Stage Gate 1 Report – Draft Final Response to Board Input

March 10, 2022

On February 16, 2022 and February 24, 2022, the Link21 Team presented information on the first major Link21 Program (Link21) milestone, Stage Gate 1, to the Capitol Corridor Joint Powers Authority (CCJPA) and San Francisco Bay Area Rapid Transit (BART) boards, respectively. As noted in those presentations, staff will return to both Boards at subsequent meetings to request that they:

- Adopt the Link21 vision, goals, and objectives.
- Approve Link21's advancement into Phase 1 based on concurrence with the following four key statements:
  1. Link21's vision, goals, and objectives are appropriate, clear, and measurable, and provide a foundation for the Business Case.
  2. Stakeholder and public engagement, with a focus on equity advancement, has informed the process and supports advancement into Phase 1.
  3. A foundation of analytical work has been completed to develop and evaluate concepts in Phase 1.
  4. The program has the people, processes, funding, and tools to support progress through Phase 1.

Among the supporting materials for the Board discussions was a draft final version of the *Stage Gate 1 Report*. This report provides extensive documentation supporting the four statements above. It also summarizes the stage gate process leading up to Board consideration, focusing on the input received from three preceding reviews and the clarifying actions taken in response to those reviews.

The input received through the stage gate reviews helps build consensus around the central themes that drive Link21's progress. The Link21 Team received important input from both the CCJPA and BART board discussions. The actions being taken by the Link21 Team in response to the Boards' questions, comments, and direction are being documented as part of the *Stage Gate 1 Final Report* (updated draft attached). Input from the preceding review panels is included in Appendix B of the *Stage Gate 1 Report*.

The Link21 Team will seek approval on the two action items from the BART Board on April 14, 2022, and from the CCJPA Board on April 20, 2022. That approval will be based on previous materials and discussion, along with the adjustments made in response to Board input. The following tables show the Board input received and the Link21 Team's proposed responses. Assuming Board concurrence with these actions, the recommended changes will be made in the *Stage Gate 1 Final Report* and any other relevant program documents, and they will be reflected in program activities as Link21 progresses to Phase 1.

STATEMENT NUMBER	CCJPA BOARD INPUT	PROPOSED RESPONSE	PROPOSED LANGUAGE
1	Potential confusion over use of the term "community stability" in the program's vision, goals, and objectives, especially that it could be misconstrued to suggest discouraging economic development.	Modify language to more clearly reflect intent to balance desired development/growth with anti-displacement. Make changes to: ▫ Vision Statement and Goals and Objectives sections in the *Stage Gate 1 Report - Draft Final* — Vision Statement and Goals and Objectives (p. 2-2, 2-3) — Statement 2 discussion (p. 2-7) ▫ Program's foundational documents and related presentation materials	**Vision Statement** **Current** …This program, including a new transbay passenger rail crossing between Oakland and San Francisco, will enhance livability, community stability, economic opportunity, and environmental quality in the Megaregion while improving the travel experience. **Modified** …This program, including a new transbay passenger rail crossing between Oakland and San Francisco, will enhance environmental quality, livability, and economic opportunity while protecting against community instability and displacement in the Megaregion as it improves the travel experience. **Goals and Objectives** **Current** Goal 2: Promote Equity and Livability *Objectives* ▫ Connect people and places ▫ Improve safety, health, and air quality ▫ Advance equity and community stability **Modified** Goal 2: Promote Equity and Livability *Objectives* ▫ Connect people and places ▫ Improve safety, health, and air quality ▫ Advance equity and protect against community instability and displacement

STATEMENT NUMBER	CCJPA BOARD INPUT	PROPOSED RESPONSE	PROPOSED LANGUAGE
1	Greater indication required on the role of Link21 in *Plan Bay Area 2050*.	Add language in the *Stage Gate 1 Report* introduction (with a new Section 1.1, p.1-1), and include in related presentation materials.	The Link21 Program is a generational initiative to transform Northern California's passenger rail network into a faster, more integrated system, providing safe, efficient, and affordable travel for everyone. It has at its core a new transbay passenger rail crossing between Oakland and San Francisco, and it is sponsored by BART and CCJPA with support from the California State Transportation Agency (CalSTA) and other partners. Link21 is a product of more than a decade of regional and state planning studies assessing the transport needs of Northern California. The Metropolitan Transportation Commission (MTC) described Link21 as the "anchor of a plan for rail in the Bay Area, looking out over the next three decades," in *Plan Bay Area 2050*, and the *2018 State Rail Plan* stated that, "...implementing the Rail Plan vision and pursuing partnerships to generate associated economic growth depend on a second Transbay crossing."
4	Provide indication of how future capital construction funding will be approached.	Add language in the *Stage Gate 1 Report* Statement 4 discussion (p 2-12).	The Link21 Team will be developing detailed funding plans as the program progresses, and they are actively pursuing new funding sources, including federal, state, and local opportunities. In particular, the landmark funding provided under the federal Bipartisan Infrastructure Law provides unprecedented opportunities for programs, such as Link21. The identification and pursuit of funding for construction and eventually operations will advance as the specific project(s) in Link21 take shape.

STATEMENT NUMBER	BART BOARD INPUT	PROPOSED RESPONSE
1	The market analysis should be posted on the Link21 website once it has gone through its full quality control review. It should be made clear that the ridership analysis will be able to model various scenarios, including different rates of work from home.	The *Market Analysis Summary Report* is included in the *Stage Gate 1 Report* in Appendix A, and it will be posted on the Link21 website as a separate document. The *Market Analysis Report* is currently being prepared and will be posted on the Link21 website in April 2022. The detailed ridership model will be developed in Phase 1 and will be able to reflect the various scenarios noted by the Board.
2	The program was asked to provide more substantive information on outcomes of early engagement, especially through co-creation, to demonstrate the commitment to equity and not to repeat past problems of large programs and projects related to marginalized communities.	A focused presentation will be made to the BART Board on March 10 that will be reflected in the *Stage Gate 1 Report* Statement 4 discussion (p.2-7), and it will be included in Appendix A.
3	Foundational design analysis should take into account future sea level rise.	Sea level rise considerations will be included in future design assessments in Phases 1 and 2.
4	Board encouraged the use of its members for future advocacy of the Link21 Program.	The Link21 Team will continue to provide monthly updates to the Board, and they will work with the Board to engage directors on specific items, such as federal and state grant application submittals.

LINK21

CONNECT NORTHERN CALIFORNIA

STAGE GATE 1 REPORT

DRAFT FINAL

April 2022

Prepared By:
Link21 Program Management Consultants (PMC)

BART

CAPITOL CORRIDOR

ISSUE AND REVISION RECORD

REVISION	DATE	PREPARER(S)	PMC REVIEWER(S) / BART/CCJPA REVIEWER(S)	APPROVER / BART/CCJPA APPROVER	DESCRIPTION/ NOTES
0	02/01/2022	Joseph Chroston-Bell, NRC	Ian Brown, NRC	Peter Gertler, HNTB	Working DRAFT submittal
	02/07/2022	---	Sadie Graham, BART; Camille Tsao, CCJPA	Sadie Graham, BART	Working DRAFT submittal review
1	02/10/2022	Joseph Chroston-Bell, NRC	Ian Brown, NRC	Peter Gertler, HNTB	DRAFT submittal
	02/14/2022	---	Sadie Graham, BART; Camille Tsao, CCJPA	Sadie Graham, BART	DRAFT submittal review
2	02/14/2022	Joseph Chroston-Bell, NRC	Ian Brown, NRC	Peter Gertler, HNTB	DRAFT FINAL submittal
					No review requirement
2.A	04/07/2022	Joseph Chroston-Bell, NRC	Ian Brown, NRC	Peter Gertler, HNTB	Revised DRAFT FINAL submittal
					No review requirement

SHAREPOINT PATH

Record Center/STRA Record Center/WPA.03/
1-SAPM-PH0-Stage_Gate_1_Report-DRAFT-FINAL

TABLE OF CONTENTS

FIGURES

APPENDICES

ACRONYMS AND ABBREVIATIONS

ACRONYM/ABBREVIATION	DEFINITION
BART	San Francisco Bay Area Rapid Transit
CCJPA	Capitol Corridor Joint Powers Authority
Boards	BART and CCJPA Boards of Directors
CBO	community-based organization
CEQA	California Environmental Quality Act
EMU	electric multiple unit
NEPA	National Environmental Policy Act
PMC	Program Management Consultants
PMT	Program Management Team
SPP	Strategic Program Plan

LINK21 PROGRAM TEAM NAMES

TEAM NAME	TEAM MEMBERS
PMC	The HNTB Team
PMT	BART/CCJPA + PMC
Consultants	Consultants supporting program identification/project selection
Link21 Team	PMT + Consultants

1. INTRODUCTION

The Link21 Program (Link21) is a generational initiative to transform Northern California's passenger rail network into a faster, more integrated system that provides safe, efficient, and affordable travel for everyone. It has at its core a new transbay passenger rail crossing between Oakland and San Francisco, and it is being sponsored by the San Francisco Bay Area Rapid Transit (BART) and Capitol Corridor Joint Powers Authority (CCJPA), with support from the California State Transportation Agency (CalSTA) and other partners.

The program is a product of more than a decade of regional and state planning studies assessing the transport needs of Northern California. The Metropolitan Transportation Commission (MTC) described Link21 as the "anchor of a plan for rail in the Bay Area, looking out over the next three decades" in Plan Bay Area 2050, and the 2018 State Rail Plan stated that, "...implementing the Rail Plan vision and pursuing partnerships to generate associated economic growth depend on a second Transbay crossing."

1.1. Purpose of Report

This *Stage Gate 1 Report* summarizes the Link21 Stage Gate Process and evidence to support action by the BART/CCJPA Boards of Directors (Boards) to advance Link21 from Phase 0 to Phase 1. The request of the Boards is to:

- Adopt the Link21 vision, goals, and objectives.
- Approve advancement of Link21 into Phase 1.

In support of these requests, the Boards will review the evidence that supports the following four statements:

1. Link21's vision, goals, and objectives are appropriate, clear, and measurable, and they provide a foundation for the Business Case.
2. Stakeholder and public engagement, with a focus on equity advancement, has informed the process and supports advancement into Phase 1.
3. A foundation of analytical work has been completed to develop and evaluate concepts in Phase 1.
4. The program has the people, processes, funding, and tools to support progress through Phase 1.

1.2. Stage Gate Process

The Stage Gate Process is an international best practice to control risk and ensure timely and cost-effective delivery using a rigorous and formalized, decision-driven process to advance projects and programs. Stage gates are applied at key milestones to memorialize decisions and ensure a project's readiness to advance.

The Stage Gate Process was adapted specifically to apply to Link21. For Stage Gate 1, it included three formal review meetings prior to consideration by the Boards. Each review increased with authority, from Peer Industry Experts to Executive Leadership, with the aim to progressively build confidence in Link21's Stage Gate 1 recommendations to the Boards.

At each review, panelists were asked to comment, identify risks, and note their concurrence in the supporting statements. See Appendix B for the review panels' notes, actions, and recommendations.

Each review consisted of a panel of attendees, a chairperson, and a vice chair. It was the panelists' role to review the presented evidence that supports the four statements and to identify any outstanding issues that need to be addressed before Link21 can advance. It was the chairperson's responsibility to consider this discussion and feedback before making the decision to proceed to the next level of the Stage Gate hierarchy (**Figure 1-1**).

Figure 1-1. Hierarchy of Stage Gate 1 Reviews and Board Action

PEER INDUSTRY EXPERTS REVIEW

The Peer Industry Experts Review was a panel of experienced senior management professionals from the larger partner organizations of Link21's Program Management Consultants (PMC) team. The panel was chaired by the PMC program manager and co-chaired by the PMC strategic advisory lead.

Presenters included both senior delivery managers within the PMC and their aligned managers that were appointed by BART and CCJPA. The first review considered the four statements (in Section 1.1) in detail to confirm the readiness of Link21 to proceed to the BART/CCJPA Staff Review.

Link to the Peer Industry Experts Review summary

BART/CCJPA STAFF REVIEW

The BART/CCJPA Staff Review consisted of a panel of senior leaders from BART and CCJPA that represented a diverse background from operations planning to real estate development.

This panel was chaired by BART Program Director Sadie Graham and co-chaired by CCJPA Program Manager Camille Tsao. They focused on reviewing the program's readiness to proceed, and they engaged BART and CCJPA staff so they may brief their respective senior executive managers in advance of the Executive Review.

Link to the BART/CCJPA Staff Review summary

EXECUTIVE REVIEW

The Executive Review was a panel of executive management representatives from BART and CCJPA's executive committees. It was chaired by BART General Manager Robert Powers and co-chaired by CCJPA Managing Director Robert Padgette.

This review took into consideration the previous panel reviews and focused on the Link21's readiness to proceed for the Boards' consideration.

Link to the Executive Review summary

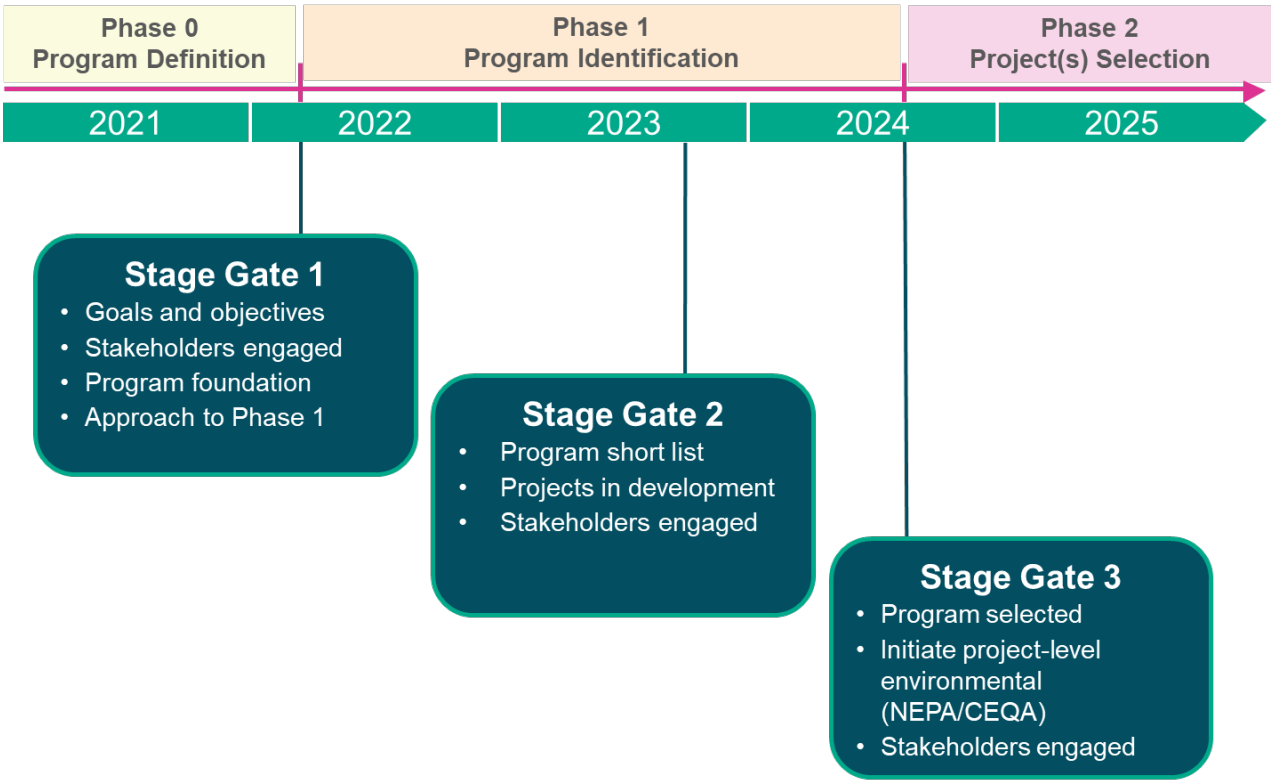
CONCURRENCES

The Peer Industry Experts, BART/CCJPA Staff, and Executive reviews all provided concurrence with the four statements listed in Section 1.1. Their actions and recommendations are noted in Appendix B.

1.3. Future Stage Gates

Future stage gates have been identified, as shown in **Figure 1-2**. Stage Gate 2 is projected to occur in late 2023, and it will include a short list of program concepts. Stage Gate 3 is projected to occur by late 2024, and it will include initiation of the environmental review process. Other stage gates will be defined as Link21 progresses.

Figure 1-2. Future Stage Gates



National Environmental Policy Act (NEPA)/California Environmental Quality Act (CEQA)

2. SUMMARY OF EVIDENCE

This section summarizes the evidence presented to the Peer Industry Experts, BART/CCJPA Staff, and Executive review panels to support advancing Link21 from Phase 0 to Phase 1 based on the four statements originally presented in Section 1.1:

The meeting notes, including actions and comments by each of the review panels, are provided in Appendix B.

Statement 1: Link21's vision, goals, and objectives are appropriate, clear, and measurable, and they provide a foundation for the Business Case.

The *Problem and Vision Statement & Goals and Objectives* document was prepared as part of the development of the Business Case Framework and Methodology. It was reviewed and refined to reflect additional information that became available and feedback from stakeholder/public engagement and equity advancement activities during Phase 0. More detail on engagement and equity outreach activities is provided in Statement 2.

Link21 Problem Statement

> *The 21-county Northern California Megaregion, encompassing a vast area of over 24,000 square miles, is home to over 12.5 million people and is the fifth largest U.S. megaregional economy.[1,2] These numbers have increased significantly over the last 30 years and population is expected to reach 16 million by 2050.[3]*
>
> *Along with this growth and prosperity, the Megaregion has experienced increasing income inequality and displacement. Many residents struggle to live affordably within easy reach of work, school, shopping, and recreation. Road and freeway congestion is among the nation's worst, and opportunities for roadway expansion are greatly limited and inconsistent with state and regional goals. The existing and proposed future BART and Regional Rail (including commuter, intercity, and high-speed rail) network, and in particular the transbay corridor between Oakland and San Francisco, is unable to effectively meet the growing needs of the Megaregion.[4,5,6] The lack of multiple reliable transportation choices*

[1] *The Northern California Megaregion: Innovative, Connected, and Growing,* Bay Area Council Economic Institute, June 2016
[2] *Continuing Growth and Unparalleled Innovation: Bay Area Economic Profile*, Bay Area Council Economic Institute, July 2018
[3] *P-3: State and County [Population] Projections Dataset*, California Department of Finance, 2019
[4] "Bay Area traffic is terrible, so why are fewer people taking transit?", The Mercury News, January 2020
[5] Vital Signs: Time Spent in Congestion, Metropolitan Transportation Commission, October 2018
[6] The Urbanist: Seamless Transit, SPUR, May 2015

will undermine community stability and limit opportunities for the Megaregion's residents and businesses for years to come.

In the Transbay Corridor, BART trains are frequently overcrowded,[7,8] and with limited alternate routes, any disruption to service negatively impacts travelers regionwide.[9] In several areas, transit and rail are either unavailable, unaffordable, or undependable due to infrequent or unreliable service; lack evening, weekend, and late-night availability;[10] and have long travel times requiring multiple transfers and fares. The lack of regional rail connectivity greatly limits its effectiveness as an accessible and practical alternative to congested freeway corridors.

Without investments in the current systems to enable a robust rail network and vibrant, stable communities, most trips in these corridors and around the Megaregion will continue to be made by car, contributing to increased congestion and greenhouse gas emissions,[11] unreliable travel times, and damage to the environment and public health. In addition, transit-dependent and reliant communities will suffer from continued inadequate access, crowded rides, and slow and inefficient routes.

Link21 Vision Statement (highlighted text represents the refinements/additions made during Phase 0):

The Link21 Program and its partners will transform the BART and Regional Rail (including commuter, intercity, and high-speed rail) network in the Northern California Megaregion into a faster, more integrated system that provides a safe, efficient, equitable, and affordable means of travel for all types of trips.

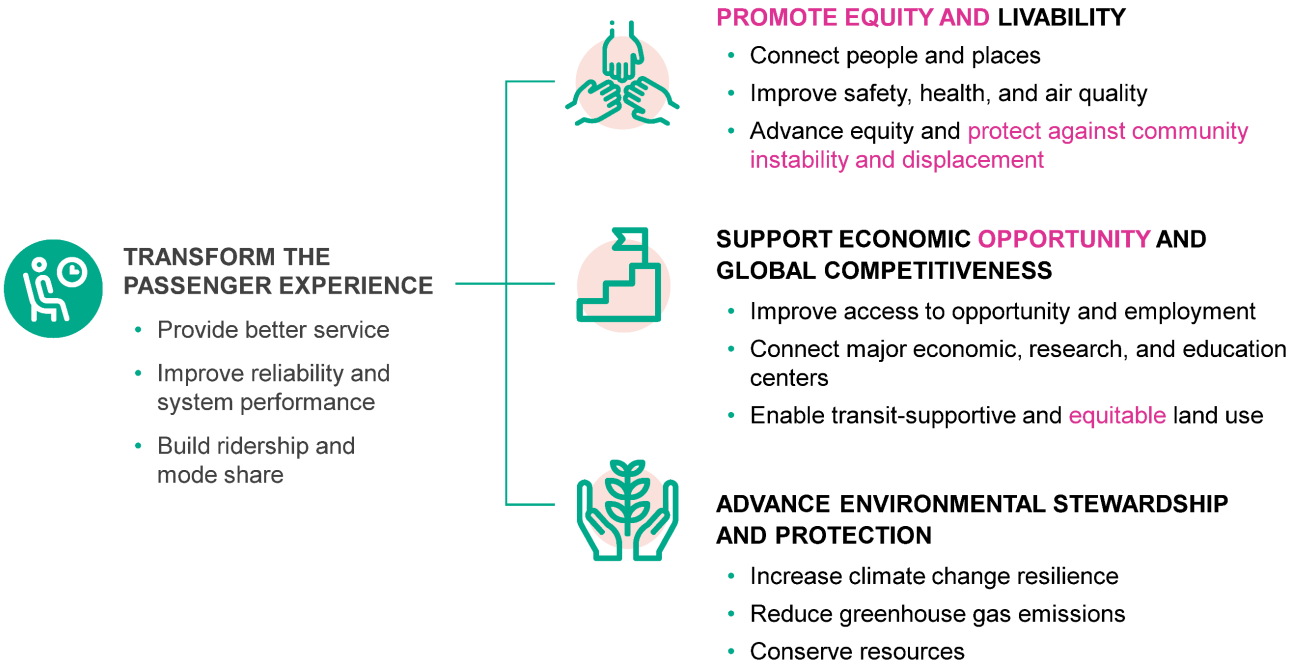
This program, including a new transbay passenger rail crossing between Oakland and San Francisco, will enhance environmental quality, livability, and economic opportunity while protecting against community instability and displacement in the Megaregion as it improves the travel experience. With key investments that leverage the existing rail network and increase capacity and system reliability, rail and transit will better meet the travel needs of residents throughout the Megaregion.

[7] *Crossings: Transformative Investments for an Uncertain Future*, Metropolitan Transportation Commission, November 2019
[8] Note that analysis is based on market conditions prior to the COVID-19 pandemic
[9] *Bay Area Core Capacity Transit Study Final Report*, Metropolitan Transportation Commission, September 2017
[10] "BART has lost nearly 10 million passengers on nights and weekends. Can it lure them back?", San Francisco Chronicle, February 2020
[11] *Another Inconvenient Truth: To Achieve Climate Change Goals, California Must Remove Barriers to Sustainable Land Use*, Bay Area Council Economic Institute, August 2016

Goals and Objectives

Four goals were developed with corresponding objectives, as shown in **Figure 2-1**. Text in pink represents modifications to the goals and objectives based on feedback from stakeholders, the public, and the BART Board.

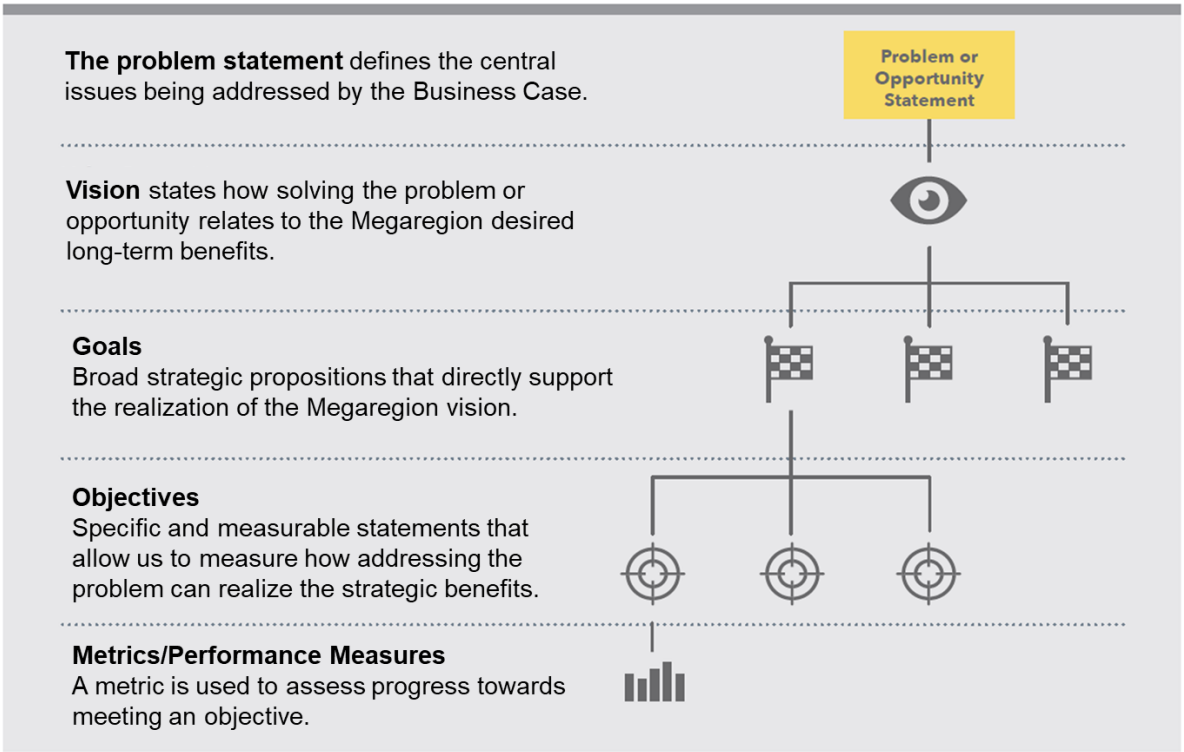
Figure 2-1. Goals and Objectives



Business Case Framework and Methodology

The Link21 business case framework and methodology (see the *Strategic Program Plan [SPP] - Chapter 2: Business Case* in Appendix A) is designed to select concepts and alternatives through a transparent and evidence-based approach. To do this, the Business Case will assess the problem to be solved, define a vision, and apply the different layers of goals and objectives and metrics, as shown in **Figure 2-2**.

Figure 2-2. Foundation of the Evaluation Framework



The Business Case will evolve over the program's life cycle and throughout the different phases:

- Phase 0: Business Case Framework and Methodology supports program definition.
- Phase 1: Preliminary Business Case supports program identification.
- Phase 2: Intermediate Business Case supports the identification of project alternative(s) to enter into CEQA/NEPA environmental review.
- Phase 3: Final Business Case contains detailed information on the benefits, costs, and a program and project(s) delivery and implementation strategy.

The Business Case consists of four elements, which reflects the multidimensional evaluations that are required for this complex program:

1. Strategic Case outlines the rationale.
2. Economic Case appraises the costs and benefits.
3. Financial Case assesses the financial viability.
4. Deliverability and Operations Case considers the feasibility.

For Phase 0, the focus was on the Strategic Case, particularly on the vision, goals, and objectives. Future phases will increasingly focus on the other cases. Building off previous studies, findings, and continuous stakeholder/public outreach and equity advancement, the vision, goals, and objectives were derived from and refined to

communicate the rationale and focus on megaregional passenger rail improvements and benefits with a new transbay passenger rail crossing between Oakland and San Francisco.

A key element of the Business Case was stakeholder and public engagement and a commitment to advance equity. These activities informed and refined the vision, goals, and objectives during Phase 0 for clarity and continuity with stakeholder and community priorities.

A strategic priority for Link21 is its commitment to advance equity across the program life cycle from planning to operation. In support of this, the Program Management Team (PMT)[12] developed the *Equity Vision Statement* (see Statement 2), that was informed in part by the co-creation workshops, to guide the program's equity objectives in project planning, evaluation processes, and outcomes.

To support the vision, goals, and objectives as clear and measurable, metrics were developed and refined throughout Phase 0. The metrics will be used to measure the relative quantitative and qualitative benefits and costs of concepts and program alternatives at a megaregional level in future phases. Refer to the *Phase 1A Metrics* in Appendix A for a full list of the metrics developed in Phase 0.

At Stage Gate 1, the vision, goals, and objectives will be formally adopted through a Board action. The metrics developed in Phase 0 will continue to be refined, as necessary, in subsequent phases as additional program information and findings emerge and stakeholder and public engagement and equity advancement advances.

Statement 2: Stakeholder and public engagement, with a focus on equity advancement, has informed the process and supports advancement into Phase 1.

Phase 0 included extensive stakeholder and public engagement activities and made significant progress to advance equity. These activities included a multipronged approach of informing, educating, interacting, and receiving feedback on the benefits of Link21 to:

- Elected Officials
- Agencies and Stakeholders
- Freight, Rail, and Transit Operators
- Business/Industry Leaders
- Media
- General Public
- Equity Partners
- Advocacy Groups

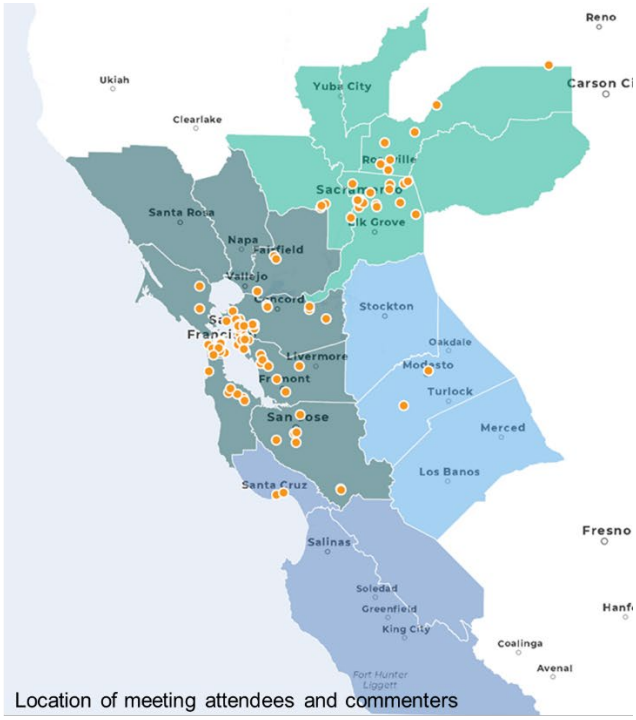
[12] BART/CCJPA and PMC

At the outset, an *Engagement Action Plan* was produced to guide a strategy of continuous outreach through Phase 0. Key performance indicators included website visits, number of attendees at public workshops, social media mentions, presentations to transportation and other partner agencies, and number of survey responses, as shown in **Figure 2-3**.

Figure 2-3. Key Engagement and Outreach Figures from Phase 0 (as of January 2022)

TO DATE:

- **149k** website views at Link21Program.org
- **773** #Link21 social media mentions
- **2,000+** responses to the Goals & Objectives survey
- **600+** attendees at five public workshops, summer and fall 2021
- **680** community co-creation participants, in partnership with **30+** CBOs
- **200+** presentations to transportation and other partner agencies
- **900+** responses to the Service Improvements survey



Location of meeting attendees and commenters

The information learned and gathered from these activities was used to inform the Business Case (vision, goals and objectives, and metrics) described in Statement 1, equity advancement, technical work, and lessons learned and best practices for future outreach activities.

Link21 kicked off in August 2019 prior to the COVID-19 pandemic. In March 2020, the PMT pivoted their strategy and tactics to comply with COVID-19 restrictions to essentially be fully remote. The PMT incorporated virtual meetings, webinars, interactive activities, surveys, and other online tools to engage the stakeholders and the public. In addition to these tools, traditional tools and methods including mailers and phone participation were used to enable access and participation by all communities. As COVID-19 restrictions began to lift in the summer of 2021, a hybrid approach using digital tools and methods and in-person grassroots outreach was used to “meet people where they are” — community fairs and festivals, BART and Capitol Corridor stations, and Capitol Corridor trains.

Link21 developed an *Equity Vision Statement* to guide its approach:

> *An equitable Link21 Program (Link21) acknowledges the ongoing effects on access to mobility and opportunity that past infrastructure projects have had on impacted communities. It shows an understanding of how past projects have failed to adequately consider the needs of systemically marginalized community members, and it evaluates what barriers to rail access exist for low-income and Black, Indigenous, and People of Color (BIPOC) residents, as well as riders with disabilities, women, LGBTQIA+ passengers, and other historically underserved identities.*
>
> *A fair and just Link21 partners with impacted communities to develop much needed transit benefits for priority populations* via co-creation, a process used to integrate the knowledge and expertise community members bring from their own lived experience directly into program decisions. This allows the program to stay flexible and responsive to emerging and changing needs over time.*
>
> *Equitable transportation will give everyone the ability to travel safely, affordably, and reliably to work, school, healthcare and government services, family and friends, and other important places in their lives. It should be fast, clean, efficient, welcoming, and accessible for anyone. By following a more equitable process, Link21 will help advance more equitable transportation outcomes throughout the Northern California Megaregion (Megaregion).*

Link21 is being built on a commitment to equity. A key component of equity advancement is the focus on community co-creation. Co-creation entails partnering with community-based organizations (CBO) to solicit input on important program topics from segments of the public who are often underrepresented in the transportation planning process. CBOs and participants were compensated for their contribution to co-creation process because of the level of effort required, the value they provided, and the alignment with emerging best practices. The co-creation process was developed with guidance from sources such as Justice40, a Biden Administration initiative "that aims to deliver 40% of the overall benefits of federal investments in climate and sustainable transportation to disadvantaged communities."

Equity advancement during Phase 0 included participation from over 680 community members, 31 CBOs, and 1,500 community members from communities of color or low-income backgrounds participating in a survey. As a result, the PMT received valuable feedback on key program topics, such as the goals and objectives, travel patterns, service goals, community burdens, and general equity concerns. Feedback received from the outreach and community co-creation initiatives resulted in changes to the program's approach, including the addition of enhancing economic opportunity while protecting against community instability and displacement in the program's vison, goals, and objectives.

Phase 0 also developed and refined the definitions of priority populations (see the *Link21 Priority Populations Update* in Appendix A). This definition is critical for evaluating the costs and benefits of Link21 on priority populations in Phase 1.

The initial Link21 priority populations definition was based on definitions used by other state, regional, and local agencies. However, it lacked consistent methodology across the Megaregion. As a result, the PMT revised the definition to reflect community input received during Phase 0 and a burden-based approach that could be applied across the Megaregion. The burden-based approach identified census tracts that experience the highest levels of burdens when compared to neighboring communities and included burdens that were documented through research and community co-creation. This approach aligns with guidance from other agencies, such as Justice40 and BART's emerging equity framework. The definition may be iterated upon at appropriate points in the program as more information becomes available. It should be noted that priority populations are a program-specific designation that is not intended as a replacement for environmental justice or other compliance designations.

The Link21 Team[13] is continuing to refine its stakeholder/public engagement and equity advancement strategies and tactics to support more focused activities around concept development that will lead to a short list of program concepts in Phase 1. These activities will include a combination of virtual and physical engagement activities and will comply with all COVID-19 and other restrictions. Equity advancement will continue with community co-creation and the formation of an Equity Advisory Council to provide expert review of evaluation methods, strategies, and recommendations.

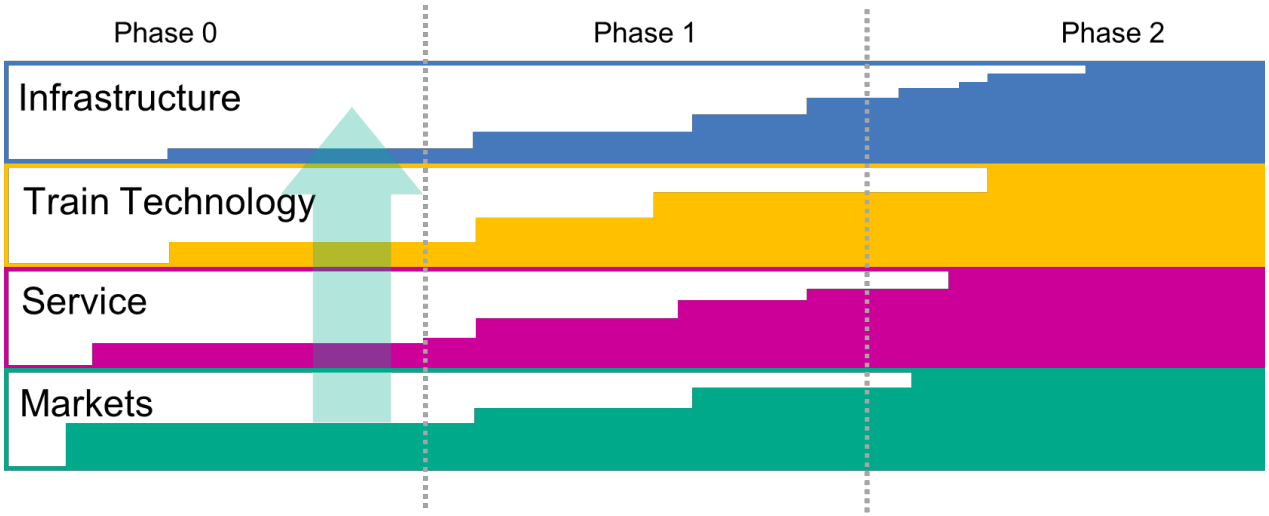
The presentation made to the BART Board on March 10, 2022, is included in Appendix A. It describes the engagement and equity work undertaken so far, and how Link21 is engaging with the general public and partnering with marginalized communities.

Statement 3: A foundation of analytical work has been completed to develop and evaluate concepts in Phase 1.

The analytical work prepared in Phase 0 established a framework and foundation for the development of Link21 concepts to be defined in more detail and evaluated in Phase 1. Concept development is based on four building blocks: markets served, train service provided, train technology deployed, and infrastructure capability delivered, as illustrated in **Figure 2-4**. As part of this process, concepts either not considered or not advanced to Phase 1 were also identified.

[13] BART/CCJPA, PMC, and Consultants supporting program identification/project selection (Consultants)

Figure 2-4. Evolution of Link21's Building Blocks of Markets, Service, Train Technology, and Infrastructure (Phases 0 to 2)



The Building Block approach is a best practice to develop projects and programs by focusing on *market* (type and volume of trips) and *service* (frequency, routes, and stopping patterns) first then by appropriate *train technology* (train performance and traction power) and required *infrastructure* (track, structures, power, etc.). As a result, focusing early in the planning process on markets and services, the "what", will better inform the requirements for train technology and infrastructure, the "how", as the program progresses. Further information on this process can be found in the Reimagining Rail with Link21 webinar (11/18/2021) on the Link21 website.

Markets

The Business Case Team prepared a megaregional market analysis using big data and sophisticated methods to identify potential hubs of long-term, unmet demand and transbay unmet demand. The data for the market analysis was pre-COVID (post-COVID data does not exist yet). A sensitivity analysis and other methods were used to address the potential impacts of a post-COVID demand. In September 2021, the PMT presented the market analysis approach and findings to the Boards, stakeholders, and the public. The analysis informed corridor identification for rail service development in Phase 1, and it supports the megaregional strategic case for new transbay rail connectivity. The analysis also supported community co-creation input regarding "system inefficiencies," which validated where trips are more convenient by car (e.g., between east and west Contra Costa County) or require transit-dependent communities to take extremely long journeys to travel by transit.

Additional information is provided on the Market Analysis page of the Link21 website and in the *Market Analysis Report: Executive Summary* in Appendix A.

Service

The PMT prepared a review of service opportunities for frequencies and journey types across the Megaregion. They also identified critical constraints to the delivery of these opportunities, such as BART's Oakland Wye operations and trackage rights constraints with freight railroads. This information will inform the creation of service concepts, including service plans, routes, and stopping patterns that will be developed in Phase 1. Today's regional rail network generally operates on freight rail rights-of-way, and, as a result, trackage rights and shared use of infrastructure will be an area of increasing focus that will require more detailed analyses and engagement with the freight railroads.

Additional information is provided on the Service Improvements page of the Link21 website.

Train Technology

BART and regional rail technology advancements and interoperability were considered in Phase 0. It was determined that advancement in regional rail electric multiple units (EMU) train technology have performance characteristics comparable to BART, and they present an opportunity to serve a wide variety of market needs, including those traditionally served by BART. The use of EMUs or new technologies, such as hydrogen and battery powered units, could deliver comparable service while meeting the state mandate for zero emissions. Phase 1 will further review new technologies and evaluate program concepts to identify the optimal balance of BART and Regional Rail[14] for program concepts to be advanced. However, Link21 aims to deliver a complementary system of upgrades to both BART and Regional Rail regardless of the identified technology for the new transbay passenger rail crossing.

Additional information is provided on the Train Technology page of the Link21 website.

Infrastructure

Phase 0 included limited consideration of infrastructure requirements. In Phase 1 and beyond, there will be an increased focus on infrastructure requirements based on the definition of the markets to be served and the service and technology requirements. During Phase 0, the PMT divided the Megaregion into logically constrained geographic corridor segments and identified high-level physical opportunities and constraints from a detailed literature review of prior studies, meetings with other agencies (e.g., rail operators, cities, and transportation agencies), and internal workshops. This information was used to build early development of potential concepts to be considered in Phase 1. Information from these sources and additional planning, engineering, travel demand, and environmental studies in Phase 1 will be used to support more detailed development and evaluation of program concepts, leading to a short list for Stage Gate 2.

Additional information is provided on the Infrastructure page of the Link21 website.

[14] Could include commuter, intercity, or high-speed rail.

Concepts Not Advancing to Phase 1

Link21 did not consider an auto crossing. Previous planning studies showed that a new auto crossing between San Francisco and Oakland did not meet regional environmental goals. Voter direction in Regional Measure 3 and BART Measure RR reaffirmed this; therefore, Link21 is focused on developing and delivering a new transbay passenger rail crossing.

Concepts considered but not advancing include:

- **Technologies not interoperable with BART or standard gauge Regional Rail:** Based on voter-approved funding requirements, organizational and governance responsibilities, previous regional planning, Link21 goals and objectives and business case criteria.
- **New transbay passenger rail crossing on a bridge:** Based on maritime requirements for bridge height and shipping clearance and construction of a rail approach structure from the elevation of the bridge to underground or at-grade facilities in Oakland and San Francisco would be highly disruptive and inequitable to residents and businesses.
- **Diesel trains operating in the new crossing:** Based on a state mandate for zero-emission rail vehicles and inconsistent with environmental goals.

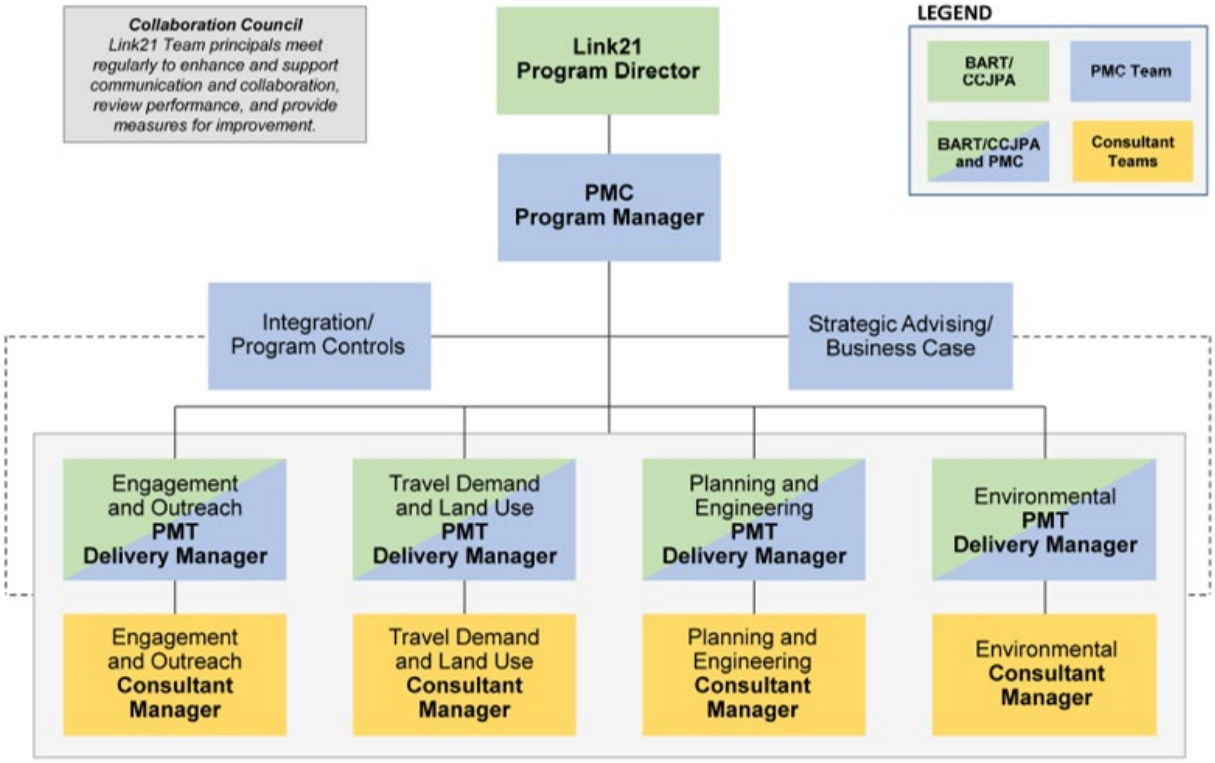
Statement 4: The program has the people, processes, funding, and tools to support progress through Phase 1.

Phase 0 included creating the PMT, systems processes, and tools to scale as the program grows and evolves from planning to design and construction and ultimately revenue service. The *Phase 0 Financial and Deliverable Summary Report* in Appendix A provides an overview of key Phase 0 activities, products, and expenditures. An SPP was developed at the outset of the program. It is maintained and updated regularly as a living document to memorialize and socialize the program components of cost, schedule, budget, risk, quality, and other organizational and management strategies, methods, processes, and tools to support the efficient and effective delivery of the program (refer to *SPP Chapter 1: Introduction* in Appendix A).

The Link21 Team includes an integrated and one-team organization of BART and CCJPA and consulting staff. At the outset of Phase 0, there were about 10 dedicated staff, and it is projected that by Phase 1 there will be over 100 dedicated staff. The consulting staff includes the PMC that serves as an extension of BART/CCJPA staff and that provide both strategic advising and program management services. In addition, there are four service category Consultant teams that provide technical and subject matter expertise in Planning and Engineering, Engagement and Outreach, Environmental, and Travel Demand and Land Use. BART/CCJPA is supported by the PMC in developing program strategy, direction, and decision-making, and in overseeing delivery of the Consultants' services. All key positions on the BART, CCJPA, PMC, and

Consultant teams are filled, and the organization is built to be flexible and scalable as the program evolves and grows. **Figure 2-5** is an organization chart for the PMT.

Figure 2-5. Link21 Program Management Team Organization Chart



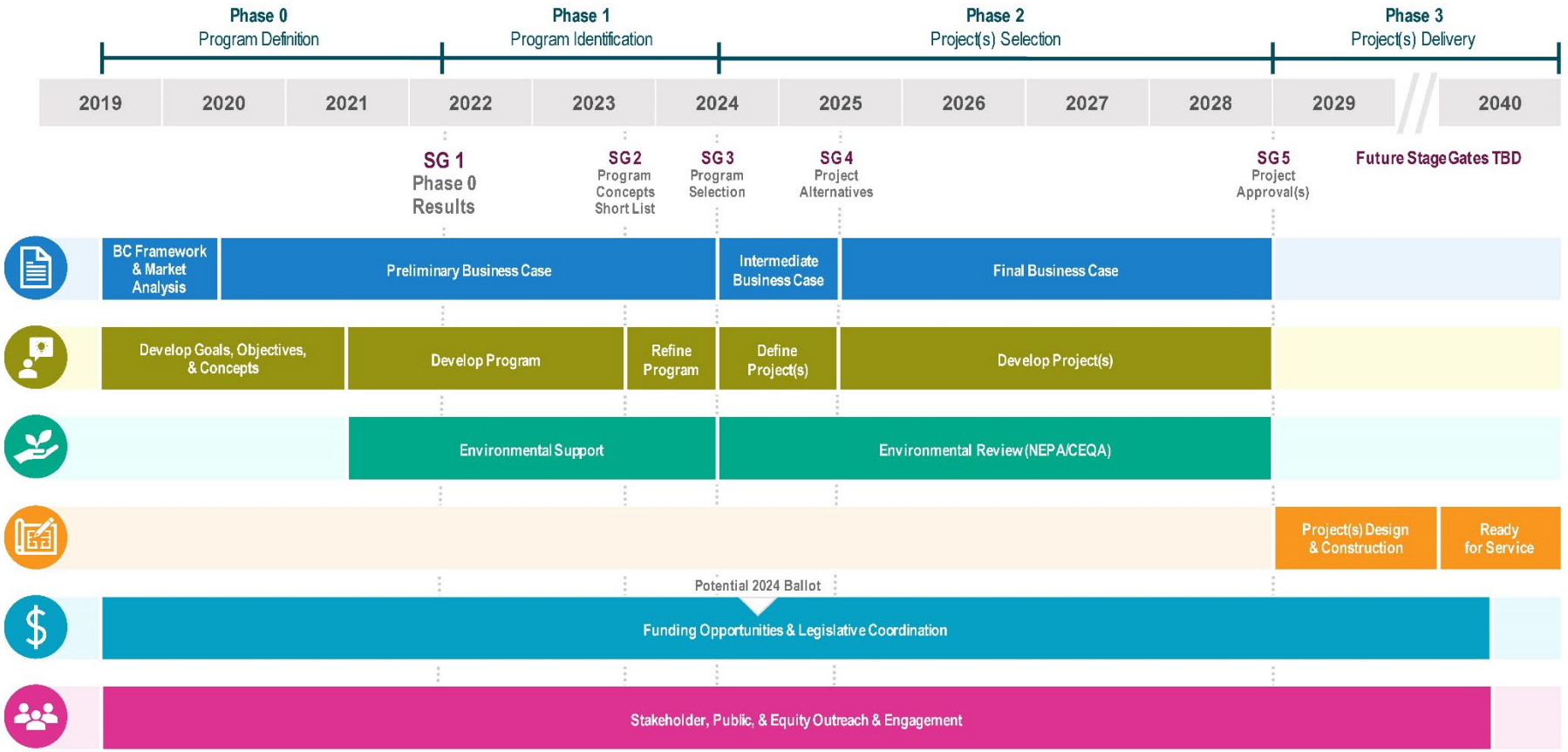
To ensure the program is being delivered effectively and efficiently, the PMT established and is maintaining systems, processes, and tools to manage the program. These include collaboration and information technology systems to support document control, cost and schedule management, geographic information system (GIS) and virtual design, and website and social media applications.

At the BART/CCJPA staff stage gate review, an action was made to update the text for Statement 4 to explicitly reference funding. The PMT agreed, noting the importance of understanding the program's financial viability through Phase 1 to inform the Boards' actions. The PMT developed a Cash Flow Model that is used to project spending rates and existing and potential funding (revenues) to manage the scope, schedule, and budget and to support the program through revenue services. Existing funding is projected to be sufficient to advance through Phase 1 (Program Identification) in 2024, and additional funding sources may be required to support the program through subsequent phases and completion of environmental review and capital funding for design and construction. The PMT will develop detailed funding plans as the program progresses and is actively pursuing new funding sources, including federal, state, and local opportunities. In particular, the landmark funding provided under the federal Bipartisan Infrastructure Law provides unprecedented opportunities for programs such as Link21. The identification

and pursuit of funding for construction and eventually operations will advance as the specific project(s) in Link21 take shape.

The objective for Stage Gate 2, which occurs in late 2023 about midway through Phase 1, is to develop a short list of program concepts, to identify (potentially) a preferred rail technology for use in the crossing, and to provide sufficient information to position a potential project for federal, state, or regional funding opportunities by 2024. Following Stage Gate 2, the short list of program concepts will be further developed through the remainder of Phase 1 to Stage Gate 3 by mid-2024, recommending a preferred program advance to Phase 2 and the identified projects enter into environmental review (see **Figure 2-6** for the Link21 Master Program Timeline).

Figure 2-6. Link21 Master Program Timeline



BC = Business Case
SG = Stage Gate

A detailed Phase 1 schedule was developed that identifies key milestones and critical paths to complete Phase 1 and Stage Gates 2 and 3. The Phase 1 schedule identified key interfaces between all tasks and deliverables to meet the project milestones dates. This information is used for work planning and scope and schedule management for BART and CCJPA, PMC, and Consultants.

APPENDIX A. STAGE GATE REVIEW SUPPORTING MATERIALS

- Strategic Program Plan – Chapter 1: Introduction
- Strategic Program Plan – Chapter 2: Business Case
- Market Analysis Report: Executive Summary
- Monthly Stakeholder Updates
- Phase 1 Metrics
- Priority Populations Update
- Equity Vision Statement
- Fact Sheet: Rail Bridge Assessment
- Fact Sheet: Train Technology
- Phase 0 – Financial and Deliverable Summary Report
- BART Board Presentation on Engagement and Equity

LINK21

CONNECT NORTHERN CALIFORNIA

STRATEGIC PROGRAM PLAN

CHAPTER 1: INTRODUCTION

April 2022

DRAFT - DELIBERATIVE

Prepared By:
Link21 Program Management Consultants (PMC)

BART

CAPITOL CORRIDOR

INTENTIONALLY LEFT BLANK

ISSUE AND REVISION RECORD

REVISION	DATE	PREPARER(S) / BART/CCJPA REVIEWER(S)	APPROVER / BART/CCJPA APPROVER	DESCRIPTION/NOTES
0	10/18/2019	Gay Knipper, HNTB	Gay Knipper, HNTB	WPA.01 Initial DRAFT submittal
	10/25/2019	Sadie Graham, Duncan Watry, BART	Sadie Graham, BART	WPA.01 Initial DRAFT submittal review
1.A	02/07/2020	Gay Knipper, HNTB	Peter Gertler, HNTB	WPA.01 DRAFT submittal
	02/13/2020, 02/29/2020	Sadie Graham, Andrew Tang, BART	Sadie Graham, BART	WPA.01 DRAFT submittal review
2.A	07/30/2020	Kara Lentz, HNTB	Gay Knipper, HNTB	WPA.02 V1 DRAFT submittal
	07/31/2020, 08/17/2020	Sadie Graham, BART; Camille Tsao, CCJPA	Sadie Graham, BART	WPA.02 V1 DRAFT submittal review
2.B	10/30/2020	Kara Lentz, HNTB	Gay Knipper, HNTB	WPA.02 V1 DRAFT FINAL submittal
				No review requirement
3.A	04/19/2021	Steve Lavelle, Intueor; Rebecca Mincio, HNTB	Steve Lavelle, Intueor	WPA.03 V2 Working DRAFT submittal
	05/13/2021	Sadie Graham, BART	Sadie Graham, BART	WPA.03 V2 Working DRAFT submittal review
3.B	06/04/2021	Steve Lavelle, Intueor; Rebecca Mincio, HNTB	Steve Lavelle, Intueor	WPA.03 V2 DRAFT submittal
	08/13/2021	Sadie Graham, BART	Sadie Graham, BART	WPA.03 V2 DRAFT submittal review
3.C	11/29/2021	Steve Lavelle, Intueor; Rebecca Mincio, HNTB	Steve Lavelle, Intueor	WPA.03 V2 DRAFT FINAL submittal
				No review requirement

REVISION	DATE	PREPARER(S) / BART/CCJPA REVIEWER(S)	APPROVER / BART/CCJPA APPROVER	DESCRIPTION/NOTES
4	04/07/2022	Steve Lavelle, Intueor; Rebecca Mincio, HNTB	Steve Lavelle, Intueor	WPA.04 DRAFT submittal

SHAREPOINT PATH

Records Center/PRGM Record Center/WPA.04/SPP/
1-PRGM-PH0-SPP_CH01_Introduction-DRAFT

TABLE OF CONTENTS

FIGURES

TABLES

INTENTIONALLY LEFT BLANK

ACRONYMS AND ABBREVIATIONS

ACRONYM/ABBREVIATION	DEFINITION
BART	San Francisco Bay Area Rapid Transit
CCJPA	Capitol Corridor Joint Powers Authority
DBE	Disadvantaged Business Enterprise
PMC	Program Management Consultants
PMT	Program Management Team
SBE	Small Business Entity
SPP	Strategic Program Plan

LINK21 PROGRAM TEAM NAMES

TEAM NAME	TEAM MEMBERS
PMC	The HNTB Team
PMT	BART/CCJPA + PMC
Consultants	Consultants supporting program identification/project selection
Link21 Team	PMT + Consultants

INTENTIONALLY LEFT BLANK

1. INTRODUCTION

1.1. Purpose

The Northern California Megaregion (Megaregion) includes the nine-county Bay Area, the six-county greater Sacramento area, the three northernmost counties of the San Joaquin Valley, and the three counties in the Monterey Bay Area, for a total of 21 counties. The Megaregion represents 5% of the nation's gross domestic product (GDP) and the highest per capita in the country. The expanding suburban markets are now increasingly tied to an extensive and expanding rail network, including the San Francisco Bay Area Rapid Transit's (BART) System. BART's current Transbay Tube has been connecting BART between San Francisco and the East Bay for nearly 50 years, and it cannot meet the expected future travel demand. Therefore, BART and the Capitol Corridor Joint Powers Authority (CCJPA), collectively referred to as BART/CCJPA, are representing the region's rail partners in pursuing a new transbay passenger rail crossing project (Crossing Project) within the context of the larger travel demand and the megaregional rail network.

The Link21 Program (Link21) is a highly complex and long-term effort. In June 2019, BART/CCJPA selected the HNTB-led team as its Program Management Consultants (PMC) for this critical initiative. While BART/CCJPA leads and maintains control of all ultimate decisions, the PMC collaborates closely with BART/CCJPA and combined they comprise the Program Management Team (PMT). The PMC supports BART/CCJPA with necessary strategic insights and technical analyses to advance Link21 while maintaining public trust, promoting transparency, and identifying funding opportunities.

To assemble the Link21 Team (as shown in **Table 1-1**), BART/CCJPA recently procured additional Consultants (Consultants supporting program identification/project selection) for the following service categories: Engagement and Outreach, Planning and Engineering, Travel Demand and Land Use, and Environmental.

Table 1-1. Link21 Program Team Names

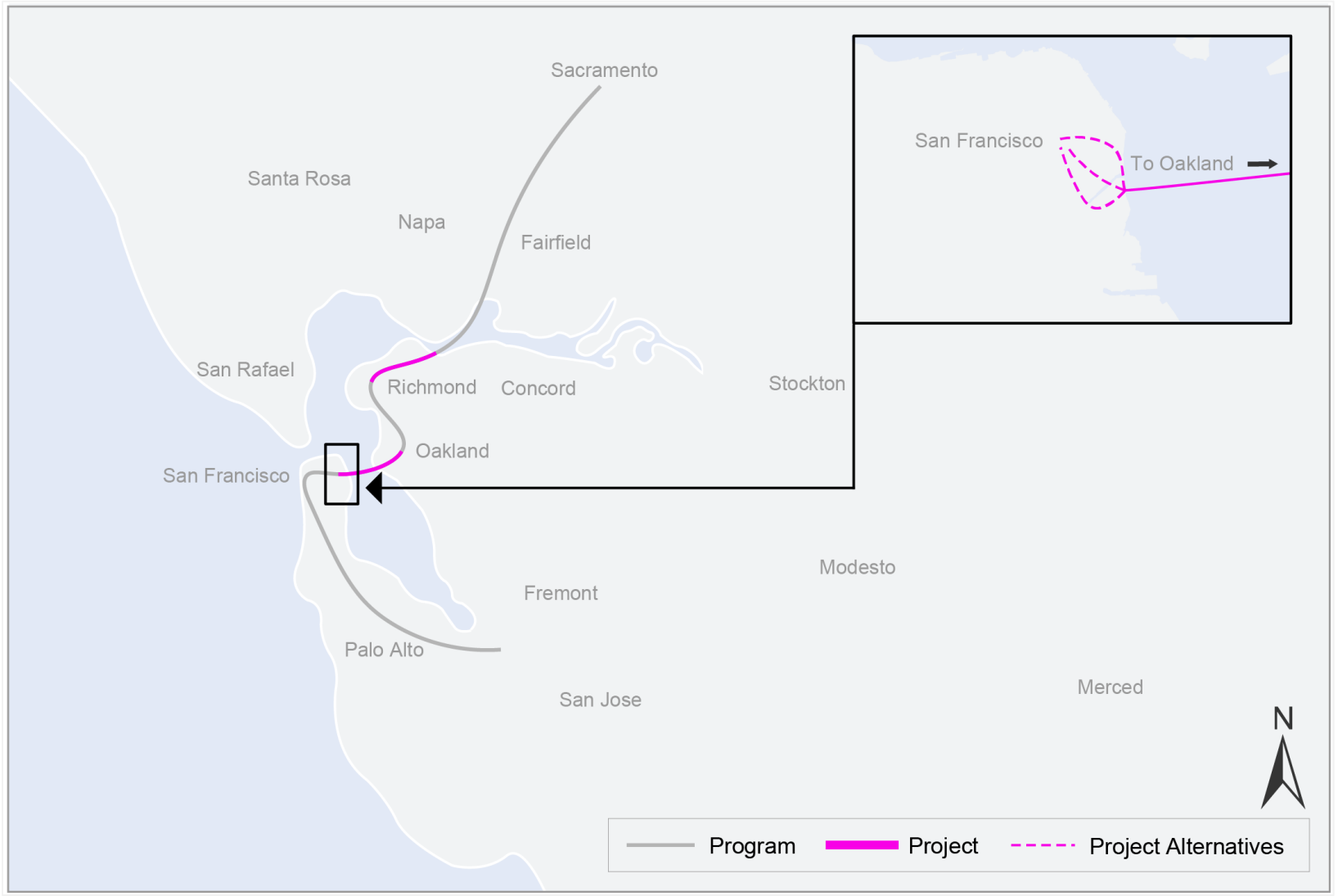
TEAM NAME	TEAM MEMBERS
PMC	The HNTB Team
PMT	BART/CCJPA + PMC
Consultants	Consultants supporting program identification/project selection
Link21 Team	PMT + Consultants

The PMC will collaborate with BART/CCJPA to prepare and maintain this Strategic Program Plan (SPP) as a fundamental document that serves to memorialize and socialize program components, management strategies, and key decisions that support the goals and objectives for Link21.

1.1.1. Program Overview

The Link21 elements within the SPP are organized by the “Program” and the “Project(s),” as shown in **Figure 1-1.** It is an illustrative example of the relationship between the Link21 Program and Project(s). The Link21 Program could include BART and Regional Rail (commuter, intercity, or high-speed rail) improvements from Sacramento to San Francisco. It also could include one or more projects that would be advanced to delivery and revenue service. It is likely that at least one of the projects will be a transbay crossing between Oakland and San Francisco and may include other projects to be identified and progressed. Please note, Figure 1-1 is only illustrative and is not an actual representation of a proposed program or project that will be identified and selected as part of Link21.

Figure 1-1. Illustrative Example of a Program versus a Project



Note: This graphic was developed to visualize program terminology. It does not reflect defined alternatives, components, projects, or design options.

INTENTIONALLY LEFT BLANK

1.2. Strategy

1.2.1. Guiding Principles

The PMT will consider the following three overarching principles as a guide to the planning and delivery of Link21.

GOVERNANCE

While the individual members of the PMT continue to lead specific efforts, BART/CCJPA, as the program owner, makes the final decisions related to the delivery of Link21, including, but not limited to, decisions about Link21's scope, budget, schedule, commitments, policies, and quality. Additionally, BART/CCJPA will report to the BART and the CCJPA boards, who will have the overall decision authority at each stage gate, which is a critical decision point in the program and captures the foundational actions that determine Link21's direction.

RESOURCES PLANNING

Throughout the Link21 life cycle, BART/CCJPA will collaborate and leverage PMC and Consultants' resources as needed. The PMT will use its strategic, technical, and program management expertise and procurement experience to successfully deliver Link21.

INNOVATION

The PMT will establish and foster an innovative culture to provide knowledge management and transfer while achieving Link21's goals and objectives. The Link21 Team will build upon BART/CCJPA's institutional knowledge, collective best practices, and lessons drawn from global experience on similar complex capital programs.

1.2.2. Strategy Development

With a program of Link21's magnitude, pressure will mount to demonstrate progress and return on investment. Therefore, it is essential to the overall strategy to carefully plan, execute, deliver, and mitigate risk. The PMT's approach to strategy development and program management is through visionary and collaborative leadership from initiation through operations. This approach will be supported by skilled advice, program management expertise, and technical insights from subject matter experts, managers, owner-operators, and agency executives on relevant megaprojects in the Bay Area as well as nationally and globally.

The PMT will develop appropriate options and conduct robust analyses to make sure decision-makers and stakeholders are continuously engaged and informed. Throughout Link21, the PMC and the Consultants will assist BART/CCJPA in developing options and recommendations through alignment analysis, environmental clearance,

engineering, and construction. Once BART/CCJPA determines the best path forward, the PMT will work together to provide successful planning and delivery of program and project activities.

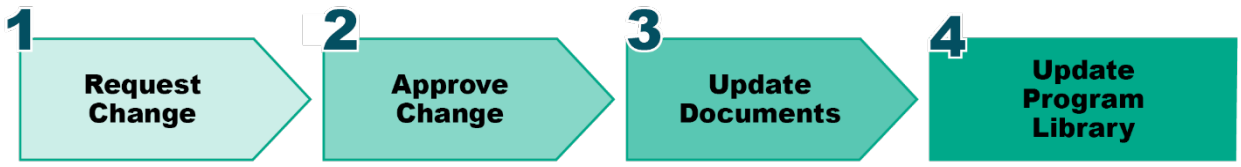
The list of strategic issues, as shown in **Figure 1-2**, forms the initial basis for this SPP. The PMT will continually monitor these and other emerging issues to proactively manage Link21 efficiently and effectively.

Figure 1-2. Strategic Issues

1.2.3. Foundational Documents

The PMT has integrated foundational documents throughout the SPP to promote consistency in the messaging and communications across Link21. The documents are guiding principles for Link21; therefore, they require strict version control. The PMC has developed a process for managing, tracking changes, and updating the foundational documents; promoting accuracy of the content; and maintaining the integrity of the files. As shown in **Figure 1-3**, all change requests will be submitted and approved prior to the documents being updated.

Figure 1-3. Foundational Document Control Process Overview



The PMC is facilitating all change requests and approvals using the Foundational Document Control Log. Links to the document and a detailed workflow for facilitating the Foundational Document Control Process are on the Link21 SharePoint Collaboration Site (SharePoint) in the PMT Collaboration subsite.

1.2.4. Strategic Program Plan Purpose and Structure

This SPP establishes, memorializes, and socializes key strategies, policies, and protocols to guide the Link21 Team as they define, oversee, manage, and deliver Link21. The SPP is organized into 14 chapters with supporting appendices. **Table 1-2** provides the SPP Quick Guide that includes a brief description of each chapter.

Table 1-2. SPP Quick Guide

CHAPTER	DESCRIPTION
1. Introduction	Background information, guiding principles, and SPP's purpose with quick reference links to Foundational Documents
2. Business Case	Overview of the key principles of the Business Case Framework, Process, and Methodology; Problem and Vision Statement & Goals and Objectives; and Strategic Evaluation Framework
3. Organization, Communication, and Governance	Approach to develop and update the organization, roles, and responsibilities and authorities for the various entities engaged in program delivery. Advisory and oversight structure may include various groups such as executive leaders of transit planning and funding agencies, elected officials, business oversight committees, nongovernmental agencies, communities of interest, technical experts, and others to be determined
4. Stage Gate Process	Process to minimize and mitigate the risks associated with delivering capital projects, and to enable appropriate governance and control of projects as they progress through development and onto delivery and completion
5. Program Controls	Goals and objectives, roles and responsibilities, and processes for the key functional areas of program management and program controls
6. Quality	Programmatic approach to provide quality products and services for program delivery
7. SBE[1] and DBE[2] Programs	Plan to achieve BART's SBE/DBE goals for Link21
8. Equity	Will be included in the next revision of the SPP
9. Program Integration	Approach to identifying, managing, and documenting interfaces between the four service categories, and to providing proactive support of and coordination with the PMC delivery managers

[1] Small Business Entity
[2] Disadvantaged Business Enterprise

CHAPTER	DESCRIPTION
10. Engagement and Outreach	Programmatic approach for efficient and strategic engagement and communications among Link21 Team members. By establishing guidelines for these activities, project sponsors, partners, stakeholders, and audiences will understand the need for and benefits of Link21
11. Planning and Engineering	Approach for systematic assessments to enable efficient and effective program delivery grouped by technical discipline, including planning, environmental, etc.
12. Environmental	Approach to the development and implementation of the Link21 environmental compliance strategy
13. Travel Demand and Land Use	Will be included in the next revision of the SPP

1.2.5. Development Timeline and Deployment Strategy

The SPP is a living document. The PMC will update the SPP at least annually and provide more frequent updates as necessary and appropriate to meet the needs of Link21. The PMC plans to update the SPP through informed collaboration among the PMT and the Consultants, the evolution and progression of program and project definition, and by lessons learned through the *Program Quality Plan's* continuous improvement and innovative processes. The PMC program manager will review and approve each update of the SPP, including references to foundational documents for BART/CCJPA's review, comment, and final approval.

Taking into consideration the level of effort over time and the number of delivery participants, the PMC will engage and communicate SPP updates to the Link21 Team through:

1. Secure online access link to the SPP
2. Onboarding information
3. User guides and training materials

The PMC will continuously capture lessons learned, incorporate improvement strategies, and advance innovative practices throughout program delivery.

LINK21

CONNECT NORTHERN CALIFORNIA

STRATEGIC PROGRAM PLAN

CHAPTER 2: BUSINESS CASE

April 2022

DRAFT - DELIBERATIVE

Prepared By:
Link21 Program Management Consultants (PMC)

BART

CAPITOL CORRIDOR

INTENTIONALLY LEFT BLANK

ISSUE AND REVISION RECORD

REVISION	DATE	PREPARER(S) / BART/CCJPA REVIEWER(S)	APPROVER / BART/CCJPA APPROVER	DESCRIPTION/NOTES
1.A	02/06/2020	Elisa Tejedor, Steer	Gay Knipper, HNTB	WPA.01 DRAFT submittal
	02/10/2020	Sadie Graham, Andrew Tang, BART	Sadie Graham, BART	WPA.01 DRAFT submittal review
2.A	07/30/2020	Elisa Tejedor, Steer	Gay Knipper, HNTB	WPA.02 DRAFT submittal
	09/03/2020	Sadie Graham, Andrew Tang, BART	Sadie Graham, BART	WPA.02 DRAFT submittal review
2.B	10/30/2020	Elisa Tejedor, Steer	Gay Knipper, HNTB	WPA.02 V1 DRAFT FINAL submittal
				No review requirement
3.A	04/16/2021	Elisa Tejedor, Steer	Steve Lavelle, Intueor	WPA.03 V2 Working DRAFT submittal
	05/13/2021	Sadie Graham, BART	Sadie Graham, BART	WPA.03 V2 Working DRAFT submittal review
3.B	06/04/2021	Elisa Tejedor, Steer	Steve Lavelle, Intueor	WPA.03 V2 DRAFT submittal
	08/13/2021	Sadie Graham, BART	Sadie Graham, BART	WPA.03 V2 DRAFT submittal review
3.C	11/30/2021	Elisa Tejedor, Steer	Steve Lavelle, Intueor	WPA.03 V2 DRAFT FINAL submittal
				No review requirement
4	04/07/2022	Elisa Tejedor, Steer	Steve Lavelle, Intueor	WPA.04 DRAFT submittal

SHAREPOINT PATH

Records Center/PRGM Record Center/WPA.04/SPP/
1-PRGM-PH0-SPP_CH02_Business_Case-DRAFT

TABLE OF CONTENTS

FIGURES

TABLES

INTENTIONALLY LEFT BLANK

ACRONYMS AND ABBREVIATIONS

ACRONYM/ABBREVIATION	DEFINITION
BART	San Francisco Bay Area Rapid Transit
CCJPA	Capitol Corridor Joint Powers Authority
CEQA	California Environmental Quality Act
FBC	Final Business Case
IBC	Intermediate Business Case
NEPA	National Environmental Policy Act
NOD	Notice of Determination
PBC	Preliminary Business Case
ROD	Record of Decision
WP	Work Plan

LINK21 PROGRAM TEAM NAMES

TEAM NAME	TEAM MEMBERS
Program Management Consultants (PMC)	The HNTB Team
Program Management Team (PMT)	BART/CCJPA + PMC
Consultants	Consultants supporting program identification/project selection
Link21 Team	PMT + Consultants

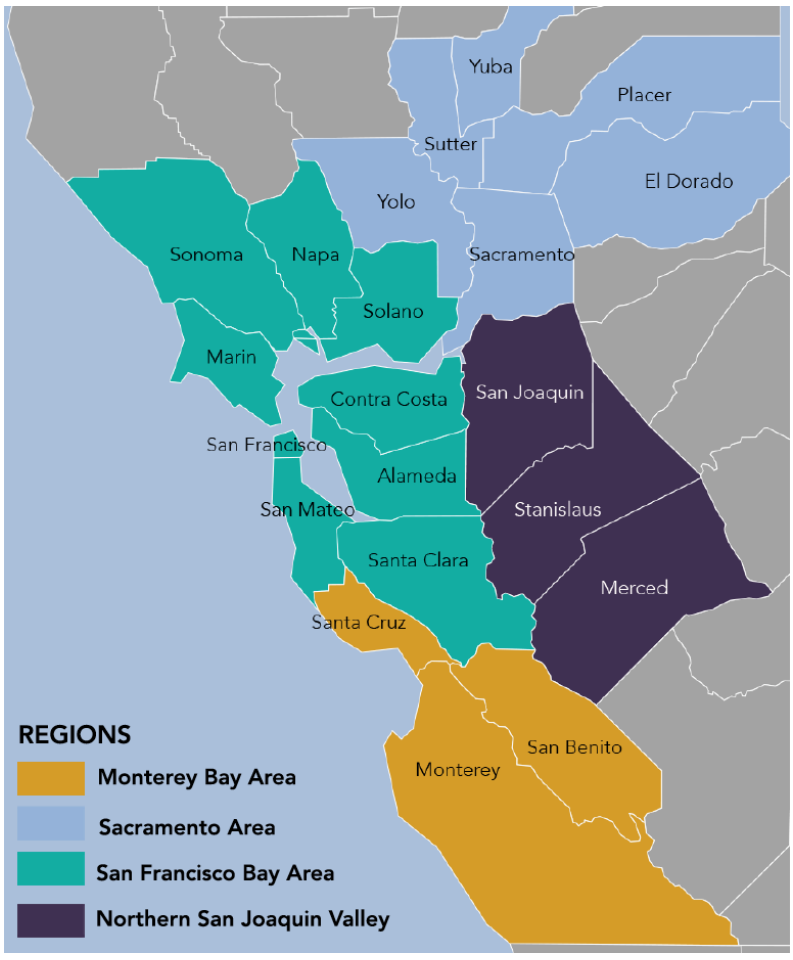
INTENTIONALLY LEFT BLANK

2. BUSINESS CASE

2.1. Purpose

To advance the Link21 Program (Link21) from high-level strategic planning to delivery, the San Francisco Bay Area Rapid Transit (BART)/Capitol Corridor Joint Powers Authority (CCJPA) have adopted a business case process. The Business Case will support decision-makers, planners, analysts, and designers in the planning and ultimate delivery of a new transbay passenger rail crossing alternative that will maximize benefits to the Northern California Megaregion (Megaregion).[1] It is the central workstream for Link21, providing a comprehensive framework to identify, evaluate, and compare potential alternative project investments that may be selected to make up the program.

Figure 2-1. Northern California Megaregion



Source: Bay Area Council Economic Institute, The Northern California Megaregion: Innovative, Connected and Growing.

[1] The Northern California Megaregion is defined as the area covering the regions of the Bay Area, Sacramento Area, northern San Joaquin Valley, and Monterey Bay Area that is comprised of 21 counties (shown in **Figure 2-1**).

Chapter 2 provides a high-level overview of the Business Case Process and its key deliverables according to the following structure.

- **Business Case Process and Methodology:** Presents the rationale for using the Business Case as a decision-making tool, as well as the various workstreams and methodologies that comprise the Business Case Process.
- **Business Case Deliverables:** Describes the documents associated with the Business Case, including the Business Case Framework and three progressively detailed Business Cases themselves.
- **Business Case Supporting Analysis:** Includes supporting analysis to inform the development of the Business Case (e.g., Market Analysis).

This chapter and its appendices may evolve over the course of the Business Case Process as the development of Link21 progresses.

2.2. Strategy

2.2.1. Business Case Methodology

This section describes the rationale for using the Business Case as a decision-making tool and introduces the workstreams and methodologies behind the overall Business Case Process. It is organized as follows:

- Introduction to Link21 and the Business Case Process
- Business Case structure
- Phase-specific workflows

INTRODUCTION TO THE PROGRAM AND BUSINESS CASE PROCESS

As introduced in Section 2.1, the Link21 Business Case Process is the central workstream in advancing Link21 from high-level strategic planning through to delivery, providing a comprehensive framework to identify, evaluate, and compare program concepts for investments and potential projects. It ultimately seeks to produce a Business Case: a comprehensive, organized collection of evidence and analyses that sets out the rationale for why a problem or opportunity should be addressed and makes the case for doing so in the form of one or more investments. The rationale for adopting a Business Case Process for Link21 and other large infrastructure projects includes:

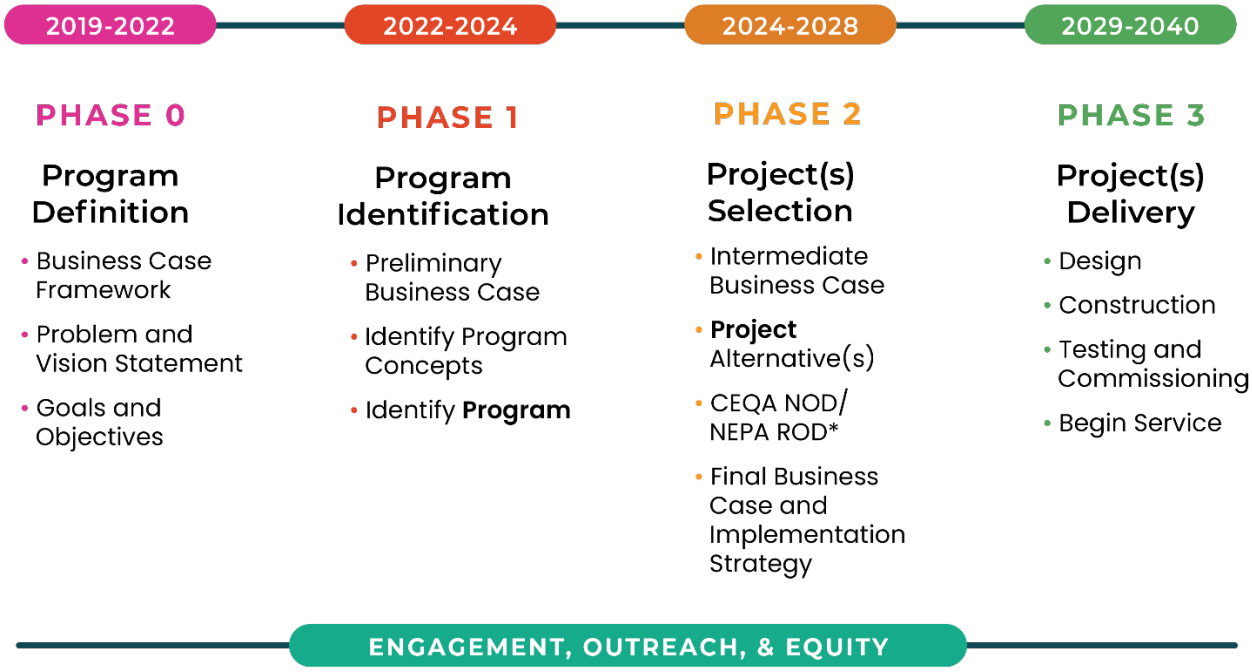
- Identifies benefits, costs, and risks throughout Link21's life cycle, and how the program is connected to the benefits stakeholders seek to realize.
- Makes efficient use of limited resources to plan, design, and deliver a new investment by developing a staged approach that screens out low-performing program concepts during the early phases of Link21, prior to the program progressing to environmental review.

- Evaluates program concepts and projects in a transparent, consistent, and evidence-based manner, against a predefined set of goals and objectives, for the public, stakeholders, and decision-makers to understand.
- Helps program designers to optimize program concepts by providing evidence on the potential benefits and outcomes of each program concept.
- Documents the key impacts of the program concepts and provides an audit trail of the rationale for decision-making throughout Link21's life cycle.

The Link21 Business Case Process is organized into a series of phases, defined by milestones and activities by which program concepts and projects are developed and evaluated in increasing levels of detail over the Link21 life cycle. The four phases and their corresponding milestones are listed here and are illustrated in **Figure 2-2**.

- **Phase 0: Program Definition** sets out foundational elements of Link21, including the structure, steps, and timeline for the Business Case Process, and key elements of the Business Case Framework. The latter consists of the problem and vision statements, a set of program goals and objectives, and the key assumptions to be used in subsequent evaluation steps.
- **Phase 1: Program Identification** develops program concepts and conducts additional evaluation. The goals of this phase are twofold: 1) select a single program concept based on completion of the Preliminary Business Case; and 2) within the program concept, identify a priority project consisting of a crossing between San Francisco and Oakland and related infrastructure to serve as the basis of a request for funding.
- **Phase 2: Project Selection** identifies and evaluates alternatives for one or more discrete projects within the program selected in Phase 1. A reasonable range of feasible alternatives for each project would be advanced for environmental review under the National Environmental Policy Act (NEPA) and/or California Environmental Quality Act (CEQA). The Intermediate Business Case (IBC) and Final Business Case (FBC) processes identify and select the project alternative(s). The selected alternative(s) by the business case should correspond to the selected alternative(s) in the Record of Decision (NEPA) and Notice of Determination (CEQA).
- **Phase 3: Project Delivery** focuses on implementing the project alternative(s) using design and construction packages. The final milestone is initiation of revenue service.

Figure 2-2. Phases of the Business Case Process



**NOD = Notice of Determination/ROD = Record of Decision*

BUSINESS CASE STRUCTURE

The Business Case consists of several chapters, which are developed in progressively increasing levels of detail over the Link21 life cycle, from the PBC (Phase 1) to the IBC and FBC (Phase 2). **Table 2-1** describes the content of each Business Case chapter, while **Table 2-2** presents the evolution of the Business Case over the Link21 life cycle.

Table 2-1. Business Case Document Structure

ELEMENT	DESCRIPTION
Chapter 1: Introduction	*Provides an overview of the Business Case*. Summarizes previous stages of the Business Case Process and defines why the Business Case Process was initiated.
Chapter 2: Business Case Framework	*Defines the rationale to invest in transportation (a problem or opportunity statement)*. This section is a solution-agnostic summary of the key motivators for the Business Case and the key benefits that can be realized if the investment is successful. *Defines the evaluation framework for the concepts and/or alternatives* based on the key benefits desired.
Chapter 3: Alternatives	*Sets out concepts and/or alternatives that can potentially address the rationale for investment.* Details a range of mutually exclusive and meaningfully different alternatives, including capital projects, service patterns, policies, or changes to the customer experience that can respond reasonably to the rationale for investment.

ELEMENT	DESCRIPTION
Chapter 4: Strategic Case	*Evaluates the extent to which concepts and/or alternatives contribute to strategic benefits*. Discusses how and to what extent each alternative realizes Link21's target benefits and discusses them qualitatively and quantitatively.
Chapter 5: Economic Case	*Evaluates the value of the concepts and/or alternatives to society as a whole with a socioeconomic benefit-cost analysis*. Assesses the program's benefits in monetized terms relative to the delivery costs. This analysis indicates the overall economic value of achieving strategic benefits.
Chapter 6: Financial Case	*Assesses the financial impacts of the concepts and/or alternatives and the funding/financing tools that can deliver them*. Considers revenue impacts and costs to develop a net financial impact or level of required subsidy. Identifies the opportunity costs of not delivering Link21, including alternative investments required or triggered. Provides recommendations on a funding and financing strategy based on the total capital costs, operating costs, and required subsidy.
Chapter 7: Deliverability and Operations Case	*Assesses the technical and organizational/governance delivery and operational requirements.* Reviews the unique requirements and risks for each alternative and assesses the extent to which the alternatives can be delivered and operated and how the key risks can be mitigated or managed.
Chapter 8: Conclusions and Recommendations	*Makes clear recommendations for decision-makers* on the alternatives that should either move forward or be removed from further consideration.

Table 2-2. Key Stages of Business Case Development

BUSINESS CASE STAGE	LINK21 PHASE	KEY OUTCOMES
Business Case Framework	Phase 0	▫ Description of the problem statement, vision statement, goals, and objectives ▫ Methodology for evaluation of concepts and/or alternatives
PBC	Phase 1	▫ Evaluation of program concepts ▫ Selection of a single program concept for implementation ▫ Identification of a priority project that is centered on a San Francisco – Oakland crossing within program concept

BUSINESS CASE STAGE	LINK21 PHASE	KEY OUTCOMES
IBC	Phase 2 (initial)	▫ Development and evaluation of alternatives for one or more projects included in the identified program ▫ Selection of one alternative for each project studied
FBC	Phase 2 (later)	▫ Case to proceed with the project alternative(s) (refinement of IBC)

PHASE-SPECIFIC WORKFLOWS

Table 2-3 summarizes the major goals, activities, and milestones for each phase of the Business Case Process.

Table 2-3. Key Goals, Activities, and Milestones by Phase

PHASE	GOALS	KEY ACTIVITIES AND MILESTONES
0	▫ Define the Business Case Process and Framework ▫ Identify potential program concepts for further consideration	▫ Prepare Business Case Framework, including the problem statement, vision statement, goals, and objectives, as well as the methodology for the development and evaluation of concepts and/or alternatives. ▫ Identify preliminary program concepts from a variety of internal and external sources.
1	▫ Refine and potentially bundle program concepts ▫ Identify a single program concept for investment	▫ Refine program concepts by defining individual components and screening against Link21's goals and objectives. ▫ Develop PBC, including conceptual engineering; ridership, land use, and benefits forecasting; and evaluation against strategic, economic, financial, and operational/deliverability criteria. ▫ Identify a single program concept by engaging stakeholders for input on the tradeoffs between the program concepts, as identified in the PBC, and making a final recommendation to BART and CCJPA boards. ▫ Within the selected program concept, identify a priority project candidate consisting of a crossing between San Francisco and Oakland and related infrastructure to serve as the basis of a request for funding.

PHASE	GOALS	KEY ACTIVITIES AND MILESTONES
2	▫ Identify project alternative(s) ▫ Obtain environmental clearance for the project alternative(s) ▫ Develop FBC and Implementation Strategy for the project alternative(s)	▫ Develop IBC, building on the PBC and making the case to proceed with one or more projects within the program alternative. ▫ Following engagement with and input from stakeholders, select a single alternative for each project studied and make a final recommendation to the BART and CCJPA boards. ▫ Develop FBC that summarizes all work to date and establishes the case to proceed with the selected program alternative and, within that, the selected project alternative(s). ▫ Prepare draft environmental clearance documents.
3	▫ Implement project alternative(s)	▫ Implement project alternative(s), including procurement, design, and construction. ▫ Prepare for operational readiness and commencement of revenue service.

2.2.2. Business Case Deliverables

This section describes major deliverables that are produced throughout the Business Case Process, including:

1. Business Case Framework
2. Preliminary Business Case (PBC)
3. Intermediate Business Case (IBC)
4. Final Business Case (FBC)

The three Business Cases are typically organized into several chapters. The structure and contents are summarized in **Table 2-1**.

BUSINESS CASE FRAMEWORK

The Business Case Framework sets out foundational items for the entire Business Case Process and Link21 life cycle, including:

- Strategic Case Framework, including the Problem and Vision Statement & Goals and Objectives
- Business Case assumptions, including program boundaries, baseline scenario(s) for future projects, and key analysis years
- Business Case methodology for developing and evaluating concepts and/or alternatives

PRELIMINARY BUSINESS CASE

The PBC, completed at the end of Phase 1, summarizes the evaluation of the program concepts, and it will provide a recommendation for the selection and implementation of a program concept. It is developed through the following activities:

- Develop conceptual engineering (up to a nominal 10%) of the short-listed program concepts to determine their engineering feasibility, deliverability, engineering risks, and capital and operating expenditure requirements.
- Forecast travel demand, ridership, land use, and benefit outputs for the short-listed program concepts using estimation tools developed in Phase 0 and earlier portions of Phase 1.
- Use these outputs to evaluate the short-listed program concepts against strategic, economic, financial, and operations/deliverability criteria, including environmental considerations.

INTERMEDIATE BUSINESS CASE

The IBC is completed at the start of Phase 2. It summarizes the evaluation of various projects within the program concept and will provide a recommendation for one or more project alternative(s). It is developed through the following activities:

- Build on the conceptual engineering work from Phase 1 by developing the design and deliverability aspects of the project alternative(s) at a relatively high level and provide a list for initial screening.
- Refine the models from Phase 1 for estimating travel demand, ridership, and operations to enable screening and evaluation of the project alternative(s).
- Screen the high-level project alternative(s) and select a short list.
- Develop the short list of project alternative(s) to a level enabling more detailed evaluation.
- Evaluate the short list of project alternative(s) against strategic, economic, financial, and operations/deliverability criteria, including environmental considerations.

FINAL BUSINESS CASE

The FBC, published at the end of Phase 2, summarizes all the project alternatives development and evaluation work completed over the Business Case Process to date, including the environmental impacts evaluation in the environmental document(s). It sets out the case to proceed with the program concept and, within that, one or more project alternative(s) as identified in the IBC. It refines the IBC, supported by additional engineering and modeling work for the project alternative(s), further financial and benefit-cost analysis, funding and financing plans, governance approaches, understanding of environmental impacts, and risk mitigation measures.

2.2.3. Business Case Supporting Analysis

This section describes supporting information and analysis that has been developed to inform the Business Case.

MARKET ANALYSIS

The purpose of the market analysis is to provide insight into the distribution of travel demand and land use within the Megaregion and to identify corridors that can be served by Link21. These outputs will be used to inform the development and initial screening of program concepts.

This includes an understanding of:

- Existing and future levels of travel within the region, including exploring how trip rates could change under varying levels of socioeconomic growth, land use and job distribution, and policy regulation, such as auto ownership rates.
- How trip rates could change under different development scenarios, for instance, variations in land use patterns, spatial and sectoral distribution of employment, technology change towards new mobility modes such as clean air vehicles (CAV), or attitude changes towards flextime and teleworking.
- Markets that could best be served by a new transbay rail crossing that will require analyzing barriers to transit usage, whether physical (i.e., capacity constraints onboard trains and at station parking capacities) or psychological (e.g., lack of awareness of transit options).
- How patterns in travel demand could change from today's estimates should land use patterns evolve as a result of Link21. This will include "future-proofing" the analysis by considering potential changes.
- How different rail technologies capture demand for different types of markets.
- How future travel demand growth could impact the transportation network, forming a basis of the problem statement in the Strategic Case Framework, namely the potential transportation network consequences should Link21 not be undertaken.

The *Market Analysis Report* (summary and full report with appendices) is on the Link21 website.

OTHER DISCIPLINES

The other disciplines that inform the Business Case (Engagement and Outreach, Planning and Engineering, Environmental, and Travel Demand and Land Use) are described in Chapters 10, 11, 12, and 13, respectively.

LINK21

CONNECT NORTHERN CALIFORNIA

MARKET ANALYSIS SUMMARY REPORT

DRAFT FINAL

April 2022

DRAFT - DELIBERATIVE

Prepared By:
Link21 Program Management Consultants (PMC)

BART

CAPITOL CORRIDOR

INTENTIONALLY LEFT BLANK

ISSUE AND REVISION RECORD

REVISION	DATE	PREPARER(S)	PMC REVIEWER(S) / BART/CCJPA REVIEWER(S)	APPROVER / BART/CCJPA APPROVER	DESCRIPTION/ NOTES
0	12/22/2021	Richard Batty, Steer	Elisa Tejedor, Steer	Peter Gertler, HNTB	Working DRAFT submittal
	12/30/2021	---	Sadie Graham, Andrew Tang, Emily Alter, Duncan Watry, BART; Camille Tsao, CCJPA	Andrew Tang, BART	Working DRAFT submittal
1	02/11/2022	Richard Batty, Steer	Elisa Tejedor, Steer	Peter Gertler, HNTB	DRAFT submittal
	03/29/2022	---	Andrew Tang, Duncan Watry, BART	Andrew Tang, BART	DRAFT submittal review
1A	04/05/2022	Richard Batty, Steer	Elisa Tejedor, Steer	Peter Gertler, HNTB	DRAFT FINAL submittal
					No review requirement

SHAREPOINT PATH

Records Center/BUSC Record Center/WPA.02/
1-BUSC-PH0-Market_Analysis_Summary_Report-DRAFT-FINAL

INTENTIONALLY LEFT BLANK

TABLE OF CONTENTS

FIGURES

TABLES

ACRONYMS AND ABBREVIATIONS

ACRONYM/ABBREVIATION	DEFINITION
BART	San Francisco Bay Area Rapid Transit
CCJPA	Capitol Corridor Joint Powers Authority
ACE	Altamont Corridor Express
BIPOC	Black, Indigenous, and People of Color
CAGR	compound annual growth rate
Caltrain	Peninsula Corridor Joint Powers Authority
GRP	gross regional product
MAST	Market Analysis Spreadsheet Tool
MPO	Metropolitan Planning Organization
MTC	Metropolitan Transportation Commission
OD	origin-destination
PBA	Plan Bay Area
PMC	Program Management Consultants
tph	trains per hour
U.S.	United States

LINK21 PROGRAM TEAM NAMES

TEAM NAME	TEAM MEMBERS
PMC	The HNTB Team
Program Management Team (PMT)	BART/CCJPA + PMC
Consultants	Consultants supporting program identification/project selection
Link21 Team	PMT + Consultants

INTENTIONALLY LEFT BLANK

INTRODUCTION

This *Market Analysis Summary Report* presents a high-level summary of the market analysis work that was performed in support of the Link21 Program (Link21). Detailed results are presented in the main *Market Analysis Report*.

Link21 and its partners will transform the San Francisco Bay Area Rapid Transit (BART) and Regional Rail (including commuter, intercity, and high-speed rail) network in the Northern California Megaregion (Megaregion) into a **faster**, more **integrated** system that provides a **safe**, **efficient**, **equitable**, and **affordable** means of travel for all types of trips.

This program, including a new transbay passenger rail crossing between Oakland and San Francisco, will enhance **environmental quality, livability, and economic opportunity** while protecting against community instability and displacement in the Megaregion as it improves the **travel experience**. With key investments that leverage the existing rail network and increase capacity and system reliability, rail and transit will better meet the travel needs of residents throughout the Megaregion. Advancing equity is central to Link21, it is a specific goal of Link21 and a lens through which to assess the achievement of all Link21 goals and objectives.

The geographic scope of Link21 spans the 21-county Megaregion, which includes counties within the San Francisco Bay Area, the Sacramento Area, the Northern San Joaquin Valley, and the Monterey Bay Area.

BART and the Capitol Corridor Joint Powers Authority (CCJPA) have partnered to advance Link21.

Purpose of the Market Analysis Summary Report

The key goals of the *Market Analysis Summary Report* are to:

- Provide insight into the existing and future distribution of travel demand, population, and employment within the Megaregion.
- Provide an evidence base for the Link21 problem statement and support the development of program concepts.
- Identify market opportunities and corridors with high ridership potential that could be served by Link21.

Approach and Report Structure

To achieve these goals, the market analysis work focused on three key areas, which are reflected in the structure of the *Market Analysis Summary Report*, as follows:

1. **Existing Conditions:** An investigation of the historical socioeconomic, equity, and transportation conditions of the Megaregion, providing an understanding of existing travel patterns.
2. **Future Conditions:** An overview of forecast megaregional population and employment growth and future travel demand patterns and transportation investments for the Megaregion.
3. **Link21 Market and Corridor Potential:** The identification of specific markets with high rail ridership potential, in particular unmet rail potential, and of corridors with high market potential for new or enhanced rail service. The outputs from these analyses were tested for robustness against various future scenarios (uncertainty analysis) and were compared to results using an alternative analysis approach (emergent network).

Key Findings

The key findings from the market analysis are as follows:

- While the Megaregion has experienced above average growth in its population and economy, the distribution of this growth has been geographically uneven. This unevenness of growth is expected to continue with a greater concentration of employment growth in the Bay Area, generally, and in specific counties within the Bay Area.
- Growth in the Megaregion has also been inequitable with evidence of increasing inequality in household income and an increasing housing and transportation cost burden for lower income households. This increasing inequality constrains where residents can live and work, impacting their travel patterns and transportation decisions. Advancing equity has been identified as a goal of Link21, and a priority populations definition was developed to allow specific groups to receive additional focus in the development and evaluation of Link21 concepts.
- There is insufficient capacity to accommodate growing travel demand across the Megaregion, particularly in the Transbay Corridor between San Francisco and Oakland[1]. Further substantial growth in travel, including Transbay Corridor travel, is expected in the future. This is likely to further strain the already overcrowded and congested crossings, even when accounting for planned capacity increases to both the BART Transbay Tube and the San Francisco–Oakland Bay Bridge (Bay Bridge),

[1] The data used and analyses presented in this report do not account for changes in travel patterns experienced as a result of the COVID-19 pandemic or for future changes in population and employment patterns caused by the pandemic.

underscoring the need for substantial investment in a new crossing to serve the entirety of projected demand growth.

- Markets, corridors, and segments in the Megaregion were evaluated in terms of their rail potential and, in particular, their equity-weighted unmet rail potential.[2] This analysis revealed that the greatest potential for attracting new transbay rail riders is at the core of the Megaregion, closest to the Transbay Corridor – particularly in and around San Francisco and Oakland and to/from locations between Richmond and Bay Fair in the East Bay.
- Some segments further from the Transbay Corridor have medium equity-weighted unmet transbay rail potential, particularly those including markets without existing high quality transbay service, such as Hercules, Vallejo, Fairfield, San Ramon, Millbrae, and Palo Alto. Other segments have high non-transbay potential, particularly in San Mateo and Santa Clara counties, indicating potential benefits from investments beyond the crossing.
- Uncertainty analysis (examining alternative scenarios) indicates the findings from the market and corridor rail potential analyses are very robust.
- The findings from the market and corridor rail potential analyses are also corroborated by alternative emergent network analysis, which is further explained in the Robustness Testing section.

EXISTING CONDITIONS

The first market analysis task was to investigate the historical socioeconomic, equity, and transportation conditions of the Megaregion and to understand existing travel patterns by analyzing:

- Population and employment
- Equity, in terms of racial, social, and geographic distribution of outcomes
- Megaregional travel

Population and Employment

An analysis of the geographic distribution of population and employment across the Megaregion is important to understanding interregional travel demand patterns. The market analysis examines the current population and employment and also the extent and distribution of growth in the Megaregion.

[2] Equity weighting of unmet rail potential is achieved by double counting trips made by priority populations, reflecting the importance of serving areas with high priority populations shares and totals and counteracting the historic tendency to underserve priority populations.

The majority of the Megaregion's population and employment are based in the Bay Area with the share of jobs in the Bay Area being greater than the population share.

- According to California state figures, the Megaregion was home to over 12.7 million residents and 6.2 million jobs in 2019.
- Most of the high-density population areas in the Megaregion are located in the Bay Area and certain parts of the Sacramento Area.
- There are high concentrations of both housing and employment in downtown San Francisco, Oakland, and San Jose.

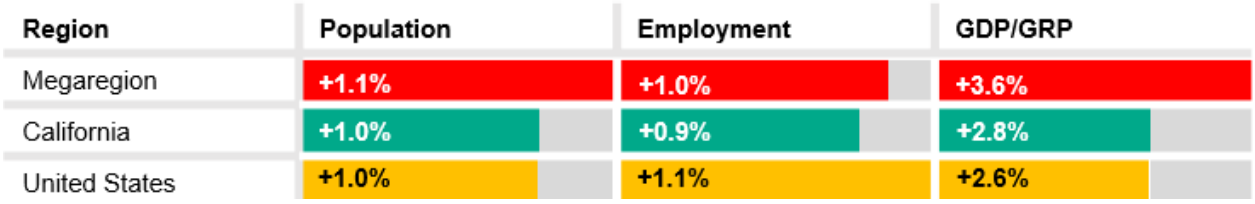
The Megaregion has experienced above average growth in its population and economy.

Between 1990 and 2019, the megaregional population increased by 37% compared to national growth of 32%.

Despite three economic crises between 1990 and 2019, the overall Megaregion's gross regional product (GRP) increased at a compound annual growth rate (CAGR) of 3.6% (**Figure 1**), outperforming national and statewide growth. Over 73% of the Megaregion's GRP in that period was generated in the Bay Area.

Figure 1. Percent of CAGR (1990-2019)

Historical socioeconomic growth in the Megaregion is strong compared to national and statewide benchmarks.



Source: Program Management Consultants (PMC) analysis of California Department of Finance, California Employment Development Department, and the U.S. Bureau of Labor Statistics data

However, the distribution of this growth has been uneven.

Within the Megaregion, the Sacramento Area and the Northern San Joaquin Valley experienced the fastest growth rates in population and in employment.

While growth in the Bay Area has been slower, the existing size of population and employment there means that most of the Megaregion's growth in absolute terms has been concentrated within the Bay Area.

Moreover, the Bay Area's share of employment growth has been higher than its corresponding share of population growth **(Figure 2)**.

Figure 2. Percent of Megaregion Share of Growth

The Bay Area experienced a higher share of employment growth than population growth from 1990 to 2019, especially over the last nine years.

Source: PMC analysis of data from the California Department of Finance and the California Employment Development Department

Within the Bay Area, the West Bay (including San Francisco) has had a much higher share of employment growth than of population growth.

Since 2010, San Francisco has observed a 128,000 increase in number of jobs, which is 13% of the total Megaregion's growth, while population has only increased by 86,000, just 5% of the Megaregion's total population growth.

This uneven distribution of population and employment growth, both at a macro level across the Megaregion, and at a micro level between Bay Area counties has implications for travel demand within the Megaregion, and specifically increased travel demand within the Transbay Corridor.

Equity

Promoting equity (along with livability) has been identified as one of Link21's goals, and it is also a lens through which to analyze metrics that underpin Link21's objectives.

To facilitate the evaluation of Link21's benefits and impacts on equity, a program-specific geographic designation of equity has been defined. The priority populations definition was developed to support Link21's efforts to address inequities across the Megaregion; all other Megaregion areas are referred to as the general population. This definition will be used in the Business Case Evaluation to review the distribution of program benefits and negative impacts. In the market analysis, it is used to explore disparities and disadvantages experienced by priority populations in livability, affordability, and accessibility compared to general populations. An initial definition of priority populations based on state and regional geographic metrics related to equity was used for the market analysis. An updated version of this definition, based on the most impactful burdens felt by Megaregion residents, will be used for future work.

Link21's *Draft Equity Commitment* includes a focus on partnering with priority populations to create needed benefits and to minimize harms to those who need it most, including:

- Transit-dependent riders
- Those harmed by past transportation projects

- Those with limited access to important resources, such as housing or job opportunities

To assess how Link21 advances equity, the program must first understand how current conditions across the Megaregion are distributed both geographically and demographically. The data points used for this analysis are summarized in **Figure 3** and are not an exhaustive list of equity considerations for the program.

Figure 3. Equity Metrics

Assessing equity in the Megaregion involves many different metrics, but rail accessibility and vehicle ownership are key variables that are directly related to Link21.

Metrics	Measurement	Impact to Link21	
Household Income: How much a household earns in a year	Median household income	Income is directly related to livability and affordability and is influenced by access to jobs	Variables that have **non-transportation** impacts to the Link21 Program
Housing Cost Burden: Used as a measure of affordability; aligned with definition used by HUD[A]	Households who spend over 30% of their income on housing costs	According to HUD, people who are housing cost burdened may have difficulty affording necessities, such as food, clothing, transportation, and medical care	
Ethnicity: Related to physical traits and cultural identification	Households by ethnic group	Inequity in the Bay Area is not only related to socioeconomic status, includes racial inequity	
Regional Rail Accessibility: The proportion of the Megaregion's population and jobs that are close to rail services	Population or jobs within one, five, and ten miles of rail	Priority populations can benefit from rail proximity	Variables that have **transportation** impacts to the Link21 Program
Vehicle Ownership: Households without access to a vehicle	Zero-vehicle households	These households are more likely to be transit-reliant	

[A] *U.S. Department of Housing and Urban Development*

While the Megaregion's GRP increased at a rate well above national and statewide averages, the distribution of this growth suggests that this has been inequitable across the Megaregion, leading to disparities and disadvantages for specific population groups.

The Bay Area leads the Megaregion in household income and in income inequality:

- According to U.S. Census data, over 67% of the Megaregion's households with incomes between $100,000 and $200,000 live within the Bay Area; for households with incomes exceeding $200,000, this is even higher at an estimated 82%.
- Bay Area counties Marin, San Francisco, and San Mateo have among the highest degrees of income inequality as measured by the Gini Index in 2019.

There is evidence of increasing inequality in household income in the Megaregion, especially in the Bay Area.

- The Megaregion has seen the greatest growth from 1990-2019 in the highest income bracket — households earning over $150,000. In non-Bay Area counties,[3] every income bracket has experienced growth from 1990-2019, but in the Bay Area only the highest income brackets (over $100,000) and the lowest income brackets (less than $30,000) have experienced growth.

Moreover, as home values and rents have increased in the Megaregion, lower-income households face an increasing housing cost burden:

- Based on an analysis of U.S. Census data, an estimated 43% of the Megaregion's priority populations households are housing cost burdened, meaning they spend 30% or more of their income on housing costs, leaving less disposable income for other necessities.
- Since 2010, among households earning below $75k annually, the proportion that are housing-cost burdened has increased.

Black, Indigenous, and People of Color (BIPOC) make up a large and growing proportion of the Megaregion's population, and they are disproportionately likely to have low incomes:

- The BIPOC proportion of population in the Megaregion's four areas ranges from 47% in the Sacramento Area to 65% in the Northern San Joaquin Valley.
- Between 1990 and 2019, the number of BIPOC households in the Megaregion increased at a CAGR of 2.6%, whereas White, Non-Hispanic households have declined.
- Across the Megaregion between 2015 and 2019, a higher proportion of Black (Non-Hispanic), American Indian/Alaska Native, and Hispanic/Latino residents earned less than $30k a year compared to residents of other races/ethnicities.

Equity issues are particularly apparent in transportation. High housing costs are pushing low-income households, including many BIPOC households, further from the transbay core, potentially further away from employment opportunities and areas with more frequent rail service. Therefore, access to transit is a critical issue for priority populations, especially the 12% of priority populations who do not have access to a vehicle at home.

- While 64% of priority populations live within 5 miles of a rail station, this accessibility to rail is not universal throughout the Megaregion, particularly in the outer non-Bay Area counties.
- Priority populations already residing within close proximity to rail (21% live within 1 mile) would benefit from improved service levels and improved connectivity to key destinations.

[3] Counties within the Monterey Bay Area, the Sacramento Area, and the Northern San Joaquin Valley

Having access to more affordable, high-quality rail has the potential to improve livability for priority populations by allowing households to reduce transportation costs and improve access to affordable housing and living-wage jobs. To deliver program benefits to priority populations, it will be important to:

- Maintain access to Link21 for priority populations in the Bay Area by mitigating displacement.
- Connect priority populations and improve quality of service throughout the Megaregion.

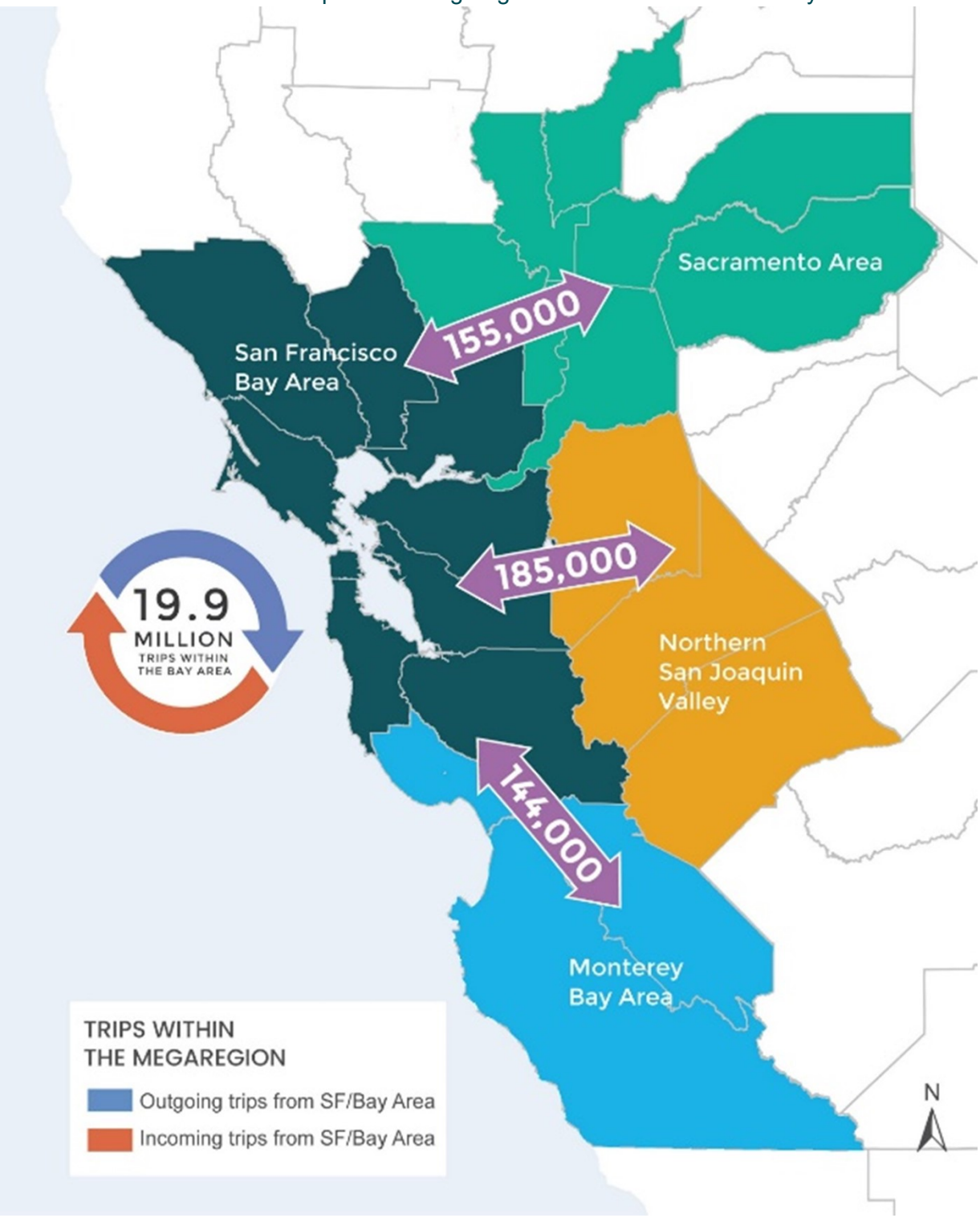
Megaregional Travel

The market analysis analyzed travel demand across the Megaregion and in the Transbay Corridor in terms of trips made by auto, rail, and other non-rail transit.

In 2015, travelers within the Megaregion made a combined total of 32.2 million average weekday trips. Of these trips, 19.9 million (62%) occurred within the Bay Area, particularly to/from the East Bay, San Francisco, San Mateo, and Santa Clara counties and 675,000 people crossed the San Francisco Bay using one of four crossings (three bridges and the BART Transbay Tube). Key travel flows within the Megaregion are shown in **Figure 4**.

Figure 4. Trips within the Megaregion (2015)

Almost two-thirds of all 2015 trips in the Megaregion were made within the Bay Area.



Source: PMC analysis of StreetLight and other travel pattern data

In 2015, auto was the dominant mode of travel in the Megaregion with over 95% of total daily trips. Among the relatively small number of non-auto trips, only 28% were made by rail (heavy/regional rail and subway/metro services) with the remainder made by other forms of transit such as bus, ferry, or street-running light rail.

In contrast to the overall Megaregion, the Transbay Corridor has a much higher rail mode share. In 2015, BART captured a 32% daily share of transbay trips (38% during the peak), while in the key San Francisco – East Bay (Alameda and Contra Costa counties) market, BART's share was 49% throughout the day and 56% during the peak.

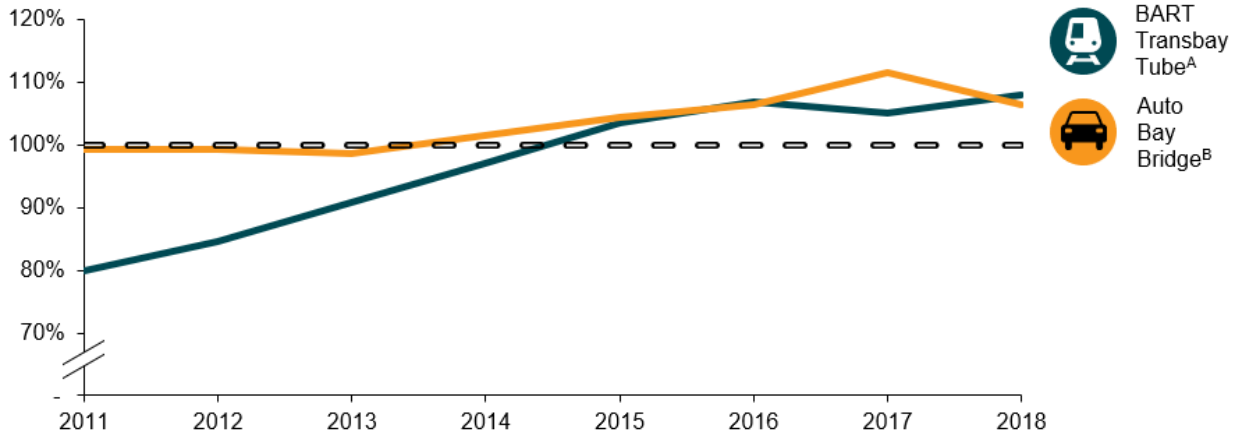
In 2015, the majority of rail services in the Megaregion were provided by BART, Capitol Corridor, Caltrain, Altamont Corridor Express (ACE), and San Joaquins. All five recorded at least 10% growth in demand between 2010 and 2019, including an approximate doubling of ACE and Caltrain ridership. While BART has observed more modest ridership growth in percentage terms and even a slight decline since 2017, it still carries a large majority of megaregional rail demand, and peak volumes have steadily increased in the Transbay Tube.

Inaccessibility of rail stations, combined with limited parking facilities at stations, likely serves as a deterrent to greater rail usage. In 2015 only 30% of trips started within 1 mile of a rail station, and 27% of trips started more than 5 miles from a station. Inaccessibility of stations is particularly noticeable in several areas of the Megaregion associated with high-trip volumes, such as western San Francisco, parts of Santa Clara County, most of the Monterey Bay Area, and most of the Sacramento Area, forcing most travelers to drive or in some cases use other public transit to make their trip.

There is insufficient capacity to accommodate growing travel demand across the Megaregion, particularly in the Transbay Corridor. Fueled by sustained population and employment growth in the Megaregion and the geographic concentration of this growth as described previously, demand for travel has grown to approach or exceed the capacity of key links and infrastructure. Since 2015, both the Bay Bridge and Transbay Tube have been operating consistently above their planned capacities during peak periods, as summarized in **Figure 5**.

Figure 5. Percent Peak Demand Volume Over Capacity

Both Transbay Crossings have been over capacity since 2015



Source: PMC analysis of BART peak loadings and California Department of Transportation (Caltrans) Census Traffic Program data

[A] BART capacity assumed to be 25,300 passengers per hour per direction

[B] Bay Bridge Capacity assumed to be at 9,250 vehicles per hour per direction

Furthermore, while a substantial proportion of BART travelers currently drive to access stations, demand for BART parking facilities at stations exceeds available capacity.

Elsewhere in the Megaregion, key highways and rail links are also operating close to or above their planned capacity, including highway approaches to the various bridges crossing the San Francisco Bay and Caltrain links between San Francisco and San Jose. Therefore, many travelers in the Megaregion face congested highways and crowded trains.

These and other factors are having a detrimental impact on travel experiences in the Megaregion. Long commutes have become increasingly prevalent.

In 2019:

- An estimated 14% of trips were longer than one hour, up from 10% in 2010.
- Five percent of trips were over 90 minutes, up from 3% in 2010.

The upward shift in commute times may be partially attributed to the capacity issue described above; another likely contributing factor is rising housing costs and housing cost burdens causing segments of the population, notably priority populations, to live further from their workplaces.

Uncompetitive rail travel times (compared to auto) are a barrier to rail travel in the Megaregion:

- Rail trip times exceeded auto times for over 99% of origin-destination (OD) pairs analyzed.

- An estimated 66% of transbay OD pairs had a rail trip at least 30 minutes longer (including average access and egress to and from stations) than the corresponding auto trip.

The disparity in times may be attributed to a variety of factors, including long access and egress times to and from rail stations, slow and infrequent trains, and long transfers. Rail operators' difficulty in meeting their on-time performance targets further undermines confidence in the service. In addition, long-distance rail trips spanning different regions within the Megaregion typically require transfers between different operators, each with uncoordinated schedules and/or infrequent service.

The resulting long and unpredictable rail travel times cause many travelers to choose auto, while others may not travel at all. An improved rail network could encourage new trips and grow new markets.

Link21 represents a clear opportunity to add additional rail capacity to relieve the bottlenecks in the Transbay Corridor and beyond, while also improving other elements of the rail passenger experience, such as travel time, frequency, network connectivity, less need for transfers, and coordination between rail operators. As such, the foundational goal of the program is to transform the passenger experience, which enables the achievement of the three other program goals: promote equity and livability, support economic opportunity and global competitiveness, and advance environmental stewardship and protection.

FUTURE CONDITIONS

Building on the existing conditions analysis, the next stage of the market analysis is to provide an overview of:

- Future population and employment growth
- Future megaregional travel (including travel demand patterns and transportation investments)

Future Population and Employment Growth

The 2040 adopted regional transportation plans of the Megaregion's Metropolitan Planning Organizations (MPO) serve as the baseline scenario for Link21, including for the Metropolitan Transportation Commission's (MTC) Plan Bay Area (PBA) 2040. Since the adoption of PBA 2040, MTC has developed three alternative Horizon Futures 2050 forecasts for the Bay Area, which are used to inform Link21's uncertainty analysis described later in this report.[4] A base year of 2015 was selected for Link21, aligning with most of the adopted MPO plans.

[4] While this document was being finalized, MTC and the Association of Bay Area Governments (ABAG) adopted PBA 2050, an updated plan for the Bay Area which builds on PBA 2040 and incorporates the results of the Horizon Futures 2050 forecasting work.

Note that the MPO forecasts used by Link21 were developed well before the COVID-19 pandemic, when there has been an unprecedented decrease in travel demand across the Megaregion and in cities across the world. The impact of COVID-19 on population and employment growth along with travel demand has been examined as part of the Link21 uncertainty analysis.

Based on the adopted plans, between 2015 and 2040 the Megaregion's population is forecast to increase to over 15.3 million at a CAGR of 1.0% with employment growing to 7.1 million at a slightly slower CAGR of 0.9%.

While the Northern San Joaquin Valley is forecast to remain the fastest growing area by both population and employment, the Bay Area is forecast to have the highest population and employment growth in absolute terms.

- The Bay Area's population is forecast to increase by 2.0 million out of the 3.3 million increase for the Megaregion.
- The Bay Area accounts for 1.0 million of the 1.5 million increase in jobs forecast.

The historically uneven distribution of population and employment growth is expected to continue with a greater concentration of employment growth in the Bay Area generally and in specific counties within the Bay Area.

- The Bay Area is forecast to have a 62% share of the increase in megaregional population but 66% of the increase in employment.
- The East Bay is forecast to have a 22% share of the population growth but 26% of the increase in employment. Similarly, San Francisco and San Mateo counties are forecast to have a combined 14% share of population growth but 18% of the jobs increase.

This continuing imbalance in the distribution of population and employment, illustrated in **Figure 6**, may lead to further increased travel demand on already congested transbay road and rail infrastructure.

Figure 6. Historical Growth and Baseline Forecasts for Population and Employment

The baseline forecasts the Bay Area to have a large proportion of the growth in the Megaregion, continuing the uneven distribution of population and employment growth trends, particularly in San Francisco.

Source: PMC analysis of data from the California Department of Finance, Employment Development Department, state of California, and MPOs (MTC, Association of Monterey Bay Area Governments [AMBAG], Sacramento Area Council of Governments [SACOG], Stanislaus Council of Governments [StanCOG], and Merced County Association of Governments [MCAG])

[A] *Historical growth rates are from 1990 to 2019.*

[B] *Future forecast growth rates are from 2015 to 2040.*

Following the adoption of PBA 2040, MTC undertook an initiative named Horizon that attempted to incorporate the uncertainty of external forces into the early stages of its 2050 regional planning process. MTC's *Horizon Futures 2050* forecasts were still in development at the time of writing this report; it applies only to the Bay Area counties.

There are three different forecast scenarios, illustrated in **Table 1**: Back to the Future, Clean and Green, and Rising Tides, Falling Fortunes. These scenarios present divergent patterns of change impacting the lives of Bay Area residents based on various

political, technological, economic, and environmental challenges and the responses to these challenges.

Table 1. Three Forecast Scenarios from Horizon Futures 2050

SCENARIO	DESCRIPTION
Back to the Future	▫ Defined by a thriving national economy supported by increased public investment in infrastructure, as well as immigration reform that increases the national population and workforce growth rate significantly. ▫ In the Bay Area, the technology sector thrives, leading to broad adoption of low-cost driverless vehicles. — As a result, coastal metropolitan areas see a new wave of growth as technologies enable residents to commute longer distances to thriving urban job centers. ▫ Silicon Valley technologies remain dominant worldwide in everything from cars to e-commerce. Yet booming growth poses challenges for communities and their aging infrastructure that are absorbing that growth.
Clean and Green	▫ Defined by an aggressive federal carbon tax to curb carbon dioxide emissions. ▫ Assumes that the policy is implemented in the early 2020s and results in similar commitments worldwide. Consequently, clean technologies thrive. ▫ Driverless electric vehicles become nearly universal with consumers preferring to share rides more frequently. Virtual reality enables more telecommuting and distributed workplace locations, particularly for higher income individuals. ▫ Federal infrastructure investment allows for the completion of high-speed rail lines across the country, including California High-Speed Rail. ▫ Yet with high taxes and new regulations, jobs are assumed to be increasingly automated, which boosts productivity but results in fewer openings for workers without college degrees.
Rising Tides, Falling Fortunes	▫ Defined by relaxed federal regulations and the elimination of federal programs from social services to infrastructure. ▫ The federal government implements costly tariff policies as well as tight immigration restrictions. — As a result, an era of slow growth begins across the United States with particularly significant impacts in areas like the Bay Area. ▫ Labor constraints mean that innovation rates slow and driverless, electric vehicles fail to live up to the hype. Finally, a lack of international leadership means that worst-case sea level rise predictions come true (three feet of sea level rise by 2050).

Source: PMC analysis of Horizon Futures Final Report

Population and employment growth projections vary widely between the baseline and the *Horizon Futures* scenarios. For example:

- Compared to the baseline forecast, the Back to the Future scenario projects much higher population and employment growth in the Bay Area (1.7% CAGR vs. 1.0% for population, 1.8% vs. 0.9% for employment).
- By contrast, population and employment growth in the Bay Area in the Rising Tides, Falling Fortunes scenario is much lower than in the baseline with a decline in population in the East Bay and declines in employment in San Mateo and North Bay counties.
- All three Horizon Futures project significantly higher employment growth in San Francisco than PBA 2040. Furthermore, San Francisco's share of Bay Area employment growth is vastly greater than its share of population growth for the Back to the Future and Clean and Green scenarios, making the potential imbalance between population and employment even more marked.

These wide variations in growth projections for population and employment will also impact transbay travel demand, as discussed in the following sections.

Future Megaregional Travel

In Link21's baseline forecast, the Megaregion is projected to experience substantial growth in travel. By 2040, 8.8 million additional average weekday trips are forecast, representing a 27% increase over 2015 volumes. This growing demand for travel can be attributed to the projected size and distribution of population and employment growth across the Megaregion.

Projected growth rates vary across the Megaregion, as illustrated in **Table 2** and **Table 3**.

- Among interregional trips, growth is projected to be fastest for trips between outer regions (such as the Sacramento Area and the Northern San Joaquin Valley) and the Bay Area with some region pairs recording growth rates above 150% over the 25-year span. Such fast growth is likely driven, at least in part, by imbalanced population and employment growth. The outer regions are projected to accommodate a relatively large share of population growth, while the Bay Area is projected to accommodate a similarly large share of employment growth, which will lead to an increased need for travel between the two.
- On the other hand, the largest absolute growth in travel is expected to occur entirely within the Bay Area, particularly on the core regions of San Francisco, San Mateo County, Santa Clara County, and the East Bay. In particular, demand for travel through the Transbay Corridor is projected to grow by 35% between 2015 and 2040, again driven by an increasing geographic imbalance of population and employment growth.

The projected growth in megaregional travel is accompanied by changes in residents' mode choice. In the Transbay Corridor, the number of rail trips in the key San Francisco-East Bay market is projected to grow by 16%, although this represents a slight decrease in rail mode share. Other region pairs, including San Francisco to Santa Clara County and the Northern San Joaquin Valley to San Francisco, are forecast to have high increases in rail mode share, which will likely be driven by planned new or enhanced rail service in these corridors.

Little change is forecast in the accessibility of rail across the Megaregion:

Even with planned baseline investments to the rail network, only 31% of projected trips in 2040 originate within 1 mile of a rail station, only a one-point improvement from 2015.

Table 2. Percent Growth in Average Weekday Megaregional Trips 2015-2040, Both Directions

Non-Bay Area counties in the outer regions are projected to experience the fastest trip growth rates, but the Bay Area is expected to accommodate the largest absolute growth in travel, particularly in the East Bay and San Mateo and Santa Clara counties.

DESTINATION/ ORIGIN	EAST BAY	SAN FRANCISCO	SAN MATEO COUNTY	SANTA CLARA COUNTY	NORTH BAY	SACRAMENTO AREA	MONTEREY BAY AREA	NORTHERN SAN JOAQUIN VALLEY
East Bay	26%							
San Francisco	22%	28%						
San Mateo County	74%	28%	14%					
Santa Clara County	68%	-36%	43%	31%				
North Bay	87%	39%	172%	879%	15%			
Sacramento Area	57%	117%	75%	135%	55%	25%		
Monterey Bay Area	38%	64%	32%	55%	6%	51%	16%	
Northern San Joaquin Valley	66%	152%	60%	99%	26%	79%	33%	24%

Table 3. Absolute Growth in Average Weekday Megaregional Trips (Thousands) 2015-2040, Both Directions

DESTINATION/ ORIGIN	EAST BAY	SAN FRANCISCO	SAN MATEO COUNTY	SANTA CLARA COUNTY	NORTH BAY	SACRAMENTO AREA	MONTEREY BAY AREA	NORTHERN SAN JOAQUIN VALLEY
East Bay	1,832							
San Francisco	98	614						
San Mateo County	174	150	238					
Santa Clara County	273	-24	178	1,493				
North Bay	175	41	37	58	269			
Sacramento Area	69	9	3	9	7	1,829		
Monterey Bay Area	4	2	3	67	0	1	306	
Northern San Joaquin Valley	90	10	6	29	1	79	2	626

Source: PMC analysis of StreetLight and other travel pattern data

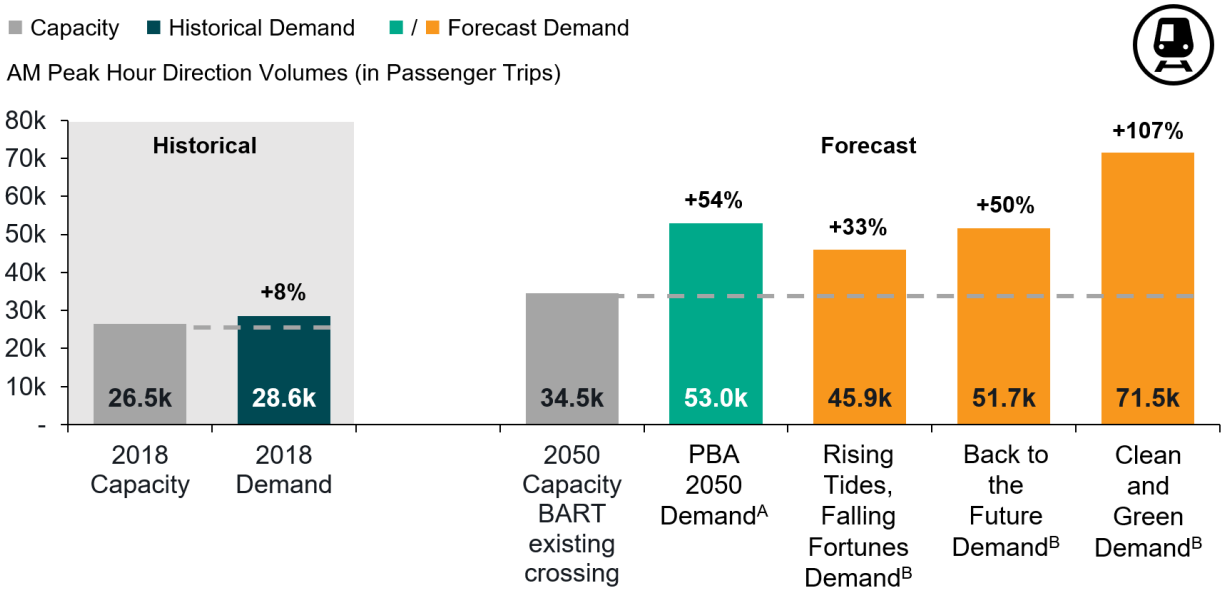
The significant growth in Transbay Corridor travel will likely strain the already overcrowded and congested crossings further, even when accounting for planned capacity increases to the Transbay Tube and the Bay Bridge.

Figure 7 illustrates that, while the BART Core Capacity project will enable an additional six trains per hour (tph) to travel through the Transbay Tube (from 22 to 28 tph[5] in each direction), this is insufficient to meet projected demand under the baseline forecast or any of the three scenarios generated using *Horizon Futures 2050*. Travel demand is projected to exceed planned capacity by the early 2030s at the latest, and under the most aggressive (Clean and Green) growth forecast, the system could be 107% over capacity by 2050.

[5] The market analysis assumed implementation of Phase 1 of the federally funded portion of the Core Capacity project to 28 tph. The locally funded Phase 2 will increase train throughput to 30 tph.

Figure 7. AM Peak Hour Peak Direction Volumes vs Capacity for Transbay Tube (in Passenger Trips)

While the Core Capacity project will increase capacity on the Transbay Tube, unconstrained demand is still forecast to exceed available capacity even in the most conservative baseline forecast.



Source: PMC analysis of MTC travel model data

[A] *Includes the Link21 Program*

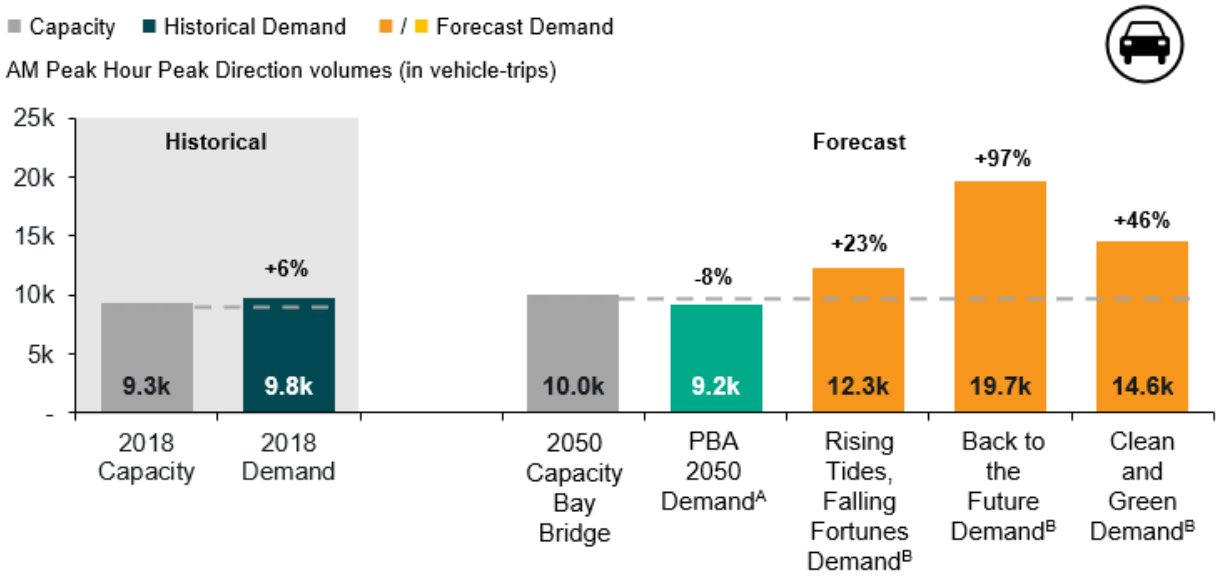
[B] *Excludes PBA 2050 projects*

For the Bay Bridge, the implementation of all-electronic tolling has provided a slight boost to vehicle capacity. However, **Figure 8** shows that this is insufficient to meet future demand in any of the scenarios analyzed. Even in the most conservative auto demand growth forecast (Rising Tides, Falling Fortunes) projected 2050 demand exceeds capacity by 23%, while the Back to the Future forecast projects demand 97% above available capacity.

Despite these investments, travel demand is projected to exceed planned capacity. Of the range of demand growth scenarios analyzed, the most aggressive one could result in the Transbay Tube operating at 107% above its planned capacity by 2050, and the Bay Bridge at 97% above its planned capacity. Conversely, the most conservative growth scenario could result in the planned BART and Bay Bridge capacities exceeded by 33% and 23%, respectively.

Figure 8. AM Peak Hour Peak Direction Volumes vs Capacity for Bay Bridge (in Vehicle Trips)

With demand already exceeding capacity, transbay auto demand is expected to continue to grow, further straining the Bay Bridge.



Source: PMC analysis of MTC travel model data

[A] *Includes the Link21 Program*

[B] *Excludes PBA 2050 projects*

The large disparity between unconstrained demand and available capacity for both road and rail crossings underscores the need for substantial investment in a new crossing to serve the entirety of projected demand growth.

LINK21 MARKET AND CORRIDOR POTENTIAL

This third and final phase of the Market Analysis builds on the analysis of existing and future conditions and investigates the potential for enhancement of rail in the Megaregion.

Link21's market analysis approach goes beyond a typical market analysis, which only considers existing and future travel patterns in the light of socioeconomic and demographic trends. Instead, it focuses on identifying markets and corridors that might be best served by rail, deploying a regression model and custom spreadsheet tool to estimate the unmet rail potential for a given market or corridor. This unmet rail potential is subsequently used to inform the development of program concepts.

Equity is central to all aspects of Link21 work, including the market analysis. Trips made by priority populations are double counted when estimating unmet rail potential, reflecting the importance of serving areas with high priority populations shares and totals, and counteracting the historic tendency to underserve priority populations.

Given the inherent uncertainties in the inputs and assumptions used in the market analysis (compounded by the impacts of the COVID-19 pandemic), uncertainty analysis is an important component of the overall approach. It allows us to test the robustness of the analysis by considering how travel demand patterns could change from today's estimates as land use patterns, mobility trends, and rail competitiveness evolve.

Rail potential is assessed under the following three headings:

- **Market rail potential analysis:** identifying specific markets with high, unmet ridership potential.
- **Corridor rail potential analysis:** bundling high-potential, geographically proximate markets into high-potential rail corridors**.**
- **Robustness testing:** performing an uncertainty analysis under various scenarios and verifying findings using alternative approaches.

Market Rail Potential Analysis

The purpose of the market rail potential analysis is to identify markets with the highest ridership potential for Link21 by focusing on trips using the Transbay Corridor between San Francisco and Oakland.

Markets are defined as individual neighborhoods or entire municipalities that may be served by rail. They are represented by clusters, which are the main geographic unit of analysis for the market analysis, and cluster pairs. Clusters are a group of multiple hexcells, which are uniform hexagonal areas that are 0.5 miles in diameter and that collectively cover the entire Megaregion; each cluster has a hub at its center. The market rail potential analysis identifies clusters and cluster pairs with the greatest unmet rail potential, while prioritizing equity by double counting trips made by priority

populations (consistent with Federal Transit Administration [FTA] guidance on equity analysis).

Rail potential is estimated using a regression model, custom specified to identify conditions that enable high rail ridership in the Megaregion. This model estimates rail potential as a function of key factors, including socioeconomic characteristics of clusters (such as population and employment density) and rail level of service characteristics (such as travel time, cost, frequency, and transfers).

The regression model is then applied in the Market Analysis Spreadsheet Tool (MAST), a spreadsheet developed by Link21 to calculate the good service rail potential and unmet rail potential for all cluster pairs in the Megaregion. Unmet rail potential is defined as follows:

- **Unmet rail potential** is the difference between good service rail potential and baseline ridership.
- **Baseline ridership** represents future rail demand, including the impact of population and employment growth and also the land use and project assumptions that are included in adopted MPO plans. The impact of crowding is modeled using a capacity constraint curve, whereby the proportion of travelers prepared to use rail gradually decreases as load factors increase towards and beyond 100%.
- **Good service rail potential** represents rail demand under an idealized network with (potentially unrealistic) good rail service and no capacity constraints between all cluster pairs in the Megaregion. Good service is defined as fast, frequent, cheap, direct, and with plenty of available seats.

The results of this analysis are shown in **Figure 9** that maps the locations of the greatest unmet transbay rail potential. These are the markets where service improvements have the greatest potential to increase transbay rail ridership.

The core of the Megaregion has the highest potential for attracting new transbay riders. Forty-five percent of all equity-weighted unmet rail potential in the Megaregion involves a trip through the Transbay Corridor.[5] The majority of this unmet rail potential can be found in San Francisco and in inner East Bay locations between Richmond and Bay Fair. These high potential markets exist in several categories:

- New markets without existing rail service, such as western San Francisco and the Grand Lake District in central Oakland
- Markets with poor, non-direct transbay rail service, such as Emeryville and the Bayshore District in San Francisco
- Markets with large capacity constraints, such as the existing BART corridor along Market Street in San Francisco

[5] Here, and throughout the market analysis, note that only those trips longer than 3 miles have been analyzed.

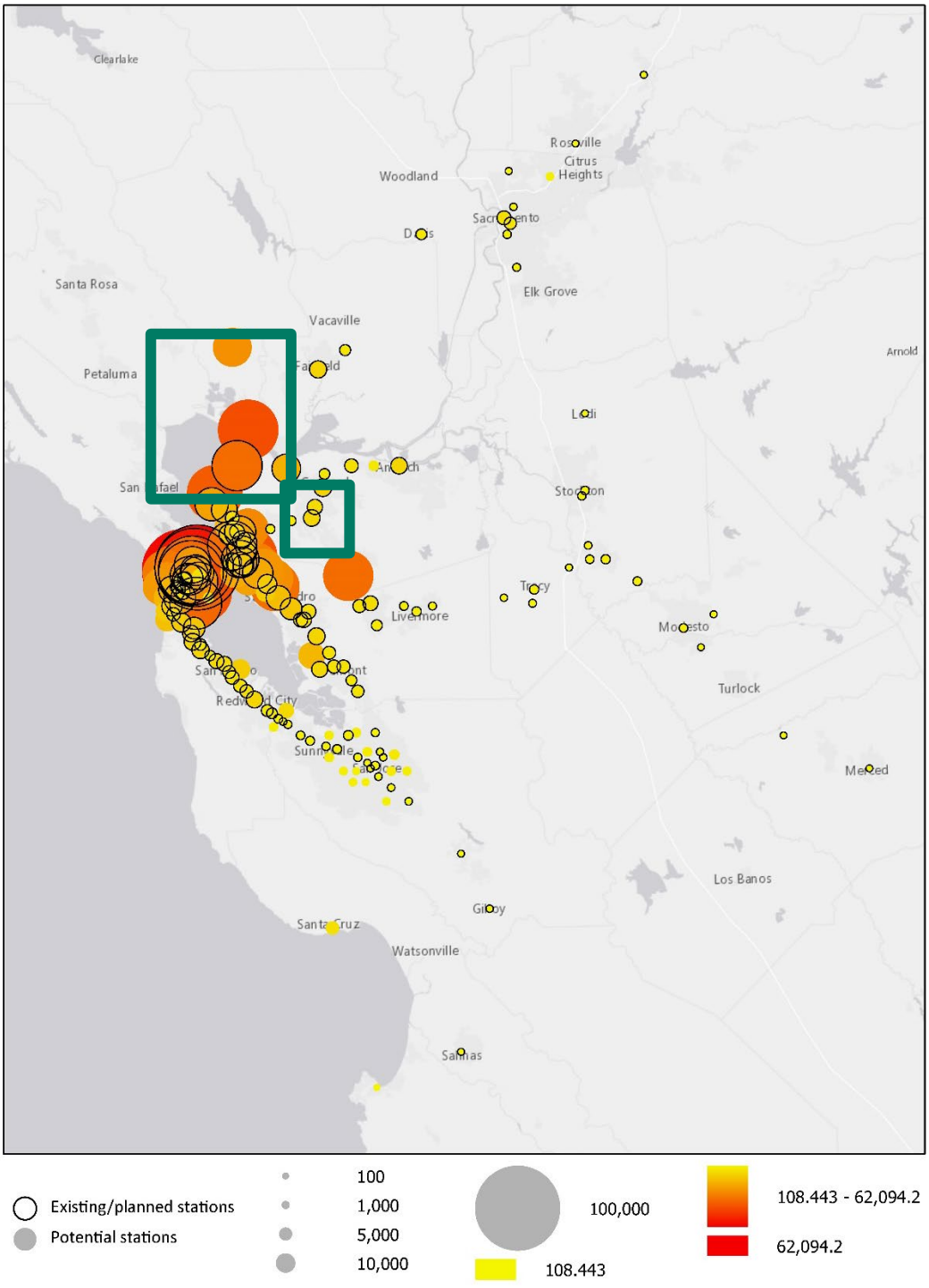
Beyond the core of the Megaregion, sizeable unmet transbay rail potential exists in markets further from the Transbay Corridor. These markets include Hercules, Vallejo, San Ramon, Southern Alameda County, and Central and Southern San Mateo County.

Markets with more limited potential stand to benefit from Link21 in other ways:

- All clusters benefit when “good transbay rail service” is provided with MAST results suggesting that the largest benefits come from improved journey times and the elimination of transfers (increasing peak trips by 22% and 16%, respectively).
- Markets located a long distance from the Transbay Corridor, such as Sacramento and Stockton, have relatively modest unmet transbay rail potential in terms of trips, but they involve longer trip distances and, therefore, higher passenger miles potential. This could translate into commensurately larger mileage-related benefits from a new transbay passenger rail crossing and other infrastructure at the core of the Megaregion, such as travel time savings, air quality improvements, and greenhouse gas emissions reductions.
- The benefits of Link21 could extend beyond transbay trips, particularly for Santa Clara County. For example, a new transbay passenger rail crossing that connects San Francisco to Oakland with improvements to San Jose could attract new, non-transbay riders between San Jose and Oakland (via the East Bay).

Figure 9. Transbay Equity-weighted Unmet Rail Potential (number of potential trips), 2040[6]

Forty-five percent of total unmet rail potential involves a trip in the Transbay Corridor.



Source: PMC rail potential analysis

[6] Analysis is based on trips longer than 3 miles.

Corridor Rail Potential Analysis

Corridor rail potential analysis builds on previous market rail potential analysis by connecting geographically proximate high-potential markets. Once individual high-potential markets have been identified, they can be connected to form segments, which in turn can be grouped to form corridors. These corridors are a useful geographic unit of analysis to inform subsequent program concept development, as they are high-level representations of potential rail alignments. Note that at this point, these corridors reflect market potential only and do not yet take into account engineering, operational, cost, or other factors that need to be considered in the design of transit corridors.

The corridor rail potential analysis seeks to identify corridors and segments with high unmet rail potential, using similar approaches and tools to the preceding market rail potential analysis. Similarly, the analysis emphasizes equity by doubling the importance of potential trips made by priority populations, reflecting the central role that equity plays in Link21 and to counteract the historic tendency to underserve priority populations.

The high-potential corridors and segments identified in this analysis subsequently inform the development of program concepts alongside other sources, such as public studies/plans and stakeholder engagement.

Most of the clusters analyzed in the market rail potential analysis fall naturally into one or more of 12 geographically organized corridors: nine in the East Bay and three in the West Bay, as illustrated in **Figure 10** and **Figure 11.**

Figure 10. East Bay Corridors

East Bay corridors are approximate linear groupings of markets originating in Alameda/Oakland and extending to Sacramento, San Jose, Stockton, and Modesto.

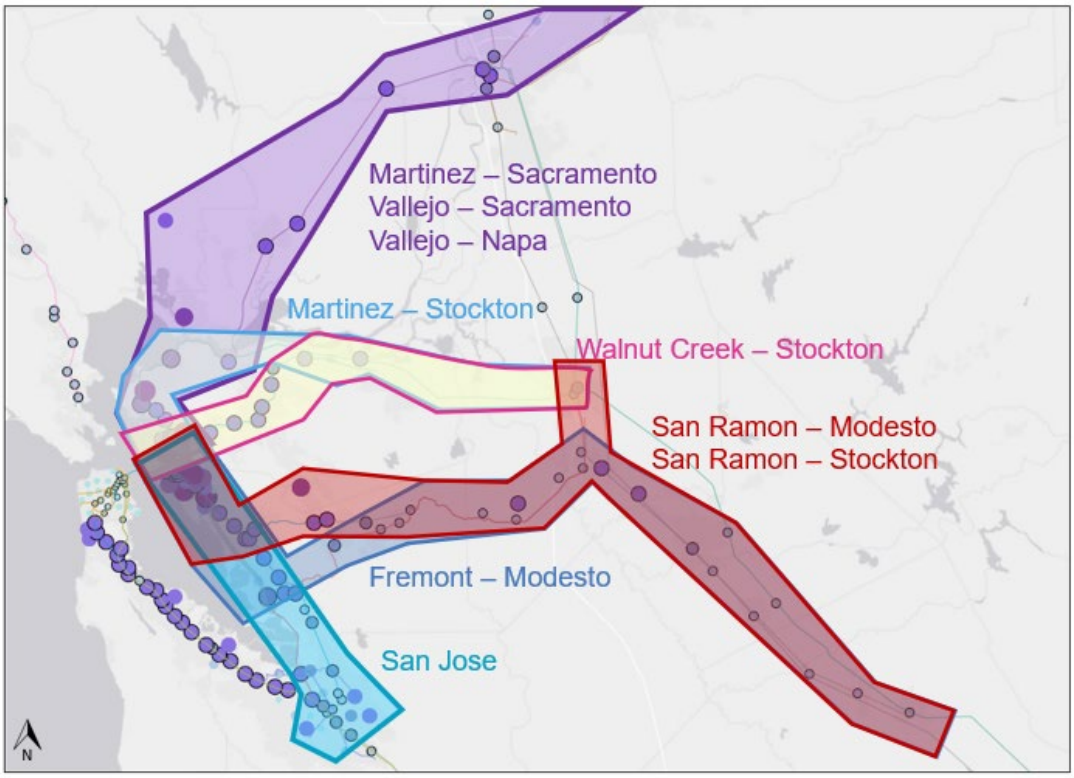
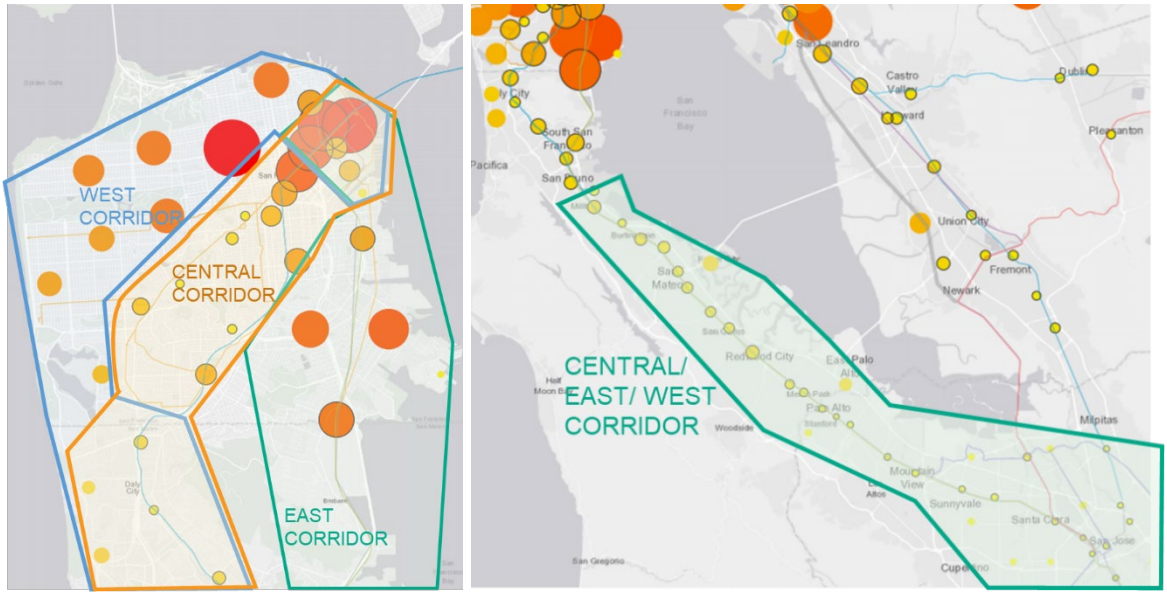


Figure 11. West Bay Corridors

West Bay corridors originate in San Francisco and take three different paths before converging on one main segment that follows existing rail service through San Mateo and Santa Clara counties.



The unmet rail potential for each corridor was estimated using the following steps:

- Split the corridors into segments with logical breakpoints based on large markets or infrastructure barriers.

For each segment, identify market concepts by connecting high-potential markets.

Evaluate the transbay equity-weighted unmet potential of each market concept by connecting all its markets with existing and planned stations on the other side of the San Francisco Bay.

- For each segment, identify the market concept with the highest transbay equity-weighted unmet potential.
- For each corridor, incrementally identify segments with the highest combined potential.

A key finding across all corridors studied is that the greatest potential for attracting new transbay rail riders is at the core of the Megaregion, closest to the Transbay Corridor.

The analysis results are shown in **Figure 12** and **Figure 13**, which displays the unmet rail potential by segment. The segments with the greatest unmet rail potential are in and around San Francisco and Oakland, and to/from locations between Richmond and Bay Fair in the East Bay.

The top five segments for transbay unmet potential are connected directly to either end of the Transbay Corridor.

Figure 12. Total Equity-weighted Unmet Rail Potential (number of potential trips) for Segments in East Bay Corridors, 2040

Top five segments for transbay unmet potential are connected directly to either end of the Transbay Corridor.[7]

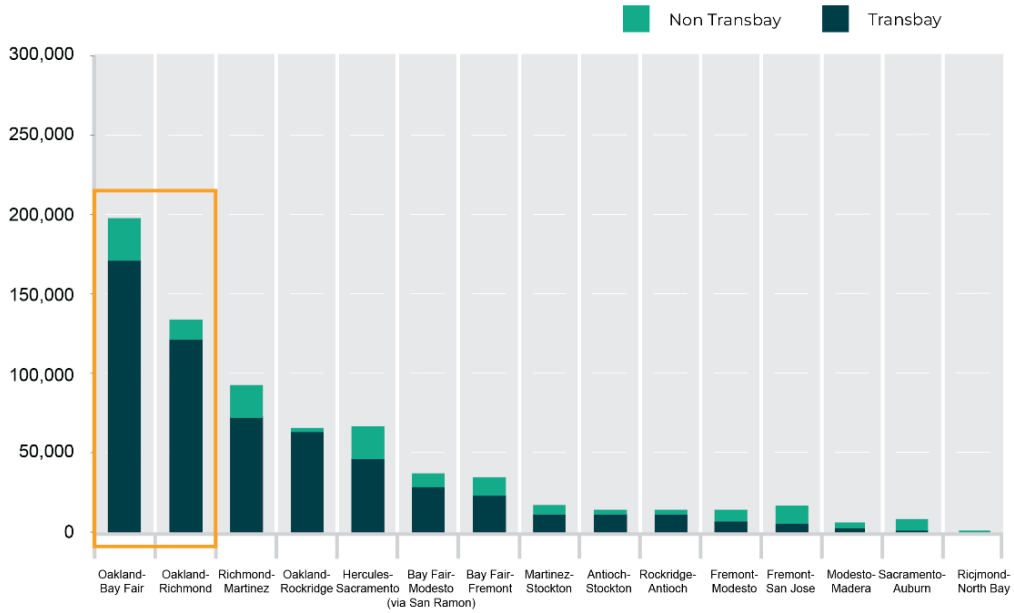
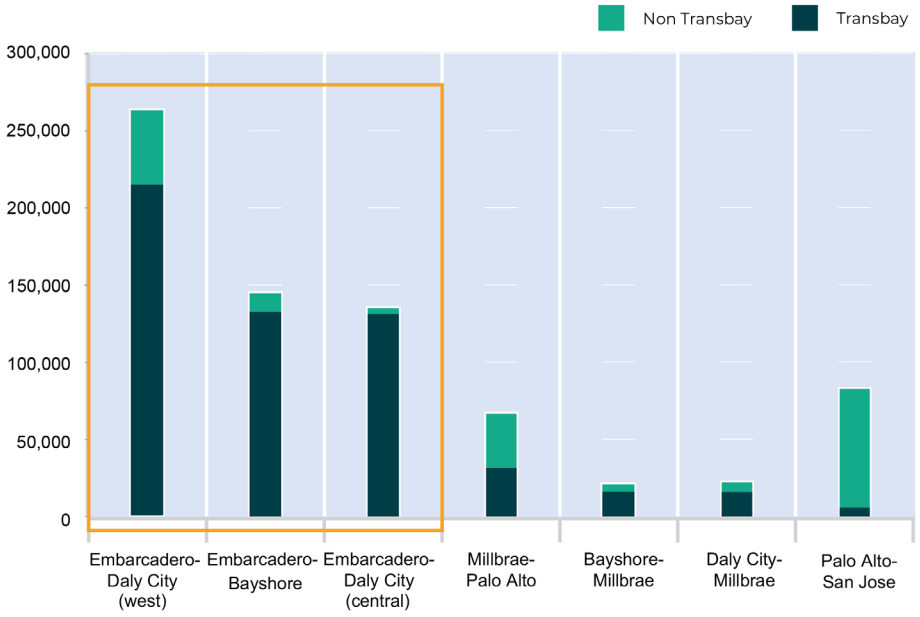


Figure 13. Total Equity-weighted Unmet Rail Potential (number of potential trips) for Segments in West Bay Corridors, 2040



Source: PMC rail potential analysis

[7] Note that the segment labels in the figures, and mentioned elsewhere in this section, refer to geographic areas and not trips between location pairs. For example, Oakland-Bay Fair refers to a geographic area encompassing all locations between Oakland and Bay Fair, it does not mean trips between Oakland and Bay Fair.

For East Bay corridors, the greatest unmet rail potential is driven by new markets without existing service, particularly Alameda, central and eastern Oakland, and Emeryville. The Richmond-Martinez segment also shows high potential among Sacramento- and Stockton-bound corridors, owing to new markets in that segment. However, unmet potential in the Oakland – Rockridge segment (within the Walnut Creek/Stockton corridor in Figure 10) is substantially lower than for other core segments as this segment is already well served by BART.

By contrast, on the three West Bay corridors, the high unmet potential in San Francisco can be attributed not only to new markets in western San Francisco (e.g., Pacific Heights, Richmond District, and Sunset District) but also to crowded trains on existing BART transbay rail service through downtown San Francisco. In particular the Embarcadero – Daly City (Central) segment is highly capacity constrained, and new rail service could unlock demand that is unable to or unwilling to use the existing service.

Other findings from the corridor rail potential analysis includes the following:

- Several segments located a medium distance from (but not adjacent to) the Transbay Corridor mostly have medium transbay unmet potential. Most of this potential is due to new markets without existing transbay rail service, including Hercules, Vallejo, San Ramon, and from Millbrae in San Mateo County to Palo Alto in Santa Clara County.
- Segments further from the Transbay Corridor have relatively low unmet rail potential. The low market potential, identified previously, of markets such as Sacramento, Stockton, and Modesto translates into low unmet potential for segments connecting these markets, such as Modesto – Merced or Suisun – Sacramento.

Some segments have high non-transbay unmet potential compared to their transbay unmet potential, particularly in San Mateo and northern Santa Clara counties (e.g., for the Millbrae – Palo Alto, Palo Alto – San Jose, and Fremont – San Jose segments). This suggests there may be ridership and other associated benefits to be realized from investments beyond the crossing.

Robustness Testing

Given the critical importance of Link21 to the Megaregion, and the uncertainty regarding the future of travel and transportation there, it is vital to test the robustness of the market analysis methods and outputs. This testing has taken two forms:

- **Uncertainty analysis:** tests the impacts of changes to key parameters.
- **Emergent network modeling:** uses an alternative approach to verify and to add to the findings of the main market analysis approach.

The **uncertainty analysis** enables the prioritization of corridors and segments that perform well under a variety of possible future scenarios and makes sure the team can

future-proof the analysis by considering how travel demand patterns could change from today's estimates as land use patterns, mobility trends, and technologies evolve.

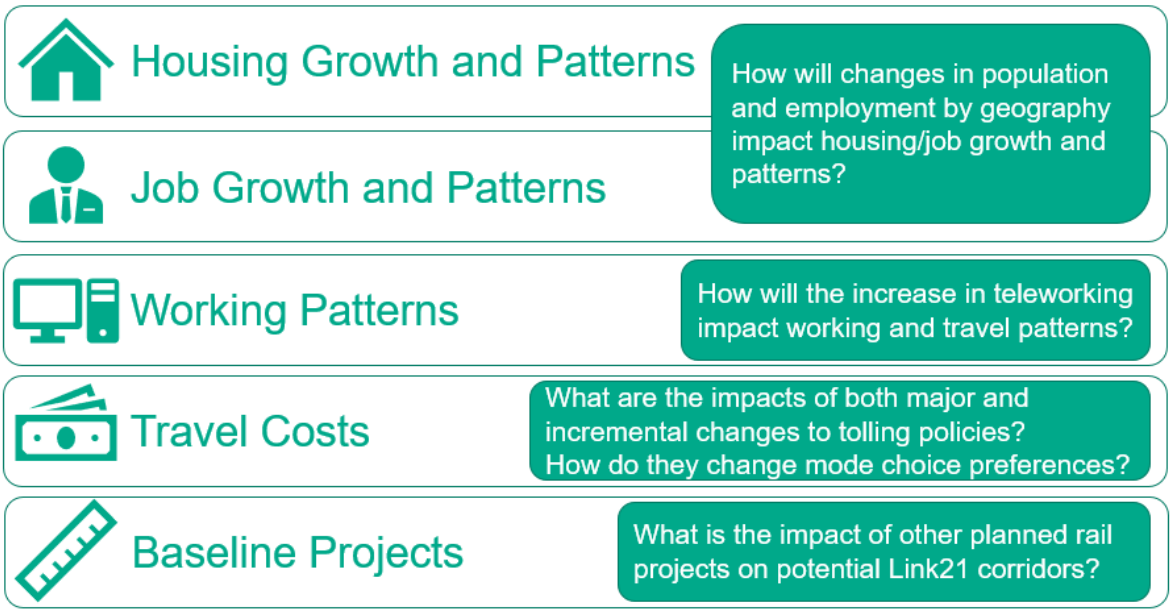
The uncertainty analysis tested up to five scenarios within each of the following five categories: housing growth and patterns, job growth and patterns, working patterns, travel costs, and baseline projects (**Figure 14**). Each set of scenarios is intended to represent a broad range of possible futures — some correspond to high or low values of a parameter while others correspond to specific potential developments, such as implementation of a congestion pricing zone.

The uncertainty scenarios were tested using the MAST. Under each scenario, corridors and segments were ranked for their equity-weighted unmet rail potential, and the rankings were compared to those from the baseline scenario. Any significant changes in ranking needed to be considered carefully in order to avoid:

- Overrating concepts that perform well in the baseline scenario but poorly across several sensitivity scenarios.
- Underrating concepts that perform poorly in the baseline scenario but well across several sensitivity scenarios.

Figure 14. Future Scenarios

Five sets of future scenarios captured a wide range of possible future conditions that might impact travel demand patterns.



The key finding from the uncertainty analysis was that while the absolute performance of the various corridors and segments changed considerably under many of the uncertainty scenarios, there were no significant impacts on relative performance.

Across all the uncertainty scenarios, there were only two unique pairs of corridors and one unique pair of segments that saw changes in relative rankings. None of the

corridors or segments tested increased by more than one rank in terms of equity-weighted unmet rail potential, and all cases where rankings did change were largely a result of two corridors or segments having similar potential in the baseline scenario.

This reinforces the main market analysis findings, in terms of identifying corridors and segments with high equity-weighted unmet rail potential.

The uncertainty analysis indicates the findings from the market and corridor rail potential analyses are very robust.

Emergent network modeling was used to identify high-potential rail corridors in the nine-county Bay Area. The Emergent Network Modeling Framework is a methodology used by the San Francisco County Transportation Authority (SFCTA) to assess rail transit market potential in promising but yet-to-be-studied corridors. The emergent network features an abstract transit network of seamless/ubiquitous rail/transit services covering the study area. Examining the ridership results from providing seamless/ubiquitous rail transit throughout a study area provides an indication of which rail corridors travelers might use if good rail service were provided.

The analysis found significant potential in core markets radiating from Oakland in the East Bay and San Francisco in the West Bay. In the East Bay, these markets span from Richmond in the north to Antioch in the northeast to Fremont in the south to Dublin in the southeast. In the West Bay, they span from Daly City in the southwest to Millbrae in the south to the Richmond and Sunset districts of San Francisco in the west.

The unmet transbay rail potential is likely to be most significant in corridors and markets where there is poor or no existing or planned transbay rail service. These include the Oakland – Richmond – Vallejo corridor, the Alameda – Bay Fair corridor, and several markets in western San Francisco.

The findings from the emergent network analysis corroborate the findings from the market and corridor rail potential analyses.

Link21 Program Monthly Stakeholder Update

The Link21 Team continues to make significant progress on the Business Case and in developing program concepts. The start of 2021 has also seen the ramp up of engagement work. Link21 and its partner agencies aim to integrate urban and intercity rail throughout the Northern California Megaregion, as envisioned by the California State Rail Plan. The Link21 Team will provide regular updates on engagement and key activities moving forward.

Value Capture

The Link21 Team continues to identify effective and practical approaches and actions for Link21 to support value capture (revenues from increased property values as a result of infrastructure investments). Tailored value capture strategies for the Crossing Project (transbay rail crossing between San Francisco and Oakland) could contribute to short- and long-term funding streams for the program and support objectives, such as advancing equity and providing other broader economic and social benefits.

Link21 Website Launch

We launched the program website Link21program.org at the end of January. BART and Capitol Corridor's communications staff helped publicize the launch, which generated attention on social media, radio, print, and television outlets. The website is the digital home for Link21, and it has already received:

- More than 2,000 site visitors
- Almost 800 responses to the Goals and Objectives survey

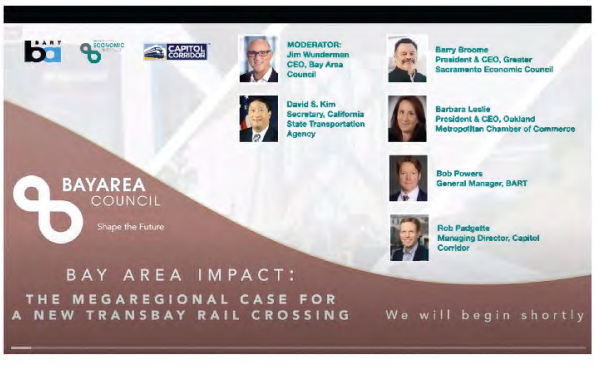
Media

The Link21 Program has attracted considerable media attention. Link21 Team staff have conducted numerous interviews, including:

- San Francisco Business Times
- San Francisco Examiner
- Overhead Wire Podcast
- Trains Magazine

Bay Area Council Economic Institute Webinar

A week after the website's launch, the Bay Area Council Economic Institute (BACEI) hosted a webinar on Link21 that was attended by over 300 people. *(continued on page 2)*



BART's General Manager Bob Powers and Capitol Corridor's Managing Director Rob Padgette joined Bay Area Council CEO Jim Wunderman, California State Transportation Agency (CalSTA) Secretary David Kim, and other leaders to discuss the importance of Link21 to Northern California.

Equity Activities

With Link21, BART and Capitol Corridor are looking to set a new standard for how megaprojects advance equity. The Link21 Team is preparing an Equity Blueprint with the Office of Civil Rights and has recently completed over 20 interviews with BART, Capitol Corridor, and other stakeholders regarding equity issues and concerns. The Link21 Team has also completed the first round of *co-creation focus groups,* which are a key component of this effort. In co-creation, we are partnering with community-based organizations (CBOs) throughout the Northern California Megaregion to host two-hour focus groups with minority, low-income, and other historically disenfranchised groups that are often excluded in planning processes.

During the first round, the team held 23 events, co-hosted by 20 CBOs reaching 340 people. The second round is scheduled for later this year. This early engagement helps us to understand the needs of *priority populations* from the outset, allowing us to proactively craft an equitable program.

We are excited to pilot the compensation of CBOs and focus group participants in this work. The work that the equity team is performing incorporates concepts from the Government Alliance on Race and Equity (GARE) Link 21 Acting Director Sadie Graham participated in.

In addition to the co-creation work with CBOs, the team will place advertising in ethnic publications and develop a targeted social media ad campaign to inform priority populations about the Program and upcoming public meetings.

Outreach and Engagement Accomplishments

The Link21 Team has been busy introducing the program to various stakeholders including:

- **Link21 Program Development Team (PDT) and Other Peer Agencies:** A growing group of rail operators and transportation planning agencies including California State Transportation Agency, Caltrain, Altamont Corridor Express, and the California High-Speed Rail Authority
- **Link21 Jurisdiction Working Group (JWG):** A growing group of city partners
- **Business groups:** Bay Area Council, East Bay Leadership Council, Oakland Chamber of Commerce, Kaiser Permanente, East Bay Economic Development Alliance, Conference of Minority Transportation Officials, and Bay Area Regional Building and Construction Trades Council
- **Elected officials:** Engagement continues with a variety of elected officials, including the Northern California congressional caucus and state and local representatives
- **BART groups:** Accessibility Task Force, Business Advisory Council, Limited English Proficiency, and Title VI/Environmental Justice Advisory Committees

Connecting with Link21

www.Link21program.org | info@Link21program.org | 855-905-LINK (5465)

Look Ahead

Our current work is building toward a significant milestone in early 2022 — a list of program concepts for further pre-environmental evaluation. Over the next month, our primary purpose is continuing to introduce the program to stakeholders throughout the Megaregion. Planned activities include:

- Conducting second round of co-creation focus groups
- Hosting informative, virtual public workshops in partnership with local agencies
- Presenting to more agency boards, city staff, business groups, and elected officials
- Completing the Market Analysis in mid-2021
- Exploring federal funding opportunities

Recent/Upcoming Events

MAY 21

WTS INTERNATIONAL CONFERENCE

Session: **Building Equity into Megaproject Development, Inside and Out**

Speakers: Sadie Graham, BART; Emily Alter, BART; Carolyn Flowers, InfraStrategies; Brooke Staton, Reflex Design Collective; and Kyle Morales and Kimberly Sims, HNTB

MAY 14, 2021

JUNE 21

UPCOMING VIRTUAL PUBLIC WORKSHOPS*

JUNE 17 - CITY OF RICHMOND/CONTRA COSTA COUNTY

JUNE 22 - CITY OF OAKLAND/ALAMEDA COUNTY

JUNE 28 - SAN FRANCISCO CITY AND COUNTY

JUNE 29 - SOLANO COUNTY

JULY 21

RECENT & UPCOMING MEETINGS & PRESENTATIONS

JULY 2021 - STAFF PDT MTG

JULY 2021 - JWG MTG

JULY 2021 - EXEC PDT MTG

*Dates are tentative. Additional workshops are being added. Visit Link21program.org to view the most current list of workshops.

Link21 Program Monthly Stakeholder Update

The Link21 Team continues to make significant progress on the Business Case, the financial feasibility for the Link21 Program, and in developing program concepts. The start of 2021 has also seen the ramp up of engagement work. The Link21 Team will provide the BART and CCJPA boards with regular updates on engagement and key activities moving forward.

New BART Engagement Manager Named

Nicole Franklin has been selected as the new BART Link21 engagement manager. Nicole is a public engagement and land use professional with more than 20 years of experience working with government agencies, permitting, funding, and on construction phases of private development and public infrastructure projects.

Nicole previously served as a principal property development officer for BART. She will oversee the Engagement and Outreach contract and consultants for the Link21 Program.

Federal Funding

The Link21 Team is actively seeking funding opportunities to support the program. With equity being the foundation of the program, the Team has prepared an application for a U.S. Department of Transportation RAISE planning grant (Rebuilding American Infrastructure and Sustainability Equity), formerly known as the BUILD and TIGER grants. These grants focus on safety and environmental protection generating equitable economic opportunity. If selected, the Link21 Program will use these funds to further its equity work and support additional community co-creation workshops.

Preparing the Future - Link 21 Interns

This year, the Link21 Program, partnering with BART, has made a commitment to prioritize mentoring youth and young adults entering the workforce through BART's paid internship program. Capitalizing on BART's holistic approach, Link21 plans to build momentum with our interns on the front lines of equity. The internship program is designed to show future transit professionals the importance of equity from the very start of their careers. Through research, they will develop a youth engagement and outreach strategy using project-based learning. Interns will be exposed to the public agency and consultant worlds and the many facets of transportation planning. The Link21 Team will empower young people to speak their minds and contribute to planning processes that will

Public Workshops in Full Swing

With 21 counties and more than 160 cities, the Engagement and Outreach Team has its work cut out for them — and they are ready! Over the summer, the Link21 Team will host several virtual public workshops across the Northern California Megaregion (Megaregion) to educate, engage, and solicit feedback from the public. Workshops have been held for West Contra Costa and Contra Costa County, the City of Oakland and Alameda County, San Francisco and the surrounding areas, and Solano County.

The workshops are interactive, focus on different areas of the Megaregion, and are co-hosted by transportation agencies and other Link21 partner agencies. The input from these meetings will be used to help shape the program during the early planning phase.

Mark your calendar for the next public workshop. A full listing of past events and future meetings can be found at Link21program.org/events.

In addition to hosting public workshops, Link21 Team members have been speaking nationally about the program. Camille Tsao (CCJPA project manager) and Peter Gertler (HNTB program manager) served on different panels during the American Public Transportation Association (APTA) Rail Conference held in June.

UPCOMING VIRTUAL PUBLIC WORKSHOPS

JULY 15 – PLACER, SACRAMENTO, AND YOLO COUNTIES, 5:30 PM

UPCOMING WORKING GROUP MEETINGS

JULY 19 – JURISDICTIONAL WORKING GROUP

JULY 26 – STAFF LEVEL PROJECT DEVELOPMENT TEAM

AUG 5 – EXECUTIVE LEVEL PROJECT DEVELOPMENT TEAM

Look Ahead

The BART Board of Directors authorized four contracts for Planning and Engineering (ARUP/WSP Joint Venture), Engagement and Outreach (HDR), Travel Demand and Land Use (Cambridge Systematics), and Environmental (ICF) professional services to support the further development of Link21. These consultant teams represent a mix of international, national, and local firms with over 80 Small Business Entity/Disadvantaged Business Enterprise firms expected to begin work later this summer. These firms have extensive experience working in the 21-county Megaregion.

We are continuing our work to introduce the program to stakeholders throughout the Megaregion. Planned activities include:

- Presenting the Market Analysis
- Developing the Preliminary Program Concepts
- Presenting findings of the first round of community co-creation workshops

Equity Update

The Link21 Team has completed its initial synthesis of input received during Round 1 of community co-creation workshops. Feedback from the 350 participants will help shape Link21's approach to equity, including technical work. This summer, the Link21 Team will begin the second round of community co-creation with community-based organizations (CBO) and participants to share back key insights and to update them on Link21's progress.

In this outreach, we are contacting additional CBOs to expand the reach of our engagement work. The second round of community co-creation workshops will help inform the update of Link21's priority populations definition.

Connecting with Link21

Website: www.Link21program.org

Email: info@link21program.org

Phone: 855-905-LINK (9045)

Link21 Program Monthly Stakeholder Update

First Public Workshop Series in the Books

This summer, the Link21 Team launched a series of virtual public workshops to introduce the public to Link21. For many, this introduction gave a glimpse of what the program could mean for their commutes and communities. In addition to the workshops, the team hosted Office Hours events in July for those who had additional questions or wanted to further discuss topics surrounding Link21, including equity, environmental, the market analysis, and List of Concepts development.

The feedback received during the workshops and Office Hours events provided the team with invaluable insight, including desired destinations, travel challenges, and service aspirations. For example, participants listed Monterey, Tahoe, Sacramento, Napa, and San Francisco as top destinations in the region. Another poll identified traffic, congestion, frequency, and time as some of the greatest travel challenges. Finally, participants cited reliability, convenience, speed, and longer hours as things they would like to see in service improvements. This information and comments received through the website, email, phone calls, and the goals and objectives survey is being shared with the technical team as they develop the Program Concepts.

Several agencies partnered to co-host the events, including the City of Oakland, West Contra Costa Technical Advisory Committee, San Francisco Municipal Transportation Agency, San Francisco County Transportation Authority, City of Sacramento, and Placer, Solano, and Yolo counties.

As the team moves closer to developing a List of Program Alternatives, stakeholders will see a more targeted approach to outreach based on the market analysis and Program Concepts.

Program Receives Funding Letter of Support

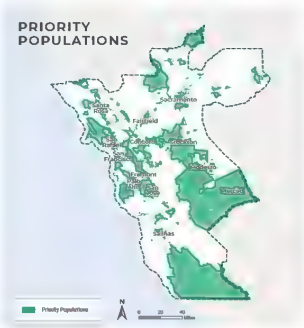
Seven California Congress members signed a letter to support Link21's RAISE planning grant application. The Link21 Team plans submitted a $1.5 million request to support additional equity efforts throughout the Northern California Megaregion (Megaregion). Supporters include Congress members Mark DeSaulnier, Barbara Lee, Jackie Spier, Zoe Lofgren, Eric Swalwell, John Garamendi, and Ro Khanna. Congressman Swalwell's office was instrumental in drafting and championing the letter of support.

Link21 equity work is in line with President Biden's Justice 40 Initiative, a commitment to deliver at

least 40% of the benefits from federal investments to climate and clean energy in priority population communities. Through the RAISE planning grant, Link21 hopes to further its equity work to ensure past harms are not repeated to the Megaregion's most vulnerable communities.

Link21 continues to look for additional funding through federal, state, and local resources to support ongoing planning efforts.

Equity Update



Over the past few months, the Link21 Team has synthesized and integrated findings from the first round of community co-creation. Some notable takeaways that emerged across workshops included:

- High support for the goals and objectives, particularly transforming the passenger experience and enhancing community and livability
- Current issues such as safety, cleanliness, displacement, COVID service cutbacks, and fare cost make it difficult for many to think about rail in the future
- Significant interest in using rail for reasons beyond commuting

Throughout August, the team will conduct its second round of community co-creation. In addition to partnering with community-based organizations (CBOs) to host workshops, the team will work with CBOs to distribute a survey to community members. This new approach should further lower barriers for participation, allowing the Link21 Team to hear from more groups. In addition, feedback from the second round will inform the fall update of Link21's priority populations definition, which will give the Link21 Team a community vetted geographic designation of equity.

Consultants

Earlier this year, the BART Board of Directors approved four contracts to support Link21: Engagement and Outreach, Environmental, Planning and Engineering, and Travel Demand and Land Use. Contracts with HDR, WSP, Cambridge Systematics, and ICF are being finalized and the firms will receive a Notice to Proceed shortly afterward. The addition of these consultants will support and advance technical work. The Program Management Team is currently working with BART and these consultants to finalize their first work plan.

Look Ahead

With the loosening of COVID restrictions, the Engagement and Outreach Team will focus more on boots-on-the-ground outreach to further educate and engage the general public. There will also be a greater emphasis on identifying and cultivating program champions

The Equity Team will continue to lay the groundwork for the Equity Council and begin to understand who should make up the Council and what decisions they will provide input on.

The Environmental Team will continue the activities related to strategy, management, and consultant on-boarding.

UPCOMING MEETINGS AND PRESENTATIONS

AUG 2 -	TAMC RAIL POLICY COMMITTEE
SEP 9 -	BART BOARD OF DIRECTORS
SEP 15 -	CCJPA BOARD OF DIRECTORS
FALL 2021 -	PUBLIC WORKSHOPS SERIES 2
FALL 2021 -	PROJECT DEVELOPMENT TEAM STAFF AND EXECUTIVES
FALL 2021 -	JURISDICTIONAL WORKING GROUP

Connecting with Link21

Website: www.Link21program.org

Email: info@link21program.org

Phone: 855-905-LINK (9045)

Link21 Program Monthly Stakeholder Update

Market Analysis: Identifying Unmet Rail Potential

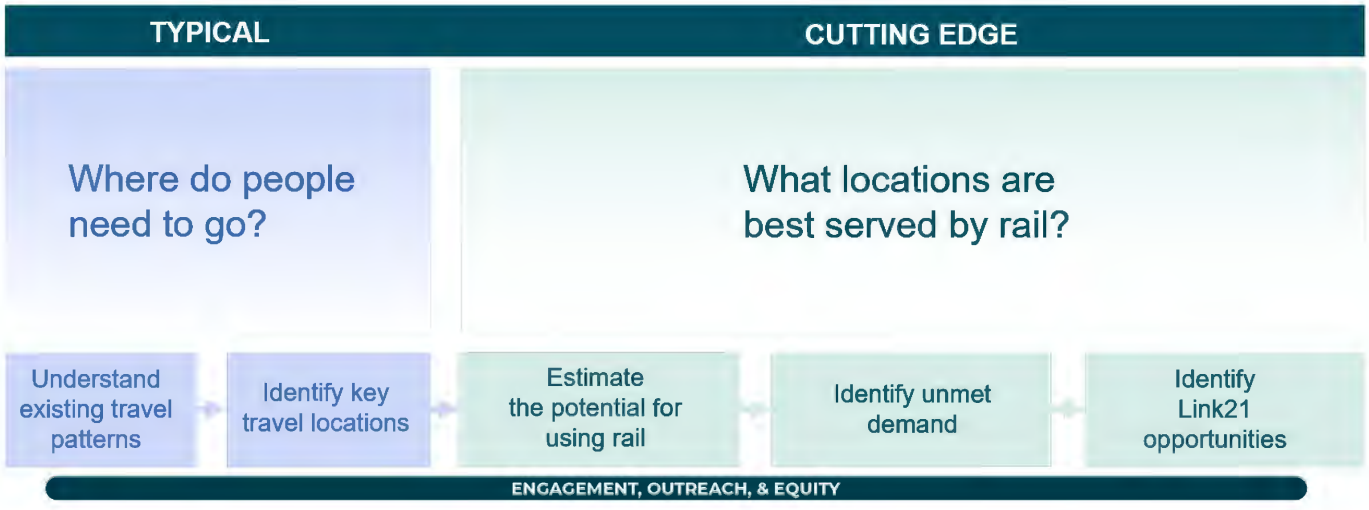
In order for future Link21 projects to offer the highest value to the Northern California Megaregion (Megaregion), the Link21 Team conducted a market analysis to help understand which areas in Northern California have the greatest potential for Oakland-San Francisco transbay corridor passenger rail ridership.

The market analysis covers all 21 counties of the Megaregion and uses traditional and cutting-edge methods to understand where people need to go and what locations might be served by passenger rail. Traditional methods of market analysis focus on understanding where people would like to go by using pre-pandemic travel patterns and identifying key travel locations.

Innovative modeling techniques that incorporate demographic information and traveler surveys were used to analyze:

- Pre-pandemic travel patterns by passenger rail, transit, car, and other modes of travel
- Key travel markets, such as major employment centers, residential communities, shopping, entertainment, and other hubs
- Potential that travel would be conducted by passenger rail if passenger rail were convenient and affordable
- Unmet demand for passenger rail service, including future projections

Priority population neighborhoods are located in underserved areas that Link21 aims to prioritize as part of the program. In order to improve the equity outcomes of



(continued on page 2)

(continued from page 1)

the project, priority population neighborhoods are being double weighted to make sure they are considered fairly.

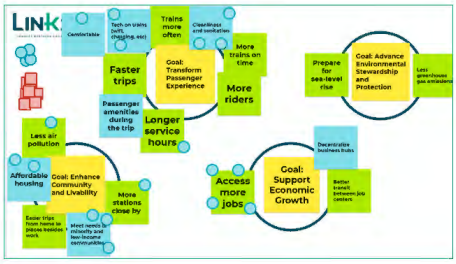
This methodology is similar to the Federal Transit Administration's (FTA) New Starts approach where the agency assigned a weight of two to trips by transit-dependent persons using information from the 2009 National Household Transportation Survey.

The market analysis identified that 45% of unmet rail potential uses the transbay corridor with the highest potential being in areas that are closest to the crossing. These areas are throughout San Francisco and in the East Bay between Richmond and Bay Fair.

The Link21 Team is assessing a range of potential long-term travel patterns by looking at different assumptions for population, jobs, telecommuting, and travel costs.

Preliminary findings from the market analysis have been shared with Link21's technical panels, Program Development Team (PDT), and Jurisdiction Working Group (JWG). The Link21 Team is currently addressing and incorporating the comments from these groups and preparing a report summarizing the market analysis findings. Key findings will be shared with the public during fall outreach opportunities tentatively scheduled for later this year.

Redefining Priority Populations



The Link21 Team has kicked off the second round of community co-creation. Round two will include more than a dozen workshops and the distribution of a survey to priority population communities. The survey is a new approach designed to further reduce barriers to participation that will allow Link21 to learn from a more diverse group of community partners. Data received from both the surveys and the workshops will be synthesized throughout September and October and shared with the community shortly thereafter. Feedback from the second round will inform the fall update of Link21's priority populations definition, which will give the Link21 Team a community-vetted geographic designation of equity.

Round three of community co-creation is expected to launch later this year.

Collaborating to Expand Funding Opportunities

Link21, in collaboration with the BART Government Relations and Capital Finance teams, is working with staff from the California State Legislature, California State Transportation Agency (CalSTA), and other passenger rail and transit operators on a proposal to amend the Transit and Intercity Rail Capital Program (TIRCP) guidelines. TIRCP is a highly competitive grant program, that is funded by the state's cap-and-trade program and that funds "transformative capital improvements that will modernize California's intercity, commuter, and urban rail systems, and bus and ferry transit systems, to significantly reduce emissions of greenhouse gases, vehicle miles traveled, and congestion." Link21 is seeking to amend the guidelines to specifically allow project development as an eligible program category, along with other recommended changes.

BART and Link21 staff are currently evaluating whether to submit an application for TIRCP once the Call for Projects is released later this fall. The Link21 Team will continue to work closely with BART's Capital Finance and Government Relations staff to determine an appropriate grant proposal. Thanks to BART staff for their continued support and advocacy of the program.

Creating Opportunities for the Future

Over the last several weeks, two students from BART's summer internship program have assisted the Link21 Team with developing a strategy for youth engagement. As a generational program, it is important that the team engage and seek input from current and future riders of all ages. Samantha Tay, a rising senior majoring in biochemistry and molecular biology at the University of California at Davis, and Taylor Yiu, a rising senior at Alameda High School, were charged with creating an engagement and outreach strategy to reach more youth in the Megaregion.

(continued on page 3)

(continued from page 2)

BART interns Samantha Tay (left) and Taylor Yiu (right) during their mentoring session with BART intern alumnae Monet Boyd (inset).

The interns reviewed the results of community co-creation round 1 youth workshops to develop and enhance youth-oriented outreach materials.

Through project-based learning, the interns were exposed to the public agency and consultant worlds, and the many facets of transportation planning. Tay and Yiu's plan will help Link21 empower young people to speak their minds and contribute to planning processes that will affect them well into the future.

As one of their final activities, the two interns met with Monet Boyd, a BART alumnae intern, for a virtual mentoring session. At this meeting, they discussed their experiences as interns and how BART and Link21 can continue to promote youth and equity in the future.

Both interns said they had a great experience during their time on the program and learned not only technical skills, but important soft skills needed to be successful.

"Being open to communication is key," explained Tay. "Clear up confusion and ask questions early on." Yiu learned the value of networking saying, "Having connections with people is important."

At the end of the program, they presented the youth engagement strategy to the Link21 Team and were awarded a Certificate of Accomplishment on behalf of the BART Planning and Development Department.

Link21 Featured at Conference on Advancing Transportation Equity

Emily Alter with BART's Office of Civil Rights and Mydria Clark with HNTB gave participants of the Transportation Research Board's (TRB) inaugural Conference on Advancing Transportation Equity (CATE) a glimpse into the Link21 Equity Program.

According to the TRB website, CATE features "all areas of transportation practice and research, including those that address links between transportation and housing, telecommunications, health, policing, or economic development."

Presentations at the conference featured those who are working on the front lines of transportation equity and justice within community-based and non-profit organizations. Participants represented a wide range of lived experiences and discussed how diverse perspectives are included in policy development, project selection, and mitigation to advance transportation equity.

Through an informative interview for the conference's video series, Alter answered questions posed by Clark on the Equity program, particularly on community co-creation strategies and how public input is being integrated in Link21's technical work.

Looking Ahead

- Fall outreach will begin in October and focus on the market analysis and an update on technical work being performed. This will also be a key opportunity for the public to provide the Link21 Team with valuable input on the market analysis and service aspirations.
- Onboarding of the Engagement and Outreach consultants is anticipated in late September.
- Round 3 of community co-creation is tentatively scheduled for late 2021/early 2022.

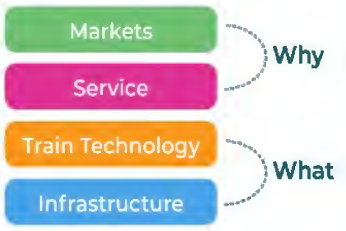
UPCOMING MEETINGS AND PRESENTATIONS

SEP 15 -	CCJPA BOARD OF DIRECTORS
OCT 14 -	BART BOARD OF DIRECTORS
FALL 2021 -	PROJECT DEVELOPMENT TEAM (PDT) STAFF AND EXECUTIVE MEETINGS
FALL 2021 -	JURISDICTIONAL WORKING GROUP (JWG) MEETING
Q4 2021 -	PUBLIC WEBINAR SERIES

Link21 Program Monthly Stakeholder Update

Building Better Service

The overarching goal of the Link21 program is to transform the passenger rail experience by improving service. Key projects, such as a new passenger rail crossing between Oakland and San Francisco, will enable improved rail service, connectivity, and mobility for many people around the Megaregion. The Link21 team is coordinating with the State Rail Planning team and other transportation agencies on what future rail service in the Megaregion will look like.



Building blocks of service.

Understanding markets, designing service, identifying train technology (type of train car), and designing infrastructure improvements are the four "building blocks" of defining the "why" and "what" of the Link21 Program.

The Link21 Team will first evaluate potential markets, then develop potential service plans that serve those markets. A detailed market analysis and stakeholder input will be used to inform our thinking around markets and service, as well as land use and equity considerations.

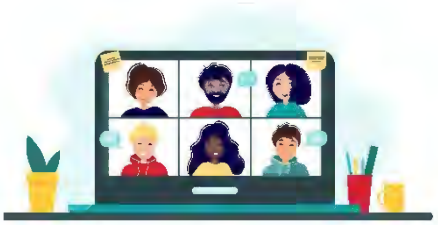
Through an upcoming survey, the Link21 Team will ask the public about their service aspirations—what good service looks like to them— shorter travel times, longer service hours, more frequent trains, better connectivity, system resiliency, better station access - and others.

The Team use use this feedback to develop service plans to present for additional stakeholder and public feedback in early 2022. Following service planning, the team will then be able to determine which train technology and infrastructure are needed to support the type(s) of service that is envisioned. This will come later in the Program.

Creating New Definitions

Last month, the Link21 Team completed its second round of co-creation workshops and distributed a survey to help increase input opportunities for priority population communities. Nearly 200 community members participated in workshops co-hosted with 11 community-based organizations (CBOs).

The Link21 Team partnered with additional CBOs and a research firm to conduct a survey and poll that reached more than 1,000 additional stakeholders.



Feedback from these workshops and surveys will be used to develop a new priority population definition for use in Link21 technical work. This new definition will reflect feedback regarding burdens, concerns, and desired outcomes. The new definition will move Link21 forward by focusing on design solutions and outcomes that emphasize those who need improved rail service the most.

More broadly, input from both rounds of community co-creation is being considered throughout program work, including the efforts to identify desirable service aspirations of priority populations.

Positioning for Success

As the Link21 Team looks for ways to fund this generational program, it is important to identify opportunities early. The team is working to submit an application for the Sustainable Communities Grant opportunity, sponsored by Caltrans, to support additional engagement and outreach efforts.

The agency has a little over $29 million available "to encourage local and regional planning that furthers state goals, including, but not limited to, the goals and best practices cited in the Regional Transportation Plan Guidelines adopted by the California Transportation Commission." Awards are expected to be announced in spring 2022.

Link21 has also applied for a Rebuilding American Infrastructure with Sustainability and Equity (RAISE) grant through the U.S. Department of Transportation. Awards will be announced in November 2021.

Fall Outreach - A Deep Dive into the Community

The Engagement and Outreach Team will take Link21 on the road in November through a three-pronged approach (grassroots outreach, webinars and live Q&A, and partner agency and advocacy group meetings) that is designed to reach more stakeholders, meet people where they are, receive feedback that can be shared with the Link21 technical teams, and continue to cultivate relationships with partner agencies and advocacy groups.

The Link21 Team plans to do this through a robust grassroots outreach effort that includes partnering at tabling events with BART's Government and Community Relations team, visiting major fairs and festivals, and conducting outreach onboard various BART and Capitol Corridor routes and at stations with high ridership (based on pre-pandemic numbers).

Stakeholders reached through these methods will be provided with information on the upcoming webinars and live question and answer sessions scheduled for mid-November and will be encouraged to take a survey that will help Link21 better understand the service aspirations of travelers. Information gleaned from these surveys will help the technical teams with service plan development.

In addition to grassroots outreach, Link21 will host webinars that provide an update on what the team has been working on, our findings so far, the market analysis, next steps, and how the public can help us get there.

Four live question and answer sessions will be held on November 13, 16, 17, and 18 with subject matter experts from the Link21 team.

The third prong of this approach includes meeting with partner agencies and advocacy groups to provide an update on Link21 and to encourage these agencies to share information about the fall outreach series and the survey.

Upcoming Events*

FALL 2021	IN STATION AND ON TRAIN OUTREACH
NOV 13	FALL OUTREACH LIVE Q & A
NOV 16	FALL OUTREACH LIVE Q & A
NOV 17	FALL OUTREACH LIVE Q & A
NOV 18	FALL OUTREACH LIVE Q & A
1Q 2022	PROJECT DEVELOPMENT TEAM EXECUTIVE AND STAFF LEVEL MEETINGS
1Q 2022	JURISDICTIONAL WORKING GROUP MEETING

**For more information about dates, times, and locations of outreach activities, visit www.Link21program.org/events.*

Connecting with Link21

Website: www.Link21program.org

Email: info@link21program.org

Phone: 855-905-LINK (9045)

Link21 Program Monthly Stakeholder Update

Updating Priority Populations Definition to Meet Program Goals

In November 2021, the Link21 Team updated its priority populations definition. Link21's priority populations were initially defined based on the state's existing definition of disadvantaged and low-income communities and the Metropolitan Transportation Commission's (MTC) and counties' Communities of Concern (now called Equity Priority Communities).

The updated Link21 priority populations definition is program-specific and identifies areas with significant low-income, non-white, or transportation-cost-burdened populations that also experience disproportionate economic, mobility, community, and health and safety burdens. The definition was created with the input of 330 community members through the second round of community co-creation and a megaregional poll with 1,500 respondents. Input from these community members informed how factors like housing-cost burden, displacement, internet access, employment benefits, and others were incorporated into the definition. Conversations with partner agencies and subject matter experts and research into other geographic metrics also guided this update.

The updated definition will be used in Phase 1 work. It is a living definition, and the Link21 Team is identifying other points in the program schedule where the definition could be further updated, if needed. The team plans to provide more detailed information about the development of the updated definition in the February stakeholder report and on the Link21 website. BART and CCJPA board members will have the opportunity to learn more and provide feedback as part of the Stage Gate review process.

Community members will be given an opportunity to ask questions and provide comments on the updated definition in the coming months.

Link21 Wraps Up Fall Engagement Series

The Link21 Team continued its robust engagement campaign in early November by hosting four webinars with live Q&A sessions, launching the service improvements survey, and performing outreach at various BART and Capitol Corridor stations, on board several Capitol Corridor trains, and event/festival tabling.

Approximately 150 people attended the webinars, which included a program update, a review of the recently concluded market analysis, and a discussion of the building blocks of service (markets, service, train technology, and infrastructure), and how they will play into the eventual development of program concepts. As the program is currently focused on evaluating the first two building blocks — market and service — the online and paper survey dives deep into what

(continued on next page)

(continued from previous page)

passengers feel constitutes "good service", how they use rail, and their current and future travel patterns. This information will be used to help design the service plans that will support the proposed concepts. To date, more than 400 surveys have been received (paper and online versions). You can access the survey by clicking here. The survey closes January 31, 2022.

In the grassroots efforts, the Engagement and Outreach Team tabled at 46 events, festivals, and stations throughout the Megaregion with over 500 community touches.

The Link21 Team in Manteca at the Christmas in the Promenade event.

Service Improvements Survey Extended

The deadline for completing the service improvements survey has been extended to January 31, 2022. The survey can be accessed by visiting: www.Link21program.org/survey.

Please feel free to share the survey link as the team works to learn more about passenger travel patterns and what good service means to them.

Link21 - Future Funding

Link21 appears to be well-positioned for potential funding through several of the existing and new rail federal programs. As the program requirements are being developed at the federal level, the Link21 Team will work with BART, CCJPA, and partner agencies' staff to advocate for grant funding that is complementary to and not competing against agency needs.

Currently, the Link21 Team is considering advancing another proposal through the Rebuilding American Infrastructure with Sustainability and Equity (RAISE) grant program.

At the state level, the team worked closely with the region's transit operators and MTC on advocating for a significant portion of the state's budget surplus to be directed to transportation programs and projects. We will continue working with our partners on the regional distribution of these funds.

BART Taking Steps to Update System Expansion Policy

For several decades, BART's service plans focused on extending service to areas within and beyond its core service area. In 1999, BART adopted its first *System Expansion Policy* to provide policy guidance to the BART board, staff, and local jurisdictions on the conditions necessary to consider service expansion. The policy is a framework that focuses on broad goals and objectives, system expansion criteria, and metrics for staff recommendations.

During the November 18th BART Board of Directors meeting, staff outlined a plan to update the current policy to better align with BART's Strategic Plan goals and objectives, and to strengthen the policy's commitments to equity, sustainability, and transit-supportive land use while providing flexibility to use appropriate rail technology and ensuring fiscal responsibility by recognizing potential impacts on the operations and maintenance of BART's current service.

The updated policy will help shape Link21, particularly the crossing between Oakland and San Francisco, and it will aid the consideration of potential new stations, including infill stations. BART will begin stakeholder outreach in early 2022 with Board adoption of recommendations slated for summer 2022.

(continued on next page)

(continued from previous page)

Upcoming Board Presentations and Working Group Meetings

JAN 24, 9 AM	PROGRAM DEVELOPMENT TEAM (PDT) STAFF LEVEL
FEB 1, 1 PM	PDT MEETING - EXECUTIVE LEVEL
FEB 2, 3 PM	JURISDICTIONAL WORKING GROUP
FEB 16, 10 AM	CCJPA BOARD (STAGE GATE 1)
FEB 24, 9 AM	BART BOARD (STAGE GATE 1)
MARCH 10, 9 AM	BART BOARD
APRIL 20, 10 AM	CCJPA BOARD

Upcoming Industry Presentations

MARCH 31	APTA CONNECTING CITIES CONFERENCE

BART Releases Strategic Advising and Program Management RFP – Round 2

On November 12, 2021, BART advertised a Request for Proposals (RFP) to provide Strategic Advising and Program Management services for the Link21 Program. The new contract will be for a period of up to four years with an option to extend an additional six years.

The selected consultant will support BART and CCJPA staff with the delivery of the Link21 Program by providing the following professional services:

- Strategic advising support
- Stakeholder coordination
- Funding and programming plan development
- Program Management, including management of scope, schedule, risk, quality (etc.)
- Oversight of consultants providing planning and engineering, environmental review, travel demand and land use, and engagement and outreach support

Proposals were due January 11, 2022. Consultant selection is expected to be made by spring 2022.

Stage Gate

The Link21 Stage Gate process is a rigorous and formalized, decision-driven process to control risk and ensure timely and cost-effective project delivery.

It has been designed based upon U.S. and international best practices. Stage gates are key program milestones in the program life cycle and BART/CCJPA executives and Board of Directors are asked to review Link21's progress, memorialize decisions, and confirm the program's readiness to advance. Stage gates document and formalize Link21's findings, direction, and approach at key milestones throughout the program's life cycle.

The Stage Gate Process is a series of hierarchical reviews with expert panels that will inform the subsequent panels of their recommendations, culminating in a recommendation to the Board of Directors by BART/CCJPA executive leadership. The review process starts with a detailed and intensive technical review within the Link21 Team, by industry subject matter experts, followed by BART/CCJPA staff and executive management review.

(continued on next page)

(continued from previous page)

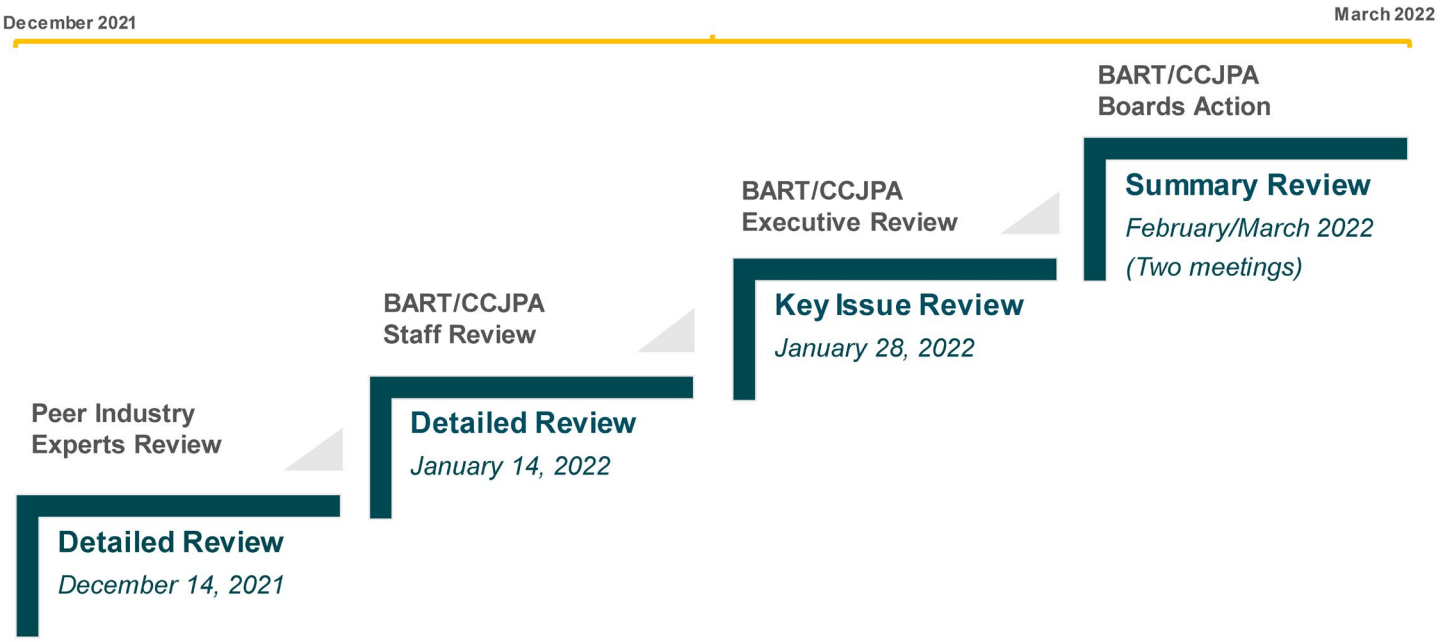
Each review includes documentation of the work that has been done, identification of program risks and mitigations, an overview of the plan of work for the next stage gate, and the opportunities for the review panel to identify and document any concerns or recommendations.

For the upcoming Stage Gate 1, Link21 will be confirming readiness to advance from Phase 0 (Program Definition) to Phase 1 (Program Identification) by providing evidence supporting the following key statements:

1. Link21's vision, goals, and objectives are appropriate, clear, and measurable, and they provide a foundation for the Business Case.
2. Stakeholder and public engagement, with a focus on equity advancement, has informed the process and supports advancement to Phase 1 (Program Identification).
3. A foundation of analytical work has been completed to develop and evaluate concepts in Phase 1.
4. The program has the people, processes, funding, and tools to support progress through Phase 1.

Link21 Team members will present the recommendation to the BART/CCJPA boards (on February 24th and 16th, respectively) and return to the Boards for action at the BART Board meeting on March 10th and the CCJPA Board meeting on April 20th.

Stage Gate Timeline Review Hierarchy



Connecting with Link21

Website: www.Link21program.org

Email: info@link21program.org

Phone: 855-905-LINK (9045)

LINK21

CONNECT NORTHERN CALIFORNIA

Business Case Phase 1 Metrics

Draft and Deliberative

BART

CAPITOL CORRIDOR

Link21 Metrics

Metrics have been developed to evaluate the **performance** of Link21 program concepts against the **goals and objectives**.

PROMOTE EQUITY AND LIVABILITY

- Connect people and places
- Improve safety, health and air quality
- Advance equity and community stability

Metrics identified for each objective, e.g.:

POTENTIAL METRICS

- Availability of rail options near people's homes
- Additional jobs accessible from people's homes
- Additional non-work destinations accessible from people's homes

Introduction

- Metrics are grouped by goal and objective
- Some metrics included in this deck will not be used for Stage Gate 2 – these are shown in grey text
- Objective B3 – advance equity and community stability assesses the distribution of benefits to priority populations relative to the total population. Several metrics are assessed in this way and are indicated with an asterisk (*) in the tables
  - Additional metrics that are not assessed by priority populations may be included in this objective (based on feedback from co-creation)

Strategic Case Metrics: Goal A – Transform the Passenger Experience

OBJECTIVE	METRIC
A1: Provide better service	In-vehicle travel times
	Total transit travel times *
	Service frequency *
	Service hours *
	Crowding
	Network integration
A2: Improve reliability and system performance	Reliability
	Expected recovery times from incidents
	Ability to maintain existing and new infrastructure
	Flexibility to meet future growth (demand/capacity)
	Viability in the event of seismic events and other emergencies
A3: Build ridership and mode share	Ridership *
	Mode shares
	VMT reduction

Strategic Case Metrics: Goal B – Promote Equity and Livability

OBJECTIVE	METRIC
B1: Connect people and places	Work trips on network *
	Jobs accessible from people's homes *
	Non-work destinations accessible from people's homes *
	Non-work trips on network *
	Availability/accessibility of rail options *
B2: Improve safety, health, and air quality	Megaregional pollutant levels
	Auto-involved crashes
	Active mode (walking, biking, etc.) access to rail
	Coverage of Areas of Health Concern

OBJECTIVE	METRIC
B3: Advance equity and community stability	Total transit travel times *
	Service frequency *
	Service hours *
	Ridership *
	Jobs accessible from people's homes *
	Work trips on network *
	Non-work destinations accessible from people's homes *
	Non-work trips on network *
	Availability/accessibility of rail options *
	Community stability will be assessed in the deliverability case under equity risk (e.g., displacement risk and anti-displacement policies)
	Additional metrics may be included based on results of co-creation such as reduction in air pollutants

Strategic Case Metrics: Goal C - Support Economic Opportunity and Global Competitiveness

OBJECTIVE	METRIC
C1: Improve access to opportunity and employment	Jobs accessible to new or improved service
	Business access to potential employees
	Business access to potential markets
	Work trips on network *
C2: Connect major economic, research, and education centers	Travel times between major employment centers
	Trips between major employment centres
	Travel times between major centers and transportation hubs (e.g. airports and main rail stations)
C3: Enable transit-supportive and equitable land use	Local land use policies consistent with Link21 land use and equity strategy (included in deliverability case under equity risk)
	Potential for future land uses within station catchment areas

Strategic Case Metrics: Goal D - Advance Environmental Stewardship and Protection

OBJECTIVE	METRIC
D1: Increase climate change resilience	Viability under different sea level rise inundation scenarios
D2: Reduce greenhouse gas emissions	Greenhouse gas emissions
D3: Conserve resources	Energy consumption for transportation

Economic Case Metrics

METRIC
Travel time savings for new and existing transit users *
Travel time savings for vehicles (i.e., decongestion) *
Travel cost reductions
Reduced criteria air pollutants
Reduced greenhouse gas emissions
Decreased auto collisions resulting in death or injury
Reduced travel times between economic centers
Increased access to labor supply
Benefit to cost metric

Financial Case Metrics

METRIC
Farebox revenues
Capital costs
Operating and maintenance costs
Life cycle costs
Farebox recovery ratio
Net financial value

Deliverability Case Metrics

METRIC
Delivery approach/phasing
Delivery risk: affordability & fundability
Delivery risk: engineering & operations
Delivery risk: environmental
Delivery risk: stakeholder/civic/governance
Delivery risk: equity

LINK21 PRIORITY POPULATIONS UPDATE

Overview

Equity is a central principle for Link21, and the Program has a stated goal to *promote equity and livability*. A key tool for evaluating how equitably Link21 benefits and burdens could be distributed is the Program's priority populations (PPs) designation. Link21 defines PPs as underserved census tracts experiencing inequitable outcomes. PPs will receive emphasis throughout program development.

PPs is a Program-specific tool that is not a replacement for Environmental Justice populations, Title VI communities, or any other compliance designations. It is important to note that PPs are **just one tool** that the Link21 Team will use to advance equity.

Need for an Update

Link21's preliminary PP definition combined designations used by the State of California, Metropolitan Transportation Commission, and local counties, but it did not include a consistent methodology across the Megaregion and did not include program-specific community input. The preliminary definition also proved to be less useful for making informed equity decisions, as it identified nearly half of the Megaregion's census tracts as PPs.

BART and other agencies at all levels of government are increasingly adopting approaches to equity based on the distribution of benefits and burdens. This update better aligns Link21's priority populations definition with this burdens-based approach.

Updated Definition

The updated definition considers PPs to be the geographic areas where people are most impacted by negative economic, mobility, community, and health and safety outcomes. This approach is consistent with emerging guidance such as Justice40.The following table introduces the three-step process used to identify and validate PPs.

QUALIFY	EVALUATE	VALIDATE
Determine the census tracts with higher proportions of low-income, transportation cost burdened, or non-white populations. Those tracts are evaluated in the next step.	Determine the census tracts where people experience the highest levels of economic, mobility, community, and health and safety burdens. Those tracts are considered PPs.	Conduct a demographic analysis of the PP tracts defined in *Evaluate* to validate the definition correlates with identities that have historically been burdened: race/ethnicity, gender, disability, limited English proficiency, foreign born, single parent household, and veteran status.

Guided by Community Input

Communities were key in shaping the updated definition. Primary sources of input were:

- Community co-creation: 330 participants through 22 community-based organizations
- Megaregion poll: 1,505 non-white and/or low-income respondents

Community feedback supported the identification, validation, and weighting of burdens. This process resulted in the inclusion of burdens such as working multiple jobs and lack of access to the internet into the updated definition. Public input also allowed the updated definition to reflect which burdens were most impactful to different communities within the Megaregion through weighting.

Figure 1: Burdens in the Updated PP Definition

Economic	Mobility	Community	Health & Safety
Income	Transportation cost burden	Disconnected youth	Medically underserved areas
Unemployment	0 car households	Miles of highway	Asthma rate
Low wages	Car to worker mismatch	Access to parks	Heart disease deaths
Family size	Commute length	Access to groceries	Air quality
Multiple jobs	Access to transit	Low educational attainment	Collisions
Housing cost burden		Displacement	Overcrowded homes
		Older adults	Low employment benefits
		Internet access	

Next Steps

In upcoming Phase 1 work, Link21's Business Case framework will be used to evaluate Program concepts against the Goals and Objectives. Each of the 12 Objectives is underpinned by metrics that measure the extent to which a given concept can provide desired outcomes. Some metrics will be measured by what portion of the projected benefits would accrue to PPs, in addition to the general population. The number and level of detail of metrics will increase as the Link21 program progresses.

For example, *enhance connectivity* is an Objective under the *promote equity and livability* Goal. There are five metrics under *enhance connectivity*, including availability/accessibility of rail options. In addition to assessing overall how many people could access rail under a concept, the Business Case will also determine what portion of those benefitting are from PPs.

PPs will also be considered in the creation of Program concepts, among other work.

The Link21 Team will revisit the PP definition at appropriate points in the Program schedule to see if additional community feedback, emerging practices, or newly available data should be incorporated.

Equity Vision Statement

An equitable Link21 Program (Link21) acknowledges the ongoing effects on access to mobility and opportunity that past infrastructure projects have had on impacted communities. It shows an understanding of how past projects have failed to adequately consider the needs of systemically marginalized community members, and it evaluates what barriers to rail access exist for low-income and Black, Indigenous, and People of Color (BIPOC) residents, as well as riders with disabilities, women, LGBTQIA+ passengers, and other historically underserved identities.

A fair and just Link21 partners with impacted communities to develop much needed transit benefits for priority populations* via co-creation, a process used to integrate the knowledge and expertise community members bring from their own lived experience directly into program decisions. This allows the program to stay flexible and responsive to emerging and changing needs over time.

Equitable transportation will give everyone the ability to travel safely, affordably, and reliably to work, school, healthcare and government services, family and friends, and other important places in their lives. It should be fast, clean, efficient, welcoming, and accessible for anyone. By following a more equitable process, Link21 will help advance more equitable transportation outcomes throughout the Northern California Megaregion (Megaregion).

*Link21 defines priority populations as the geographic areas where people are most impacted by negative economic, mobility, community, health, and safety outcomes. These outcomes are often correlated with race, ethnicity, gender, income level, and other historically underserved identities in the Megaregion.

LINK21

CONNECT NORTHERN CALIFORNIA

Can the new transbay passenger rail crossing be a bridge?

Study Purpose: Assessment of a passenger rail bridge for Link21

The Link21 Team has conducted several important initial studies to address key technical issues that will help shape the future of Link21 planning.

Previous studies have shown that building an underground transbay passenger rail crossing is feasible, but would it be possible to build a new rail bridge or use the existing San Fransisco-Oakland Bay Bridge instead? This initial study examined the possibility of using a bridge for the new transbay passenger rail crossing.

About Link21

Link21 and its partners will transform Northern California's passenger rail network into a faster, more integrated system, providing safe, efficient, and affordable travel for everyone. At the core of Link21 is a new transbay passenger rail crossing between Oakland and San Francisco that could be a second crossing for BART, a new one for Regional Rail, or both.

Link21Program.org

Key Findings

The new transbay passenger rail crossing must have logical locations for stations on either end and connect to existing or new tracks on either side of the San Francisco Bay. Exact connection points for the transbay crossing have not yet been determined. However, they do impact the possibility of a rail bridge.

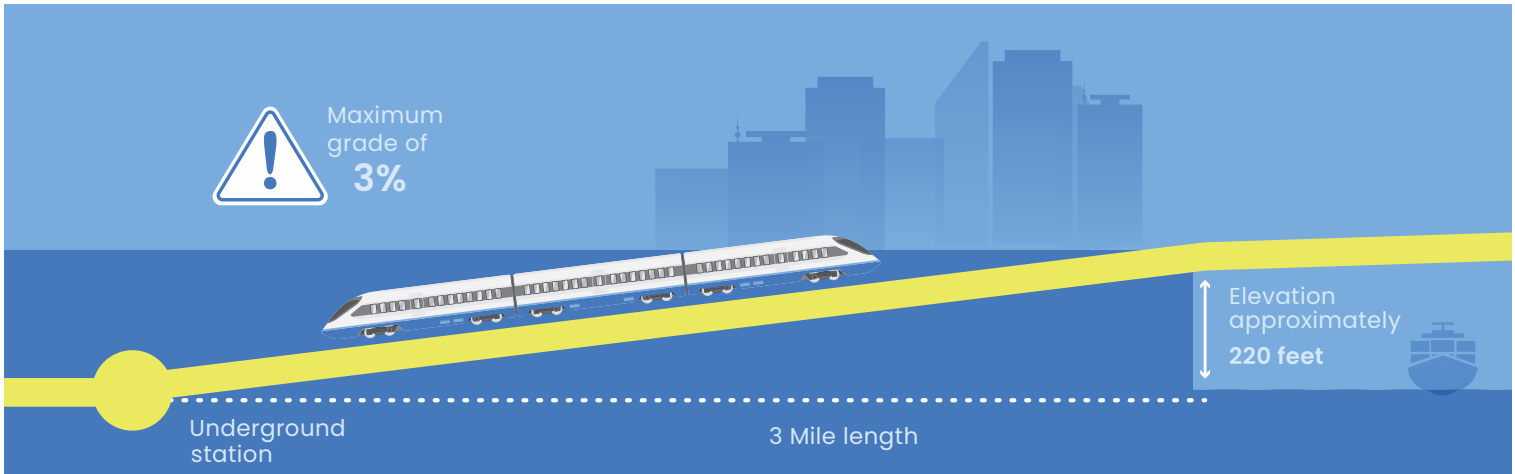
Here's why:

To connect in San Francisco at an existing or planned underground station, large infrastructure, such as trenches, ramps, and elevated structures, would be required to rise from the station platform to the bridge. While technically feasible to construct, this level of impact to the surrounding neighborhoods would likely be unacceptable.

Although rail ran on the Bay Bridge until 1958, the connection in San Francisco at that time was elevated to a second story station platform whereas the existing and planned stations in San Francisco today are underground.

Future Link21 planning will focus on an underground crossing for the Transbay Corridor that will meet Link21's Goals and Objectives while providing feasible connections and access to the underground stations in San Francisco.

For more information, visit Link21Program.org.



Grade: Slope of infrastructure required to connect a deep underground station to a rail bridge. Typically, passenger trains can operate at grades of no more than 3%.

Length: Distance needed to reach the required elevation while staying within the maximum grade.

Elevation: Bridges across the San Francisco Bay must be high enough to allow large, oceangoing ships to pass underneath — approximately 220 feet above sea level.

Link21 is sponsored by the San Francisco Bay Area Rapid Transit District (BART) and the Capitol Corridor Joint Powers Authority (Capitol Corridor).

LINK21

CONNECT NORTHERN CALIFORNIA

Will Link21 include new train technologies?

Study Purpose: Define train technologies that will be considered in Link21 planning

Link21 is focused on improving two different existing rail systems – BART and Regional Rail – so that the passenger rail network in the Northern California Megaregion (Megaregion) functions as an interconnected system. Several important initial studies have been conducted to address key technical issues that will help shape the future of Link21 planning. One initial study looked at modern train technologies and their ability to meet Link21's Goals and Objectives, and to serve the needs of urban, commuter, and intercity rail travelers.

Megaregional Travel Needs

Today, neither BART nor Regional Rail technologies alone can efficiently serve all the Megaregion's diverse travel needs. These systems have different performance characteristics and serve diverse travel needs.

BART is a fast, high frequency urban service with a lightweight, largely electric fleet operating best within the urban core and connecting San Francisco, the Peninsula, South Bay, and East Bay communities.

Regional Rail is a megaregional commuter and intercity service with a heavier fleet largely powered by diesel today, but can also be powered by electricity, hydrogen, or battery. This service operates on longer routes designed for less frequent stops and faster speeds to reduce overall travel time.

About Link21

Link21 and its partners will transform Northern California's passenger rail network into a faster, more integrated system, providing safe, efficient, and affordable travel for everyone. At the core of Link21 is a new transbay passenger rail crossing between Oakland and San Francisco that could be a second crossing for BART, a new one for Regional Rail, or both.

Link21Program.org

Key Findings

Modern Regional Rail train technologies, common throughout Europe and Asia, typically use lightweight, zero-emission electric trains. These technologies are being considered for Link21.

Future train technology must be compatible with the existing train systems and deliver a range of rail services to help meet the transportation needs of people within the Megaregion.

Train technology under consideration will:

Integrate Systems to Enhance Rider Experience

Allow compatibility between the two systems serving both BART and Regional Rail ridership needs with a seamless transition between higher-speed megaregional routes and the urban core.

Connect People and Places to Improve Access

Improve megaregional connections through the new transbay passenger rail crossing by increasing the number of places that are accessible between the Sacramento and San Joaquin regions, and San Francisco, the Peninsula, and the South Bay.

Reduce Emissions to Improve Air Quality

Support environmental stewardship by replacing existing diesel-powered Regional Rail trains to reduce greenhouse gas emissions by the time the new crossing is in service.

High-performance, zero-emission trains, like those in the future Caltrain fleet, could support Link21's goals and needs.

Future Link21 planning will focus on further evaluation of high-performance, zero-emission train technologies that have the potential to achieve Link21's Goals and Objectives. Link21 is working with the state of California on technology considerations as the leader of procurement of zero-emission rail vehicles for intercity passenger rail. Within the Link21 planning efforts, only systems compatible with BART and existing Regional Rail systems are going to be considered.

For more information, visit Link21Program.org.

Link21 is sponsored by the San Francisco Bay Area Rapid Transit District (BART) and the Capitol Corridor Joint Powers Authority (Capitol Corridor).

PHASE 0 FINANCIAL AND DELIVERABLE SUMMARY REPORT

A new transbay passenger rail crossing has been studied and considered for over two decades, and BART's 2016 Measure RR included funds towards relieving crowding. To achieve this goal, in 2018 BART and CCJPA leadership identified the need and developed an organizational strategy to advance and lead a Second Crossing initiative.

In 2019 BART, in partnership with the Capitol Corridor Joint Powers Authority (CCJPA), officially launched the Link21 Program (Link21), a program of national and regional significance that will transform mobility, environmental stewardship, equity, and economic growth for the 21-county Megaregion. In August 2019, BART awarded a Strategic Advising and Program Management (SA/PM) professional services contract that includes a diverse and international team of subconsultants and Disadvantaged and Small Businesses (D/SBE). In 2021, BART awarded professional service contracts to support the advancement of the program with: 1) Engagement and Outreach, 2) Travel Demand and Land Use, 3) Planning and Engineering, and 4) Environmental.

PROGRAM APPROACH

The Link21 Team is using a Business Case Framework to guide Program Development and Stage Gate process to manage risk. Program Development has been broken into three phases: Phase 0 – Program Definition, Phase 1 – Program Identification, and Phase 3 – Project Selection.

- Phase 0: Program Definition (2019 - 2022): sets out foundational elements of Link21, including the structure, steps, and timeline for the Business Case Process and key elements of the Business Case Framework. The latter consists of the problem and vision statements, a set of program goals and objectives, and the key assumptions to be used in subsequent evaluation steps.
- Phase 1: Program Identification (2022 - 2024): develops program concepts and conducts additional evaluation. The goals of this phase are twofold: 1) select a single program concept based on completion of the Preliminary Business Case, and 2) within the program concept, identify a priority project consisting of a crossing between San Francisco and Oakland and related infrastructure to serve as the basis of a request for funding.
- Phase 2: Project Selection (2024 - 2028): identifies and evaluates alternatives for one or more discrete projects within the program selected in Phase 1. A reasonable range of feasible alternatives for each project would be advanced for environmental review under the National Environmental Policy Act (NEPA) and/or California

Environmental Quality Act (CEQA). The Intermediate Business Case (IBC) and Final Business Case (FBC) processes identify and select the project alternative(s). The selected alternative(s) by the Business Case should correspond to the selected alternative(s) in the Record of Phase 0 Key Milestones and Deliverables.

Stage Gates are key points in the development and delivery of the Link21 that provide fundamental strategic definition to Link21's progress. Each Stage Gate memorializes the work completed and approach to the next phase of work reviewed and authorized by the appropriate board and executive levels of authority based upon staff recommendations. Stage Gates document the foundational decisions that determine Link21's direction, effectively closing one part of the life cycle and opening the next. Stage Gate 1 marks the milestone of transitioning the program from Phase 0 to Phase 1. The Link21 Program is currently closing out Phase 0 and is scheduled to transition to Phase 1 with BART/CCJPA board action in April 2022.

PHASE 0 FINANCIAL SUMMARY

Table 1 provides an overview of the current funding sources allocated to Link21. At present, the program has received $110,000,000 of BART Measure RR funds (Relieve Crowding) and $2,000,000 from the State of California through annual Capitol Corridor contributions. In addition, the Regional Measure 3 (bridge tolls) Expenditure Plan identifies $50,000,000 for the program; however, these funds are not yet available.

Table 1. Funding Allocations

FUNDING SOURCE	AMOUNT
CURRENT	
BART Measure RR	$149,999,667
CalSTA (CCJPA) (2020/2021)	$2,000,000
BART Capital Allocation	$954,719
Current Funding Total	**$152,954,386**
FUTURE	
RM3	$50,000,000
Future Funding Total	**$50,000,000**
Total Funding	**$202,954,386**

Table 2 shows the program's expenditures as of January 2022. The program has spent $41,403,884 since its formal inception in October 2019. These include costs expended by the BART/CCJPA staff (labor) and Consultants (non-labor).

Table 2. Expenditures as of January 31, 2022

	FUNDED BUDGET	EXPENSED
Total Labor	$37,900,000	$5,508,251
Total Non-labor	$115,054,386	$35,895,633
Grand Total	**$152,954,386**	**$41,403,884**

DISADVANTAGED AND SMALL BUSINESS UTILIZATION

BART's goal is to ensure that all contracts and procurements are administered without discrimination on the basis of race, color, sex, or national origin. BART's Office of Civil Rights manages the Districts Non-Discrimination in Subcontracting Program and provides DBE and SBE subcontracting goals on all contracts.

LINK21 CONTRACT PRIME	DBE SUBCONTRACTING COMMITMENT	SBE SUBCONTRACTING COMMITMENT	STATUS
Strategic Advising and Program Management	23%	25%	On track
Engagement and Outreach	30%	30%	On track
Travel Demand and Land Use	22.5%	1%	On track
Planning and Engineering	**30%**	**34%**	On track
Environmental	**30%**	**0%**	On track

PHASE 0 KEY MILESTONES AND DELIVERABLES

Following is a summary of the key milestones and deliverables that have been achieved during Phase 0 that provide a foundation for the program as it advances. These are broken out by key program tasks.

1. Strategic Advising

- Stage Gate Process
- Funding Strategy
- Land Use Strategy
- Cash Flow/Predictive Model
- White papers on governance, fares, value capture, vehicle miles traveled (VMT) mitigation banking, and equity
- Coordination with Metropolitan Transportation Commission (MTC) to have Link21 named as a project in Plan Bay Area (PBA) 2050
- Coordination with California State Transportation Agency (CalSTA) on the 2022 State Rail Plan update
- Government Relations Strategy and Implementation Plan

2. Program Management and Controls

- SharePoint Team Collaboration Site
- Strategic Program Plan
- Management plans/systems (Federal Transit Administration [FTA] Compliant): scope, schedule, cost, risk, quality
- Data information and management systems: GIS and BIM data portal
- Disadvantage DBE/SBE support and mentoring
- Configuration and integration management
- Procurement support of contracts to support Phases 1 and 2 work
  - Engagement and Outreach
  - Travel Demand and Land Use
  - Planning and Engineering
  - Environmental
- Onboarding and management of Consultant teams

3. Business Case

- Business Case Framework
  - Problem Statement, Vision Statement, Goals and Objectives
  - Evaluation metrics
- Market Analysis
  - Development of a market analysis model
  - Technical analyses
  - Application and summary of findings
  - Peer industry review

4. Equity

- Development of Equity Commitment and Framework
- Link21 Equity Training
- Priority Populations geographic definition
- Co-creation model of engagement
  - Two rounds of co-creation engagement (30+ co-creation meetings)

5. Engagement and Outreach

- Branding the program as Link21
- Interactive website (launched 2021)
- Two rounds of virtual public workshops
- Stakeholder outreach plan – including standing meetings with the Program Development Team (agencies and county transportation commissions) and Jurisdictional Working Group
- 200+ meetings with stakeholders
- Administration of three public surveys to gauge the public's interest, understanding, and transportation needs

6. Planning and Engineering

- White papers, including underground construction methods, dual-gauge operations, and passenger rail technologies
- Coordination with the Transbay Joint Powers Authority (TJPA) on the design of the Caltrain Downtown Rail Extension in San Francisco
- Development of Capital Cost Methodology
- Preliminary Concept Development

7. Travel Demand and Land Use

- Development and application of an Initial Concept Evaluation Model
- Support of method and model to estimate and identify priority populations for Equity
- Development of scope and method of 21-County Megaregional Travel Demand and Land Use Model

8. Environmental

- Development of an Environmental Strategy White Paper
- Development of the 21-county Megaregion Environmental Opportunities and Challenges GIS Database
- Development of 21-county Megaregion Land Use Database

LINK21

CONNECT NORTHERN CALIFORNIA

Engagement & Equity Update

BART Board

March 10, 2022

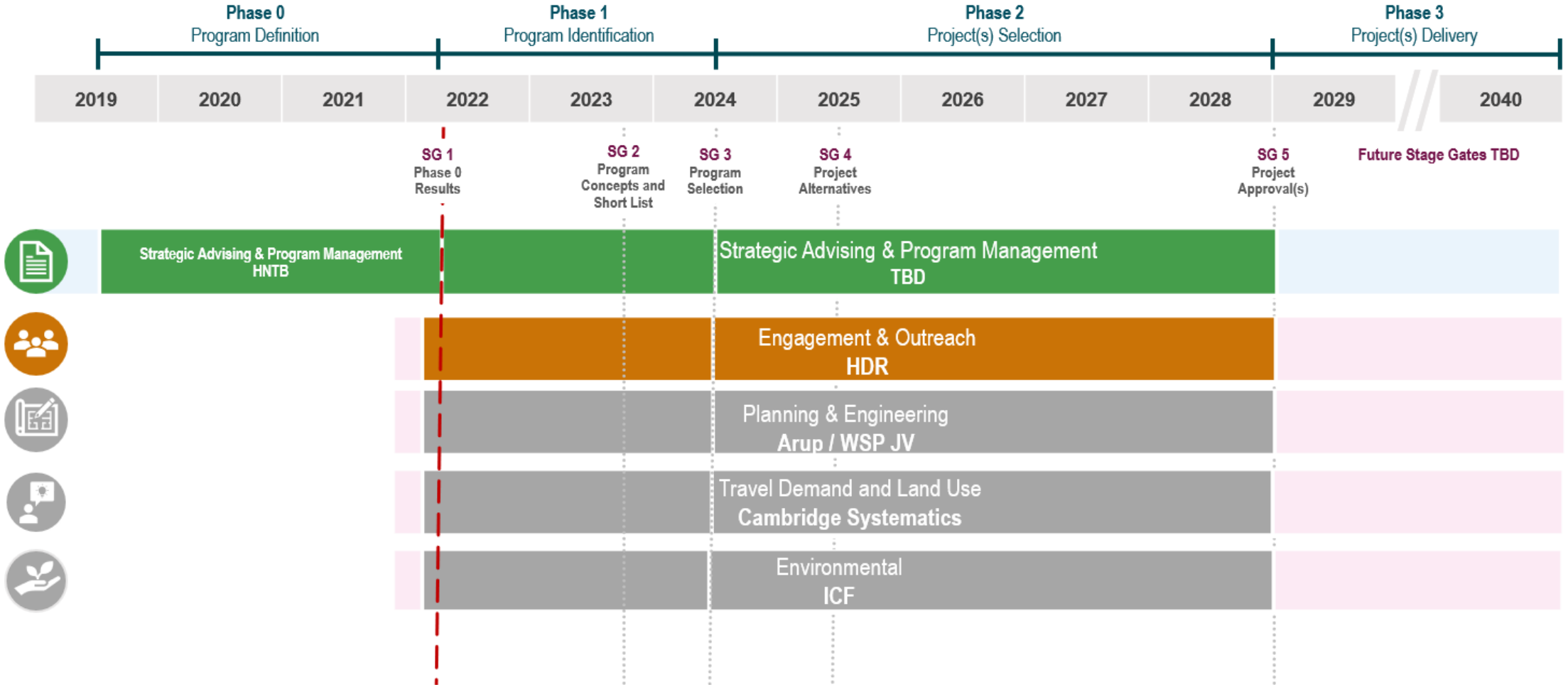
BART

CAPITOL CORRIDOR

Agenda

1. **Introduction -** Sadie Graham & Nicole Franklin (BART)
2. **Thinking and Executing Differently -** Sadie Graham & Nicole Franklin (BART)
3. **Co-creating the Future of Passenger Rail**
   - Co-Creation Model - Ezra Kong (Reflex Design Collective)
   - What we heard - Kyle Morales (HNTB)
   - Equity Accountability Council – Ben Duncan (Kearns & West)
4. **Priority Populations: an Equity Case Study-** Emily Alter (BART)
5. **Equitable Outreach** – Nicole Franklin (BART) & Lisa Marie Alley (Kearns & West)
6. **Board Collaboration**– Nicole Franklin (BART)

Consultant Team Roles & Responsibilities



DBE | SBE Goals

24% | 26% OnTrack

30% | 30% OnTrack

30% | 34% OnTrack

22.5% | 1% OnTrack

30% | 0% OnTrack

March 2022

DRAFT-DELIBERATIVE

Thinking and Executing Differently

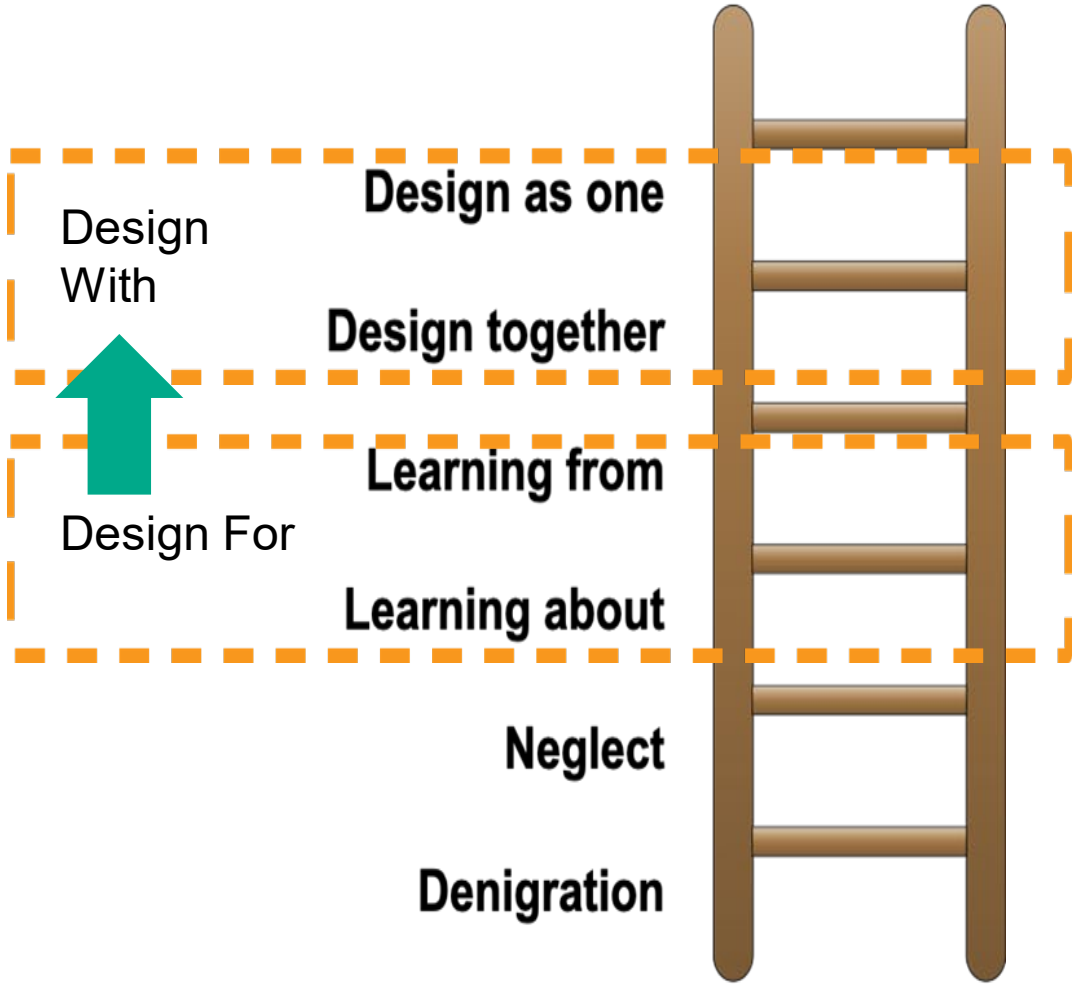
Leading with Racial and Social Equity

- Link21 Program is being built on a commitment to equity – internally and externally
- Consistent with Office of Civil Rights Racial Equity Strategy
- Integrated into all work and teams
  - Onboarding
  - Equity Blueprint
  - Equity integration liaisons for each task
- Integrating co-creation results and equity priorities iteratively

Co-Creating the Future of Passenger Rail

The Co-Creation Model

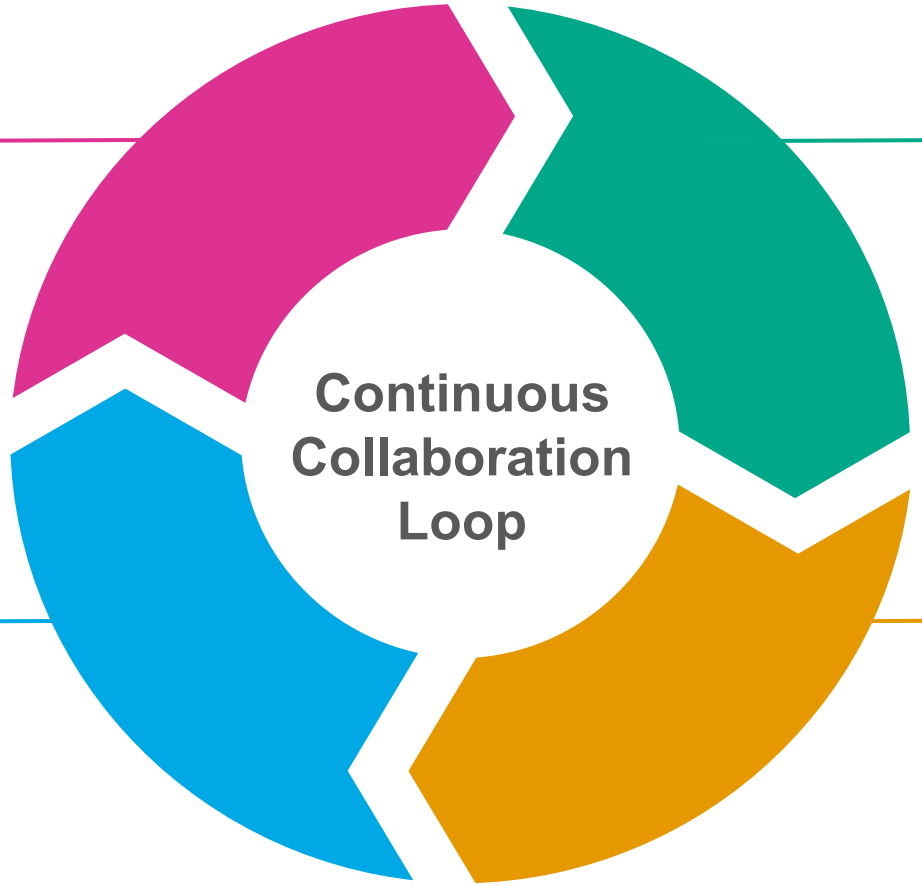
- Center marginalized communities to be a part of decisions that impact them
- Understand that trust needs to be (re)built between communities that have been marginalized
- Recognize contribution of all parties through compensation



Co-creation is an emerging best practice for many smaller and more local projects; the Link21 Team is doing leading work to scale up this approach for a megaprogram.

How Co-Creation Works for Link21

Establish and maintain partnerships with community-based organizations (CBOs)



Co-create key elements of the Program with community members

Incorporate co-created solutions into program development

Report back to communities to validate feedback heard and incorporated correctly

Determine next topics for community co-creation

Phase 0 Co-Creation Work

Round 0

Interviews with community, advocacy, agency leaders

- How should communities be engaged with?
- Who should we partner with?
- What do you want to see centered in Program development process?

Round 1

Community Workshops

- What goals & objectives do you have for Link21?
- How do you travel today? How would you like to travel?
- Do you have concerns about how Link21 could impact your community?

Round 2

Community Workshops and Surveys

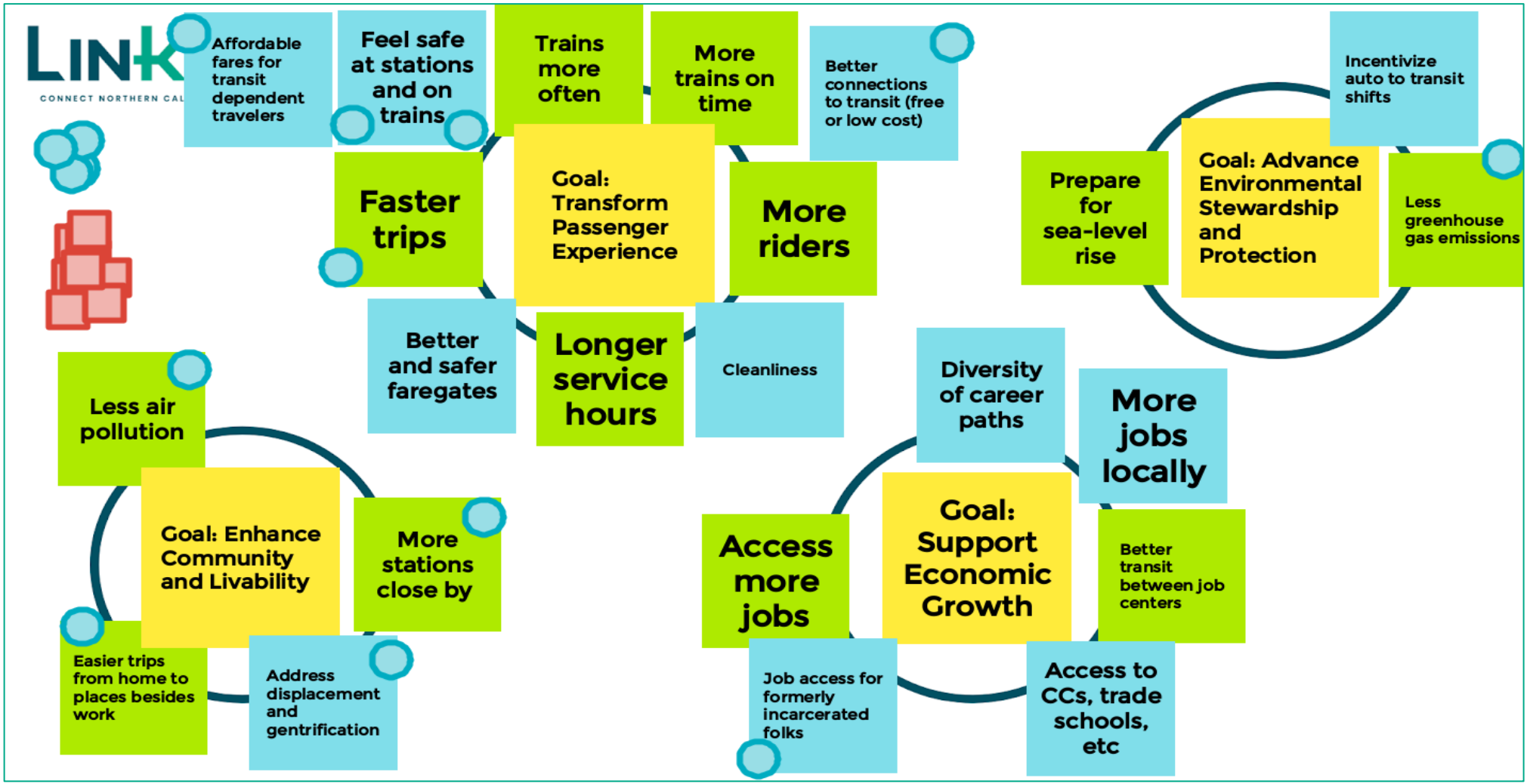
- What are biggest barriers to achieving equal access and opportunities?
- How should Link21 identify priority populations?

Round 3

Community Workshops

- *In development: will focus on better understanding transportation barriers and whether Link21 could improve them*

Co-Creation Activity Example: Goals & Objectives



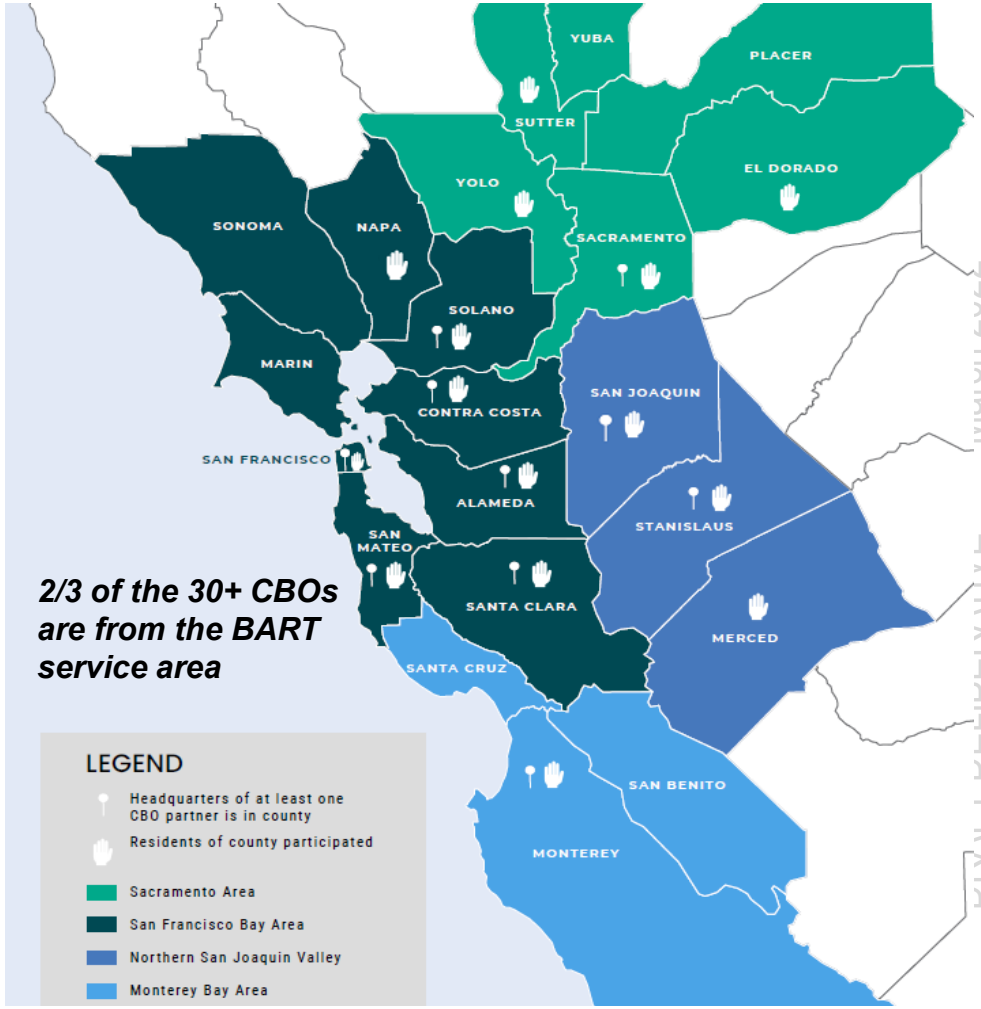
Who We've Worked With

BART Service Area

- Alameda County Library Foundation
- Alameda Point Collaborative
- A. Phillip Randolph Institute (SF)
- BMAGIC
- Conference of Minority Transportation Officials
- Community Youth Center (SF)
- El Centro Mission Neighborhood Centers
- East Oakland Youth Development Center
- Latinos United for a New America
- Nuestra Casa
- Oakland Chinatown Chamber of Commerce
- RCF Connects
- REACH Ashland Youth Center
- Samoan Community Development Center
- San Mateo Paratransit Coordinating Council
- St. Columba Catholic Church
- Success Centers
- The Village of Love
- Trybe
- United Playaz
- Unity Council

Other Parts of Megaregion

- Building Healthy Communities (Salinas) Creating Restorative Opportunities and Programs
- Fighting Back Partnership
- Hmong Youth and Parents United
- Little Manilla Rising
- Pro Youth and Families
- Resources of Independent Living
- Vallejo Chamber of Commerce
- Valley Improvement Projects
- West Modesto Collaborative



Major Co-Creation Input Themes: Phase 0

It's hard to think long-term when current issues like public safety need to be addressed.	→	Working with partner agencies to share community input on nearer-term needs.
Displacement related to transportation projects is a major concern.	→	Established an internal anti-displacement working group to guide how Link21 is addressing displacement risks.
There is a strong interest in using rail for all types of trips.	→	Adjusted language in the Program's Vision Statement to better capture the need to serve trips beyond the typical commute hours.
More steps are needed to ensure community voices guide the program.	→	Developing a framework for an Equity Accountability Council.

These are just some of learnings from co-creation that are shaping Link21 work

Equity Accountability Council

Guiding Principles and Values

- Shared Power and Meaningful Involvement
- Accountability to Community and Credible Messengers
- Diverse Representation (demographic and geographic)

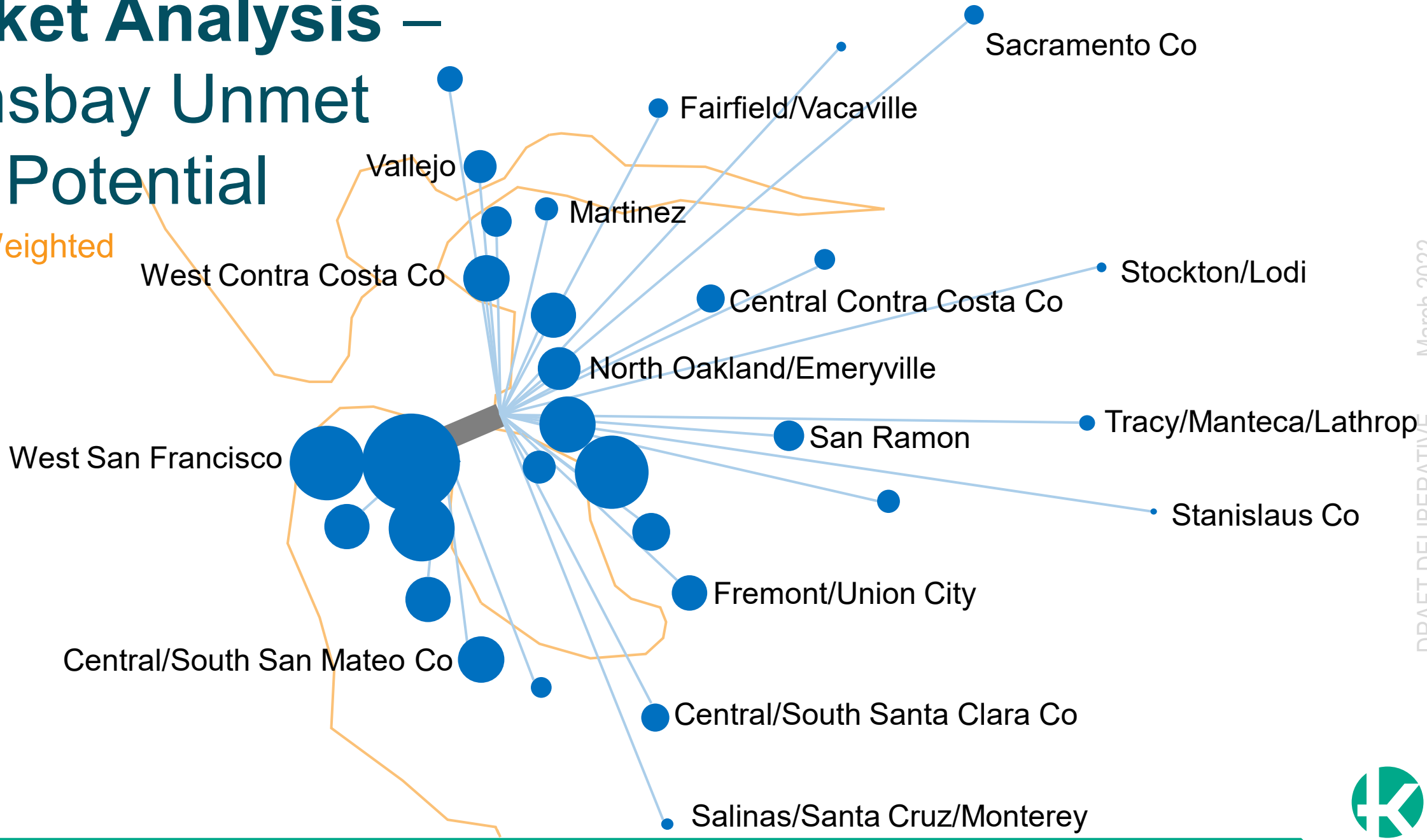
Key Decision Points (established by Charter)

- Structure, Role and Authority
- Member Selection Process and Onboarding
- Infrastructure of Supports

Priority Populations (PP): An Equity Case Study

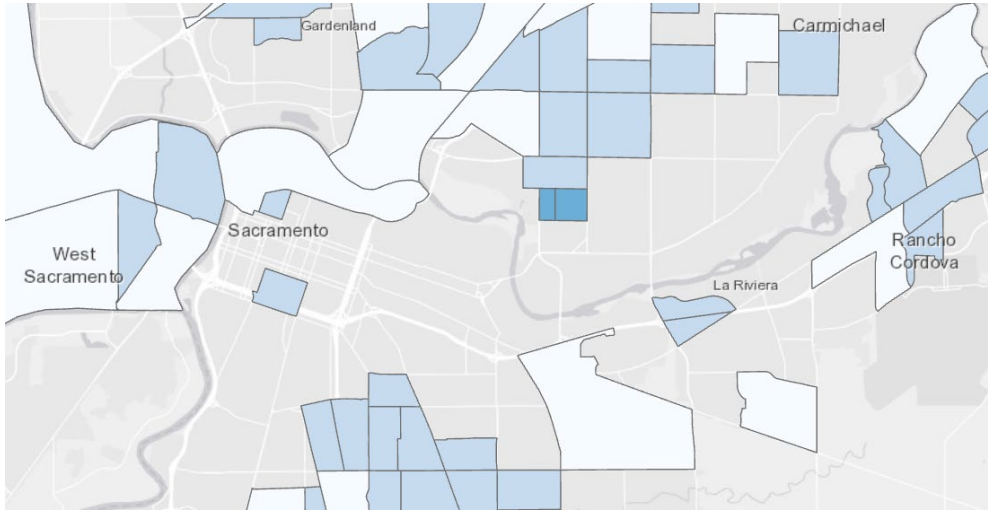
Market Analysis – Transbay Unmet Rail Potential

Equity Weighted

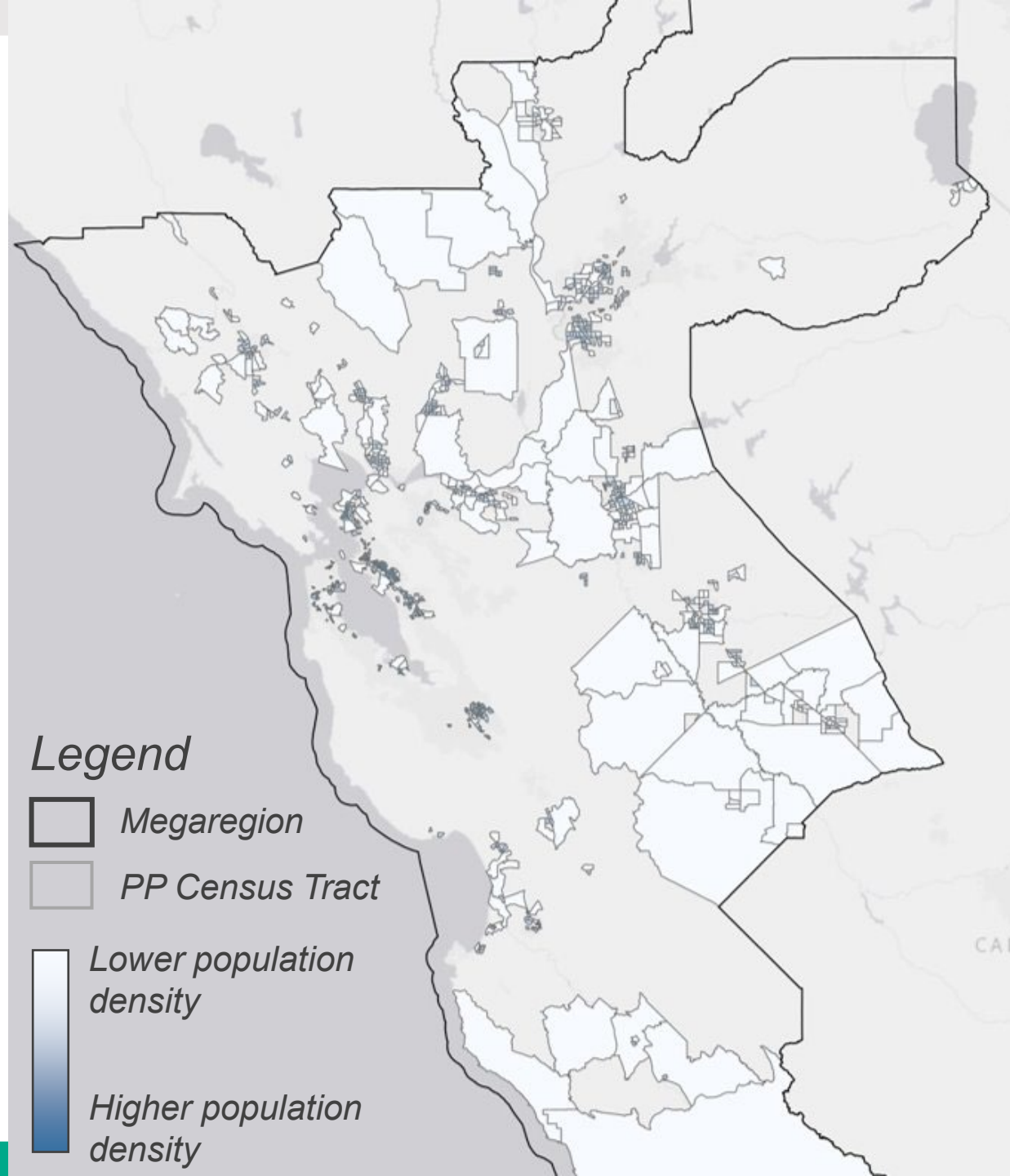


Priority Populations Update

- Census tracts experiencing inequitable outcomes
- Tool for more equitably allocating the distribution of benefits and harms
- Not meant to be a comprehensive list of where all inequities exist or marginalized communities

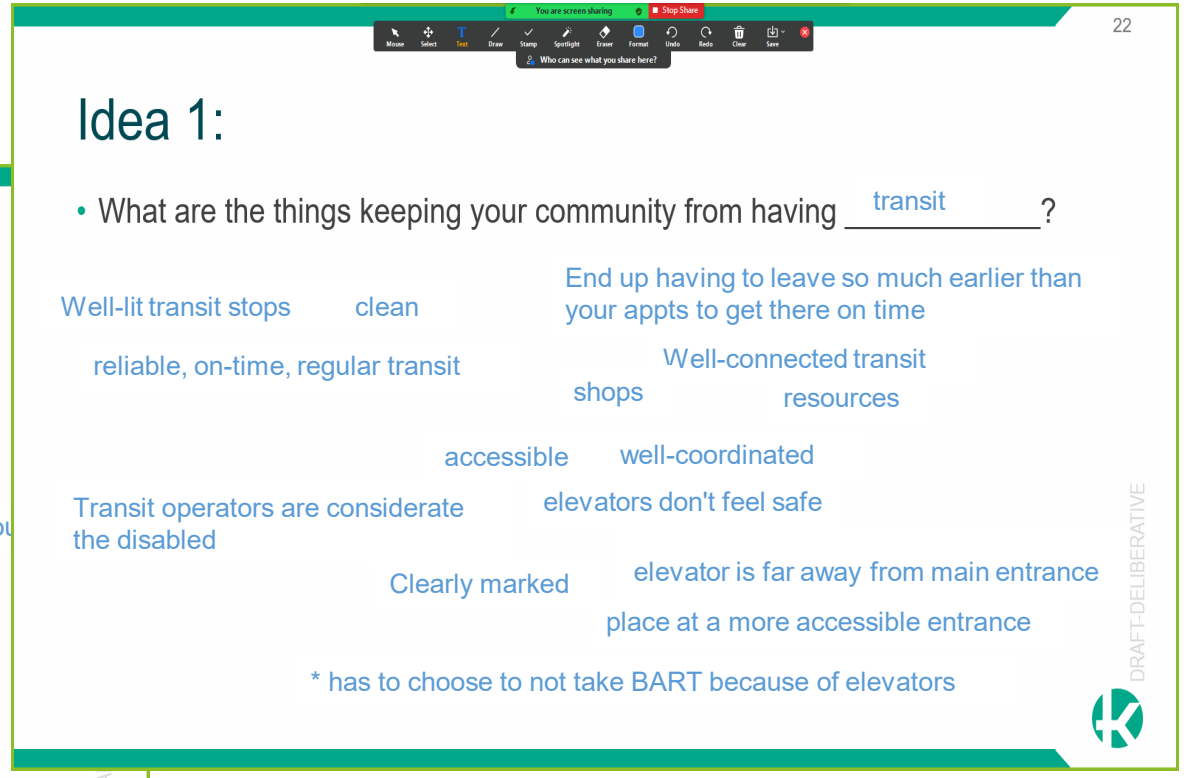


Example Local View (Sacramento)

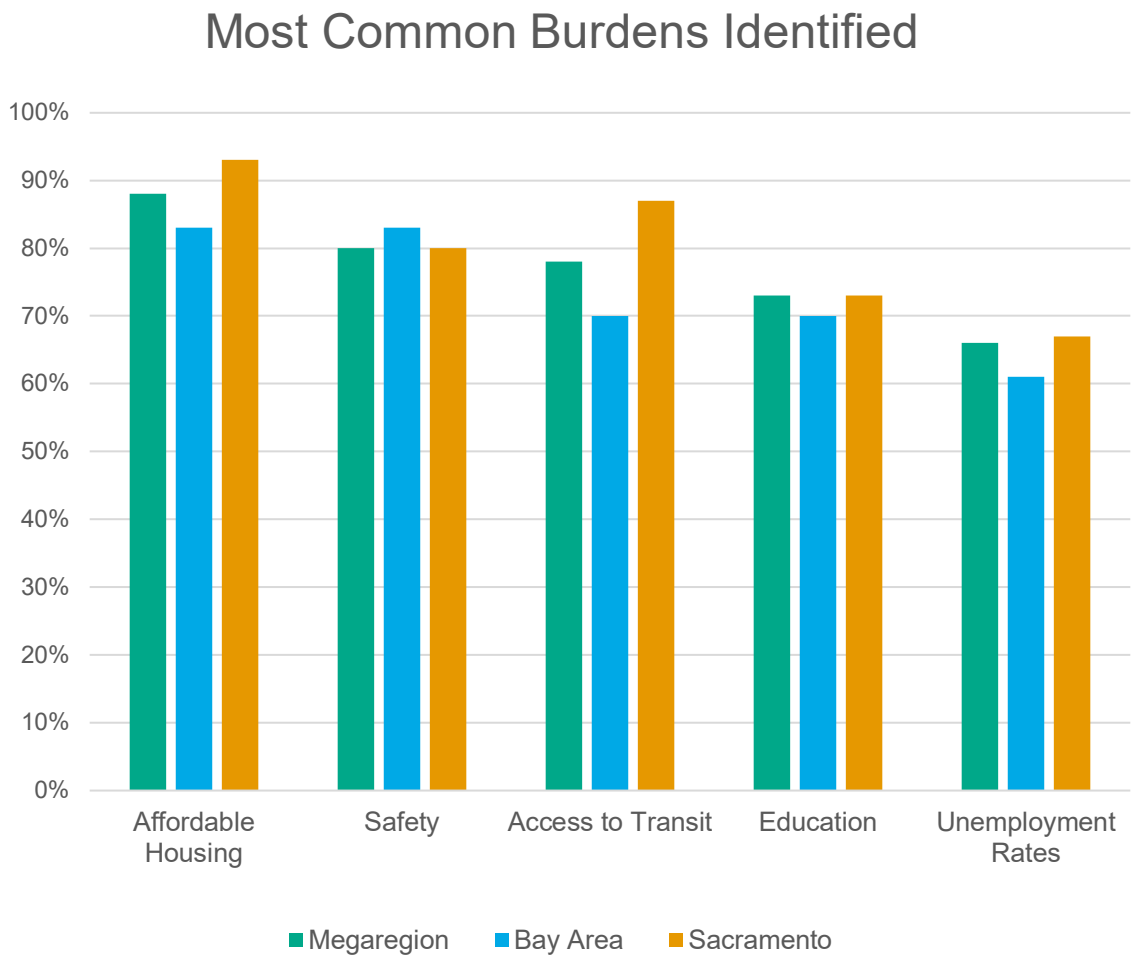


Co-Creation Round 2: Burdens Activity

- Activity based on Government Alliance on Race and Equity (GARE)'s root cause analysis process



Co-Creation Round 2: Results



> **In other communities and cities, they have buses that run all night** […] It is doable if the transportation companies are willing to do it and not think less of a community if they have limited people riding. They shut the bus down because only six people are riding it, but they are riding it because they need it. **Public transportation is a very needed and valuable commodity.** No one should ever be stranded in their community."

> **Most places are asking for tenants to make 3 times the rent.** The only way to meet this for me is to include my DoorDash income on top of my fulltime job's income."

How Community Input Informed the PP Update

Co-Creation

N=330

- Added additional metrics (e.g., working multiple jobs, access to internet)
- Used to weight high-level evaluation categories (Economic, Mobility, Community, Health + Safety)
- Validated draft metrics

Equity Poll

N=1,500

- Used to weight the individual metrics that make up the evaluation categories
- Questions used identified community burdens, defined factors important to quality of life, and assessed satisfaction with those factors

Additional Equity Integration

Using the Updated PP Definition and Further Integrating Co-Creation Results

- Concept Development
  - Identifying key markets and working with communities to design solutions to problems voiced
- Business Case Metrics and Equity Scoring Criteria
  - The distribution of benefits to PPs as a ratio of benefits to the general population
- Transportation Demand and Land Use Modeling
  - Ridership patterns based on demographic characteristics
  - Modeling community stability and displacement impacts
- Environmental Constraints & Opportunities Memo
- New Deliverables:
  - Equity Baseline Report
  - Equitable Fares White Paper

Equitable Outreach

One Size Does Not Fit All

UNIQUE STRATEGIES

- Regional Specific
- Tribal, Youth, & Students
- Marginalized Communities, incl. Priority Populations
  - Unhoused
  - LGBTQIA+
  - Faith-based

TOOLS & TACTICS

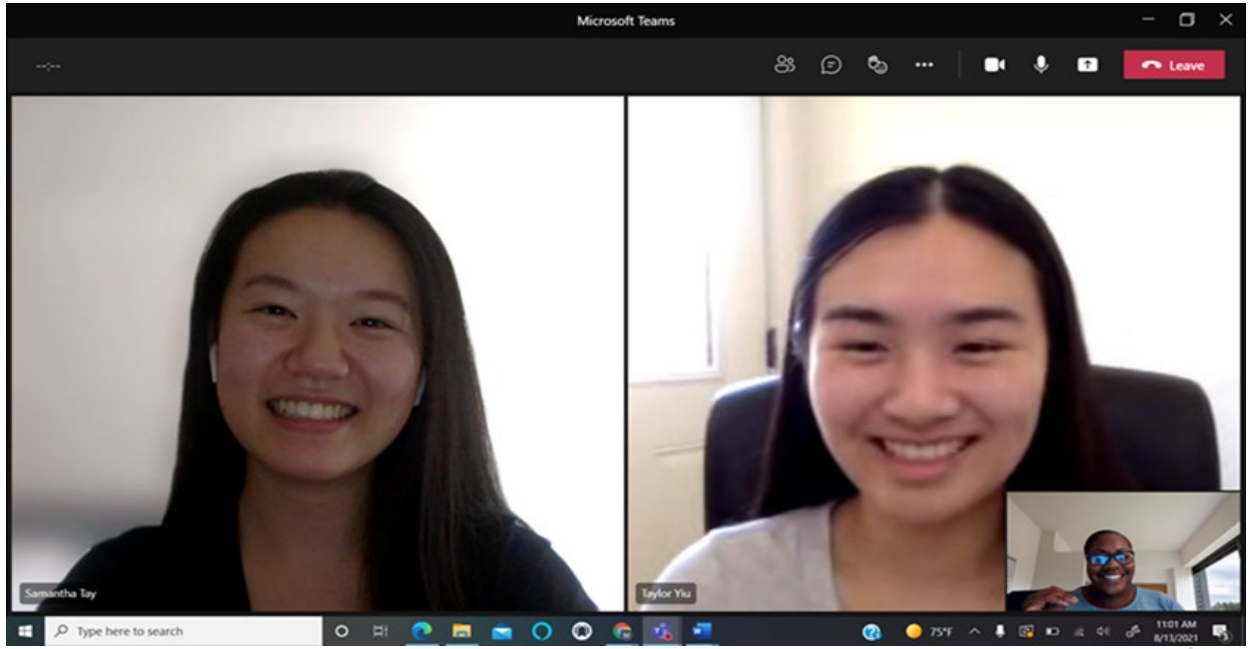
- Traditional and digital
- Designed to capture **broadest audience possible**
- Convenient and comfortable
- Multi-lingual and accessible

In Action: Youth & Student Engagement

- Internship Opportunities
- Continue working with youth-oriented CBOs within co-creation
- Robust youth strategy under development

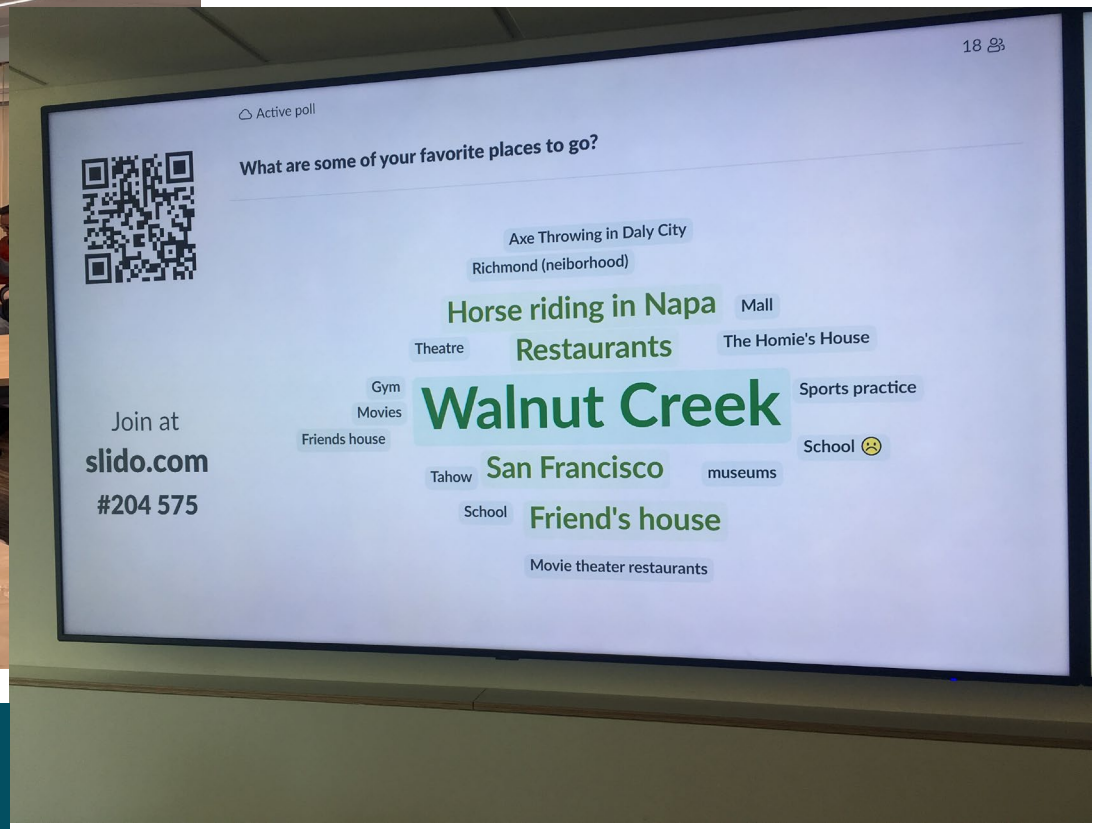
  Key Initiatives:

  - Kindergarten–12th grade activities
  - Junior college and university activities
  - Youth organization outreach
  - Link21 youth committee development



Link21 Summer 2021 Interns: from left Samantha Tay, Senior – UC Davis; Taylor Yiu – High School Senior

In Action: Youth and Student Engagement



Nicole Franklin presents to students from The College Preparatory School Students participated in several polls including one that asked them where they like to go.

In Action: Grassroots Events

Megaregional grassroots events tabling

Intercept outreach at stations and on trains

Targeted survey engagement

What We Heard from Fall Engagement

North Bay

Trains and buses need better connectivity in the region.

Link21 connection to SMART?

East Bay/Oakland

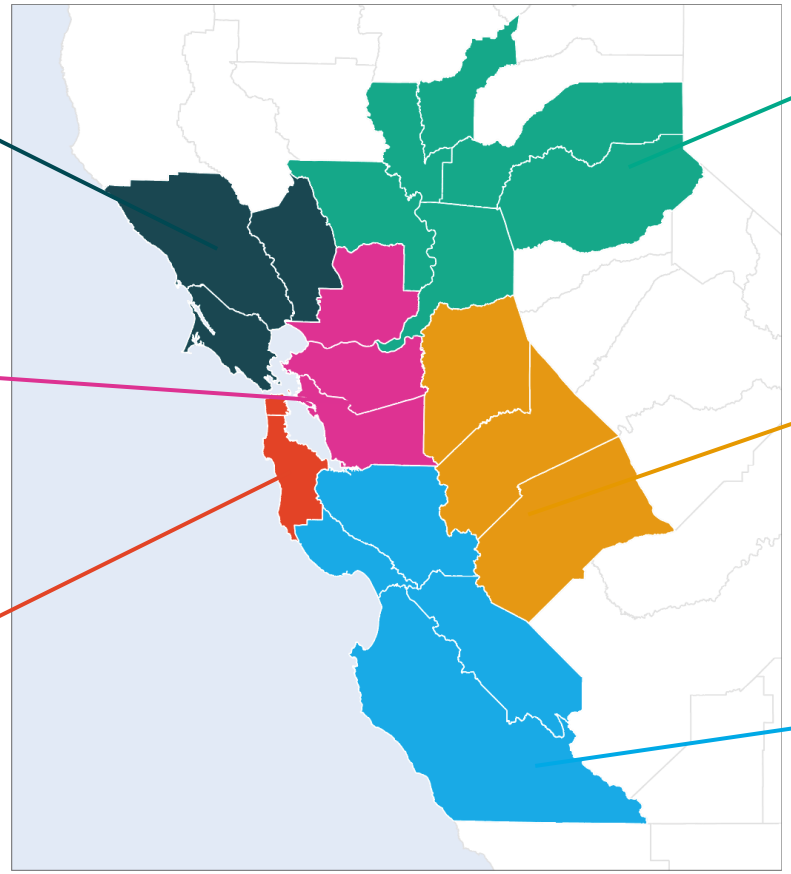
In favor of more options and connections.

General lack of awareness.

San Francisco/Peninsula

Is this connected to high-speed rail, and will trains be fast?

Does it connect to Transbay Transit Center?



Sacramento

Bay Area connections need to be reliable and more frequent.

Central Valley

How does it connect to the region and where will it take you?

South Bay

How does it work with Caltrain?

General lack of awareness.

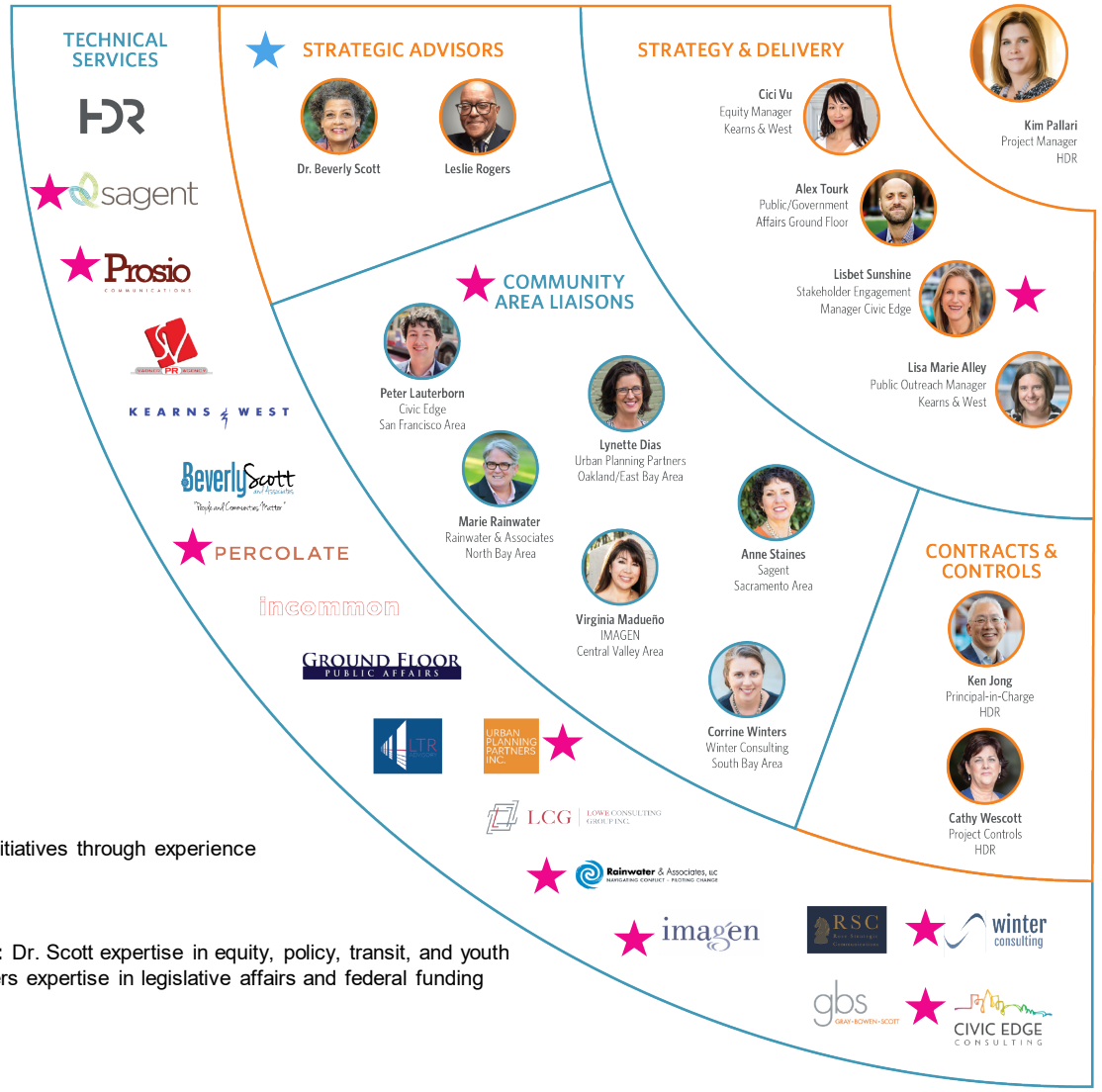
In the Megaregion

18 TEAM PARTNERS

17 SMALL BUSINESSES

8 CERTIFIED DBEs

6 COMMUNITY AREA LIAISONS led by DBE firm representatives



DBEs: Driving regional initiatives through experience and existing relationships

STRATEGIC ADVISORS: Dr. Scott expertise in equity, policy, transit, and youth engagement; Leslie Rogers expertise in legislative affairs and federal funding

COUNTIES REPRESENTED

Alameda
Contra Costa
Marin
Merced
Placer
Sacramento
San Francisco
Santa Clara
Stanislaus
Yolo

Two Engagement Paths

1. **Ongoing Education & Communications**
   - Regular monthly activities across all levels of stakeholders
2. **Targeted & Milestone Specific Communications**
   - Allow for solicitation & inclusion of input into technical work

Inclusive Engagement Strategy

	March	April	May	June
Topic Intro	1. Priority Population Def. 2. Market Analysis	Previous Topics + 3. Phase One 4. Service Planning	Previous Topics + 5. What makes a Concept	Previous Topics + 6. Vehicle Technology
Engagement Touchpoints	**Board Action - BART** ★ Speakers Bureau Co-Creation Report Back Grassroots Tabling	**Board Action - CCJPA** ★ Speakers Bureau Grassroots Tabling ★ Targeted Stakeholder Outreach	★ **Milestone Campaign 1** PDT/JWG/PIO Groups ★ Speakers Bureau Co-Creation Round 3 Grassroots Tabling ★ Targeted Stakeholder Outreach	★ Speakers Bureau Co-Creation Round 3 Grassroots Tabling ★ Targeted Stakeholder Outreach
Communication Updates	All Audiences: Social Media + Web Update	**Promote May Campaign** Stakeholder Newsletter All Audiences: E-Blast Social Media + Web Update	**Promote May Campaign** All Audiences: Social Media + Web Update	All Audiences: E-Blast Social Media + Web Update
Planning Activities	**Collaborate with PMT** Messaging/Materials Dev. Comms. Production Logistics Planning Outreach Implementation	**Collaborate/Promote with PMT** Messaging/Materials Dev. Comms. Production Logistics Planning Outreach Implementation	**E&O / PMT Participate** Messaging/Materials Dev. Comms. Production Logistics Planning Outreach Implementation	**Internal Report Back** Messaging/Materials Dev. Comms. Production Logistics Planning Outreach Implementation

★ Milestone Campaign – Regional in-person/virtual/hybrid meetings, on-line self-guided microsite, telephone townhall
★ Speakers Bureau – Public Affairs (Stakeholder tiers 1 & 2), Equity (Stakeholder tier 3), E&O (Stakeholders tiers 3 & 4)
★ Targeted Stakeholder Outreach – Tribal, Youth, Seniors, Unhoused, etc.

Board Collaboration

Board Coordination

Building an outside voice

- Establishing awareness and understanding
- Advocating and coalition building
- Regular touchpoints
- Future Rounds of Engagement

BART Board Chair Rebecca Saltzman greets attendees at the June 17, 2021 public meeting series

BART Board Member Bevan Dufty speaks at the Nov. 18, 2021 fall outreach series

Funding & Advocacy

- Moving the Program forward
- Continue to build key relationships and visibility with:
  - USDOT Secretary's Office
  - FRA and FTA Administrator's Offices
  - Build America Bureau
  - Key Congressional, State and local representatives and staff funding opportunities
  - Federal Bipartisan Infrastructure Law
    - RAISE Planning Grant - $10M Application 2022
    - FRA Federal and State Partnership Grant Program
    - FRA Corridor Identification and Development Program
  - Exploring future state TIRCP Projects
  - Coordination with MTC

APPENDIX B. STAGE GATE REVIEW MEETING NOTES

- Peer Industry Expert Review
- BART/CCJPA Staff Review
- Executive Review
- CCJPA Board Review
- BART Board Review

PEER INDUSTRY EXPERT REVIEW MEETING NOTES (12/14/2021)

Chair and Panel in Attendance

The Peer Industry Experts review panel includes five industry subject matter experts, all who are on the Link21 Program Management Consultant Team, who are familiar with, but not actively involved, in Link21 and can challenge constructively, add value, and have knowledge of the issues faced during the development phase of similar programs.

Review Panel

- Peter Gertler, HNTB **(Chair)**
- Jeff Morales, InfraStrategies **(Vice Chair)**
- Alasdair Dawson, Steer
- Caroline Flowers, InfraStrategies
- Darlene Gee, HNTB
- Simon Whitehorn, Network Rail Consulting
- Thomas Jenkins, HNTB

Recommendations and Actions Recorded

STATEMENT	ACTIONS AND RECOMMENDATIONS	TIMESCALE FOR COMPLETION
1	For future reviews, clarify the years of analysis for each of the Business Cases: cost-benefit analysis (the Economic Case) will be carried out for an extended evaluation period with benefits starting from 2040, the progress towards objectives (Strategic Case) will be evaluated for a single year, 2050.	Complete
	Once complete, an excerpt from the Strategic Case Framework should be shared with the panelists.	To be addressed once complete
	Future documentation and presentations for decision-makers should include clear maps and representation of projected future growth.	Complete
2	Age should be included in the demographic slide under Statement 2.	Complete
	For future reviews, and particularly the BART/CCJPA boards presentations, further emphasis should be given to demonstrating the effectiveness of Link21's engagement and outreach.	Complete

STATEMENT	ACTIONS AND RECOMMENDATIONS	TIMESCALE FOR COMPLETION
3	The wording “competitive with BART” should be reviewed for clarity to avoid confusion or impression of bias.	Complete
	The wording of the section entitled “ideas not advancing to Phase 1” should be reviewed to improve clarity.	Complete
	In advance of the BART/CCJPA board decision, the conclusions of supporting documentation should be reviewed to include an aligned statement with Stage Gate 1.	Complete
	The location and narrative framing of the recommendation regarding an auto-crossing should be reviewed to improve clarity.	Complete
4	The organization chart diagram should be reviewed to clarify a relationship between the Collaboration Council and the wider Link21 Program.	Complete

Record of Concurrence

The panel concurred with the four statements subject to actions and recommendations noted, allowing the Stage Gate to:

Progress to BART/CCJPA Staff Review, noting actions and recommendations above.

BART/CCJPA STAFF REVIEW MEETING NOTES (1/14/2022)

Chair and Panel in Attendance

The BART/CCJPA Staff Review panel included senior managers from the San Francisco Bay Area Rapid Transit (BART) and Capitol Corridor Joint Powers Authority (CCJPA), representing executive offices that have been involved with the advancement of Link21 today. This allowed Link21 to be reviewed from subject matter experts within the two organizations sponsoring the program. Panel members were asked to provide concurrence with the key statements and inform the chair's decision to proceed to the Executive Review with the opportunity to note actions, recommendations, and risks.

Review Panel

- Sadie Graham, BART **(Chair)**
- Camille Tsao, CCJPA **(Vice Chair)**
- Jim Allison, Planning, CCJPA
- Emily Alter, Office of Civil Rights, BART
- Joel Cox, Civil and Structural, CCJPA
- Kim Koempel, Real Estate and Property Development, BART
- Hannah Lindelof, Strategic Planning, BART
- Priya Mathur, Office of Performance and Budget, BART
- John McCormick, Operations Planning and Analysis, BART
- Lyn Williams, Strategic Engineering, BART
- Amanda Cruz, Government and Community Relations, BART

Recommendations and Actions Recorded

STATEMENT	ACTIONS AND RECOMMENDATIONS	TIMESCALE FOR COMPLETION
1	The Stage Gate presentation and notes will be reviewed to reference how the program will consider rail freight operations.	Complete
2	The Stage Gate presentation and notes will be reviewed to reference how the program will consider fare pricing.	Complete
3	A meeting will be booked with LW to directly discuss the auto crossing in further detail.	Complete

STATEMENT	ACTIONS AND RECOMMENDATIONS	TIMESCALE FOR COMPLETION
4	Future Stage Gate reviews will include illustration of the program's cash flow and indication of when sources would expire.	Complete
	Statement 4 will be modified to include an explicit reference to program funding. "The program has the people, processes, funding, and tools to support progress through Phase 1."	Complete

Record of Concurrence

The panel concurred with the four statements subject to actions and recommendations noted, allowing the Stage Gate to:

Progress to Executive Review, noting actions and recommendations above.

EXECUTIVE REVIEW MEETING NOTES (1/28/2022)

Chair and Panel in Attendance

The BART/CCJPA Executive review panel included executives from San Francisco Bay Area Rapid Transit (BART) and Capitol Corridor Joint Powers Authority (CCJPA), representing offices across the two organizations. The review was informed by previous reviews by industry experts and BART/CCJPA staff. Panel members were asked to provide concurrence with the key statements, with the opportunity to note actions, recommendations, and risks. This concurrence is to inform the Chair's decision to proceed to the BART and CCJPA Boards with the Stage Gate recommendations.

Review Panel

- Bob Powers, BART **(Chair)**
- Rob Padgette, CCJPA **(Vice Chair)**
- Pamala Herhold, Performance and Budget, BART
- Sylvia Lamb, Engineering, BART
- Alicia Trost, Communications, BART
- Rod Lee, External Affairs, BART
- Val Menotti, Planning and Development, BART
- Leo Sanchez, CCJPA
- Maceo Wiggins, Office of Civil Rights (OCR), BART

Recommendations and Actions Recorded

STATEMENT	ACTIONS AND RECOMMENDATIONS	TIMESCALE FOR COMPLETION
1	The Stage Gate presentation and notes will be reviewed to reference how the Program metrics will be considered against a 'no build' baseline in the next Phase.	Complete
2	Further information on the Co-creation work undertaken on the Program is available on request for the Executive Panel.	Available at Panelists' request
3	A Dual-gauge concept will be addressed in Phase 1.	Action for Phase 1
	The Stage Gate presentation and notes will be revised to better explain the reasoning for the Transbay rail bridge crossing concept not advancing to Phase 1.	Complete
	The Stage Gate presentation and notes will be reviewed to better explain how the Program will explore areas of mutual benefit with freight operators.	Complete

STATEMENT	ACTIONS AND RECOMMENDATIONS	TIMESCALE FOR COMPLETION
4	There should be a clear understanding of the resource implications, particularly on BART/CCJPA staff numbers and skill requirements, as the program grows and changes.	Recommendation for Phase 1
	Quality Management should be included as a specific item on the slide showing the list of processes being undertaken on the Program.	Complete
	Link21 should work with the BART Performance and Budgets and External Affairs Offices in future positioning for any Regional Funding measures that support future opportunities for Link21 Funding.	Recommendation for Phase 1

Record of Concurrence

The panel concurred with the four statements subject to actions and recommendations noted, allowing the Stage Gate to:

Progress to Board Decisions, subject to actions completed above.

CCJPA BOARD MEETING NOTES (02/16/2022)

Chair and Board Members in Attendance

The CCJPA Board meeting consisted of members from the Capital Corridor Joint Powers Authority (CCJPA) Board. The review was informed by a presentation from the CCJPA MD (Rob Padgette), Link21 Program Manager (Camille Tsao), and Link21 Program Director (Sadie Graham) as well as being supported by a Stage Gate 1 Report and additional papers, and previous reviews by industry experts and BART/CCJPA staff and executives.

- Don Saylor **(Chair)**
- Raul Peralez **(Vice Chair)**
- Lucas Frerichs
- Jeff Harris
- Jim Holmes
- Bruce Houdesheldt
- Janice Li
- John McPartland
- Steve Miller
- Harry Price
- Robert Raburn
- Rebecca Saltzman
- James P. Spering

Recommendations and Actions Recorded

STATEMENT	ACTIONS AND RECOMMENDATIONS	TIMESCALE FOR COMPLETION
1	Potential confusion over use of the term “community stability” in the program’s vision, goals, and objectives. Resolution was to modify language to more clearly reflect intent to balance desired development/growth with anti-displacement. Changes made to the program’s Vision Statement and language in the program’s goals and objectives in the Stage Gate 1 Final Report, Vision Statement and Goals and Objectives (p. 2.2 and 2.3), Statement 2 discussion (p. 2.7), as well as the program’s foundational documents and related presentation materials.	For the CCJPA Board meeting April 20th *Completed*
1	Greater indication required on the role of Link21 in Plan Bay Area 2050. Resolution was additional language in the Stage Gate 1 Report introduction (with new Section 1.1, p.1.1), and inclusion in related presentation materials.	For the CCJPA Board meeting April 20th *Completed*
4	Provide indication of how future capital construction funding will be approached. To address this, additional language was added in the Stage Gate 1 Report Statement 4 discussion (p. 2.12).	For the CCJPA Board meeting April 20th *Completed*

BART BOARD MEETING NOTES (02/24/2022 AND 03/10/2022)

Chair and Board Members in Attendance

The BART Board meeting consisted of members from the San Francisco Bay Area Rapid Transit (BART) Board. The review was informed by a presentation from the Link21 Program Director (Sadie Graham) and Link21 Program Manager (Camille Tsao), as well as being supported by a Stage Gate 1 Report and additional papers and previous reviews by industry experts and BART/CCJPA staff and executives.

- Rebecca Saltzman **(President)**
- Janice Li **(Vice President)**
- Elizabeth Ames
- Bevan Dufty
- Mark Foley
- John McPartland
- Robert Raburn
- Lateefah Simon

Recommendations and Actions Recorded

STATEMENT	ACTIONS AND RECOMMENDATIONS	TIMESCALE FOR COMPLETION
2	The program was asked to provide more substantive information on outcomes of early engagement, especially through co-creation. A subsequent follow-up focused presentation will be made to the BART Board on March 10th, and additional information included in the Stage Gate 1 Report Statement 4 discussion (p. 2.7) and the March 10th Board presentation included in Appendix B.	For the BART Board meeting March 10th *Completed*
1	It was confirmed that the market analysis will be posted on the Link21 website once it has gone through the imminent QC checks. It was also confirmed the ridership analysis that is being developed will be able to model various scenarios, including different rates of work from home. This analysis will be used as one of the tools for assessing the program concepts being developed.	Market Analysis Summary Report to be available on the Link21 website by April 14th *Completed*
3	Foundational design analysis should take account of future sea level rise.	To be included in future design assessment
4	Board encouraged the use of its members in future advocacy of the Link21 Program.	To be included in future engagement

**Page numbers refer to the Draft Final Stage Gate Report*