

BART STATION ACCESS POLICY UPDATE

POLICY CONTEXT AND BEST PRACTICES REVIEW

BART Planning, Development, and Construction

October 22, 2015

**BART Station Access Policy Update
Policy Context and Best Practices Review**

INTRODUCTION

This memo presents a review of the policy context for updating BART's Access Management and Improvements Policy (Access Policy). It includes the following information:

- A summary of the purpose.
- A summary of relevant trends at BART and in the broader region that have emerged in the 15 years since the current Access Policy was adopted.
- A summary of BART policies that have been developed since 2000 that relate to the Access Policy.
- A summary of best practices in station access policy and practice from peer agencies
- Conclusions and next steps for the Access Policy Update

PROJECT PURPOSE

BART's current Access Policy was adopted by the District's Board of Directors in 2000 (see Figure 1). Since the policy was adopted, there have been many important changes within the agency and in the region. BART seeks to develop a revised Access Policy that can serve the following purposes:

- Help guide Planning, Property Development, and Customer Access staff decision-making on a day-to-day basis
- Act as a statement of values, linking access to the larger strategic plan framework
- Help guide investment decisions, answering key questions such as: With high demand and scarce resources, how does BART prioritize access investments?
- Define performance measures, helping answer key questions such as: How does BART know if its access investments are successful? How does BART know if it needs to improve?

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Figure 1 BART Access Management and Improvements Policy (Adopted 2000)

<p>Goals</p> <ul style="list-style-type: none">▪ Enhance customer satisfaction.▪ Increase ridership by enhancing access to the BART system.▪ Create access programs in partnership with communities.▪ Manage access programs and parking assets in an efficient, productive, environmentally sensitive and equitable manner. <p>Strategies</p> <ul style="list-style-type: none">▪ Access Goals Set 5- and 10-year access goals in the context of an overall program to expand the capacity of the core BART system during the next decade.▪ Community Partnerships Seek partnerships with other transit agencies, local communities and private entities to plan and implement access programs.▪ System-Wide Parking Management Update parking management strategies. Offer riders new parking choices pursuant to their willingness to pay.▪ Access Improvements Undertake access improvements at existing stations. Improvements would fulfill strategic objectives such as intermodal access and transit-oriented development, and meet BART standards such as ADA compliance, maintainability and system consistency. Parking and other modes of access could be increased or reduced to achieve higher ridership in the context of overall station area development and access planning.▪ New Programs Develop new access programs to address system changes related to the SFO extension.▪ Resources Seek grants, rely on BART resources, pursue public/private partnerships and consider parking charges and fees for services to help offset costs of new services, programs and improvements in a cost effective manner.
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CHANGES IN THE POLICY CONTEXT SINCE 2000

Since 2000, new state and local initiatives have emerged that will influence where people live and how they get around. The following are directly relevant to BART access planning:

- **Statewide sustainability policy initiatives.** In the mid-2000s, the State of California acknowledged climate change as a major public policy issue, and mandated that regions develop sustainable visions for future growth that reduce 40% of the state’s greenhouse gas emissions associated with transportation. California Assembly Bill 32 (AB 32), passed in 2006, required the California Air Resources Board to devise a plan that would reduce

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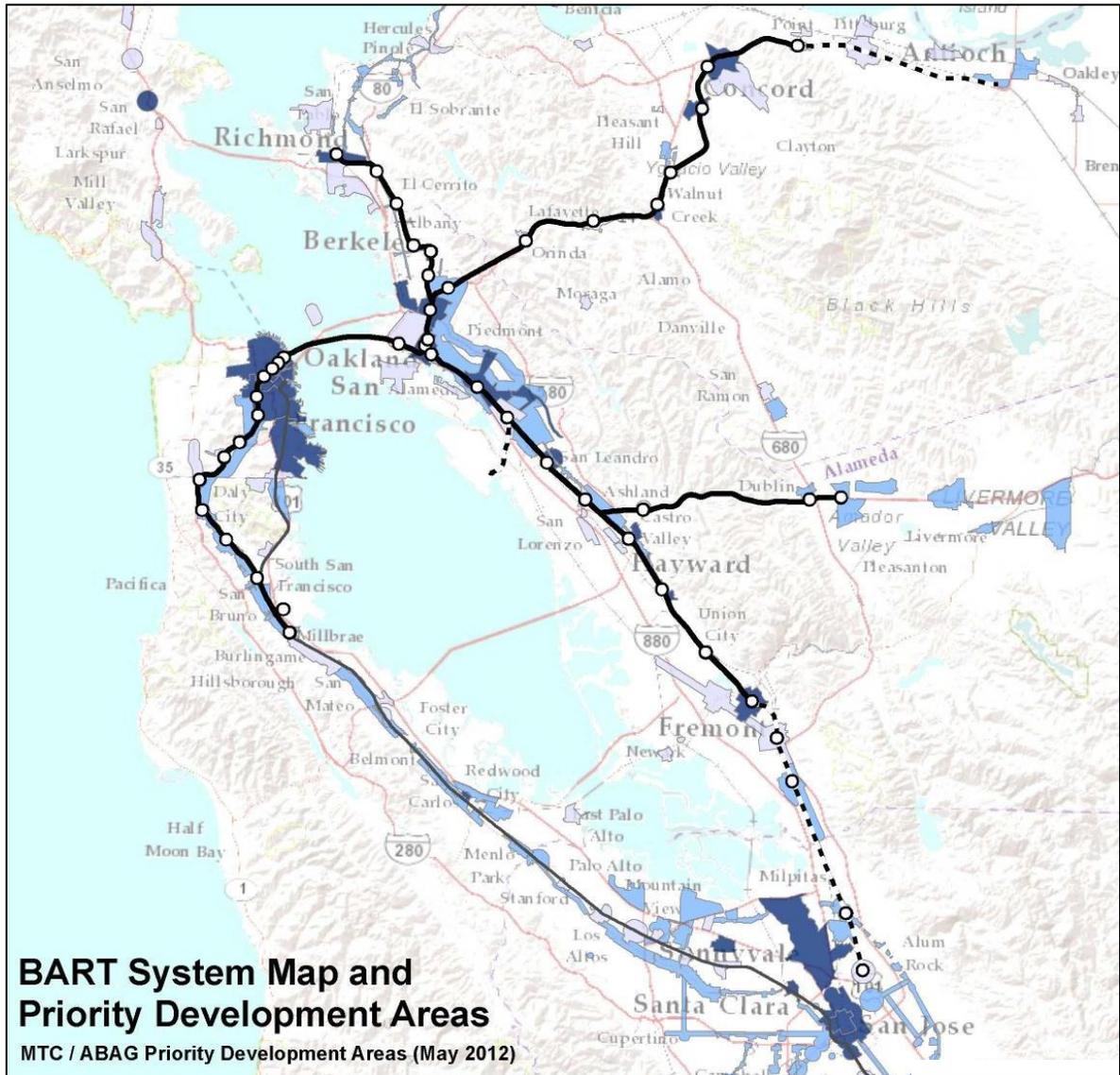
California’s greenhouse gas emissions to a certain level by 2020. Passed in 2008, Senate Bill 375 (SB 375) mandated reductions in greenhouse gas emissions and vehicle miles traveled through strengthening linkages between transportation investment decisions and land use patterns.

- **Regional sustainability policy initiatives.** In response to the State’s policy direction, the region developed its first integrated transportation and land use plan, Plan Bay Area. Plan Bay Area combines the Metropolitan Transportation Commission’s 2040 Regional Transportation Plan with the Association of Bay Area Governments’ (ABAG) Sustainable Communities Strategy. By 2040, Plan Bay Area anticipates 2 million additional Bay Area residents. It seeks to accommodate this growth by concentrating future population and employment within priority development areas (PDAs) around major transit hubs (see Figure 2). Plan Bay Area also projects 250,000 new jobs (a 40% increase) located in areas adjacent to BART stations. Every BART station is in a PDA. In this context, how riders get to BART stations, and the use of the land surrounding BART stations, is an essential part of regional land use planning.
- **Changing transportation patterns and location choices:** As the region’s population and economy have grown, demand for all transportation systems has increased. At the same time, preferences for mode choice have also shifted: transit systems have seen growing ridership, while the number of private vehicle trips has grown more slowly. Growing demand for transit has placed increasing stress on already crowded regional transit systems, including BART. At the same time, demand for residences in walkable areas near transit has increased substantially: recent research has shown that, all else equal, homes and offices near BART stations now sell and rent at a substantial premium compared to space further from transit.¹ In addition, in recent years, the use of ride-hailing services such as Uber and Lyft has increased at some stations, changing the way people use pick-up and drop-off zones.

¹ Findings of a Strategic Economics research paper completed in collaboration with BART Planning. Forthcoming.

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Figure 2 Plan Bay Area Priority Development Areas (PDAs)



Legend

- BART Stations
- BART System**
- Current BART System
- - - Extension Under Construction
- Caltrain Line
- Priority Development Areas**
- High Intensity
- Medium Intensity
- Moderate Intensity

Source: Plan Bay Area, Metropolitan Transportation Commission and USGS, ESRI, TANA, NPS

MAJOR TRENDS AT BART SINCE 2000

The BART system has grown and changed substantially since 2000. In 2003, the extension to San Francisco International Airport (SFO) and Millbrae opened. In 2011, the District opened its first infill station, at West Dublin/Pleasanton, and in 2014, service began between Coliseum and Oakland Airport. Several expansion projects are currently underway, including the Warm Springs extension, the Silicon Valley Berryessa extension, and eBART DMU service from Pittsburg/Bay Point to Hillcrest Road in Antioch.

In addition to these system expansion projects, the latest period of regional economic growth (starting approximately around 2010) has had profound effects on BART ridership and capacity. The increase is stressing already aging infrastructure and challenging the District's ability to provide continually reliable service. The following are BART-related trends observed since 2000:

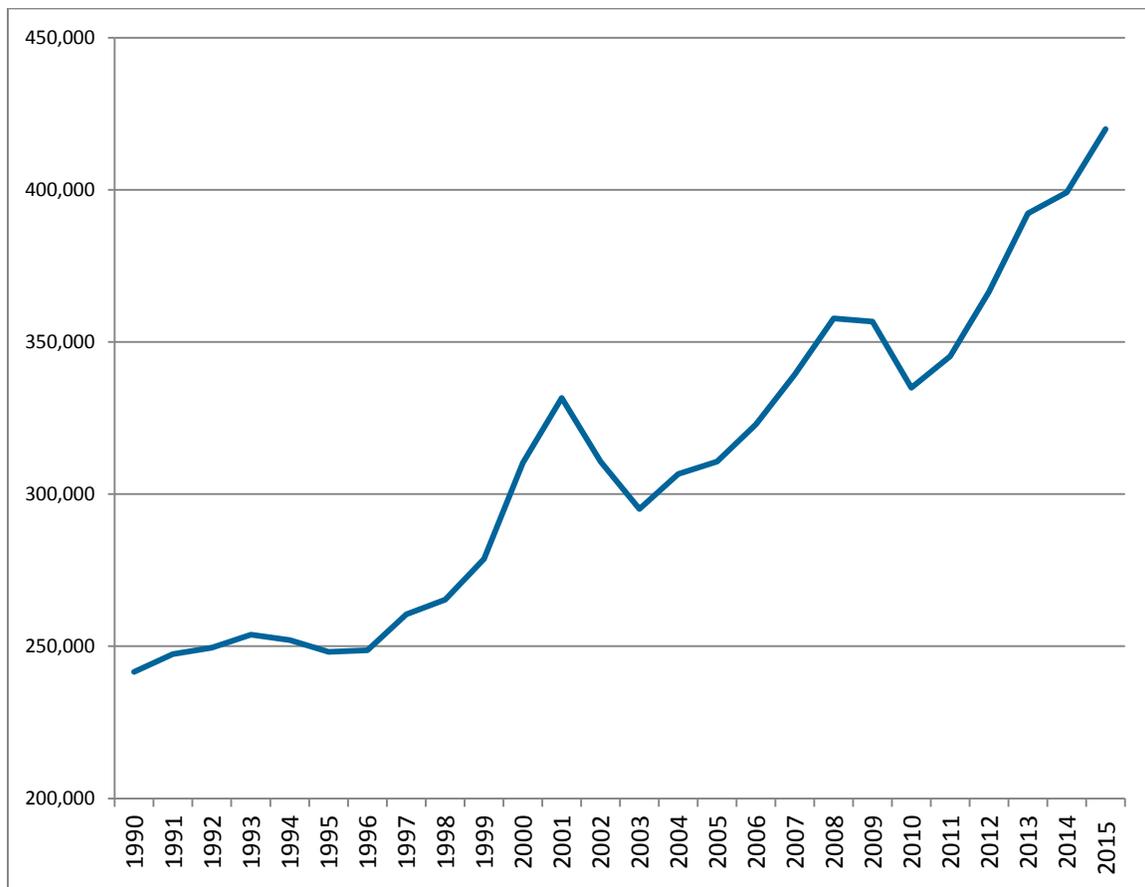
- **Ridership growth.** BART's daily ridership has grown by 26 percent since 2010, carrying an average of more than 427,000 passengers per day in July 2015. In the past five years, ridership has grown by more than 88,000 riders, while the system added only 1,100 new parking spaces. It hit its all-time highest daily ridership in 2012, when 568,000 people rode BART to reach the San Francisco Giants' victory parade. (See Figure 3.) BART had three of its ten highest ridership days ever during a tech conference in Downtown San Francisco during the week of September 15th, 2015.
- **Increasing pressure on existing access facilities.** Most of BART's parking facilities continue to reach capacity during the AM peak period. (See Figure 4). While demand-based parking pricing has been implemented to begin to manage demand, BART's parking fee was capped at \$3. Space constraints and cost-effectiveness considerations have restricted further expansion of parking facilities at most BART stations. Decisions about whether and when to provide dedicated parking lots in the future will be an important consideration for the revised access policy.
- **Capacity challenges.** Ridership increases have strained BART's ability to deliver reliable service at peak hours, particularly peak period, peak direction transbay service. Projections indicate that growing peak period, peak direction travel at the most constrained parts of the system will eventually require significant investment in new station and line capacity. Given the cost of new system capacity, it is essential that access investments and policies strive to mitigate, rather than add to, ongoing capacity challenges.
- **State-of-good-repair challenges.** Even as demand grows, the BART system is aging, and many of its key components will need to be replaced in the next decade. To remain safe and reliable, BART will need to spend nearly \$20 billion in operating and capital needs over the next 10 years.² Although staff has identified substantial funding to meet this need, both the operating and capital programs face major funding challenges in coming years. If BART is unable to reinvest sufficiently to keep its infrastructure in good working order, system failures could become more frequent, and reliability and service quality for current passengers will decrease. In this environment, funding for the expansion of facilities (including access facilities) is likely to be scarce, and a high premium will be placed on risk, consequences, and cost-effectiveness.

² BART FY15-FY24 Short Range Transit Plan and Capital Improvement Program BART SRTP CIP http://www.bart.gov/sites/default/files/docs/BART%20FY15%20SRTP_CIP%20web_0.pdf

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- **Transit oriented development projects.** Since 2000, BART has worked with local and regional partners to facilitate transit-oriented development on land around its stations. In the context of a growing region, these transit-adjacent parcels are increasingly valuable not only as sources of revenue for BART but as tools to help implement statewide and regional policy goals. Another factor is the increased concern about housing affordability in the Bay Area. At \$40,000-\$60,000 per space for structured parking, the cost of replacement parking is another obstacle to providing more workforce housing near BART. Development projects either completed or begun since 2000 are located at Castro Valley, Hayward, Richmond, Fruitvale, Pleasant Hill, Ashby, West Dublin/Pleasanton, San Leandro, South Hayward, and MacArthur stations. BART's Replacement Parking Methodology has been used in several of these cases to evaluate the tradeoffs between parking and other uses, including development. BART staff (including staff from Property Development, Planning, and Customer Access) have learned important lessons from these efforts that should be integrated into the updated Access Policy.

Figure 3 BART Average Weekday Exits



Source: BART Ridership Reports <http://www.bart.gov/about/reports/ridership>

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Figure 4 BART Parking Facility Fill Times, October 6, 2015

Station	Fill Time
West Oakland	6:30 AM
Pittsburg/Bay Point	7:00 AM
Lake Merritt	7:05 AM
Union City	7:25 AM
Rockridge	7:30 AM
Walnut Creek	7:35 AM
Fremont	7:40 AM
MacArthur	7:45 AM
Orinda	7:45 AM
Dublin/Pleasanton	7:45 AM
West Dublin/Pleasanton	7:45 AM
Lafayette	7:50 AM
San Leandro	7:50 AM
Castro Valley	8:10 AM
Daly City	8:15 AM
Pleasant Hill	8:15 AM
Concord	8:20 AM
Ashby	8:25 AM
El Cerrito Plaza	8:25 AM
El Cerrito del Norte	8:25 AM
Fruitvale (c)	8:35 AM
North Berkeley	8:40 AM
Colma	8:40 AM
Richmond	8:40 AM
North Concord	8:55 AM
Hayward	8:55 AM
San Bruno	9:00 AM
South Hayward	9:00 AM
Bay Fair	9:05 AM
Coliseum/Oak Airport	9:15 AM
South San Francisco	9:20 AM
Millbrae	11:15 AM

Source: BART Customer Access

BART ACCESS PLANNING SINCE 2000

This section reviews BART access planning since the Access Policy was approved by the BART Board in 2000. The following items are discussed for each policy or project:

- Purpose: a summary of what the plan/policy is and how it is used at BART.
- Applicability to Revised Access Policy: a summary of how the document could (or should) inform the current Access Policy Revision process.
- Discussion: additional detail on the plan/policy.

Policies and Practices

The existing Access Policy provides high-level guidance. To provide more specificity to support decision-making, BART staff has developed more detailed policies. This section provides a brief overview of access-related policies and projects completed since the Access Policy was approved in 2000.

Station Access Guidelines (2003)

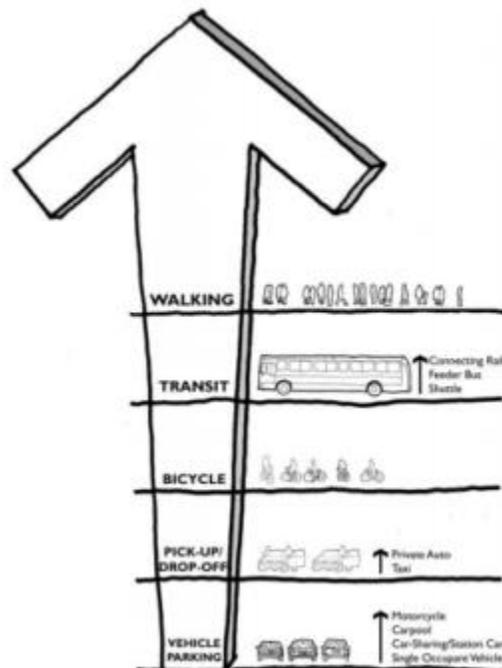
Purpose: This document provides physical design guidelines to optimize access to BART stations by all modes.

Applicability to Revised Access Policy: The guidelines are used by BART planners, engineers, and contractors to ensure that renovated and/or new station facility designs align with the District's goals.

BART Customer Access staff will soon begin a project to update the Access Guidelines. It will be important that the updated Access Policy and the updated Access Guidelines complement each other. While the Access Policy frames high-level goals and provides tools for decision-making and resource allocation, the Access Guidelines provide specific input to the physical design of facilities.

Discussion: The 2003 Station Access Guidelines were designed to complement the Access Policy by providing a clear framework to assist BART staff and contractors in the physical design of facilities at both new and existing stations. The guidelines were developed to function as a resource for BART's partners such as cities, counties, and other transit agencies, with many of the guidelines applicable to local streets and roads beyond BART's control.

The document also created BART's access hierarchy, which made explicit many of the assumptions in the Strategic Plan and the Access Policy. The hierarchy was intended to help resolve competing demands for funding



and for physical space, while emphasizing low-cost, high capacity modes.

Transit-Oriented Development Policy (2005)

Purpose: This policy governs how and when BART will promote development near stations.

Applicability to Revised Access Policy: The use of land around BART stations is a key component of both BART's access strategy and the regional land use planning vision. The balance between parking, development, and other uses shapes how many riders can access BART stations, how they get there, and at what cost to the District. It is therefore important that the TOD Policy and the revised Access Policy are consistent with each other and with BART's Strategic Plan.

Discussion: On July 14, 2005, the BART Board adopted a Transit-Oriented Development (TOD) Policy. Its goals include:

- Increase transit ridership and enhance quality of life at and around BART stations by encouraging and supporting high quality transit-oriented development within walking distance of BART stations
- Increase transit-oriented development projects on and off BART property through creative planning and development partnerships with local communities
- Enhance the stability of BART's financial base through the value capture strategies of transit-oriented development
- Reduce the access mode share of the automobile by enhancing multimodal access to and from BART stations in partnership with communities and access providers

In planning station areas, BART collaborates with neighboring residents, businesses and institutions, city and county agencies, local bus services, and members of the local communities. BART's overall goals are to improve the experience of riding BART, to maintain a safe and attractive station environment, and to support and sustain BART operations with revenue from development.

The current TOD Policy advocates “[reducing] the access mode share of the automobile by enhancing multimodal access” to and from stations at which TOD is planned. This statement of values is consistent with the Access Hierarchy established by the Station Access Guidelines.

Access Policy Methodology (2005)

Purpose: This technical document provides an open and practical planning tool to evaluate the amount of parking to retain at BART station parking lots redeveloped as TOD.

Applicability to Revised Access Policy: This methodology has been used by BART planners to weigh various priorities to determine the amount of parking to replace (typically in new structures) when building transit-oriented development projects on BART surface parking lots. The framework allows for deviating from the previously established 1:1 replacement parking practice at BART parking/development sites, while evaluating alternative access strategies and/or parking charges.

This type of analysis is an example of BART evaluating potential access investments against key performance metrics, which can help select the investment option that best meets the District's goals. This approach could be applied more broadly as part of the updated Access Policy.

Discussion:

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The BART replacement parking model incorporates four steps:

1. Collect specific data inputs for transit oriented development/station area, including existing ridership, parking occupancy data, access data by mode, and population and employment within half mile; and complete a synthesis of the policy context and access issues, which helps BART planners better understand whether local partners are willing to make decisions that will support the replacement parking scenario being considered by BART.
2. Create specific future development scenarios, including: project size, type of land uses, parking assets and policies related to shared parking, parking pricing, and other planned access improvements.
3. Evaluate each scenario according to established criteria for that station, such as ridership impacts, parking demand impacts, associated costs and revenues, and mode shifts.
4. Use the analysis to develop a transit oriented development and access/replacement parking scenario that could be included in ongoing planning processes.

The model was most recently used to help plan redevelopment at MacArthur Station. Here, the model was able to show that even with a 50% reduction in parking, ridership would increase substantially due to BART's ability to capture a portion of the trips from the new residential and retail activity, as well as improved transit access to the station. It also showed that this reduced parking scenario outperformed other scenarios from expenditure and revenue perspectives. While the final development plan changed substantially from the model inputs, the model was a crucial piece in securing approval of a final development plan that required approximately 75% replacement parking.

Access BART Study (2006)

Purpose: This study developed system-level land use and access scenarios to optimize ridership, identify station “clusters” providing opportunities for maximizing BART ridership in reverse-peak directions, and develop access mode share targets to shape investment strategies. It evaluated station access assets along a corridor, instead of treating each station individually.

Applicability to Revised Access Policy: The study provides context for potential station typology-based access priorities and analysis supporting strategies to increase off-peak/reverse-peak travel.

Discussion: As part of the study, BART created a station typology. The typology groups BART stations into five types (Urban, Urban with Parking, Balanced Intermodal, Intermodal – Auto Reliant, and Auto Dependent) based on an access typology matrix using metrics including ridership, surrounding street networks, parking capacity, transit service type and frequency, and walk access share. The study identified specific access improvements for each station type. The study also identified opportunity travel markets for reverse AM-peak direction travel.

Station Profile Survey (2008, update now underway)

Purpose: This study provides mode share and travel pattern data for a host of planning uses at BART.

Applicability to Revised Access Policy: The Station Profile Survey data is used to inform planning studies with data about ridership and system usage. A new version of the survey is currently underway, and data will be available in January, 2016. Survey findings will be used to

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revise and/or inform any access goals included in and/or related to the revised Access Policy and associated documentation.

Discussion: The Station Profile Survey began in 1973 and has been completed periodically since then. The most recent survey was conducted in 2008. Major findings related to access include:

- Compared to 1998, more customers are walking or bicycling from home to BART. (The percentage coming to BART by car stayed the same, and the percentage using other transit to connect to BART went down.)
- More than 2 out of 3 riders coming from home (68%) to BART had a vehicle available that they could have used instead of taking BART (up from 60% in 1998).
- Access modes vary considerably by station. The percentage of passengers driving alone from home is highest at North Concord/Martinez (72%) and lowest at Powell (1%). Walking from home is highest at 16th St. Mission (81%) and lowest at Orinda (3%).

While the Station Profile Study was done infrequently in the past due to funding constraints, based on recent FTA Title VI guidance and MTC policies, it is possible that MTC and BART are moving towards a major update every five years. If so, this would provide a consistent data set that would allow more rigorous analysis of station access mode share trends in a timely manner.

Bike Plan (2012) and Bike Parking Capital Program (2014)

Purpose: The 2012 Bike Plan outlines the specific strategies needed to encourage more passengers to bicycle to BART, and creates a Bicycle Investment Tool that BART staff can use to select improvements that result in the largest increases in bicycle access trips. The 2014 Capital Program provides specific investments to improve secure bicycle parking at key stations.

Applicability to Revised Access Policy: These plans create a framework for greater investment in bike infrastructure. The updated Access Policy should seek to remain consistent with this framework.

Discussion: The BART Bicycle Plan presents a set of investments that are intended to double the share of BART passengers systemwide who access stations by bicycle by 2022 (from 4% to 8%). The plan presents a number of strategies to accomplish this, organized into the following five objectives:

- **Cyclist Circulation:** Improve station circulation for passengers with bicycles
- **Plentiful Parking:** Create world-class bicycle parking facilities
- **Beyond BART boundaries:** Help assure great bicycle access beyond BART's boundaries
- **Bikes on BART:** Optimize bicycle accommodations aboard trains
- **Persuasive Programs:** Complement bicycle-supportive policies and facilities with support programs

The BART Bike Parking Capital Program outlines and prioritizes a specific program of BART parking investments meant to help achieve the objectives of the Bicycle Plan.

Because of train crowding, BART seeks to provide bicyclists with safe and secure facilities to store bikes at stations rather than bringing them on board. However, in 2013 the BART Board voted to allow customers with bicycles to board trains and stations during peak periods. The impacts of allowing bikes on BART at all times will affect future access planning efforts.

Taxicab Operating Rules (2011)

Purpose: This set of rules governs how taxicabs may operate must operate at BART stations. They rules were adopted in 2011 and are enforced by BART police. All taxicab companies are required to distribute the rules to drivers.

Applicability to Revised Access Policy: Taxicabs are one of several uses that compete for valuable space around BART stations.

Discussion: One of the purposes of the revised Access Policy will be to give guidance to staff on how to prioritize between competing uses. The BART Multimodal Access Guidelines and Curb Management Policies (now under development), will seek to implement updated Access Policy by providing more specific guidance on the allocation of curb space between various uses, including taxicabs.

Demand-Based Parking Program (2013)

Purpose: This program aims to use limited demand-responsive pricing to recover the operating costs of providing parking at BART, generate funding dedicated exclusively for station and access improvements and encourage non-parking modes of access at BART stations.

Applicability to Revised Access Policy: The program specifies that, within certain limits, BART will periodically adjust parking rates to achieve target occupancy rates. It sets a precedent for the use of prices to manage demand in the context of scarce parking resources – a principle that BART may wish to carry forward in the broader Access Policy.

Discussion: Under this program, parking at all BART facilities costs at least \$1 per day on weekdays from 4 a.m. to 3 p.m. Occupancy in parking facilities is evaluated every six months. If the lot is found to be more than 95% occupied during the AM peak period, BART may increase the parking fee by 50 cents. The maximum cost is capped at \$3 per day at all stations except at West Oakland, which is the last station in Oakland for passengers inbound to San Francisco. BART customers pay for parking using their Clipper Card. The data collected by Parking Validation Machines and Add Fare Machines is also used by BART staff to determine parking lots fill times.

During a winter 2014 evaluation, daily-fee parking facilities were found to be more than 95% full at all but two stations. Beginning in January 2015, BART began assessing a \$3 fee to park at 23 stations, plus instituted a \$7.50 daily rate at the West Oakland Station. Lower fees were maintained at eight stations. As a result of these changes, BART forecasts that it will collect \$30 million in parking fees in 2015, doubling the revenue collected prior to adoption of the new policy. The additional revenue generated will be used for station access, rehabilitation, and modernization needs.

Despite the parking fee increases, BART has not yet noticed a measureable impact on the time at which parking lots fill. These pricing changes have been implemented during a period of quickly growing ridership, so demand for parking at most BART station continues to exceed supply even at current higher prices.

With no cap on price in place at West Oakland Station, BART will have the opportunity to test the impact of truly market prices. BART parking is currently priced at \$7.50 per day at West Oakland, which is lower than the \$9 per day charged at adjacent commercial lots. However, with incremental price increases, the price of parking in the BART lot may reach or even exceed the price of nearby commercial lots before demand and supply balance.

Central C-Line Access Study (2014)

Purpose: As part of the adoption of the demand-based parking price policy, the BART Board dedicated a portion of the revenues generated from higher parking fees to other access investments. This study investigated the potential for additional access investment at four BART stations in Contra Costa County.

Applicability to Revised Access Policy: The study was intended as a pilot that would inform development of access investments for the system as a whole. It raised a number of high-level policy questions that should be addressed by the updated Access Policy.

Discussion:

This project studied access to five stations on the central C-Line: Orinda, Lafayette, Walnut Creek, Pleasant Hill/Contra Costa Centre, and Concord. The project explored strategies to improve access opportunities across modes, focusing on non-auto access. The categories of strategies considered are listed in Figure 5.

In the course of the study, specific policy and strategy questions arose regarding BART’s role in planning and implementing access projects that may not be on BART property. These questions were documented during the study, but were not fully resolved. They include:

- Should BART consider access investments both on- and off- station properties?
- Should BART consider allocating funding for ongoing operating expenses related to access, including feeder transit operations and maintenance of pedestrian and bicycle facilities, or focus on one-time capital projects?

The updated Access Policy could help to resolve these questions.

Policies & Projects in Development

The following policies and/or projects are currently underway.

Strategic Plan Update

Purpose: Once adopted, the updated Strategic Plan will provide a set of goals and strategies that will guide all of BART’s operations and planning activities.

Applicability to Revised Access Policy: The Strategic Plan will serve as a set of guideposts for BART staff for operations as well as major projects and initiatives (including the Access Policy Update). The revised Access Policy should be tightly integrated with the Strategic Plan.

Discussion: Like the Access Policy, the Strategic Plan is intended to be interdisciplinary and interdepartmental.

Figure 5 Strategies Considered

Transit Access Investments
Existing service changes
New services
Capital investments
Fare policy changes
Bike and Pedestrian Access
Infrastructure investments adjacent to and on the station property
Infrastructure (in the wider station area)
Wayfinding improvements
Bicycle parking
Vehicle Access and Ridesharing
Parking management
Carpooling promotion
Other transportation demand management programs

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In addition to this broad policy language, BART will be developing a set of Key Performance Indicators (KPIs) that flow from the Strategic Plan objectives. It will be important that any performance measures developed for the Access Policy should be consistent with the Strategic Plan KPIs.

Multimodal Access Design Guidelines Update

Purpose: This project will update the 2003 Station Access Guidelines.

Applicability to Revised Access Policy: The updated Access Guidelines and the updated Access Policy should be closely coordinated to ensure that they are consistent. Generally speaking, the Guidelines will focus on physical design considerations, while the Policy will deal with higher-level decision-making.

Discussion: BART Customer Access staff will begin working on this policy in the second half of 2015.

Shuttle and Curb Management Guidelines

Purpose: These guidelines will aim to manage curb space at stations, with consideration for shuttles, taxis, kiss-and-ride, and on-demand ride-sharing services. The guidelines will build on and integrate the existing Taxicab Operating Rules, which were adopted in 2011.

Applicability to Revised Access Policy: The Shuttle and Curb Management Guidelines and the updated Access Policy efforts should be closely coordinated to ensure that they support and reinforce each other.

Discussion: BART Customer Access staff will begin working on these guidelines in the second half of 2015.

BEST PRACTICES CASE STUDIES

This section documents a set of best practices in access policy at peer transit agencies. It focuses not on specific access investments, but on policy-level innovations that may inform BART's update to its own access policy.

It is important to note that BART is seen by its North American peers as a leader in certain aspects of access policy. Commonly cited policy innovations include BART's Access Guidelines and the access hierarchy it contains, its replacement parking methodology, and demand-responsive parking pricing.³ Where BART's approach to access has been less innovative is in engaging the question off-site station access improvements. Investments in bicycle, pedestrian, and transit access require not only intermodal centers and bicycle parking; they also require complete, connected networks, comfortable walking and cycling conditions in the surrounding community, and transit-supportive land uses. While investments in these types of improvements have the potential to be cost-effective, they require collaboration with partners, and are therefore more complex to implement than a capital project on BART property.

The case studies in this section consider innovative planning practices and policies that peer agencies have used to address access, with an emphasis on practices that improve connectivity off of station property. They offer promising approaches that BART may wish to consider as it shapes both its access policy and its access work program for the next 18 months.

Peer Agency Profiles

Vancouver TransLink: Transit-Oriented Communities, Community-Oriented Transit

TransLink (South Coast British Columbia Transportation Authority) manages the transportation network in Metro Vancouver, BC, including both the region's major road network and its transit system. TransLink's transit services include bus, demand-responsive transit, and a light rail network known as SkyTrain that provides a level of service comparable to BART, carrying over 390,000 passengers per day.

The development of SkyTrain has been guided by Metro Vancouver's "Regional Growth Strategy," which calls for regional town centers linked by transit. Zoning ordinances in Vancouver generally restrict parking within town centers. Because of this, the system has far less dedicated parking than BART. TransLink instead places greater emphasis on integrating transit stations with the surrounding communities, allowing for more efficient walking, biking, and transit access. TransLink collaborates closely with Metro Vancouver, the regional land use planning agency tasked with developing the Regional Growth Strategy, in the design of the overall transit network. It likewise collaborates closely with localities on the development of station area plans.

TransLink's Regional Transportation Strategy Framework includes the following policies that shape and reflect its approach to station access planning: support regional land use objectives (Policy 3.1); and manage parking for fairness, efficiency and revenue (Policy 2.5).

³TCRP Report 153 Guidelines for Providing Access to Public Transportation Stations
http://onlinepubs.trb.org/onlinepubs/tcrp/tcrp_rpt_153.pdf

Supporting Regional Land Use Objectives

TransLink's policy is to encourage a "compact urban area and to get jobs, housing, and major trip generators in the right locations to facilitate shorter trips and more trips by walking, cycling, and transit." The policy recognizes that "this is principally a matter for local government authorities, who are responsible for local land use planning, consistent with the [Regional Growth Strategy]." Even so, TransLink focuses on coordinating with localities to accomplish this objective.

TransLink's objectives include *working with partners* to:

- Continue to support and implement transportation-related actions contained in the Regional Growth Strategy, including to connect Regional City Centers with the Frequent Transit Network.
- Make transportation investment decisions concurrent with partner mandated (and supportive) land use decisions.
- Establish mechanisms such as partnership agreements and joint planning to provide greater certainty around expected and agreed-upon land use, policies, and investments.
- Develop corridor and area plans, and provide supportive funding, to improve access to and within frequent transit areas.
- Ensure that siting of major port, airport, gateway and industrial facilities allow for safe and efficient regional goods movement.
- Encourage affordable and rental housing along the Frequent Transit Network.
- Continue to develop and communicate resources to help support local governments and the development community in the implementation of transit-oriented communities."⁴

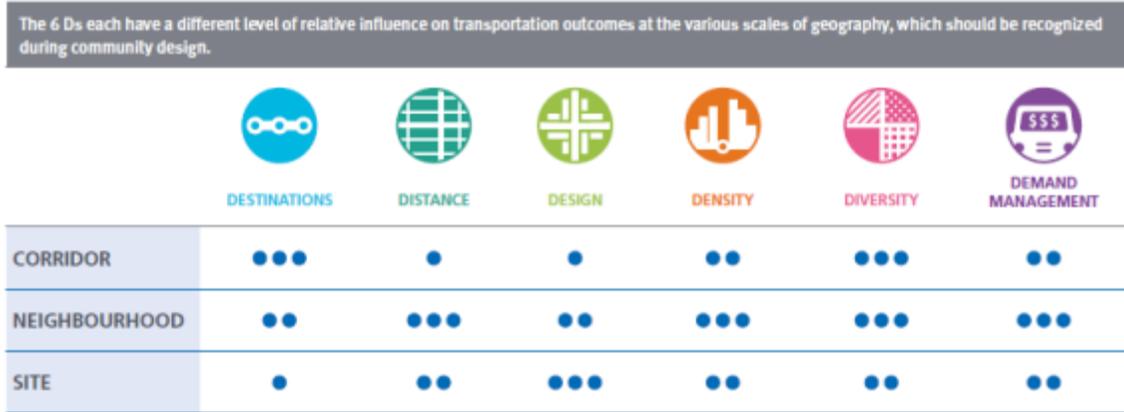
Because coordinating with local communities is such an important element of the agency's access strategy, in 2012 TransLink created a set of Transit Oriented Communities Design Guidelines.⁵ This document provides guidance to local communities on the development forms and transportation facilities approaches that work to best to maximize access to transit. Guidance is organized in terms of the "6 D's": Design, Diversity, Distance, Destinations, Density, and Demand Management. Communities are encouraged to see adoption of the approaches in the guidelines as a way to shape communities that will allow for efficient, high-quality transit service. The document includes checklists that localities and developers can use to ensure that development plans and new streets and street networks are transit-supportive.

⁴ TransLink Regional Transportation Strategy Strategic Framework http://www.translink.ca/-/media/Documents/plans_and_projects/regional_transportation_strategy/rts_strategic_framework_07_31_2013.pdf

⁵ TransLink Transit Oriented Communities Design Guidelines http://www.translink.ca/-/media/Documents/plans_and_projects/transit_oriented_communities/Transit_Oriented_Communities_Design_Guidelines.pdf

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Figure 6. Transit Oriented Communities Design Guidelines Summary



TransLink pairs the Transit Oriented Communities guidelines with its Transit Passenger Facilities Guidelines.⁶ This document is for internal use: it guides TransLink’s planners and engineers in the creation of community-oriented transit facilities that are not only operationally efficient, but also to fit comfortably into the communities they serve. For example, bus transfer facilities in urban areas should be as compact as possible, fitting into the urban fabric and not creating a gap or a barrier to pedestrian movement.

TransLink also collaborates closely with localities in the development of station area plans.

Managing Parking for Fairness, Efficiency, and Revenue

While this objective applies to the region’s entire parking system, TransLink has taken steps to implement parking management at transit stations through the adoption of its parking pricing program in 2012. This policy is similar in many respects to BART’s parking pricing strategy.

The Park-and-ride Policy⁷ states that “Park-and-ride is an important asset and TransLink will monitor and manage park-and-ride facilities” to achieve the following:

- Greater equity in the regional transportation system.
- Cost recovery to contribute to the cost of operations and construction of park-and-ride facilities.
- Revenue generation.
- Improved efficiency of the regional transportation system.
- Successful opportunities to realize the potential for land development to become more transit supportive.
- Support for major projects to maximize the return on investment.

The policy states that “Park-and-ride will be provided where it is cost effective and can provide efficient access to the transit network. The level of motor vehicle parking supply and location of

⁶ http://www.translink.ca/-/media/Documents/plans_and_projects/transit_oriented_communities/TPFDG%20Interactive%20Version.pdf

⁷ http://www.translink.ca/-/media/Documents/plans_and_projects/10_year_plan/2013_plans/Park%20and%20Ride%20Policy.pdf

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park-and-ride should positively support TransLink’s goals and objectives and represent the highest and best use of land.” It is important to note that parking is not TransLink’s primary access facility: The agency manages just nine parking facilities providing a total of 5,500 spaces for a system serving 390,000 daily trips.

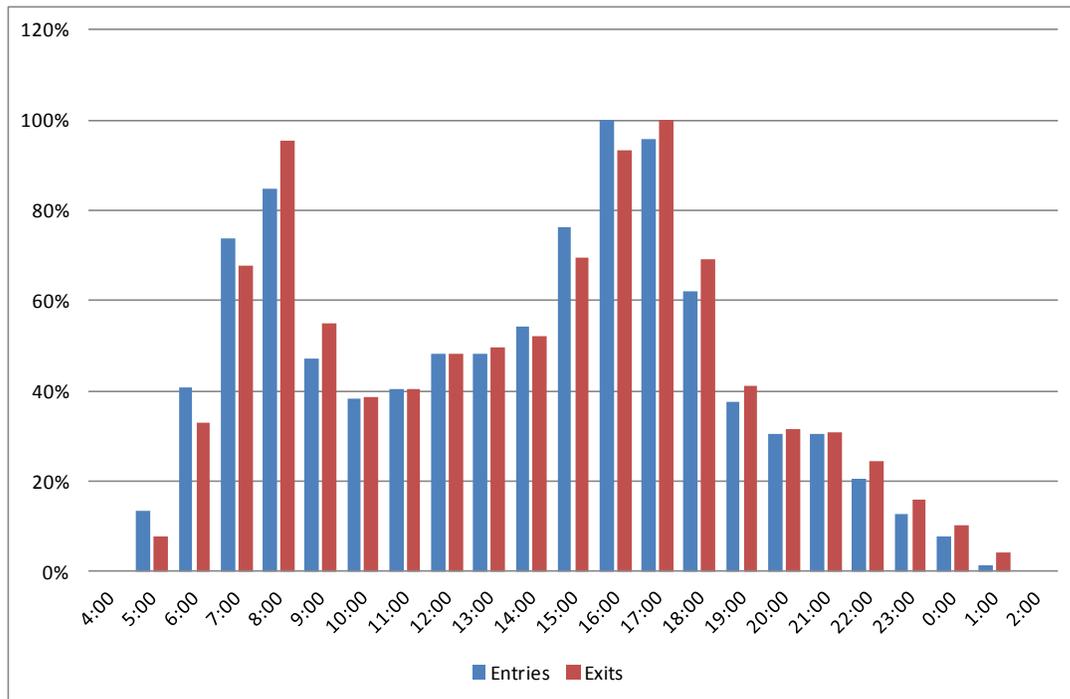
Like BART’s policy, the TransLink Park-and-ride policy also provides for variable pricing. The policy states that variable pricing will be used to “ensure revenue generation... to encourage efficient travel; provide incentives for sustainable travel behavior; and be simple and convenient for customers to understand.”

Finally, the policy states that the design of park-and-ride facilities will be guided by the full set of facilities design guidelines: the Bus Infrastructure Design Guidelines, the Transit Passenger Facility Design Guidelines, and relevant municipal design guidelines.

Pattern of Ridership

Metro Vancouver’s land use strategy emphasizes walkable development centers built around frequent transit. To capitalize on this approach, TransLink actively partners with localities to implement access strategy that emphasizes walk, bike, and transit. Partly as a result of the success of this approach, SkyTrain has a much less “peaked” pattern of ridership than does BART. With numerous origins and destinations within walking distance of stations and the access modes of choice available throughout the day, SkyTrain maintains a sizeable ridership even during midday and evening off-peak periods. Figure 7 shows entries and exits by hour for SkyTrain’s Expo Line in 2011, the last year for which this data is available. It shows that midday ridership represents roughly 40% of peak ridership. By contrast, BART’s midday ridership is generally about 25% of peak ridership.

Figure 7. Skytrain Expo Line Entries and Exits as a Percentage of Peak Hour (2011)



A new SkyTrain rail line, the Evergreen line, is currently under construction. Like the rest of the SkyTrain system, access investments will focus on development around the stations and walk, bike, and pedestrian access as opposed to park-and-ride. Planning documents project that Evergreen line will attract more than 30,000 boardings by 2030, but less than one-third of these will occur during the AM peak hour.⁸

Lessons for BART Access Policy

There are a number of lessons that BART can draw from the TransLink experience as the district updates its station access policy:

- **Connected pedestrian and bicycle networks in station areas are vital to station access.** Development density is an important contributor to walk bike access stations, but density alone is insufficient: connected pedestrian and bicycle networks are just as important. TransLink works to encourage connected networks in station areas two ways: first, through its Transit Oriented Communities Design Guidelines, TransLink communicates explicitly to local governments and developers what design approaches are most supportive of transit access. Second, TransLink participates actively in the station area planning efforts of local communities. In its access policy update, BART may wish to encourage more extensive collaboration with local communities around land use planning.
- **Transit Oriented Development is an access strategy.** TransLink’s experience demonstrates that development around rail stations can be a primary strategy for allowing station access. BART already has a well-developed TOD policy, and regularly pursues transit-oriented projects. It may wish to use the updated access policy to directly acknowledge the relationship between TOD and station access.
- **At some stations, it may be possible to reduce parking while maintaining or increasing access opportunities.** TransLink’s experience suggests that in certain contexts, it is possible to have far less dedicated on-site parking than what BART currently provides while maintaining excellent station access opportunities. BART’s existing Replacement Parking Methodology already gives planners an analytical tool to help weigh the balance between parking and development. As part of the updated access policy, BART may wish to explicitly recognize and encourage this approach. As part of its access work plan, BART may wish to consider revisiting and updating the Replacement Parking Methodology.
- **Promoting multimodal station access can be a strategy for managing demand.** One of BART’s major challenges is peak hour, peak direction crowding. This is due in part to an access system dominated by park-and-ride lots that fill early during the morning peak period. By contrast, systems like TransLink’s Skytrain that have more diverse land uses around stations and access patterns dominated by pedestrian, bicycle, and transit access tend to have more of their ridership during off-peak periods and greater reverse-commute travel. However, at BART stations where parking is the most convenient mode of access for most riders, once the parking lots fill, access opportunities are limited. By contrast, at stations that are easy to access by walking and biking,

⁸ Evergreen Line Rapid Transit Project Business Case:
www.belcarra.ca/reports/Evergreen_Line_Business_Case_Summary.pdf

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boardings remain stronger throughout the day. In the updated access policy, BART may wish to encourage staff to emphasize both non-auto access facilities and partnerships that promote diverse land uses around stations as explicit strategies for demand management.

Washington, D.C. WMATA: Planning for Pedestrian and Bicycle Access

The Washington Metropolitan Area Transit Authority (WMATA, and also known as Metro) operates Metrorail, Metrobus, and complimentary ADA paratransit for the capital region, including the District and neighboring counties in Maryland and Virginia. While WMATA operates both bus and rail, its Metrorail service is very similar to BART. Their system is significantly larger, with 91 stations compared to BART's 44. Average weekday ridership on Metrorail was over 720,000 in 2014, about 1.75 times more than BART in that year. WMATA has roughly 62,000 commuter parking spaces at or near 44 of its 91 Metrorail stations, for a rough ratio of 11.7 boardings per parking space.

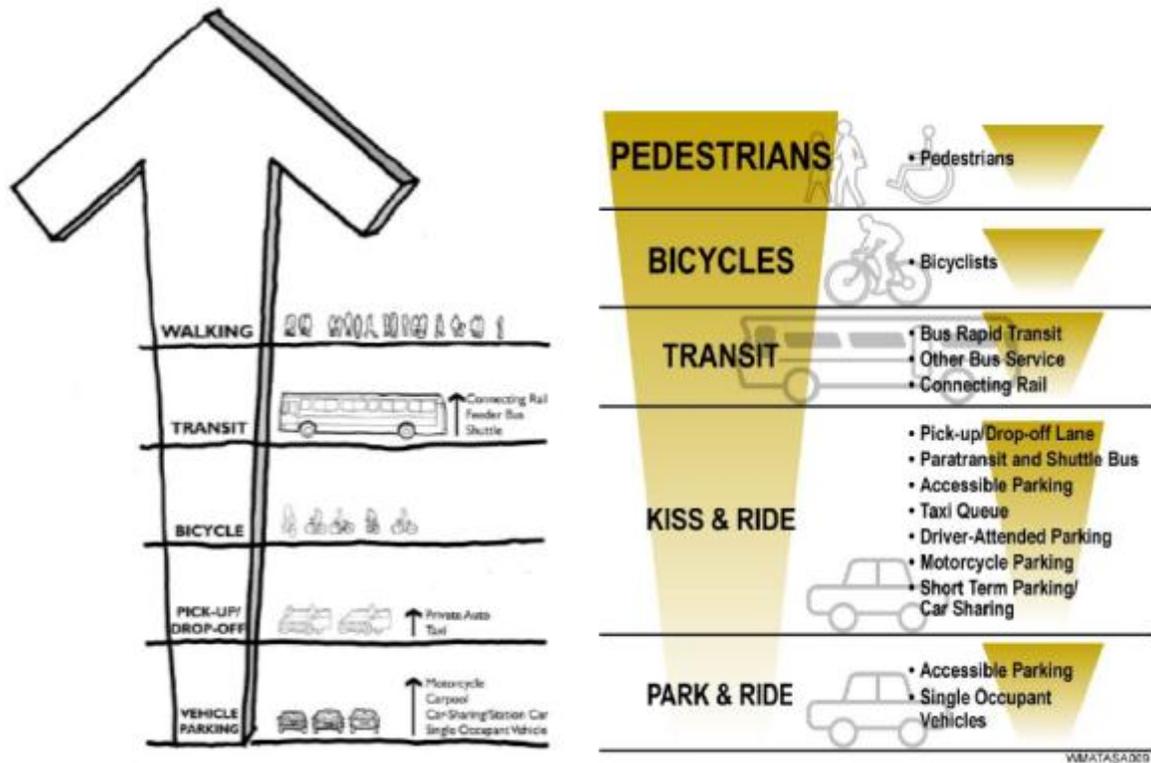
In recent years, WMATA has made strides in shaping its station access policies to improve pedestrian and bicycle access. In particular, WMATA has developed a watershed analysis approach to identify areas of potential new ridership, which helps to quantify the benefits of targeted access improvements and provide a business case for why some modes may be prioritized over others.⁹

Planning & Organizational Framework

In 2008, WMATA developed the Station Site and Access Planning Manual. In it, the agency developed mode prioritization strategies and guidelines to guide planning and design at a range of station types. WMATA's hierarchy of modes is shown below, alongside BART's; the different ordering of bicycle and feeder transit reflects the agencies' different policy priorities. WMATA's hierarchy also groups shuttles with the kiss and ride instead of with buses.

⁹ The following sections are informed by comments from Kristin Haldeman of WMATA's Long Range Planning group.

Figure 8: Access hierarchy for BART (left) and WMATA (right)



Source: BART Station Access Guidelines; WMATA Station Site and Access Planning Manual

Station Access Planning at WMATA

Currently, responsibilities for station access planning are shared between two groups at WMATA: the Real Estate Group and Long Range Planning.

The Real Estate Group works with local jurisdictions to determine on an ongoing basis which stations could be prioritized for transit oriented development opportunities depending on market conditions and local planning frameworks. At stations that have been targeted for transit oriented development, the Real Estate Group reviews surrounding land uses, zoning, access points, and what facility upgrades might be warranted given existing ridership and jurisdictional planning constraints. Station access considerations are an important component of this pre-transit oriented development analysis.

Long Range Planning staff approaches station access planning with a wider, more holistic view. Starting in 2010 with the Metrorail Bicycle and Pedestrian Access Improvements Study and subsequent capital plan, Long Range Planning has made bicycle and pedestrian access a priority. In developing the 2010 study, Long Range Planning staff conducted internal outreach at WMATA to build relationships with other groups and divisions whose staff affected access in some way. For example, long-range staff worked with maintenance staff directly to replace bike racks, which were in a poor state of repair, and to set up an official program for overseeing and managing bike infrastructure at stations. Planning staff also worked with Transit Police to build support for more secure bicycle cages.

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Bike and pedestrian projects are also used to support progress toward one of WMATA's Key Performance Indicators, "Connecting Communities." Staff describes three methods of achieving progress towards this KPI: using TOD to grow development near transit, expanding bus routes and Metrorail lines to expand transit, and removing pedestrian barriers and building new paths and sidewalks to improve access to stations.¹⁰

Bicycle and Pedestrian Investments on Metro Station Property

The *Metrorail Bicycle and Pedestrian Access Improvements Study* put in motion a campaign to enhance bicycle and pedestrian access to WMATA stations. In addition to establishing a system-wide goal of tripling the bike access mode share by 2020 (from 0.7 percent in 2007 to 2.1 percent in 2020) and quintupling the bike access mode share by 2030 (from 0.7 percent in 2007 to 3.5 percent in 2030), the report provided the foundation for a capital plan to steer non-motorized access improvements throughout the system.

This capital plan was informed by a thorough analysis of all 86 Metro stations (now 91), with a contractor inventorying bicycle and pedestrian access needs within station footprints, where WMATA has explicit control over permitting and construction. This survey identified over 3,000 projects ranging from designing and building "bike and rides" (akin to BART's Bike Stations) to installing curb ramps to facilitate accessible street crossings. The project list totaled over \$35 million. Facing budget constraints, WMATA staff used DecisionLens, a financial prioritization and resource optimization tool that BART also uses, to set goals and evaluate types of projects against each other. WMATA summarized the resulting prioritized projects by year in the 2011 Pedestrian and Bicycle Element of the 2012-2017 Capital Improvement Program. Underscoring the agency's commitment to project delivery, WMATA hired a Capital Project Manager to oversee access project implementation.

Long Range Planning staff's goal is to have this list of projects be a resource to others in the agency, such as the Real Estate Group for transit oriented development planning, as well as to local jurisdiction staff who may have funding available for station access projects. Staff members plan to update the project inventory every five years, identifying completed projects and adding new ones as necessary.

Making a Business Case for Bicycle and Pedestrian Investments off of Metro Station Property

Recently, Long Range Planning staff members have used walkshed analyses to quantify the benefits of targeted pedestrian and bicycle access improvements. The analysis consists of evaluating potential ridership from/to households and job centers within a half-mile of a Metrorail station as the crow flies, contrasted with the actual half-mile walkshed following existing pathways and roads. In cases such as Southern Avenue station below, "If a well lit, safe pedestrian path were constructed between the station and the orange-dotted area on the map, it could expand the walkshed to include up to 1,200 additional households in DC. This new connection would likely increase ridership at Southern Avenue and might even generate enough additional fare revenue to fund the construction of the trail."¹¹

¹⁰ Source: "Connecting Communities through Walkable Station Areas," presentation by Kristin Haldeman, May 1, 2015

¹¹ Source: WMATA PlanItMetro blog (<http://planitmetro.com/2014/07/01/how-can-the-coverage-of-transit-walksheds-be-increased/>)

Figure 9: WMATA walkshed analysis



Source: WMATA PlanItMetro blog (<http://planitmetro.com/2014/07/01/how-can-the-coverage-of-transit-walk-sheds-be-increased/>)

Long Range Planning staff is using these walkshed analyses as a basis for substantive funding discussions. They have started to work with local jurisdictions to classify “opportunity stations” at conventionally car-centric stations, exploring how to eliminate barriers and find funding for access projects. For example, at the recently opened Greensboro station in the car-centric Tysons Corner employment district in Northern Virginia, pedestrian retrofitting is needed to improve ridership. Long Range Planning staffers were able to identify job centers within a short walking distance of the station that could be safely accessed with a \$1.5 million sidewalk connection. Using the walkshed analysis at this station, planners created a model to estimate how this pedestrian access improvement could pay for itself: If 500 employees walked to Metro, the agency could raise over \$800,000 a year in new revenue and “pay back” the project in two years. With WMATA funding provided by a combination of fare revenue and local jurisdiction contributions, these types of projects are becoming popular among local agency partners for their cost-effectiveness.

Long Range Planning staff are at the beginning stages of conducting a complementary “bike shed” analysis, with particular focus on “low stress” bike routes to transit.

Lessons Learned

There are a number of lessons that BART can draw from the WMATA experience as the district updates its station access policy:

- **It is valuable to assess pedestrian barriers in station areas systematically, both on and off station property.** WMATA uses an analytical to assess the degree to which a lack of pedestrian connectivity in station areas is reducing opportunities for rail system access. A similar analysis, carried out at the system level, could help BART to understand where resources could be most profitably deployed off of BART property. This type of approach could be encouraged in BART’s updated access policy, and could be introduced as an element in BART’s station access work plan.
- **Evaluating access investments in terms of costs and benefits can help demonstrate a “business case” for pedestrian and bicycle projects.** WMATA staff emphasized the importance of making a business case (i.e., quantifying benefits as well as costs) for pedestrian and bicycle access improvements. This approach can help making setting priorities among access modes more transparent and neutral. Drawing on this example, BART may wish to update its access policy to standard, mode-neutral performance measures to help prioritize access investments.

TriMet, Portland, Oregon

TriMet (Tri-County Metropolitan Transportation District of Oregon) manages bus, light rail, commuter rail, and paratransit services in and around Portland, Oregon. Average weekday light rail ridership is approximately 118,400, which is over two-thirds less than BART. Together, however, weekday boardings on all fixed route transit services total over 315,000.

The Pedestrian Network Analysis Project

In 2011-2012, TriMet staff completed the Pedestrian Network Analysis Project, which evaluated pedestrian access conditions at all 7,000 TriMet rail and bus stops. The agency determined that at root, “every transit rider is a pedestrian,” with “all TriMet customers [dependent] on being able to get to and from a stop safely and comfortably.”¹² With bus stops making up the majority of TriMet’s transit stops, the analysis largely focused on improving basic infrastructure for bus riders, such as sidewalks and other customer amenities. Nevertheless, the project provides a model for BART in its recognition of the basic importance of pedestrian access, the value of detailed analysis of pedestrian safety and convenience conditions, and working with jurisdictional partners to deliver projects.

Project Goals & Methods

The Pedestrian Network Analysis Project was designed to accomplish four major interdisciplinary goals:

- Increase traffic safety, especially along major arterials in suburban or exurban service areas
- Increase system cost-effectiveness by reducing reliance on paratransit service caused by unsafe and inconvenient pedestrian connections to transit stops
- Reduce reliance on driving and help reduce regional greenhouse gas emissions
- Create great places where people want to walk

To accomplish these goals in such a large service area, TriMet conducted an evaluation of existing data (including land use, collisions, and multimodal infrastructure) to determine which areas of

¹² Source: <http://trimet.org/pdfs/publications/pedestrian-study-fact-sheet.pdf>

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transit stops had the highest level of opportunity and need, ultimately deciding on 10 Focus Areas to prioritize first. Within each of these areas, TriMet staff conducted an in-person walking assessment of existing conditions and developed project opportunities near the highest ridership transit stops.¹³ This prioritization process helped the agency hone in on the projects that would provide the highest benefit, making it easier to work with partner jurisdictions to identify grant funding and deliver projects.

Measuring Progress

The project offered three ways to measure the effectiveness of recommended infrastructure improvements:

- Increase the number of residents who perceive the Focus Areas to be safe and comfortable by 30%
- Increase pedestrian volumes within the Focus Areas by 20%
- Increase ridership at transit stops within the Focus Areas by 10%

The proposed methodologies to measure performance are provided below.

Figure 10: TriMet Pedestrian Network Analysis Project performance targets

Performance Target	Quantifiable Measure	When?	Who?	How?
1. 30% increase in perceived safety and comfort level	Number of people who feel safe and comfortable walking in the focus area	Before investments & 1 year after completion of full set of recommended focus area investments	TriMet / Local Assistance	Manual In-field attitudinal surveys
2. 20% increase in pedestrian volumes in focus area	Number of pedestrians counted crossing the street at each intersection and at key sidewalk locations.		TriMet / Local Assistance	Observation / manual pedestrian counts or installation of automated pedestrian counters
3. 10% increase in ridership at stops	Number of Boardings and Alightings at each stop		TriMet	automated passenger counters on transit vehicles

Source: Pedestrian Network Analysis Technical Memorandum#1: Targets, Methodology, and Data Inventory (April 2012)

¹³ According to TriMet staff, “For each of the ten focus areas, these elements were covered in detail: places to access locally by foot; places to access regionally by transit; 15 minute walk-shed; 15 minute transit-shed; top 5 intersections with TriMet customer ons and offs; observed behavior; mapping of conditions within a half-mile radius; and five key actions that can be taken to make the area safer, easier, and more comfortable to walk.” Jeff Owen and Alan Lehto, “Active Transportation Connections to Transit: How to Prioritize and Get Something Done,” 2013.

Project Delivery

Like BART, TriMet is only responsible for its own infrastructure, so most of the recommended projects in each Focus Area can only be implemented by local communities. Ultimately, then, the most important component of the Pedestrian Network Analysis was building the jurisdictional partnerships required to implement the recommended projects.

According to Jeff Owen and Alan Lehto of TriMet in 2013, “TriMet has recently worked with several jurisdictions around the region to develop grant applications to pursue flexible federal funds coming to the region. For each of several corridors, TriMet spearheaded an effort to develop a concept around improvements for safety and access to transit, identified and recruited jurisdictional partners, and collaboratively developed the scope of proposed improvements. Both the information developed as part of the Pedestrian Network Analysis and communication channels opened in development of the Analysis made this grant-writing effort possible.”¹⁴

Lessons Learned

There are a number of lessons that BART can draw from the TriMet’s experience as the district updates its station access policy:

- **It is valuable to consider pedestrian networks in station areas.** Like the preceding WMATA example, the Tri-Met pedestrian network analysis demonstrates the utility of having a detailed, system-wide assessment of pedestrian conditions not only on but also off of station property. BART may wish to encourage such an approach in its access policy, and it may wish to add this practice to its access workplan.
- **It is valuable to maintain a list of grant-ready projects.** TriMet’s example demonstrates the value of having a supply of cost-effective grant-ready projects at each station that can be pursued as funding opportunities arise. There is a value in having such projects available for implementation both on- and off agency property. BART may wish to encourage such an approach in its access policy, and it may wish to add this practice to its access workplan.

Los Angeles County Metropolitan Transportation Authority (Metro) Parking Policy

The Los Angeles County Metropolitan Transportation Authority (LA Metro) is the regional transportation planning agency and public transit operator for Los Angeles County. LA Metro provides a range of transit services, including local fixed-route bus, bus rapid transit, commuter rail, heavy rail, streetcar, and demand-responsive ADA transit. Metro operates park-and-ride facilities with a total of 22,000 parking spaces at 48 bus and rail stations. The parking supply is expected to increase to 25,000 parking spaces with the completion of its Expo II and Gold Line Foothill Extension in 2016. It could increase to 30,000 if Metro acquires the Caltrans-owned parking lots scattered throughout LA County. Average weekday rail ridership on the rail system is approximately 348,000, for a rough ratio of approximately 15.8 boardings for each existing parking space.

¹⁴ Ibid.

Existing Parking Policy

Metro formally adopted policies for managing its park-and-ride assets more than 10 years ago. The current parking policy was adopted in July 2003. It documents how the agency will manage its existing parking resources, develop new facilities, and work with localities to improve and periodically assess the need to provide non-auto access to transit. For existing facilities, the policy states that Metro will monitor occupancy, and for facilities with more than 75% occupancy it will pursue management strategies that include: parking “districts” that allow for shared parking between sites or users and implement charging at parking lots where occupancies exceed 90%. The policy places several conditions on the implementation of parking charges, including that the actions not cause significant decreases in transit system ridership, not cause adverse spillover parking into surrounding areas, which rates are competitive with surrounding facilities, and that revenue can cover expected costs. Variable pricing by time of day is permitted, and payment is to be integrated with the fare payment system. The policy also documents the agency’s strategy for improving the efficiency of parking (carpool/vanpool preference, time limits, and innovative technologies), and increase the supply of parking cost-effectively (re-stripping, tandem parking, and mechanical parking).

For the highest-demand facilities, the policy documents a set of strategies for increasing the supply of available parking, including buying or leasing existing parking facilities nearby, building parking lots or structures, and working with jurisdictions or private entities to provide parking or shared parking. The policy also encourages working with localities to make more on-street parking available to transit riders. Finally, the policy encourages consideration of other public policy changes to promote station access, including working with cities to better integrate land use and transportation and improve local parking controls.

The first paid parking facilities under the policy were implemented in 2004. Paid parking permits were introduced at two Gold Line Metrorail stations (Sierra Madre Villa and Lake Avenue) at a cost of \$29 and \$28 per month. Today, reserved paid parking is available at 15 Metro stations, with both monthly and daily reserved parking available. Patrons register and pay online. According to Metro, charges have not resulted in reduced ridership or neighborhood spillover. Over 90 percent of parking spaces in the system remain free.

Joint Development Policy

Metro also has a joint development policy which was last revised in October 2009. The goals of the policy are to encourage comprehensive planning and development around station sites and along transit corridors; reduce auto use and congestion through encouragement of transit-linked development. At specific sites, the policy aims to: promote and enhance transit ridership; enhance and protect the transportation corridor; enhance the land use and economic development goals of surrounding communities; and generate value to Metro. The policy documents specific policies in transportation and land use coordination and development. It provides specific implementation procedures for soliciting project proposals; evaluating proposals; and dealing with unsolicited proposals. The policy includes no specific requirement for parking replacement. According to LA Metro staff, parking spaces are added or replaced depending on demand.

Supportive Transit Parking Program Master Plan

Metro now has a project underway to update the agency’s parking policies and develop a comprehensive Supportive Transit Parking Program (STPP) Master Plan. In its first phase, the project will develop management alternatives for the board to consider. In its second phase, a

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Metro Parking Strategic Implementation Plan (a 5- to 10-year program) will be presented to the Board for adoption that will include projects for implementation. Finally some of the areas the master plan will cover include: a facilities assessment, ridership vs. demand model, supply/demand analysis, and an evaluation of Metro's parking enforcement, management, organizational structure, and maintenance schedule.

Lessons Learned

BART is among the most innovative North American transit agencies when it comes to policies aimed at managing parking and encouraging joint development. Like a number of other peer agencies, LA Metro has worked over the last several years to develop a similar set of policies, including a joint development policy and parking prices that respond to occupancy rates.

Metro is taking its parking policy a step further in the development of its Supportive Transit Parking Master Plan. This project is aiming to create a comprehensive, system-wide strategy for parking over a 5-10 year period that integrates all agencies parking approaches into a single strategy that will be adopted by the board. BART may wish to consider consolidating its existing parking approaches into a single, board-adopted strategy.

Other Best Practices

Parking Management Strategies

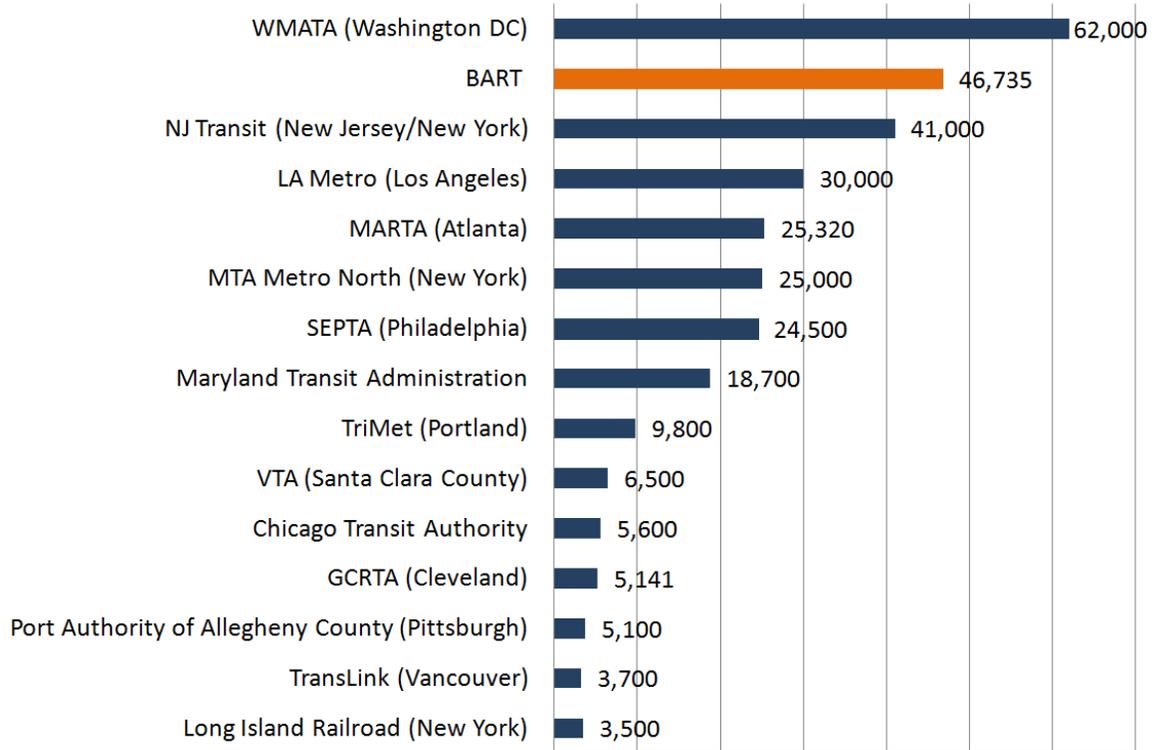
BART currently owns and manages over 46,000 parking spaces. By way of comparison, the SFMTA estimates that there are currently roughly 40,000 parking spaces in Downtown San Francisco.¹⁵ WMATA's Metrorail service, BART's closest peer and a system built just after BART opened, provides even more parking: WMATA manages 62,000 spaces specifically for Metrorail riders. As shown in Figure 11, no other peer operator has as much parking devoted to rail service as BART.

Figure 12 shows total weekday rail boardings divided by total parking spaces devoted to rail riders for each of several North American rail operators. It reveals a wide range of reliance on parking. BART currently has 9.1 boardings for every parking space it supplies. Most of North America's largest rail operators, including those serving Chicago, Vancouver, Long Island, Philadelphia, Portland, Los Angeles, and Washington DC, have more riders per parking space than does BART, reflecting the fact that they have more stations that are reliant on other modes of access. Some rail operators serving smaller cities or acting primarily as commuter railroads, including those serving Pittsburgh, Cleveland, the New Jersey suburbs of New York, and San Jose, have substantially fewer riders per parking space than does BART.

¹⁵ SFMTA SFpark Parking Census <http://sfpark.org/resources/parking-census-data-context-and-map-april-2014/>

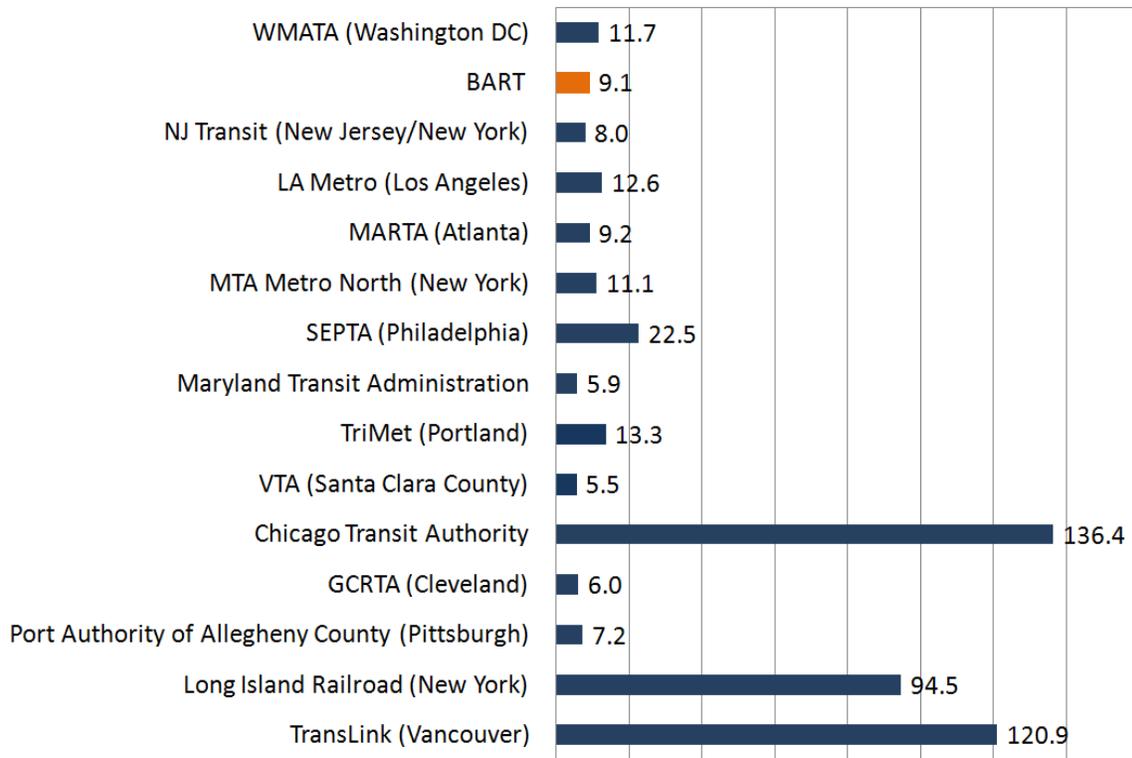
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Figure 11. Total Parking Supply by Operator (North American Rail Operators)



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Figure 12. Parking Productivity: Boardings per Parking Space



Market-based Parking Pricing

BART’s current demand-based parking pricing policy caps payments for most stations at \$3. As a result, it offers parking below the true market price at most stations, and parking facilities fill to capacity during the morning peak period. By contrast, several Bay Area communities have had success using truly market-priced parking to ensure parking availability at all times of day. San Francisco’s *SFpark* program,¹⁶ and Berkeley’s *goBerkeley* program¹⁷, are good examples of communities that use this strategy to ensure availability of on-street parking.

Market-priced parking has not yet been fully implemented at any transit-agency owned parking facilities in North America. However, many transit stations have no dedicated parking, but instead rely on nearby privately-owned parking (which is by definition provided at market-price) to provided for park-and-ride access. For example, WMATA’s Ballston, Clarendon, and Virginia Square Metrorail stations have no dedicated parking, but parking is available nearby through commercial parking operators for daily fees between \$3.50 and \$6.00 per day.¹⁸ This private supply is commonly used by WMATA riders, and demand does not exceed supply at the market price.

¹⁶ http://sfpark.org/wp-content/uploads/2014/06/SFpark_Eval_Summary_2014.pdf

¹⁷ <http://www.goberkeley.info/parkchanges.php>

¹⁸ https://www.ecolonial.com/parkers/parking-locator/?pm_s=Ballston%2C+VA

Time-of-day Parking Pricing

BART currently has significant crowding on peak-hour, peak-direction Transbay trains. One strategy that could shift demand to the shoulders and potentially relieve crowding would be to implement a surcharge to park at the highest-demand times.

This strategy has not yet been applied by a North American transit system. However, San Francisco's *SFpark* and Berkeley's *GoBerkeley* program, mentioned above, have both succeeded in shifting peak parking demand by varying prices over the course of the day. Prices that vary by time of day are also common way of managing demand for road and rail facilities. Washington Metro, for example, has higher fares during peak travel periods than it does during shoulder and off-peak periods. Bay Bridge drivers pay \$6 during weekday commute hours, dropping to \$4 during off-peak hours on weekdays. Airlines and electric utilities also commonly vary price by time of day as a way of balancing supply and demand. Further study would be required to determine if peak surcharges for parking pricing are a promising strategy for alleviating BART's core system crowding.

Shared Parking

Station parking is expensive to build and maintain, and consumes valuable land near stations. In order to mitigate these problems, other transit agencies have used shared parking strategies. By entering into agreements with owners of nearby parking, transit providers can often make parking available to riders at a lower cost to the agency. This strategy can also serve to minimize the total amount of the station area devoted to parking. Shared parking works best when the uses sharing the parking have peak demand at different times of day, such as transit stations (which see peak demand during weekday daytime) and restaurants or movie theatres (which often have peak demand at night) or churches (which often have peak demand on the weekend).

LA Metro's parking policy states that it will "[p]ursue opportunities to share the use of off-street parking facilities among different buildings or operators in an area to take advantage of different peak periods. Example: a transit center can efficiently share parking facilities with a shopping mall, restaurant or theaters." (LA Metro Parking Policy). Four of Metro's Gold Line Stations have this types of shared parking: Lake Avenue, Fillmore, Mission, and Del Mar.

Likewise, the Twin City's Metro Transit relies on joint use agreements with parking lot owners to use their facilities for park and rides: 45 of its 108 facilities are privately-owned. Many of these agreements are with landowners that host facilities that need parking at complementary hours compared to traditional weekday transit ridership needs.

On-Street Transit Rider Parking /Parking Benefit Districts

There is often significant parking available on the street near transit stations. In many cases, however, it can be a challenge to make this parking available to transit riders, because neighbors (either residents or businesses) often object to the use of curb space by commuters. In some cases, establishment of a 'parking benefit district' can help make neighboring communities more open to the idea of on-street transit rider parking. In these districts, non-residents are charged for parking, either through the sale of permits, by implementing parking meters, or by allowing for pay-by-cell, or a combination of these methods. A portion of the parking revenue is returned the local community for use in projects that benefit the district. Projects could include streetscape improvements, bike facilities, street cleaning, or other investments as chosen by the community.

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Successful parking benefit districts have been established in communities such as Downtown Pasadena, CA, Downtown Redwood City, CA, Washington DC (near the Nationals Ballpark); Austin, Texas “West Campus” District, Downtown Boulder, CO, and many others. The City of Oakland recently established a parking benefit district pilot project in its Montclair neighborhood.

In 2011, Union City created a parking benefit district for the area around its BART and the Capitol Corridor station. The city raised parking fees for on-street parking to encourage turnover and lowered fees for parking lots farther from BART. On-street time limits were removed, so parking can be used by commuters. The district directs parking meter revenues to enhanced maintenance of the Station District. Both on- and off-street parking facilities in the district regularly used by BART riders

On-street parking on designated streets around BART’s South Hayward Station has also been available to BART riders, for a fee, since 2012. Revenues accrue to the City of Hayward.

App-Based Shared Mobility Options

App-based shared mobility services have quickly become a major feature of urban transportation in recent years. There are a wide range of services available, and innovation in this area is ongoing.

The use of carsharing at transit stations is well established. Zipcar, City Carshare, Getaround, and others now offer carsharing service at or near BART stations. WMATA has partnership with Enterprise Carsharing to make cars available at 45 stations.¹⁹ LA Metro has a similar partnership with Zipcar.²⁰

Transportation Network Companies (TNC’s) like Uber and Lyft have surged in popularity in recent years, presenting both competition for traditional bus and rail transit operators, as well as potentially complementary services, helping to solve the challenge of the last mile connection from transit stations. Several transit operators have begun experimenting with how best to take advantage of the opportunities offered by these services, but no one strategy has yet emerged as a ‘best practice.’

- Dallas Area Rapid Transit (DART) has added access to Uber through its GoPass mobile ticketing app. In exchange for this promotion, Uber offers DART riders a free first ride (up to \$20).²¹ Uber has a similar arrangement with Atlanta’s MARTA. Several other operators are considering similar arrangements.
- The Hillsborough Area Regional Transit Authority (HART) has discussed partnering with one or more TNC to offer last-mile connections. Their vision is to offer a flat fare within a specified local zone, subsidized by the transit agency. This program has not yet been established.²²
- LA Metro will now reimburse for the use of Uber in its “guaranteed ride home” program. In the past, reimbursements were only offered for traditional taxicab services.

¹⁹ http://www.wmata.com/about_metro/news/PressReleaseDetail.cfm?ReleaseID=5918

²⁰ <http://www.zipcar.com/press/releases/LAMetroExpansion>

²¹ <http://www.dart.org/news/news.asp?ID=1179>

²² <http://www.tampabay.com/news/transportation/uber-finds-partners-in-tampa-bay-area/2242300>

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LA Metro is also currently working to develop a set of services it calls "Integrated Mobility Hubs." The Mobility Hubs will offer multimodal first- and last-mile connections including car sharing, real-time ridesharing and bike sharing, bike parking, small bus service, electric bikes, bicycles and/or scooters. The program is intended to focus on lower-income transit riders, and is partially funded using federal Job Access Reverse Commute (JARC) program funds. The first phase of the program will focus on transit-rich locations in Los Angeles, Hollywood, and Long Beach.²³ Phase 1 is expected to launch in 2016.

Chariot and Bridj are two newer shared mobility companies that offer more transit-like services, offering shared-ride, fixed route services along high-demand corridors. Bridj currently serves the DC Metro area and greater Boston. Chariot, which serves San Francisco, has seven routes that all have at least one stop along the Market Street corridor, where a BART connection could be made.

The Shared-Use Mobility Center, a public interest organization funded with a portion of the proceeds when IGO car sharing was sold to Enterprise, is conducting a TCRP-funding study on the relationship between app-based mobility services and transit. The study is expected to be completed in December 2015.²⁴

Bikeshare

Bikesharing has expanded rapidly in North America and around the world in recent years. US cities with established programs include Denver's B-cycle, Washington DC, Honolulu, San Antonio, Miami, and others. Bay Area Bikeshare began operations in 2013, and currently has 70 stations with 700 bicycles. About half of these bicycles are located in San Francisco, and the most active stations are located near the BART and Muni stations on Market Street, as well as near the Caltrain Station at Fourth and King Streets. Under the direction of MTC, the program will expand to 7,000 bicycles by 2017, and BART's Oakland and Berkeley stations are likely to get new bike stations.

Washington DC's Capital Bikeshare has been successfully integrated into the regional transit system. A major criteria for the expansion of bikeshare in future years is that "new stations should be located so bikeshare increases the reach of other modes, particularly public transit and walking."²⁵

A key challenge in integrating bikeshare with rail is that the supply of bikes may become "imbalanced" between stations during commute periods. Capital Bikeshare also has improved the efficiency of the program by using strategies to reallocate bikes from empty stations to full stations. These include groups of "rebalancers," who relocate bicycles throughout the day using real-time information to better meet customer demand, and offering a "reverse rider" program to encourage members to move bicycles from stations that are often full to those that are often empty during peak weekday commute periods.²⁶

Bikeshare programs in other counties have had success integrating bikeshare payment with transit fare media. In Guangzhou, China, a single payment card is available that can be used to

²³http://www.lachamber.com/clientuploads/TGM_committee/071310_Los%20Angeles%20Mobility%20Hub%20Project%20Brief%20July%202010.pdf

²⁴ <http://sharedusemobilitycenter.org/sumc-research/>

²⁵ NCTR Webinar: Integrating Bikesharing with Public Transportation. Presentation by Susan Shaheen, UC Berkeley. https://www.youtube.com/watch?v=OVT_WjQrA_8&feature=youtu.be

²⁶ NCTR Webinar: Integrating Bikesharing with Public Transportation. Presentation by Susan Shaheen, UC Berkeley. https://www.youtube.com/watch?v=OVT_WjQrA_8&feature=youtu.be

pay for all transit modes as well as bikeshare. Berlin, Germany has offered a similar mobility card that allows for payment for bikeshare as well as transit and the city's electric carsharing program.²⁷ Integration with Clipper is not yet planned for Bay Area Bikeshare.

Summary of Lessons Learned from Best Practices Case Studies

BART is already a recognized innovator in access policy. However, a number of planning practices identified TransLink, WMATA, and TriMet, and the other cities and transit agencies discussed in this section point to approaches that BART may wish to consider encouraging in its updated access policy and/or including in its station access workplan. The most promising approaches include:

1. **Evaluate access investments in terms of costs and benefits to demonstrate a “business case” for bicycle and pedestrian projects.** The WMATA case study demonstrates the value of quantifying costs and benefits for pedestrian and bicycle access improvements, illustrating that such an approach can help making setting priorities among access modes more transparent and neutral. Drawing on this example, BART may wish to update its access policy to use mode-neutral performance measures to help prioritize access investments.
2. **Recognize transit-oriented development as a station access strategy.** TransLink's experience demonstrates that development around rail stations can be a primary strategy for allowing station access. BART already has a well-developed TOD policy, and regularly pursues transit-oriented projects. It may wish to use the policy to directly acknowledge the relationship between TOD and station access.
3. **Weigh tradeoffs between parking and development.** TransLink's experience suggests that in certain contexts, it is possible to have far less dedicated on-site parking than what BART currently provides while maintaining excellent station access opportunities. BART's existing Replacement Parking Methodology already gives planners an analytical tool to help determine the right balance between parking and development. As part of the updated access policy, BART may wish to explicitly recognize and encourage this approach. As part of its access work plan, BART may wish to consider revisiting and updating the Replacement Parking Methodology.
4. **Recognize multimodal access strategies as a tool for system demand management.** One of BART's major challenges is peak hour, peak direction crowding. One contributor to this challenge is an access system dominated by park-and-ride lots that fill early during the morning period. By contrast, systems like TransLink's Skytrain that have more diverse land uses around stations and access patterns dominated by pedestrian, bicycle, and transit access tend to have more of their ridership in off-peak periods and greater reverse-commute travel. In its updated access policy, BART may wish to encourage staff to emphasize non-auto access facilities and partnerships with local jurisdictions as explicit strategies for demand management.
5. **Recognize pedestrian and bicycle networks in station areas as vital to station access.** The quality and connectivity of bicycle and pedestrian networks in the area around stations are big factors in how easy or difficult it is for people to get to BART

²⁷ NCTR Webinar: Integrating Bikesharing with Public Transportation. Presentation by Susan Shaheen, UC Berkeley. https://www.youtube.com/watch?v=OVT_WjQrA_8&feature=youtu.be

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stations on foot or by bike, but most of BART's access investments have been focused on BART property. The TransLink, TriMet, and WMATA case studies illustrate successful efforts to improve access through investments off of station property. In its updated access policy, BART may wish to empower staff to pursue cost-effective projects off of BART property.

6. **Maintain a supply of grant-ready projects.** TriMet's example demonstrates the value of having a supply of cost-effective, grant-ready projects for each station that can be pursued as funding opportunities arise. BART may wish to encourage such an approach in its access policy, and it may wish to add this practice to its access workplan.
7. **Continue to innovate in parking management.** BART owns and manages 46,000 dedicated parking spaces. Today, these facilities fill to capacity early in the morning commute period. The experience of several Bay Area communities, including San Francisco, Berkeley, Redwood City, and Union City demonstrate that market-prices can be used to ensure that parking is available at all times of day. BART may wish to consider adjusting its own parking pricing policy to allow prices that are closer to the true market price, a strategy that could serve both to improve availability and offset the cost of providing parking. Other promising parking management strategies include sharing parking with surrounding land uses, and development of parking benefit districts that could help encourage neighboring communities to make on-street parking available to BART riders.
8. **Study opportunities for integrating with shared-use mobility services.** Opportunities for shared-use mobility aided by technology are quickly expanding, and offer opportunities for improved first- and last-mile connections to BART stations. TNC services such as Uber and Lyft are widely used in the Bay Area. A number of other transit agencies have explored partnerships and cross-promotions with these companies. More transit-like services, such as Chariot (which operates in San Francisco) could also offer opportunities for partnership. LA Metro will soon be deploying "Shared Mobility Hubs," a strategy that will offer access to several app-based shared mobility as well as more traditional last-mile services at the same location. BART should continue to monitor these efforts at peer agencies, and consider implementing those that prove successful and sustainable.

CONCLUSIONS AND NEXT STEPS

Since 2000, when the BART Board adopted the current Access Policy, BART's staff and Board of Directors have created a related group of policies and practices that shape how the District invests in access. In many of these policy areas, peer agencies look to BART as a national leader. One of the major aims of updating the Access Policy will be to integrate those diverse efforts under the umbrella of a single, coherent policy. To do this, the Access Policy update will need to:

- Establish whether existing policies and practices are internally consistent.
- Consider whether meeting BART's goals and objectives requires any adjustments to current practice.
- Synthesize BART's approach to access investment into clear and succinct policy language for the Board of Directors to consider.

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From this review, the following recommendations identify areas where BART may wish to consider adjustments to existing practice, and where the Access Policy update project can help to facilitate those adjustments. The study should consider these issues in more detail moving forward:

- **Develop a framework for investing in access off of station property:** BART’s existing policy framework focuses primarily on the types of investments that can be made *on BART property*: vehicle and bicycle parking facilities, bus transfer facilities, and station walkways. However, there remain opportunities to increase the District’s role in improving access to stations, particularly those that require investment in nearby property not owned by BART, such as feeder transit access and bicycle/pedestrian networks. At some stations, investments off of station property may offer more cost-effective opportunities for improving customer access. The Access Policy could be used to establish a framework for considering off-site access investments.
- **Develop a framework for integrating access policy with system capacity considerations:** BART forecasts serious capacity limitations for peak period, peak direction travel in the future. Access investments that tend to encourage peak period, peak direction trips may need to be limited, while investments that tend to encourage off-peak and reverse peak travel could be prioritized. The Access Policy could be used to advance this objective.
- **Develop a formal process for prioritizing access investments:** The Access Policy should be tightly integrated with BART’s new Strategic Plan. As part of the Access Policy Update, the agency may wish to develop a formal process for estimating return on investment from access projects in order to decide how to prioritize access investments on an ongoing basis.
- **Develop performance measures for station access:** Use mode-neutral performance measures to help prioritize station access investments.
- **Develop a four-year workplan for station access:** The work program should identify short-term project workload, establish funding goals, and create a phasing and implementation plan for station access investments.

While the Board-adopted policy can speak to these issues at a high level, more detailed documentation may be needed to fully develop the District’s approach. It is recommended that Board-adopted policy language be accompanied by supporting documentation that provides specific process guidelines, in some cases formalizing existing internal decision-making processes and in others proposing new processes. The documentation can also act as a “bridge” document between the Access Policy and the revised Access Guidelines.