance and to minimize the City's risk exposure across that life-cycle;
e) conduct the procurement to provide full and open competition and preserve flexibility for future funding and financing sources that may include state, local, and federal sources; and
f) develop a Project with a total Project cost of no more than $500 million, expressed in dollars as of June 30, 2022

Feasibility Validation Criteria per Volume of the Report

VOLUME I

In evaluating and determining whether to accept the Feasibility Validation Report and to proceed to PDA Phase 2A, the City will consider the extent to which:

(a) the Developer has demonstrated the Financial Viability of the Business Case;
Volume I of Final FVR outlines SJCP's proposed Transit Solution, including enabling infrastructure and vehicle and systems solution, support a viable revenue risk project.

(b) the Developer has demonstrated the technical viability of the Transit Solution;
Volume I demonstrates the technical viability of the Transit through a feasible Concept Design, responsiveness to the Technical Requirements, and its ability to reach TRL 8 by Implementation.

(c) the Transit Solution and Business Case achieve the Project Objectives[4];
Volume I indicates that the Transit Solution can achieve the Project Objectives.

(d) the Developer has demonstrated that the Transit Solution and Business Case are responsive to the Technical Requirements;
Volume I indicates that Transit Solution on which the Business Case is based is responsive to Part C of Exhibit 5 of the PDA.

(e) the Transit Solution and Business Case offer the best value to the City and to the Project over the long term;
Volume I indicates at the current stage of Project development (Feasibility), the City will achieve best value.

(f) the Developer has demonstrated a proposed approach to carrying out the PDA Phase 2 Work and PDA Phase 3 Work that is efficient, clear, transparent, complete and logical, and
Volume I is silent on the scope of work and costs cap for the subsequent Project development phases under the PDA.

(g) the Developer has demonstrated an ability to effectively partner with the City during PDA Phase 2 and PDA Phase 3 and the PDA Cost Cap for subsequent PDA Phases is acceptable to the City.
Volume I is silent on the scope of work and costs cap for the subsequent Project development phases under the PDA.

[4] See above project Objectives

VOLUME II

In evaluating and determining whether to accept the Feasibility Validation Report and to proceed to PDA Phase 2A, the City will consider the extent to which:

(a) the Developer has demonstrated the Financial Viability of the Business Case;
Volume II of Final FVR supports the rationale behind the proposed commercial structure for the Project following standard P3 industry best practices and based on precedents.

(b) the Developer has demonstrated the technical viability of the Transit Solution;
Volume II summarizes the Developer's current assessment on the viability of the proposed technical solution and its ability to reach a TRL 8 by Implementation.

(c) the Transit Solution and Business Case achieve the Project Objectives[5];
Volume II summarizes that none of the Project Objectives are compromised.

(d) the Developer has demonstrated that the Transit Solution and Business Case are responsive to the Technical Requirements;
Volume II summarizes that the solution on which the Business Case is based is responsive to Part C of Exhibit 5 of the PDA.

(e) the Transit Solution and Business Case offer the best value to the City and to the Project over the long term;
Volume II summarizes that at the current stage of Project development (Feasibility), the City will achieve best value.

(f) the Developer has demonstrated a proposed approach to carrying out the PDA Phase 2 Work and PDA Phase 3 Work that is efficient, clear, transparent, complete and logical, and
Volume II is silent on the scope of work and costs cap for the subsequent Project development phases under the PDA.

(g) the Developer has demonstrated an ability to effectively partner with the City during PDA Phase 2 and PDA Phase 3 and the PDA Cost Cap for subsequent PDA Phases is acceptable to the City.
Volume II is silent on the scope of work and costs cap for the subsequent Project development phases under the PDA.

[5] See above project Objectives

VOLUME III

In evaluating and determining whether to accept the Feasibility Validation Report and to proceed to PDA Phase 2A, the City will consider the extent to which:

(a) the Developer has demonstrated the Financial Viability of the Business Case;
Volume III of Final FVR supports the rationale behind the proposed financial analysis, including D&C and O&M costs and revenues linked to farebox/ridership for the Project following standard P3 industry best practices and based on revenue risk performance based precedents. The analysis suggests an operationally sustainable solution across various growth scenarios.

(b) the Developer has demonstrated the technical viability of the Transit Solution;
Volume III summarizes the Developer's current assessment on the viability of the proposed technical solution and its ability to reach a TRL 8 by Implementation.

(c) the Transit Solution and Business Case achieve the Project Objectives;
Volume III summarizes that none of the Project Objectives are compromised.

(d) the Developer has demonstrated that the Transit Solution and Business Case are responsive to the Technical Requirements;
Volume III summarizes that the solution on which the Business Case is based is responsive to Part C of Exhibit 5 of the PDA.

(e) the Transit Solution and Business Case offer the best value to the City and to the Project over the long term;
Volume III summarizes that at the current stage of Project development (Feasibility) the City will achieve best value.

(f) the Developer has demonstrated a proposed approach to carrying out the PDA Phase 2 Work and PDA Phase 3 Work that is efficient, clear, transparent, complete and logical, and
Volume III describes the scope of work and costs cap for the subsequent Project development Phase 2A under the PDA in a clear and concise way and in line with expected costs for similar scopes in comparable projects.

(g) the Developer has demonstrated an ability to effectively partner with the City during PDA Phase 2 and PDA Phase 3 and the PDA Cost Cap for subsequent PDA Phases is acceptable to the City.
Volume III describes a scope for Phase2A and a proposed schedule for its execution that is achievable only under a collaborative work approach between the City and the Developer. It is recommended that Phase 2A initiates re-evaluating the schedule and fronting the Alterative Analysis task.

VOLUME IV

In evaluating and determining whether to accept the Feasibility Validation Report and to proceed to PDA Phase 2A, the City will consider the extent to which:

(a) the Developer has demonstrated the Financial Viability of the Business Case;
Volume IV demonstrates a project with a positive BCA, supporting the Financial Viability of the Business Case of the Project.

(b) the Developer has demonstrated the technical viability of the Transit Solution;
Volume IV outlines the benefits associated with the Transit Solution, including travel time savings, an reduced GHG emissions and air pollution impacts

(c) the Transit Solution and Business Case achieve the Project Objectives;
Volume IV outlines the benefits associated with safe, fast, frequent, and reliable Transit Solution as per the Project Objectives.

(d) the Developer has demonstrated that the Transit Solution and Business Case are responsive to the Technical Requirements.
Volume IV outlines the benefits associated with a Transit Solution responsive to the Technical Requirements.

(e) the Transit Solution and Business Case offer the best value to the City and to the Project over the long term;
Volume IV summarizes that at the current stage of Project development (Feasibility) the City will achieve a positive economic benefit.

(f) the Developer has demonstrated a proposed approach to carrying out the PDA Phase 2 Work and PDA Phase 3 Work that is efficient, clear, transparent, complete and logical, and
Volume IV is silent on the scope of work and costs cap for the subsequent Project development phases under the PDA.

(g) the Developer has demonstrated an ability to effectively partner with the City during PDA Phase 2 and PDA Phase 3 and the PDA Cost Cap for subsequent PDA Phases is acceptable to the City.
Volume IV is silent on the scope of work and costs cap for the subsequent Project development phases under the PDA.

Appendix C - Report Compliance Check

Table 2 and Table 3 below identifies the Final FFVR's compliance with respect to the requirements set out in Section 3.3 of Exhibit 5 of the PDA. A legend defining the submittal compliance status is displayed in the first table.

Table 2 Legend for Draft Feasibility Validation Report

Designation	Definition
In Compliance	Item satisfies the applicable submission and content requirements specified in the PDA
In Partial Compliance	Item partially satisfies the applicable submission and content requirements specified in the PDA
Not In Compliance	Item does not satisfy the applicable submission and content requirements specified in the PDA

Table 3: Draft Feasibility Validation Report Compliance Check

Scope	Submittal/ Item, as per PDA Exhibit 5 requirements	Submittal Compliance	Comments
Technical Feasibility	Summary of Transit Solution	In Compliance	
Technical Feasibility	Documentation of the proposed Transit Technology Maturity	In Compliance	
Technical Feasibility	Documentation of compliance of Transit Solution with Technical Requirements	In Compliance	
Technical Feasibility	Concept Design	In Compliance	
Technical Feasibility	Proposed strategy of system expansion	In Compliance	
Commercial Structure	Project Company and subsidiaries	In Compliance	
Commercial Structure	Risk allocation and Project Objectives	In Compliance	
Commercial Structure	Risk management plan	In Compliance	
Commercial Structure	Description of construction financing	In Compliance	
Commercial Structure	Description of implementation of long-term financing	In Compliance	
Commercial Structure	Identification of Equity Members (Project Company Equity)	In Compliance	

Scope	Submittal/ Item, as per PDA Exhibit 5 requirements	Submittal Compliance	Comments
Commercial Structure	Graphical representation of the proposed commercial structure	In Compliance	
Financial Feasibility - Business Case	The Business Case must be no longer than 20 pages	Not In Compliance	Total length of Business Case exceeds maximum of 20 pages
Financial Feasibility - Business Case	The Business Case must be prepared in accordance with Attachment 2 (basis and format for cost submittals) of Part A of Exhibit 5 of the PDA	In Compliance	
Financial Feasibility - Business Case	The Business Case must be organized as shown in Table A3.3.1 of Section 3.3(c) of Exhibit 5 of the PDA, and include the following:	In Compliance	
Financial Feasibility - Business Case	1. Executive Summary of Financial Feasibility	In Compliance	
Financial Feasibility - Business Case	2.1. DBFOM delivery option explained	In Compliance	
Financial Feasibility - Business Case	2.2. Site ownership, land acquisition and ROW availability	In Compliance	
Financial Feasibility - Business Case	2.3. Legal and environmental issues and their impact on financial feasibility	In Compliance	Arup scope does not include review of legal / environmental inputs.
Financial Feasibility - Business Case	3.1. Allowed Costs, presented as per Section 3.3(c)(i) of Exhibit 5 of the PDA	In Compliance	
Financial Feasibility - Business Case	3.2. Design-Build Cost (direct and indirect), presented as per Section 3.3(c)(ii) of Exhibit 5 of the PDA	In Compliance	
Financial Feasibility - Business Case	3.3. O&M Cost (direct and indirect), presented as per Section 3.3(c)(iii) of Exhibit 5 of the PDA	In Compliance	
Financial Feasibility - Business Case	3.4. Anticipated cost of capital and financing assumptions	In Compliance	
Financial Feasibility - Business Case	3.5. Project revenue forecast (Farebox and Other)	In Compliance	
Financial Feasibility - Business Case	3.6. Risk Register and Risk Allocation matrix	In Compliance	

Scope	Submittal/ Item, as per PDA Exhibit 5 requirements	Submittal Compliance	Comments
Financial Feasibility - Business Case	3.7. Funding gap analysis	In Compliance	
Benefit-Cost Analysis	Travel Demand Study	In Compliance	
Benefit-Cost Analysis	Economic BCA General Principles	In Compliance	
Benefit-Cost Analysis	Definition of the "No Project Baseline Conditions"	In Partial Compliance	In line with the PDA (Exhibit 5, Section 3.d.iii.A and B), Arup recommends including a discussion of key macro-level metrics and micro-level information on baseline conditions.
Benefit-Cost Analysis	Definition of the Project Situation	In Partial Compliance	
Benefit-Cost Analysis	Benefits	In Compliance	
Benefit-Cost Analysis	Cost Estimates	In Compliance	
Benefit-Cost Analysis	Presentation of BCA Results	In Compliance	