Parking Management Toolkit

Strategies for Action in BART Station Areas

Prepared for: Bay Area Rapid Transit District
Prepared by: Richard Willson, Ph.D. AICP
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How to Use This Toolkit

This toolkit outlines ways to address parking issues in the vicinity of the BART stations. It is intended to help key stakeholders--community members, city officials, property owners, merchants and others--as they develop parking strategies that support community goals.

The report provides a step-by-step process for exploring parking issues and selecting parking management strategies. The toolkit includes worksheets that can be used to facilitate problem solving at community meetings and workshops.

Parking management techniques work best when they are tailored to local conditions. A "one-size-fits-all" approach is less effective than carrying out the specific planning activities suggested in this toolkit. BART is issuing this report to support collaborative approaches to parking management.

About BART

The BART system consists of 95 miles of track and 39 stations in four Bay Area counties. Now under construction, the BART San Francisco International Airport Extension will add 8.7 miles of new revenue service track and four new stations in San Mateo County.

BART connects residential areas with key employment, shopping and recreational destinations throughout the Bay Area. At the same time, BART provides a focus for community development in the areas surrounding the stations. Parking for BART patrons and local uses is an integral part of station area planning.

The BART system is changing, as are the land use patterns around stations. For BART, ridership is up and the upcoming SFO Extension will provide new services and accessibility. For many local communities, station area development presents opportunities for parking management. This toolkit provides a process for addressing these issues and ideas about effective strategies.

Who to Call for More Information

BART is providing this document as resource to community members, city officials, property owners, merchants and others. The primary responsibility for addressing local parking regulations lies with the respective cities. They adopt, implement and enforce on-street parking regulations, set policies for city-owned off-street parking, and control the amount of parking that private developers must provide. However, property owners, merchants, employers and others generally control the use of off-street parking. Finally, BART manages the parking in its own station facilities.

If you wish to discuss station area parking issues in your city, you should call your city staff, usually in the Planning or Engineering department.

For BART-specific questions call Peter Albert, Station Area Planning Manager, at (510) 287-4702.

Introduction

Parking management involves the use of programs and policies that affect the use, price and availability of parking. Parking management ranges from simple time limits to sophisticated computer-based systems that direct traffic flow to available parking. Nationwide, communities are using parking management to support their transportation, environmental and community development objectives.

BART provides over 40,000 parking spaces throughout the region. Although more than half of BART riders in the AM peak (57 percent) reach stations by travel modes that *do not* involve parking, parking is still an important part of BART service.

Recent trends call for a closer look at station area parking. For BART, policy issues related to transit-oriented development, environmental quality and customer service are important strategic directions. Furthermore, BART ridership is increasing and new BART service--the SFO Extension--will open soon. These service additions will affect station areas throughout the region. For new stations, there will be easy connections to the region, a new community focus, and community development opportunities. Existing station areas may be used more intensively as their transportation and land use focus increases. Parking management can ensure that the available parking is used in an efficient manner in keeping with the goals of BART and the community.

BART recently addressed parking and other access issues with the adoption of a new BART Access Management and Improvement Policy Framework. It provides guidance on the strategies BART may consider on a system- and station-specific basis. With respect to parking, the policy directs BART to reconsider existing parking management strategies and create new strategies that make station areas functional, accessible and attractive.

For local communities, BART station areas are important elements of their community development and economic development plans. In addition, station areas play a part in livable community and traffic mitigation objectives.

Local communities may initiate their own reviews of on- and off-street parking policy and programs in station areas for a variety of reasons. This toolkit is provided to support those efforts.

Sometimes, a strategy that phases in parking programs can help local stakeholders adjust to a new approach and provide opportunities for refinements. Some policies may already be in place and working well. If change is expected, however, development of a preliminary consensus may be needed before that change occurs, with implementation keyed to actual changes. Still other long-term strategies may be discussed in a conceptual way but not required until a station area reaches a certain maturity.

Many entities control parking. BART is responsible for BART parking at BART stations. Local jurisdictions are responsible for managing on-street and municipal off-street parking, setting development standards for private development, and facilitating traffic flow. Finally, property owners, employers and merchants are responsible for managing their own private parking.

Many people (e.g., neighbors, businesses, and commuters) have a stake in station-area parking, and their interests and perspectives may vary quite considerably. Studies have shown that when the various stakeholders work together they can achieve “win-win” parking solutions that promote community development and community livability. With the release of this toolkit, it is BART's hope to encourage such collaborative solutions.

The Parking Management Toolkit

This toolkit provides ideas and suggestions on how to analyze and respond to parking issues in BART station areas. It includes diagrams and checklists to assist stakeholders in finding mutually beneficial solutions to parking issues.

Who should undertake such a study? Any stakeholder could initiate a station area parking study, but the best approach is collaboration between BART, the city and relevant stakeholders. This way, the analysis is more informed and conclusions can respond to the issues of the primary stakeholders.

The first step is to understand the parking issues as outlined in Figure 1: The What-When-Where-Who-Why of Parking Management. This modification of the classic reporter's approach to writing a newspaper story is useful for understanding parking issues. Good parking strategies depend on a solid understanding of existing conditions.

The second step is to consider alternative strategies. Tables 1 and 2 (pages 8 and 13, respectively) identify possible strategies, addressing on-street and off-street parking, respectively. Appendix A includes blank versions of these figures and tables for use in workshop activities.

The third step is to design and implement programs. The advice provided in this section emphasizes the importance of gaining support from all stakeholders and establishing the mechanisms to implement the strategy.

Step 1: Understand the Parking Issues

Developing effective parking strategies depends on a complete understanding of the nature of the parking issues at hand. This is particularly important in station areas because there are many groups of people using the area's parking resources--BART riders, local residents, shoppers, workers and others--and the patterns of parking use by each group may be different.

Detailed information about existing conditions is required if the parking study is to sort out the priorities to be given to each parking user group.

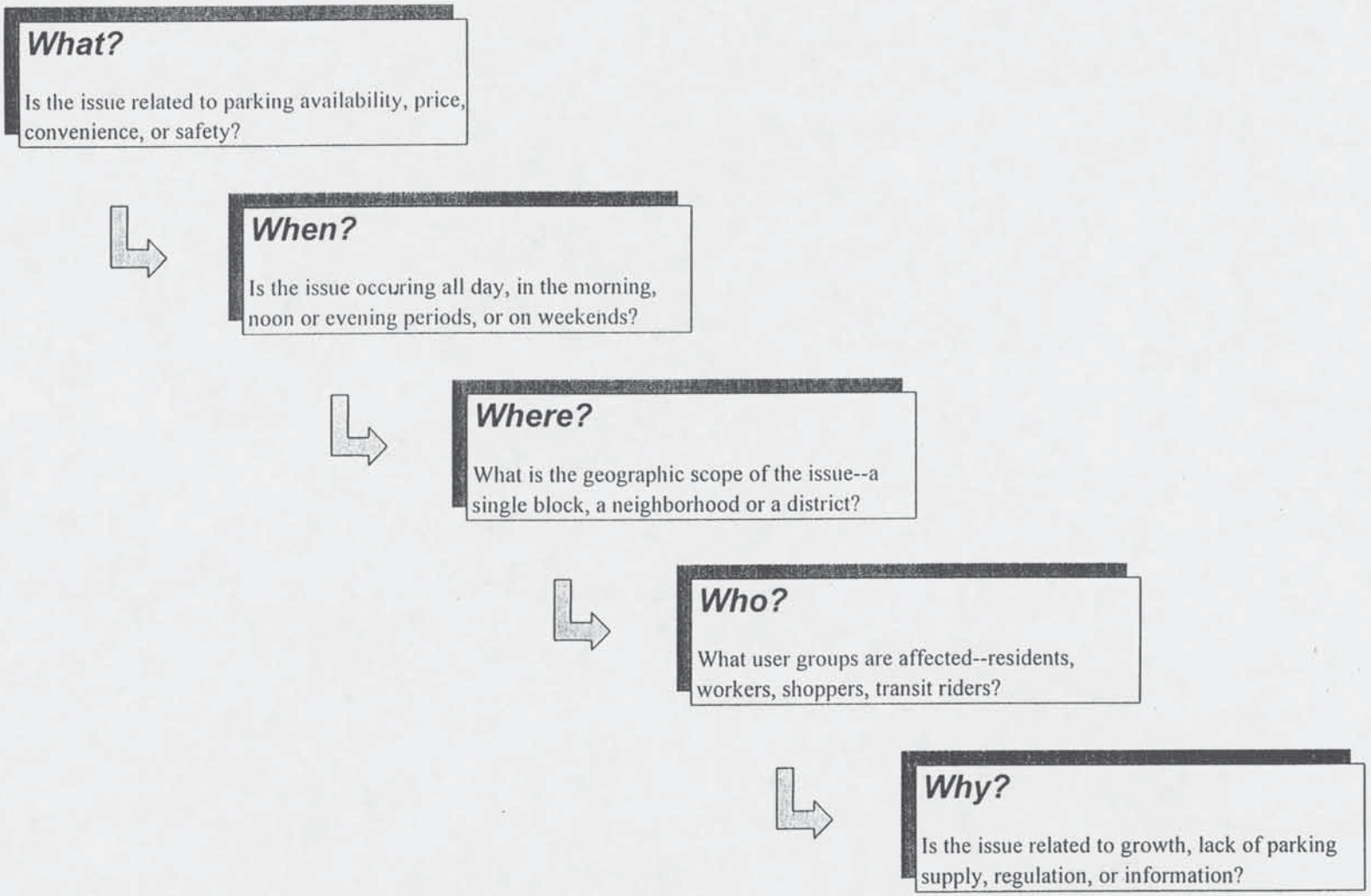
Faulty conclusions about parking strategies can be reached if the causes of a parking problem are not fully understood. An example is when a decision is made to build additional parking when in fact the problem stems from the inconvenience of using existing parking. Alternatively, a parking strategy could inadvertently disadvantage one group of parkers while trying to solve the problems of another group. For example, unrestricted parking in residential areas provides flexibility for all, but can be problematic if too many parkers from outside the neighborhood use on-street parking, reducing parking availability for residents and their guests.

The following paragraphs outline in greater detail what is meant by the what-when-where-who-why framework.

What? What is the issue? Parking issues usually concern the availability, price, convenience and/or safety of parking. Other possible issues include the predictability of space availability and traffic congestion issues related to drivers searching for parking spaces. Often, the bottom line for parkers is that the space they want is not available when they want it (or at a price they are willing to pay).

The "what" question is important because the definition of the problem is closely tied to the type of strategies selected. It is not unusual to start with one issue but arrive at a series of other issues after more detailed analysis. For example, when shoppers have difficulty finding parking they may assume that there are not enough

Figure 1: The What-When-Where-Who-Why of Parking Management



spaces, when in fact the issue is the turnover rate of the most convenient spaces (e.g., how many cars use each space per day).

When? When does the problem occur? Parking may have a particular pattern of use throughout the day, among days of the week, or even among different seasons. For example, an issue may be related to the holiday shopping period (for merchants), or weekday lunch periods (for restaurants), throughout the day (for workers), or in the evening (for movie theaters). The shorter the duration of a parking problem, the greater the possibility that some sort of shared parking arrangement can be developed. Nearby uses may have spaces available when another use has a shortage.

Where? Where is the parking issue occurring? The geographic location and the extent of the area affected will affect the type of strategies that may be used. Does the issue affect a single block, a commercial district, a neighborhood, or the entire community? Are there concerns about the impact of a commercial area on a residential area, or visa versa? It is a good practice to map the area affected by the parking issue. The answers to the "where" questions determine the geographic extent of policies and possible effects at the boundary of the area affected by a new policy.

Who? Who is using parking in a way that is creating impacts? Who is affected by the new parking use patterns? The needs of different users of parking must be understood, as should the way in which different uses affect each other's access to parking. People who use station area parking include the residents of the station area, those who work in the station area, visitors to local businesses, shoppers, and transit riders. Among transit riders, users include those who park at stations for all-day work trips, shorter mid-day trips, and when the SFO Extension opens, possibly airport travelers using BART to access the SFO airport.

A comprehensive parking strategy should address and set priorities for each user group. A consensus should be built among those who own or control parking about the entitlement of each group to use parking, taking into account their historical claim to the parking, broader city goals, willingness to pay, and how much parking each group owns. Such a discussion should include consideration of how alternative transportation modes could be used to shift parking demand characteristics. For example, how would shifting BART access modes to bus transit affect parking for patrons of local merchant parking? Similarly, how can rideshare programs for station area employees free up spaces for shoppers?

Why? Why has the issue emerged and why now? Has there been growth in business activity that has brought more visitors to the area? Has residential population and automobile ownership growth outpaced parking supply? Has the growth in BART patronage increased parking by transit riders? Have parking issues emerged simply because of a lack of information or a lack of coordination between property owners and activities? The answers to the "why" questions point to the type of responses that are appropriate and who should be responsible for solving them.

How to Answer These Questions

The framework presented in Figure 1 is a tool to assist stakeholders in analyzing parking issues. Answering these questions requires local research. Depending on local circumstances, a consortium of station area businesses, public agencies and resident groups could be formed to sponsor these studies. A variety of study techniques can provide the needed information:

1) Parking utilization studies. Such surveys provide a baseline of the conditions, including a map that shows the percentage of spaces occupied at different times of the day. They can answer questions about where shortages or surpluses exist, highlight shared parking opportunities and provided a basis against which change can be assessed. As appropriate, they should also survey parking charges and rates, the presence of validation systems and other parking control measures in place.

2) Field studies of parking conditions, which can include observation of parking patterns, parking counts, license plate surveys, or duration surveys over multiple time periods.

3) Surveys of parkers, addressing parking purposes, trip origin, length of time parked, and attitudes about parking facilities. Such surveys could also probe for reasons why parkers do not use other access modes such as bus transit, walking, biking, etc.

4) Studies of comparable station areas. These studies can reveal strategies that have been effective in similar situations.

Parking utilization surveys are most useful in addressing the what, when and where questions. Field studies, parking surveys and interviews can address the who and why questions.

In answering these questions, one needs to understand trends and likely future events that might change the context for station area parking policy. That trend analysis is needed for the station area and the broader regional context.

An important question in addressing parking issues is determining the degree of responsibility of different land uses for accommodating parking demand. For example, if BART commences operations at a new station and a new development opens at the same time, it is important to distinguish between the impact of each of those activities. Comparing those conditions to the pre-BART conditions is a good way of measuring impacts.

Finally, there must be a discussion and a consensus formed on the broader community goals that parking programs must serve. For example, some communities might make automobile mobility their priority, while others might shift their policies to promote livable communities that do not rely on the automobile. These basic directions strongly influence which alternative programs would be chosen, particularly with regard to the question of whether new parking is to be added in response to demand.

Notes:

Step 2: Consider Alternative Strategies

Strategy checklists have been developed for on-street parking (Table 1) and off-street parking (Table 2). A series of common parking issues is listed on the vertical axis. These issues are typical of what might result from a "what-when-where-who-why" analysis. The horizontal axis lists various strategies for parking management. The checks in the matrix represent strategies that are worthy of investigation for each parking issue.

On-Street Parking

On-street parking regulation is under the purview of each city. A city can address parking issues in establishing and enforcing regulations, time limits and parking meter rates. Modification of on-street parking regulations is most effective when done in coordination with changes in policies for off-street facilities.

Issues

The following explains four typical on-street parking issues that are summarized in Table 1. They include:

1. *Residents and/or their guests cannot find on-street parking spaces in their neighborhood*. If residents complain of insufficient parking, it is important to measure parking utilization at various times and days of the week. Residential neighborhoods may lack available on-street parking for a number of reasons. For example, shortages can exist if the residential population and automobile ownership exceed levels anticipated in local off-street parking regulations. Similarly, if neighborhoods are located near other uses that have high parking demand, such as commercial areas or transit stations, then those seeking parking may be using neighborhood parking resources. Finding the cause of the problem has a bearing on the type of strategy to be implemented.

Sometimes residents have plenty of neighborhood parking but do not want others to use it. Discussions can explore programs that provide benefits to communities that share their on-street parking, such as returning parking revenues to neighborhood improvement projects.

2. *Convenient spaces are not available to shoppers in commercial areas.* This is often an issue because the desirable spaces are not used productively. On-street spaces are often shoppers' first choice for parking; each of these spaces can serve many short-term patrons during the day.

Understanding the reason for the lack of availability is important. For example, if an employee parks all-day in a desirable space, then many potential customers are prevented from using that space. Similarly, if parkers from adjacent areas "invade" commercial parking there could be shortages for shoppers.

3. *It is difficult to find on-street parking anywhere in the station area.* If there is a lack of available on-street parking in the entire station area, it suggests an imbalance between activity levels. Some communities may have removed on-street parking to enable greater through traffic flow, address safety concerns or achieve aesthetic goals, making off-street parking insufficient. Alternatively, the lack of on-street spaces could be connected to a shortage of off-street parking or a problem regarding the management of on-street parking, e.g., on-street parking is being used for long-term parking and vehicle storage.

The approach taken to this situation depends on the overall character that is appropriate for the station area--in a suburban context there may be an effort to accommodate parking demand, while in an urban context the total demand would not be supplied because of land constraints, urban design priorities and transit and pedestrian objectives. But even in suburban areas, the total demand might not be supplied because of a community vision to support public transit and reduce automobile use for local trips.

Table 1: On-Street Parking Issues and Responses

Parking Issue	Permit parking programs	Enforcement	Merchant programs	Time limits and restrictions	Urban design/signage/traffic calming	Assignment of parking location	Parking charges	Parking Benefit Districts	Restriping for more spaces	Add off-street parking	Alternatives to driving
1. Residents cannot find spaces in their neighborhoods.	✓	✓		✓	✓			✓	✓	✓	✓
2. Convenient spaces are not available to shoppers in commercial areas.		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
3. It is difficult to find on-street parking anywhere in the station area.		✓		✓		✓	✓	✓	✓	✓	✓
4. Traffic congestion problems occur as drivers search for on-street parking.		✓	✓		✓	✓	✓			✓	✓

✓ = a suitable response

4. *Traffic congestion problems occur as drivers search for on-street parking spaces.* For example, if drivers are circling for extended periods of time or waiting for spaces to become available they create additional traffic congestion. In certain locations, the vehicular maneuvering while parking can be also an impediment to traffic flow.

Strategies

The horizontal axis of Table 1 shows a variety of on-street parking strategies that address the issues described above. They include:

Permit parking programs. Permit parking programs create a system where all-day or overnight parking is reserved for residents of some other designated group. These programs are used in many Bay Area communities. They are appropriate when parking demand from one land use affects the parking provided for another.

A permit parking program, for example, can prevent BART patrons from parking in residential neighborhoods around a station. Under a permit parking system, local residents and their guests would be able to use on-street parking, but cars parked for more than a defined number of hours without permits would be cited. Appendix B provides details on the implementation of permit parking districts. Most often, the permit parking district is established by the city at the request of a local neighborhood.

Permit parking can also be applied to on-street parking in commercial districts around stations. The concept provides unrestricted access to parking for residents (or employees) who have business in a parking district. Those without permits would be ticketed and/or towed if they parked longer than the permitted time. The design of permit programs should consider implementation costs for the city.

Enforcement of on-street parking regulations.

New enforcement programs can increase parking availability if regulations have not been enforced, or not consistently enforced. If a city is about to more stringently enforce time limits, however, sufficient notice should be provided to those who might be ticketed. Warnings, tickets, booting vehicles and towing can increase compliance. The public will support enforcement if it is consistently applied and tied to benefits such as increasing the availability of convenient spaces.

Merchant programs.

Merchants can provide programs to reduce parking demand, such as incentives for store employees to use alternative travel modes. If employees drive and park, merchant programs can encourage them to use underutilized off-street parking facilities.

Time limits and time-based use restrictions. Time limits are perhaps the simplest way to control the uses of on-street parking facilities. For example, parking use is effectively limited to customers by setting a two-hour limit in commercial areas. Even a four-hour time limit in a commercial area would discourage workers from using those spaces (whether riding BART or working locally). The time limit for spaces can be adjusted to reflect the particular purpose for the parking, ranging from a drop-off to longer-term parking. These time limits can be varied according to the convenience of the spaces to direct all-day parkers to underutilized spaces. If time limits are combined with parking charges, state-of-the-art parking meter systems offer flexibility in varying time limits and provide convenience to the parker.

Time-based parking restrictions prohibit parking for certain periods to preserve roadway capacity during peak commuting periods and to save parking resources for particular user groups. For example, early morning parking prohibitions reserve parking resources for mid-day parkers.

Urban design/signage/traffic calming. Urban design features can make more distant on-street parking spaces known to commuters and enhance pedestrian connections to those spaces. Good signage can direct parkers quickly and efficiently to available spaces. Sometimes the solution is as simple as providing information about space location and availability. Traffic calming, which includes strategies that moderate traffic speeds in order to improve the pedestrian environment, can also support parking management strategies. Traffic calming makes the pedestrian environment safer and more pleasant and increases parkers' willingness to walk from more distant parking spaces. Or, for those living or working nearby a station an improved pedestrian environment might reduce their use of a car to access BART.

Assignment of parking location. This strategy assigns particular parking users to specific locations to increase the efficiency with which spaces are used. For example, employer policy could require all-day parkers to parking in remote facilities to free up close-in on-street parking. Alternatively, the most convenient spaces could be devoted to pick up and drop off functions.

Charges for on-street parking. A system of differentiated parking meter rates is a key element in encouraging drivers to use parking efficiently, by directing long-term parking to less convenient spaces and gaining the most productivity from the most attractive on-street spaces. There are many alternatives for collecting on-street parking charges, ranging from traditional parking meters, to centralized parking machines, to debit card systems. Multi-space parking meters can be programmed to implement different parking charges by day of the week. They can also implement charges that differentiate between short- and long-term use, time of day, and the location of a particular parking space.

If implemented for on- and off-street facilities, parking charges reduce auto use and increase transit and pedestrian access. They provide more effective capacity from a given number of spaces because they encourage quicker turnover of spaces and increase the use of alternative modes of access (e.g., transit or carpool).

Parking charges make space availability more predictable for shoppers. The rates can be set so that there are always spaces available. Finally, parking charges create a revenue stream that can fund new parking or area improvements. Any parking charge system can include validation programs that reduce or eliminate parking charges for preferred user groups, such as shoppers.

Some residential areas might have excess on street parking, but prohibit non-residents from using it because no benefits flow back to the community from letting others use that parking. The parking benefit district concept is setting up a system in which residents parking free (using some type of residential permit system) but non residents would be charged the market price for parking. The revenues would be used for additional public services in the neighborhood where the revenue was collected, such as street cleaning, tree maintenance, sidewalk maintenance, or other improvements. The incentive of these improvements might cause neighborhoods to open up new on-street supply to other users.

Parking benefit districts for on-street parking. This concept is a variation of an on-street parking charge scheme for residential areas. Instead of prohibiting non-resident parking in neighborhoods, as occurs with a residential permit parking program, non resident parking could be allowed with an appropriate parking charge. The charge could be collected with meters, payboxes or monthly passes. Revenues from the charge would flow back to the community, for neighborhood or transportation improvements. Some neighborhoods might prefer to allow non-resident parking if it benefited local parks, landscaping or transportation facilities.

- *Increasing on-street parking supply through restriping/redesigning spaces.* Additional curbside areas can be striped for on-street parking, including angle parking, if right-of-way and traffic conditions allow. In addition, on-street parking has a traffic calming effect and improves the pedestrian environment, by physically protecting pedestrians from moving traffic. City officials can also review the size of on-street parking spaces to see if their size could be reduced. Spaces do not have to be individually marked in locations that use central parking machines, enabling a greater density of parked cars. However, there is a tradeoff between smaller parking spaces and the traffic impact of cars maneuvering into parking spaces.

- *Development of off-street parking facilities.* If existing parking facilities are being efficiently used (e.g., employees are parking in off-street lots and on-street spaces turn over frequently), then cities and property owners may consider adding *off-street* parking. Off-street parking can take the pressure off on-street supplies. Of course, provision of additional parking must take into account other potential community goals, such as reducing traffic congestion and auto dependency, improving environmental quality, and achieving livable communities.

- *Initiate new or enhanced alternatives to driving.* This toolkit focuses on parking management strategies, not the larger group of transportation demand management measures. However, any on-street parking supply issue can be addressed by changing parking demand through incentives that convince parkers to use other modes, whether that be new shuttle bus services, bicycle lockers, or financial incentives. Furthermore, strategies that provide a mix of land uses in an area may reduce automobile ownership and use.

Notes:

Off-Street Parking

Off-street parking regulations and policy are under the purview of both public and private entities. Publicly owned facilities are subject to policies established by the government agency with responsibility, i.e., the city, BART or others. However, most off-street parking is owned and operated by private property owners. In those instances, the property owner or the tenant establishes policies for the use of the facilities based on the ownership or lease arrangements. The actual operation of much off-street parking is contracted to parking management companies.

The connection between public and private parking entities is established in the minimum parking requirements contained in the city's zoning ordinance. These requirements compel developers to provide a certain amount of parking when they build a project. Parking supply is also influenced by lender requirements and standard development practices. However, minimum parking requirements are not addressed here because parking requirements are primarily an issue for new development, whereas the focus of this toolkit is managing existing parking.

Issues

Table 2 summarizes a series of off-street parking issues that are elaborated further below:

1. *Convenient spaces are not available to shoppers in commercial areas.* This may be an issue if spaces are not used productively. For example, if an employee parks all-day in a desirable off-street space, many potential customers are prevented from using that space. Similarly, there may be parking shortages for shoppers or employees if parkers from adjacent areas "invade" free, uncontrolled commercial or workplace parking.

2. *Parking lots and structures are usually full.* When the off-street parking supply is less than the demand, uses compete for parking on a first-come, first-served basis. This could occur when a new land use has increased the parking demand without a commensurate increase in parking supply, or a new tenant has a high employee density or a high level of visitors. When these conditions exists, market prices for parking generally emerge to ration the scarce parking resource, and/or parking spills over to on-street and other off-street parking.

3. *Parking patterns are uneven--some lots are full and others underused.* Uneven use of parking may relate to the access policies of the owners of those facilities, differences in attractiveness, perceptions of safety, temporary factors relating to the occupancy of the buildings, and so on. The opportunity presented by such an uneven distribution is policies that shift parking location to change the perceived availability of parking.

4. *Parking "poaching" is occurring--parkers from one use occupy parking provided for another use.* Parking poaching can occur when off-street parking does not have regulations, enforcement programs or parking access control. Examples of poaching include circumstances where employees park in spaces provided for retail uses or where BART transit riders park in spaces provided for employees.

5. *Cars are parked for long periods of time, thereby excluding daily parkers.* Cars parked for more than 24 hours take away spaces from more productive short-term uses. In this instance, "productive" is measured in terms of length of time parked.

Strategies

Table 2 also summarizes potential responses to off-street parking issues. The paragraphs that follow describe them in greater detail:

Access control. A wide variety of devices are available to control the use of off-street parking. The following describes some examples, ranging from simple to more complex systems:

Table 2: Off-Street Parking Issues and Responses

Parking Issue	Access control (gate arms, validation systems)	Enforcement	Employer programs	Time limits and restrictions	Signage/ITS/design	Shared parking	Parking cash-out	Parking charges	Provide more parking	Alternatives to driving
1. Convenient spaces are not available to shoppers in commercial areas.	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
2. Parking lots and structures are usually full.			✓	✓		✓	✓	✓	✓	✓
3. Parking patterns are uneven.	✓	✓		✓	✓	✓	✓	✓		
4. Parking "poaching" is occurring-parkers from one use occupy parking provided for another use.	✓	✓	✓	✓	✓			✓	✓	
5. Cars are parked for long periods of time, excluding daily parkers.		✓		✓				✓		

✓ = a suitable response

1) For retail locations, property owners can:

- post signs that limit who can use the parking facility and for what purposes. Existing security personnel give warnings, post notices, and if necessary arrange for towing. Closed circuit television and intelligent transportation systems (ITS) can support enforcement activities.
- chain off parking entrances until stores open in the later morning period. This prevents most journey-to-work transit commuters from poaching parking.
- use gate arm access controls (with validation systems for customers if free parking is provided). Such a system prevents non-shoppers from using the facility entirely or charges them a price.

2) For worksites, employees can:

- establish a hang tag or sticker system for employee parking. Existing security personnel give warnings, post notices, and if necessary arrange for towing.
- use a validation system that ensures that parkers are those intended to use facility. For example, workers enter their parking space number on a validation machine within their workplace.
- use gate arm access controls and access card systems for employees. Such a system prevents non-employees from using the facility entirely, or alternatively charges them for parking.

Enforcement. Simple information and enforcement programs can be surprisingly effective. Such regulations include time limits or restrictions on who can use the parking. Security and parking control officers can assist with enforcement.

Employer programs. Employers can provide incentives for employees to use rideshare, transit, or non-automobile travel modes. Incentives include use of *Commuter Choice* tax provisions, guaranteed ride home programs, providing vanpool start up costs, etc. Rideshare programs can also provide information on alternative travel modes and ridematching assistance. All these programs reduce the number of cars driven to work for each employee, thereby lowering parking demand. Employers can also create programs that relocate employee parking to remote parking locations that have excess capacity, e.g., employees of a shopping mall during the holiday peak shopping period.

Time limits and time-based use restrictions. Time limits are a simple way to control the use of off-street parking facilities. The time limit for spaces can be adjusted to reflect the particular purpose for the parking. These time limits can be established on a differential basis to direct all-day parkers to underutilized spaces (e.g., the top levels of a parking structure).

Time-based use restrictions can prohibit parking for certain periods to reserve parking resources for a user group. For example, early morning parking prohibitions reserve parking resources for mid-day parkers.

Signage/ITS/Design. Good signage directs parkers quickly and efficiently to available spaces. In the case of parking structures, the challenge is to get the upper stories of parking structure occupied. Sometimes the problem is as simple as providing information. Intelligent Transportation Systems (ITS) offer sophisticated ways of guiding drivers to available parking. Finally, parking structures designed with good passive safety and logical circulation are more likely to be fully used than those that appear unsafe.

Shared parking. If the time of peak parking demand varies among uses, shared parking strategies can use existing parking with greater efficiency. Shared parking reduces the need to add more parking by recognizing that each land use has a different peak parking utilization period. If those peak periods do not overlap, then at least a portion of the parking facility can be shared. For example, an office building

has low parking demand in the evening, which is the peak demand period for a restaurant. These two uses could share a portion of the parking.

Shared parking is normally thought of for an individual mixed-use site. But uses on separate sites can share parking. For example, BART has an arrangement at the Colma station where BART users use a portion of a bowling alley's parking during the day. The concept can be further expanded to include the sharing of parking on a station area basis. Shared parking reduces the cost of development and increases convenience for parkers.

Shared parking is normally used as a strategy for new development, but existing uses can develop shared parking arrangements with nearby property owners. Such arrangements can be privately initiated and implemented or carried out in cooperation with a city.

Although parking requirements for new development are not a focus of this toolkit, the use of in-lieu programs (where a developer makes a cash payment instead of providing a parking space) can facilitate shared parking concepts.

Parking cash-out. Employers can cash-out parking charges. Under a parking cash-out program, the employer offers workers the cash value of the cost of the parking space that is provided. Many employees choose to trade their parking space for the cash and commute to work using another travel mode. The cash out offer costs the employer nothing because it reduces expenditures on employee parking.

Parking charges. Research shows that parking charges at workplaces are the most effective tool for encouraging travelers to use efficient travel modes. Parking charges increase the level of transit use and ridesharing. Greater transit use and ridesharing, in turn, reduces parking demand.

Parking charges at commercial locations increase the rate at which parking spaces turn over. This increases the effective capacity of a fixed number of parking spaces.

Provide more off-street parking. Increasing efficiency through restriping, stacked parking, and attended parking provides more off street parking spaces per acre. However, if lower cost parking management options have been implemented and there are still shortages of parking, consideration may be given to constructing additional off-street parking.

Consideration of this strategy depends on the broader goals of the city concerning traffic congestion and auto dependency, improving environmental quality, and achieving livable communities. If adding parking is consistent with community goals and there is available roadway capacity to serve the parking facility, existing surface parking lots can be converted to higher intensity uses by decking and the construction of multi-story structures. However, substantial parking demand and a high willingness to pay must be present to generate enough revenues to cover the costs of providing additional parking.

Initiate new or enhanced alternatives to driving. This toolkit focuses on parking management strategies, not the larger group of transportation demand management measures. However, any off-street parking supply issue can be addressed by changing parking demand through incentives that convince parkers to use other modes, whether that be new shuttle bus services, bicycle lockers, financial incentives. Furthermore, strategies that provide a mix of land uses in an area may reduce automobile ownership and use.

Step 3: Design and Implement Parking Programs

Parking is important to many members of a community. It affects the convenience with which they use the transportation system, the cost of travel and feelings they have about their neighborhoods and communities. Because parking is so important to many different people, parking policy should be developed and implemented in a collaborative manner. In addition, it should support broader community objectives laid out in community visions, general plans, specific plans, redevelopment strategies and other initiatives.

Since parking is under the control of many stakeholders--the city, private property owners, merchants and employers--it is important to involve key stakeholders and find policies that can help each group achieve their goals. Stakeholders include those who own or control parking and community members who are affected by parking policies.

Many groups can take the lead in bringing stakeholders together. The city could convene such an effort, but equally could a neighborhood group or merchant group.

Many Bay Area cities have implemented parking management strategies, so there is a substantial body of experience that can be shared. Appendix C lists some of the approaches used in BART station areas.

The key steps in designing and implementing a parking program are as follows:

1) Collect background information on the issue and complete the "what-when-where-who-why" analysis (see Step 1, page 3). Consult existing parking utilization studies and conduct any field studies that are required. Assemble relevant policy statements from general plans and other city policies.

2) Review alternative strategies from Tables 1 and 2 (see Step 2, page 7). Assess the most suitable approaches, based on the strengths and weaknesses of each approach and their respective fit with local conditions and local policy. Develop new approaches if those listed do not respond to local conditions.

One the most significant questions that must be answered is whether parking issues will be addressed by managing existing supplies (in combination, perhaps, with incentives for alternative travel modes) or whether additions to parking will be considered. The answer to this question rests, in turn, with the community's general plan policies, environmental policies, resources available for new programs and its philosophy about sustainability, quality of life and other questions.

Once the general direction of parking policy is established, more specific criteria can be developed, including:

- effectiveness in addressing the parking problem,
- community acceptability,
- compatibility with local plans,
- cost and financing feasibility,
- time frame for implementation, and
- implications for congestion and air quality.

3) Create a process to identify and work with stakeholders. Develop formal and informal processes to discuss the issue, the potential approaches and implementation issues. Identify local supporters of the process who can explain the issues to the community.

4) Take alternative approaches to the community to gain further feedback. Build consensus on the preferred approaches.

5) Develop implementation plan(s), including estimates of costs and revenues associated with the strategies. For projects where there is joint responsibility for the problem, develop agreements on cost

sharing and implementation responsibility. Present the plan to the appropriate body or bodies for adoption and implementation.

Secure funding and assign organizational responsibility for carrying out programs. Create institutional structures (e.g., parking authorities, oversight bodies) and hire or assign staff to work on the project.

Develop marketing and public information programs to inform residents, the business community and commuters of the changes that are planned.

6) Implement the strategy and monitor its success, considering conditions before and after its implementation. Make adjustments after the initial period of implementation to make sure that the programs are working as intended.

Notes:

Parking Resources

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Willson, R. (2000) ″Reading between the Regulations: Parking Requirements, Planners' Perspectives, and Transit." *Journal of Public Transit*. 3: 111-128.

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Appendix A: Worksheets

The blank worksheets that follow are for use in community meetings and workshops. Public officials and community members can explore issues and strategies by filling the appropriate boxes.

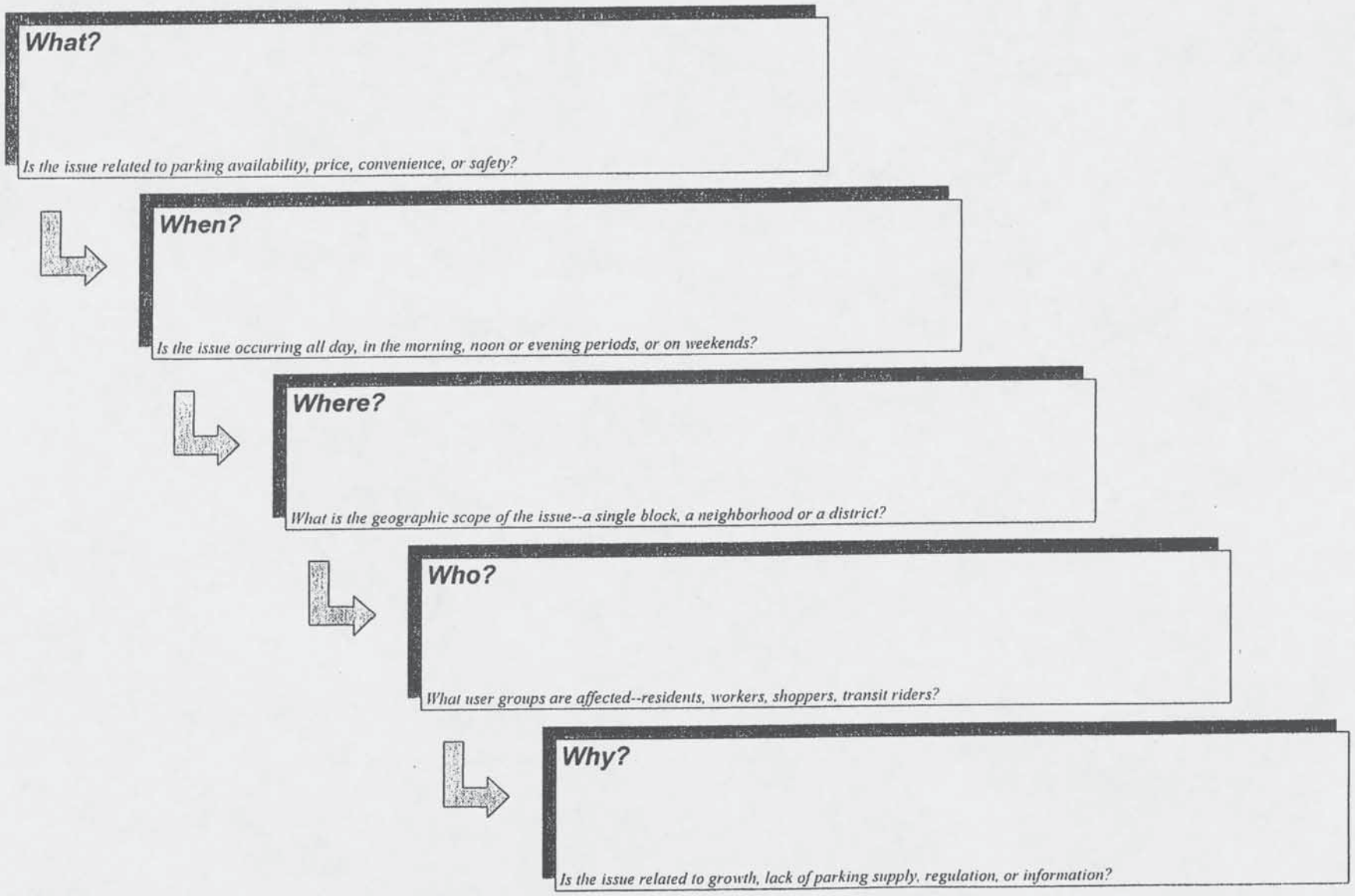
The worksheets can be used in a number of ways. They can be filled out by individuals and then tallied for the group to indicate areas of commonality. Alternatively, small groups can discuss the issues raised in the worksheets and develop a consensus around the issues and strategies.

The worksheets include the following:

- The What-When-Where-Who-Why of Parking Management
- On-Street Parking Issues and Responses
- Off-Street Parking Issues and Responses

Notes:

Analysis Worksheet: The What-When-Where-Who-Why of Parking Management



Analysis Worksheet: On-Street Parking Issues and Responses

Write in parking issues below:	Permit parking programs	Enforcement	Merchant programs	Time limits and restrictions	Urban design/signage/traffic calming	Assigment of parking location	Parking charges	Parking Benefit Districts	Restriping for more spaces	Add off-street parking	Alternatives to driving	Other.

Note: Add a check or a rating (1 - 3) for those strategies that are appropriate for the issues you have identified.

Notes: _____

_____

Analysis Worksheet: Off-Street Parking Issues and Responses

Write in parking issues below:	Access control (gate arms, validation systems)	Enforcement	Employer programs	Time limits and restrictions	Signage/ITS/design	Shared parking	Parking cash-out	Parking charges	Alternatives to driving	Other. _____	Other. _____

Note: Add a check or a rating (1 - 3) for those that are appropriate strategies for the issues you have identified.

Notes: _____

_____

Appendix B: Permit Parking Programs

Residential parking permit parking programs are designed to provide reasonably available and convenient on-street parking for residents when parking demand from nearby uses would otherwise occupy that parking. Cities generally establish permit parking districts that are designated on a map and for which specific parking regulations apply. Many of the communities around BART stations have implemented residential permit parking programs (See Appendix C)

Permit parking districts regulate time aspects of parking for non-residents. For example, a district may restrict parking for non-residents to 2 hours, allowing for visitors but not all-day parking. Residents of the district are entitled to a permit that releases them from the particular parking restrictions. Residents may also request guest permits for visitors. Residents must provide proof of residency, complete an application, and in most cases pay a small fee, which pays for the administrative costs of operating the program. The ordinance establishing such a program should include provisions for appeals.

Cities usually set thresholds for the creation of a permit parking programs. For example, the establishment of a program could require a petition signed by a certain percentage of residents residing within the zone, or could be based on the initiative of the city. Most cities then require a study by the City traffic engineer or planner, followed by a recommendation to the City Council.

Many programs include policies regarding the number of parking permits to be issued to guests. The rules prohibit the sale, rent or lease of any permit to any other individual. Generally, permits are not transferable between areas.

In the case of BART, it would be prudent to involve the community in the planning process before BART SFO Extension begins revenue service. Permit parking is a substantial change from normal parking policies, so community buy-in is a must.

Effective enforcement and appropriate fines must accompany permit parking programs. That is a key to maintaining the credibility of the program. Police support is a must.

Finally, the parking district must be sized so that spillover effects on other neighborhoods are limited. Too small an area will displace parkers. Too large an area will undermine the need for the program. Threshold criteria should be established for determining areas that are eligible.

Notes:

Appendix C: Bay Area Experience with Transit-Related Parking Management

The table on the following page summarizes the experience of a series of BART and Caltrain station areas in the Bay Area where parking management has been an issue, as compiled by BART staff. These stations tend to be those with high parking demand. Since parking policies are subject to change, please contact the relevant local jurisdiction for the most current information.

The following are some specific examples of innovative parking programs in the Bay Area:

- The City of Lafayette has developed a program to charge BART users for available on-street parking on three streets in the vicinity of the stations. Parking on the two streets closest to the station is $3 per day. Signs indicate the restrictions on parking. Each space is numbered and payment boxes are provided at the entrance to the station. These are spaces that were not previously used by residents. The program benefits BART riders and provides about $35,000 in revenue to the city.

- Private off-street lots are providing parking for BART users on a paid basis in the West Oakland and El Cerrito del Norte stations. BART patrons pay up to $5 per day for this parking.

- Shared parking is used for overflow BART parking at the Colma station. In this case, SamTrans pays the property owner for the right of BART to use a portion of the Sierra Bowl parking lot. The parking is provided free to BART riders.

- Spillover parking from the Oakland Coliseum is allowed to use BART station parking on a paid basis.

- Many cities institute various forms of on-street parking control systems in the vicinity of BART stations, ranging from parking meters, to time limits, to permit programs. Examples BART stations with permit parking programs include Daly City, Balboa Park, Concord, Pleasant Hill, Rockridge, West Oakland, El Cerrito Del Norte, El Cerrito Plaza, North Berkeley, Downtown Berkeley and Ashby.

- Caltrain uses a $1 per day parking charge in many of its commuter rail stations.

- Numerous owners of private parking lots use parking signage, validation programs, management and enforcement to ensure that parking is available for their customers. Strategies range from posting signs, to chaining off the parking facility before the stores open, to enforcement activities. Examples include the Hillsdale Shopping Center (Caltrain), the El Cerrito Plaza, the Embassy Suites in Pleasant Hill, and others.

Appendix Table C-1: Example Bay Area Parking Management Strategies

	Signage for private off-street lots	Parking meters	On-street parking time limitations	Enforcement	Residential parking permit program	Validation systems
BART San Francisco Stations	Yes	Yes	Yes--varies	City police	Yes	Varies
BART Bay Fair Station	Yes		Yes--four hour limit	BART police, shopping center security, city police		
BART Colma Station	Yes		Yes--four hour limit	BART police, city police		
BART Lafayette		Yes--for BART users	Yes	BART police, city police		
BART Concord Station			Yes--four hour limit	BART police, city police		
BART Daly City Station			Yes--four hour limit	BART police, city police	Yes	
BART El Cerrito Plaza Station	Yes		Yes--four hour limit	BART police, shopping center security, city police		
BART Pleasant Hill Station	Yes		Yes--two hour limit	BART police, city police		Embassy Suites
BART Rockridge Station		Yes	Yes--four hour limit	BART police, city police		
BART West Oakland Station			Yes--four hour limit	BART police, Caltrans personnel, city police	Yes	
Caltrain Hillsdale Station				Parking lot personnel, city police		Yes
Caltrain Millbrae Station			Yes, various			