Play 1

ASSIGN AND CONFIGURE THE HUB KIT OF PARTS

When designed well, mobility hubs are tailored to the needs of Bay Area's diverse travelers and the communities they serve. Mobility hub planning and design features should be unique to each hub, reflecting local land use and transit network characteristics and addressing the mobility and community needs of each specific hub location. This play provides guidance on hub configurations, access hierarchy, and the mobility hub kit of parts within the context of a Bay Area mobility hub typology.

DESIGNING HUBS TO SOLVE REAL PROBLEMS

Mobility hubs can help to solve regional mobility connections. Hubs are existing points in the regional mobility network that can solve mobility and community challenges through coordinated multimodal planning and integrated transit design.

It is important to understand the conditions and gaps we are solving for as we develop a regional hub program and as implementation partners advance projects. Problem statements vary by location, but generally – whether structured around transit or not – hub areas require coordination to solve four key problem areas or elements:

Transit Information Displays, San Francisco @ 4th & King

Problem Area 1: Operational Complexity

Mobility hubs are complex operating environments that sometimes concentrate conflicting demands into limited public spaces. As we give people access to sustainable mobility options (scooter, bikes, transit, carshare) at mobility hubs, partner agencies need to resolve access to and connections across multiple mobility options as well as provide safe pedestrian and bicycle infrastructure access to and from the hub.

Likewise, partner agencies should take an intentional and cohesive approach to siting mobility hub amenities (detailed in the *Kit of Parts* section below). Hub design and configurations should reflect the mode shift, safety, and access outcomes that we want to see as a region.

Problem Area 2: Going Beyond Mobility

Mobility hubs are places of exchange in the broadest sense; yet hub investments often narrowly focus on transportation. Agencies and their community partners must ask whether hubs can support public life, cultural amenities, and public resources. How can these public spaces reflect the community's fingerprints, creating welcoming and safe spaces beyond co-locating mobility amenities?

Successful mobility hubs are those that plan with community and support culturally relevant hub design and programming, which so far is an underrepresented component in mobility hub implementation.

Problem Area 3: Customer Experience

Customer-centric mobility hub design and operations are crucial to the success of hubs across the region. Experiential design should account for multiple perspectives and systems, not just on the 9 a.m. to 5 p.m. weekday commuter. This includes designing a safe and seamless physical and digital experience across public transit and shared mobility options. Not putting the diverse needs of customers first can result in disjointed payments, a lackluster passenger waiting experience, and unsafe conditions for people who bike and walk.

Shared services by private providers should be included in the design of the space to reduce safety issues and impeding access for people with disabilities.

Problem Area 4: Poor Information

Whether it's maps, real-time notifications, or directional signs, mobility information should give people an understanding of their mobility options at any time, their arrival time, and their next best option if there is a disruption. Yet, information at hubs today can be static, difficult to access, and not responsive to disruptions. As people are waiting or passing through hubs, they also should understand the non-mobility amenities available to them and how to access them.

PLACE AND PRODUCT

One of the markers of success for a mobility hub is the ability to bridge the gap between outcomes for a place and experience for the customer. A mobility hub is a product – or an assemblage of products – that needs to sell a compelling value proposition to potential customers. That product needs to be efficient, comfortable, pleasant, easy to understand, and supported by abundant choices. If not, your customer will not frequent the hub.

Central to designing your mobility hub product is the ability to articulate your desired outcomes for the site and for your customers. This articulation should reflect what the community needs, what the regional values and priorities are, and the use cases that align the two.

Use cases for the place and the product can range widely from hub-to-hub and might change depending on the time of day. At one hub, the predominant use case might be to bridge first- and last-mile gaps. Another hub's primary use case is to reduce congestion on the Bay Bridge. And another hub's leading use case could be to give the neighborhood access to car share and shared electric micromobility options at a central access point. These use cases will change over time and adapt based on on-going evaluation and feedback loops from the community.

Source: Gig Car Share

TYPOLOGY AND ANCHOR SERVICES

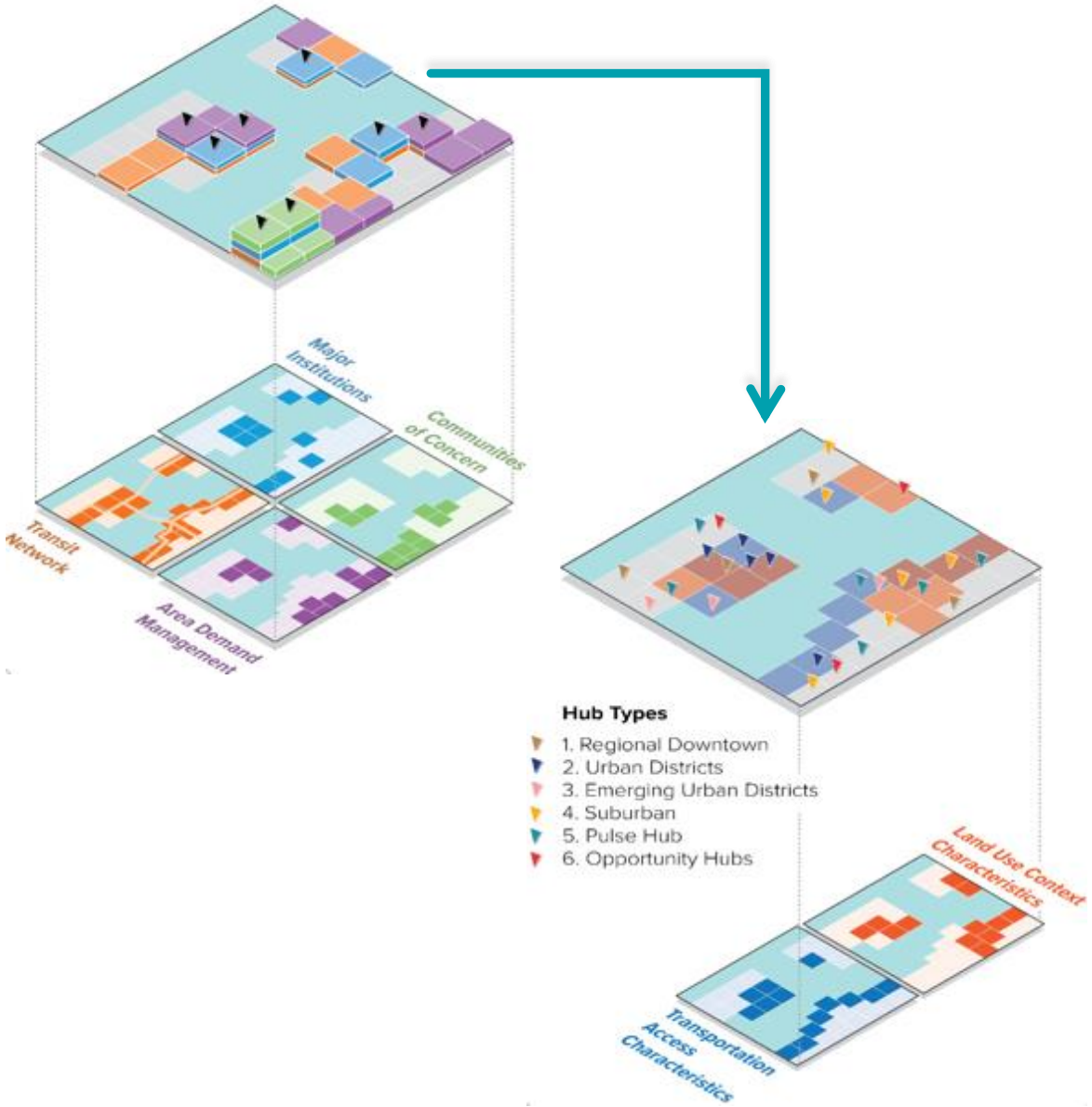
Hubs range in complexity from the Transbay Terminal and the San Rafael Transit Center to the Curtola Park-and-Ride in Vallejo. The form, function, and amenities needed at a mobility hub will depend on the underlying transit services and frequency, land use, and transportation access characteristics.

As part of the mobility hub location analysis, MTC identified the region's baseline mobility hub network, or universe of mobility hubs. To help guide investment efforts and contextually design hubs, we developed a mobility hub typology and assigned each baseline mobility hub location to one of six hub types:

- Regional Downtown Hubs
- Urban District Hubs
- Emerging Urban District Hubs
- Suburban/Rural Hubs
- Pulse Hubs
- Opportunity Hubs

Each hub type description is detailed on the following pages, including the anchor services likely at each hub type. Anchor services are summarized in Figure 3 on page 20 and include, at a minimum, transit stops served by rail or multiple frequent transit routes. They could also have microtransit, car share, docked bike share, or other community mobility models depending on the location.

Figure 1 Context-Appropriate Regional Mobility Hub Typology



Regional Downtown Hubs

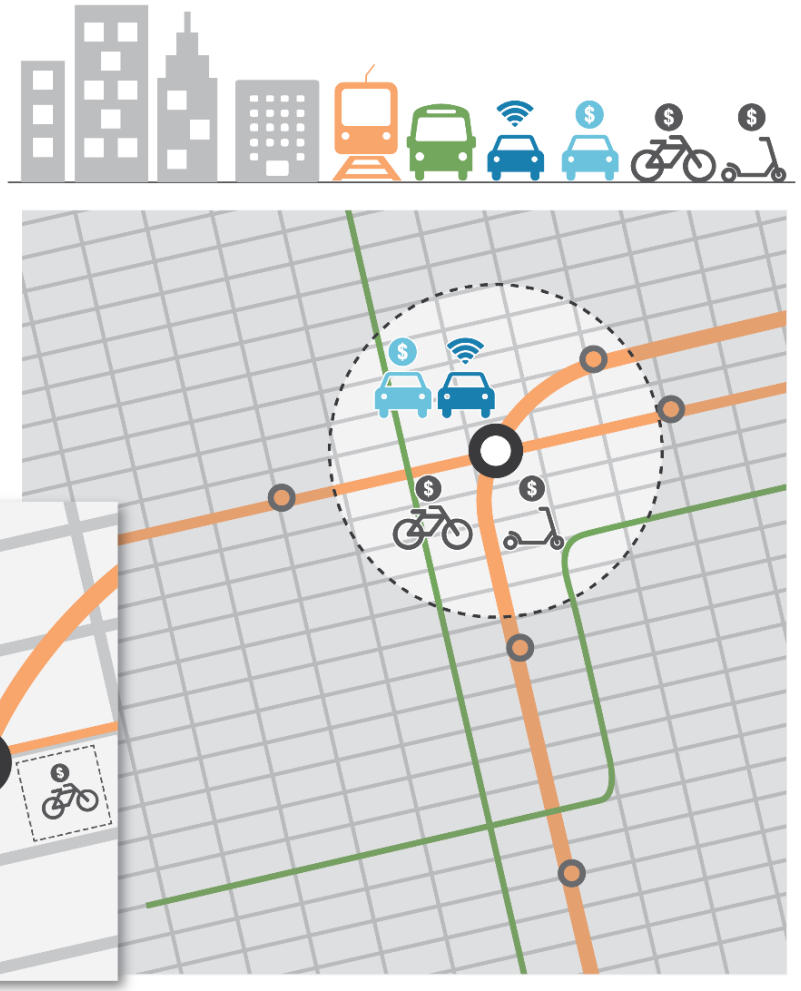
Regional Downtown hubs are the centers of economic and cultural activity. Surrounded by an established mix and scale of development, these hubs are in the highest residential and employment densities of all hub types. The hubs are easy to access for all types of travelers, particularly pedestrians and bicyclists. The hubs are served by a rich mix of modes, including high-capacity transit and high frequency bus service. Users are connected to local and regional travel destination via these hubs.

Likely Features & Anchor Services

- Multiple high-capacity transit services, above, at, and below grade
- High frequency bus service with two or more transit agencies
- Access to car share and shared micromobility services, including bike share stations and scooter share
- Strong demand for TNCs and taxis

Examples

- Transbay Transit Center, San Francisco
- 12th Street Oakland City Center
- VTA 2nd and Santa Clara, San Jose



Urban District Hubs

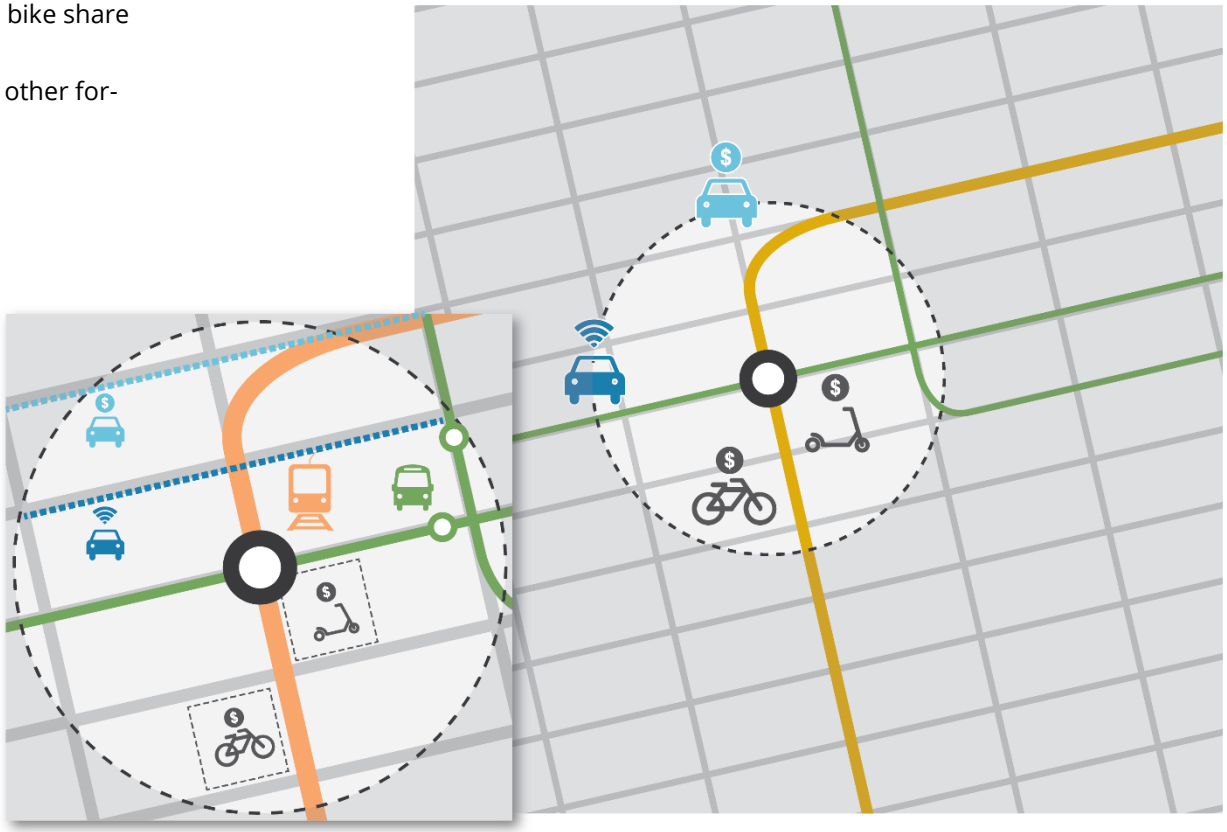
Urban District hubs are major and local centers of moderate to high residential and employment densities. These are often commuter hubs served by high-capacity transit or high frequency bus service, as well as local bus routes. Carshare and/or bikeshare services are within a short distance. Retail and restaurants may be within walking or biking distance, supporting a walkable and bicycle-friendly network immediately around the hub.

Likely Features & Anchor Services

- High-capacity transit and/or high frequency bus service with two or more transit agencies
- Access to car share and shared micromobility services, including bike share stations and scooter share
- Moderate demand for TNCs and other for-hire services

Examples

- Caltrain Mountain View Station
- BART Pleasant Hill Station
- Caltrain San Mateo Station



Emerging Urban District Hubs

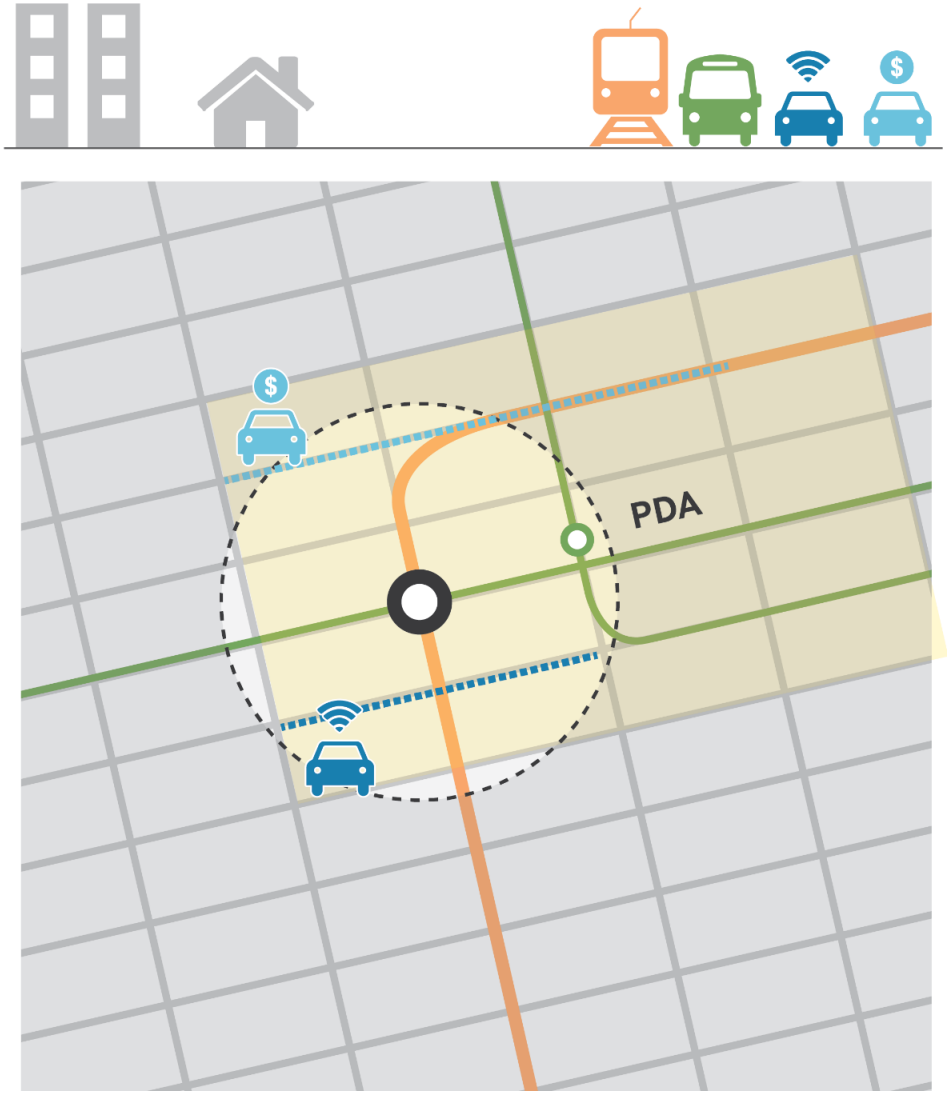
Emerging Urban District hubs are located within areas of moderate and low residential and employment densities. These hubs are served by high-capacity transit service, functioning as centers for smaller, local communities and economic activity. The location of these hubs primarily in or near MTC Priority Development Areas (PDAs), indicating they are locations for future growth. They are often located near established job centers, shopping districts, and other services.

Likely Features & Anchor Services

- High-capacity transit or high frequency bus service with two or more transit agencies
- Limited shared mobility services, mostly car share
- Moderate demand for TNCs and other for-hire services

Examples

- Caltrain Millbrae Station
- BART Richmond Station
- Suisun-Fairfield Station



Suburban and Rural Hubs

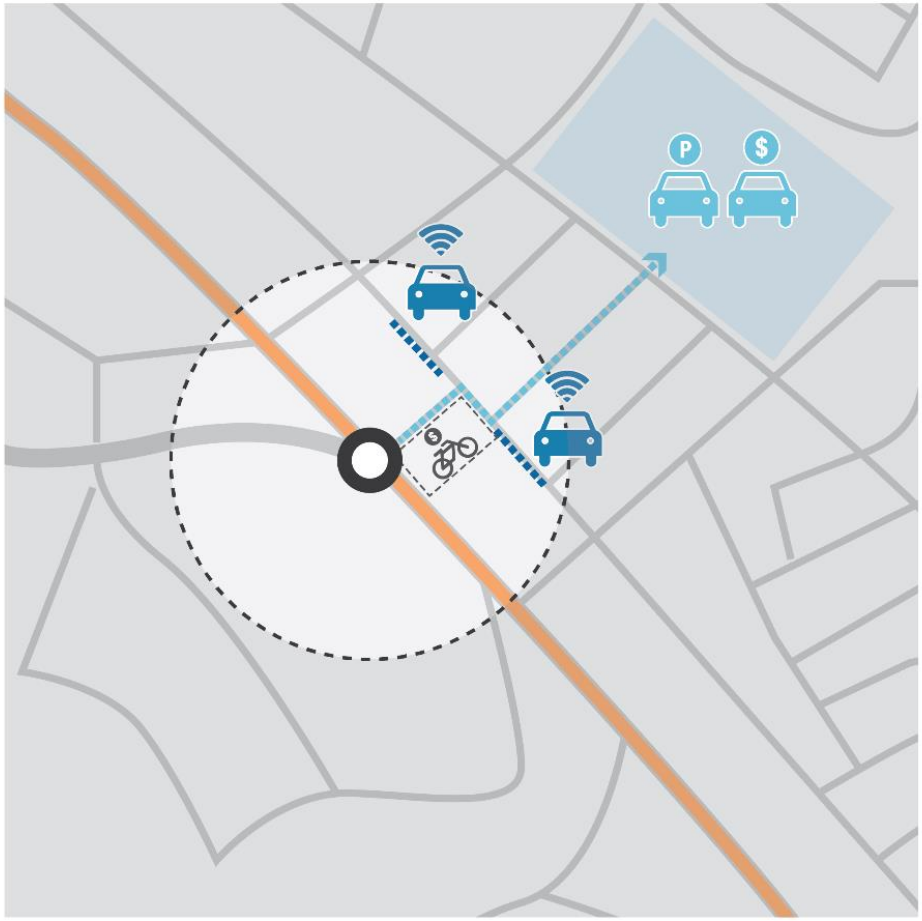
Suburban hubs are in auto-oriented or small neighborhood areas. These hubs provide important connections to regional transit options, which may include regional rail and bus, bus rapid transit (BRT), or local bus routes. Users typically access these hubs via nearby Park-and-Ride lots and/or car share or bike share.

Likely Features & Anchor Services

- Park-and-Ride access connected to regional rail and BRT
- Frequent and infrequent local feeder bus services
- Within car share and/or bike share service areas
- Moderate demand for TNCs and taxis

Examples

- Winchester Station, Campbell
- I-880 Station, Milpitas
- Dublin/Pleasanton Station, Livermore



Pulse Hubs

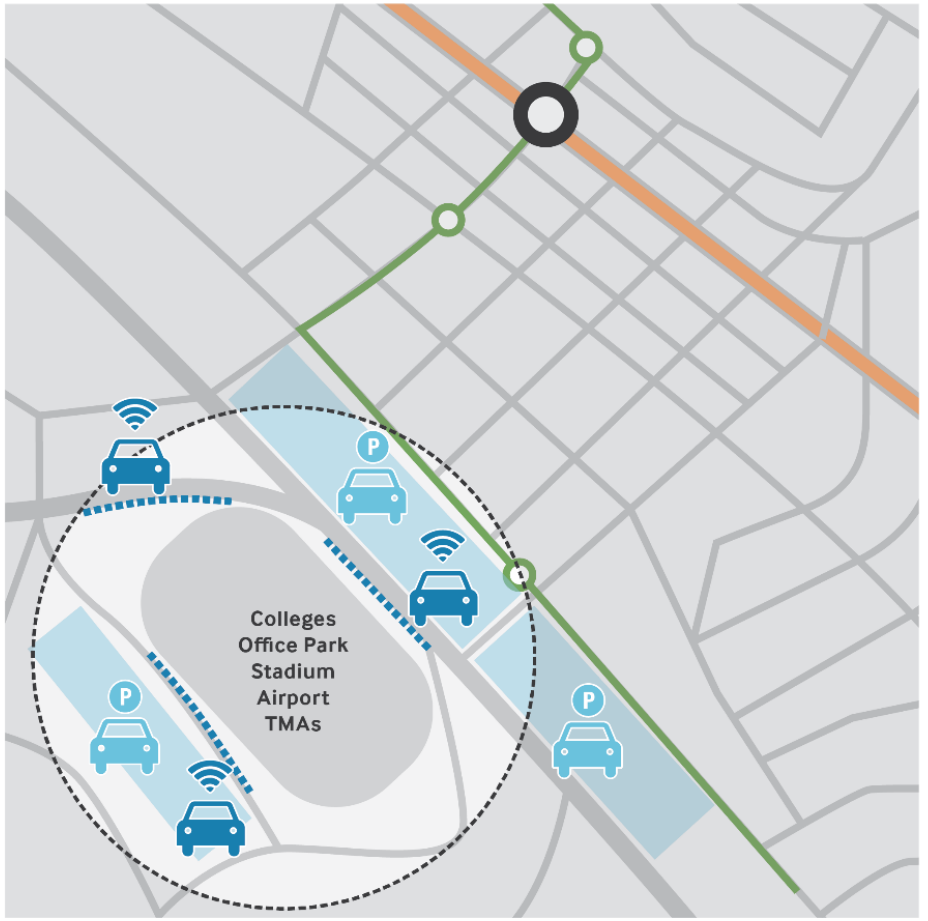
Pulse hubs are large trip generators, including airports, stadiums, universities, and major employer campuses. Transit may not be the focus or center of the area's economic activity. Development around these areas may be recent and street grids may be less connected. These areas may have significant opportunities for mixed-use development if the hubs are well connected to other parts of the region.

Likely Features & Anchor Services

- Defined by a large trip generator
- Frequent and infrequent local feeder bus services
- First- and last-mile services, including shuttles and microtransit (scooters, bikes or other lightweight vehicles, especially electric ones that may be borrowed as part of a self-service rental program)
- Access to car share and shared micromobility services, including bike share stations and scooter share
- Moderate, highly peaked demand for TNCs and other for-hire services

Examples

- Bishop Ranch, San Ramon
- San Jose State University, San Jose
- Google, Mountain View



Opportunity Hubs

Opportunity hubs are in outlying town center areas and/or at the intersection of MTC Communities of Concern and/or High Displacement Risk Areas. These areas have many of the key elements needed for a mobility hub – high concentrations of employment or residential density – but lack high quality, frequent transit service or other shared mobility services.

Key Features & Anchor Services

- Areas with concentrated mobility demand, but no proximate access to multiple frequent transit routes or other shared mobility services
- Limited or no anchor services

Examples

- Grand Ave & Lake Park Ave, Oakland
- Alum Rock & Capitol, San Jose

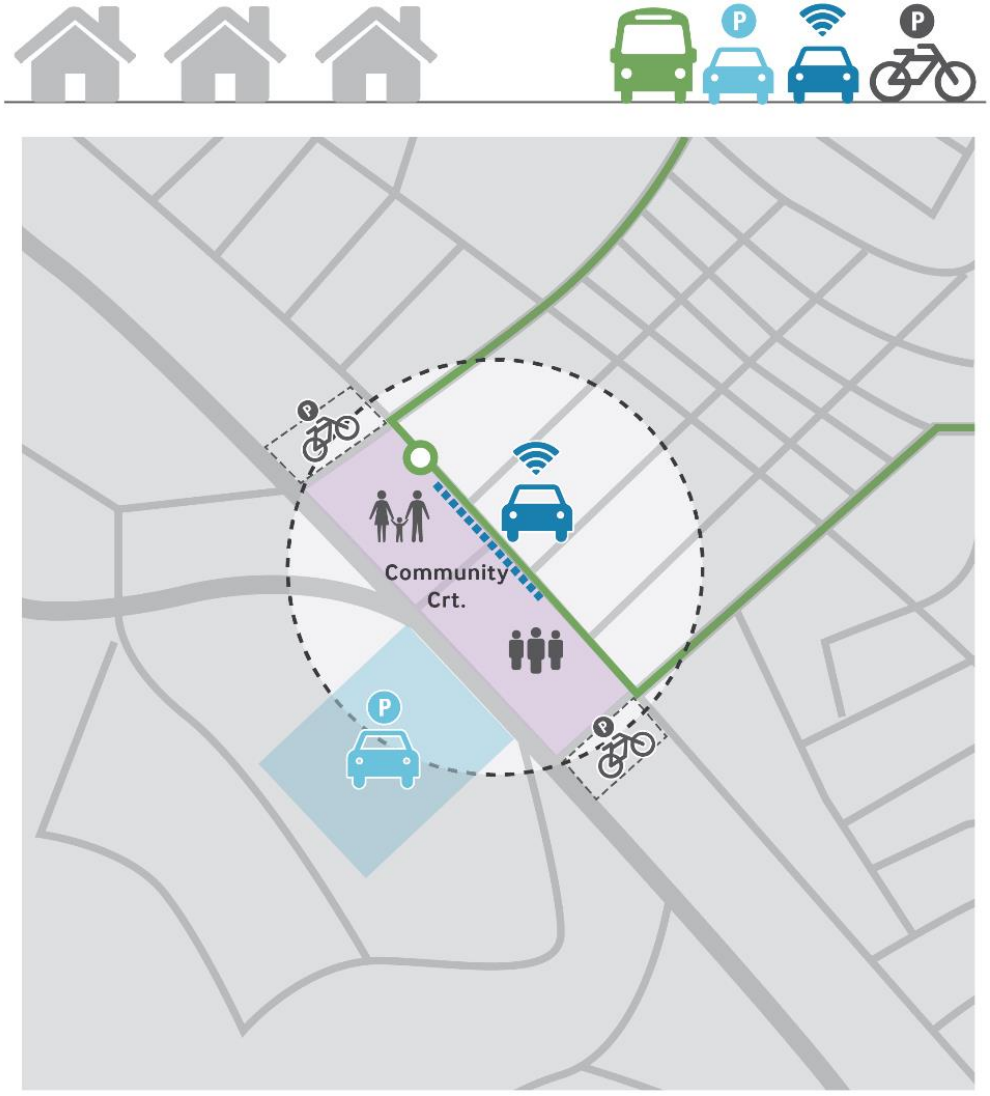
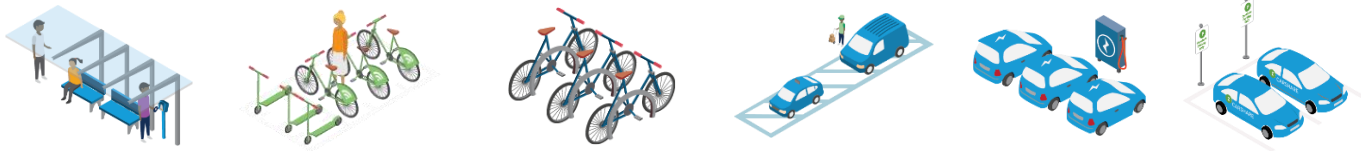
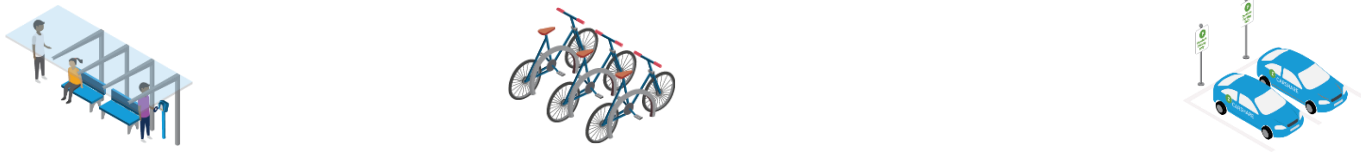


Figure 2 Anchor Services by Hub Type

Hub Type	Anchor Services
Regional Downtown Hubs	
Urban District Hubs	
Emerging Urban District Hubs	
Suburban Hubs	
Pulse Hubs	
Opportunity Hubs	

Transit

Shared Micromobility Services

Long- and short-term secure bike parking

Loading zones for ride-hail, shuttles, micro/on-demand transit, and urban freight

EV charging infrastructure for shared vehicles and micromobility

Dedicated car share parking

Common carrier package pickup and other efficient delivery services

THE KIT OF PARTS

Regional mobility hubs are the intersection of four key elements: **Sustainable Access & Mobility**, **Public Realm**, **Customer Experience**, and **Information**. Flexible in their design, mobility hubs are the sum of their parts and integrate plug-and-play features that nimbly accommodate change within each element. The following section outlines each element, the different parts that consist of each element, and the mobility hub types that contain those parts. Each hub type section illustrates which hub features should be included, considered for application, or might not be applicable except in unique cases. For example, some hub locations might not be able to support bike share stations, except where community-controlled bike share or bike libraries are viable.

S

SUSTAINABLE ACCESS & MOBILITY

P

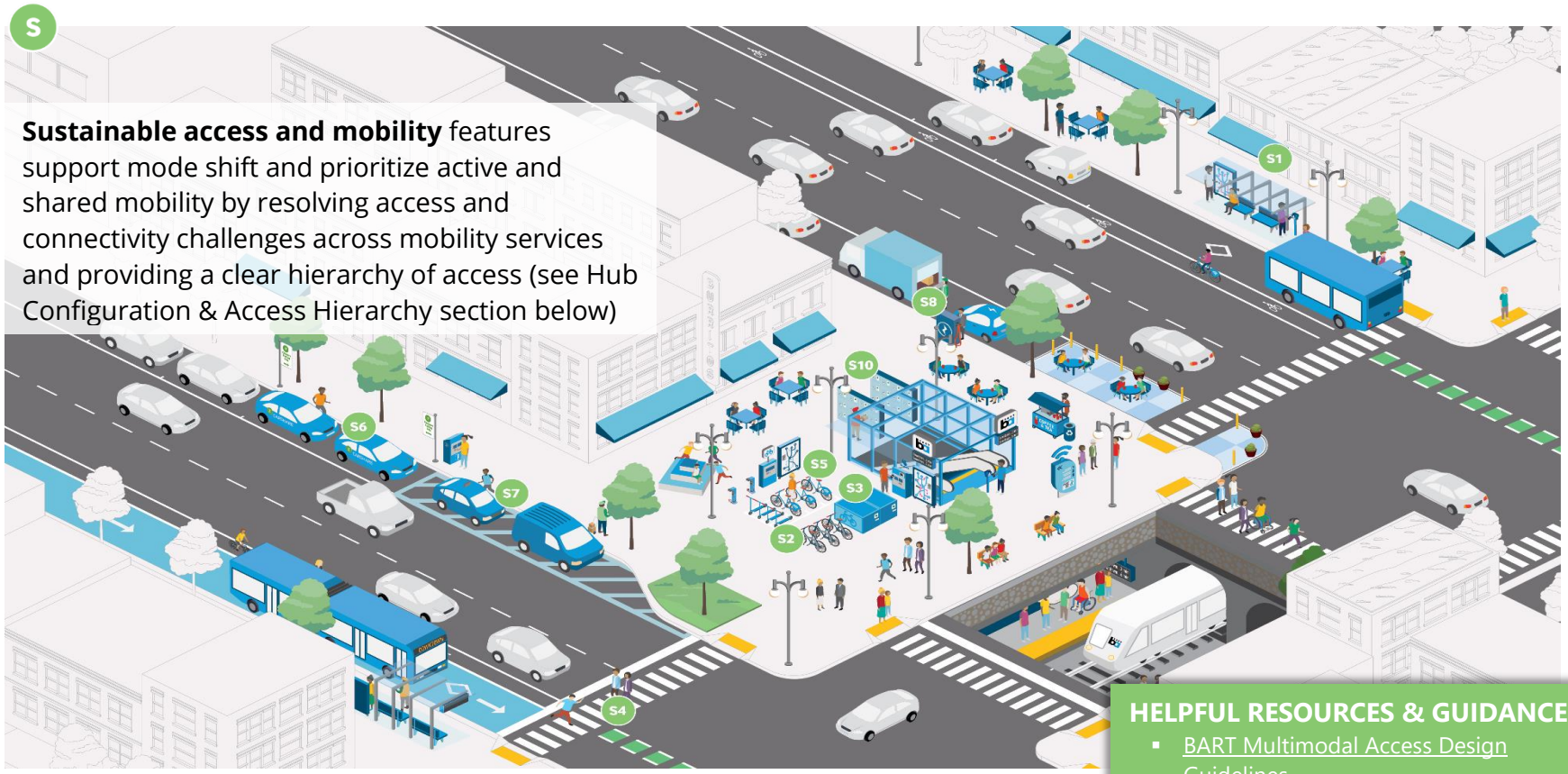
PUBLIC REALM

C

CUSTOMER EXPERIENCE

I

INFORMATION



Sustainable Access & Mobility

Example Kit of Parts

- **S1** Transit shelters and waiting areas
- **S2** Long- and short-term secure bike parking
- **S3** Bike stations with end-of-trip facilities
- **S4** Clear connections to bike and pedestrian networks
- **S5** Micromobility stations and drop zones
- **S6** Dedicated car share parking
- **S7** Loading zones for ride-hail, shuttles, micro/on-demand transit, and urban freight
- **S8** EV charging infrastructure for shared vehicles and micromobility
- **S9** Digital policy and geofences
- **S10** Common carrier package pickup and other efficient delivery services

HELPFUL RESOURCES & GUIDANCE

- BART Multimodal Access Design Guidelines
- NADTC Bus Stop Accessibility Toolkit
- TransLink Bus Infrastructure Design Guidelines
- Metrolinx Mobility Hub Guidelines
- NACTO Bike Share Station Siting Guide
- T4A Shared Micromobility Playbook
- Seattle EV Charging at Shared Mobility Hubs
- ITE Curbside Management Practitioner's Guide

Include	Consider	Not Applicable
●	◐	○

Figure 3 Sustainable Access & Mobility – Kit of Parts

Part		Definition	Hub Types					
			Regional Downtown	Urban District	Emerging Urban District	Suburban	Pulse Hub	Opportunity Hub
S1	Transit shelters and waiting areas	Covered structures at transit stops that provide a safe and comfortable place to wait for transit.	●	●	●	●	●	●
S2	Long- and short-term secure bike parking	Bicycle infrastructure that provides a convenient and secure place to park and repair bikes. Consists of bike lockers, bike cages, or indoor bike parking that provides covered long-term parking as well as short-term bike racks.	●	●	◐	◐	●	◐
S3	Bike stations with end-of-trip facilities	Staffed secure bike parking areas, usually outfitted with changing rooms, maintenance tools, light retail, and other supportive end-of-trip facilities.	●	◐	◐	◐	●	○
S4	Clear connections to bike and ped networks	Roadway improvements for pedestrian and bicycle safety and comfort by providing direct access to transit.	●	●	●	●	●	●
S5	Micromobility stations and drop zones	Designated areas for users to pickup and drop-off shared bikes, scooters, mopeds, and other small vehicles.	●	●	◐	◐	◐	◐
S6	Dedicated car share parking	Parking that has been marked and designated for car share vehicles and equipped with a minimum level 2 electric vehicle charger.	●	●	◐	◐	●	◐
S7	Loading zones for ride-hail, shuttles, micro/on-demand transit, and urban freight	Yellow curbside areas used for active freight and passenger loading and unloading of ride-hail, shuttles, micro/on-demand transit, and urban freight.	●	●	●	◐	●	◐

Include	Consider	Not Applicable
●	◐	○

Part		Definition	Hub Types					
			Regional Downtown	Urban District	Emerging Urban District	Suburban	Pulse Hub	Opportunity Hub
S8	EV charging infrastructure for shared vehicles and micromobility	Charging system that allows for fast charging of shared vehicles and micromobility.	●	●	●	●	●	●
S9	Digital policy and geofences	Critical tools used to effectively and dynamically manage the public right-of-way and enforce access and deployment requirements (e.g., exclusion zones, slow zones, forced drop off, etc.).	●	◐	◐	◐	●	○
S10	Common carrier package pickup and other efficient delivery services	Secure, self-service kiosks for users to retrieve packages and other goods at any given time.	●	◐	◐	◐	◐	◐

Public Realm

Hub work often focuses on mobility function and amenities without reflecting the community's fingerprints. **Public realm** features move beyond mobility to create welcoming and safe spaces through culturally relevant design and programming that support public life with cultural amenities and resources.

Example Kit of Parts

- **P1** Permanent and mobile vending/retail space
- **P2** Culturally relevant programming
- **P3** Community-driven design elements/tactical urbanism
- **P4** Street furniture
- **P5** Pedestrian-scale lighting
- **P6** Green space

HELPFUL RESOURCES & GUIDANCE

- San Francisco Planning Public Space Stewardship Guide
- Transportation Research Board Fast-Tracked: Tactical Transit Study
- PolicyLink Creating Change through Arts, Culture, and Equitable Development: A Policy and Practice Primer
- Better Block Recipes

Figure 4 Public Realm – Kit of Parts

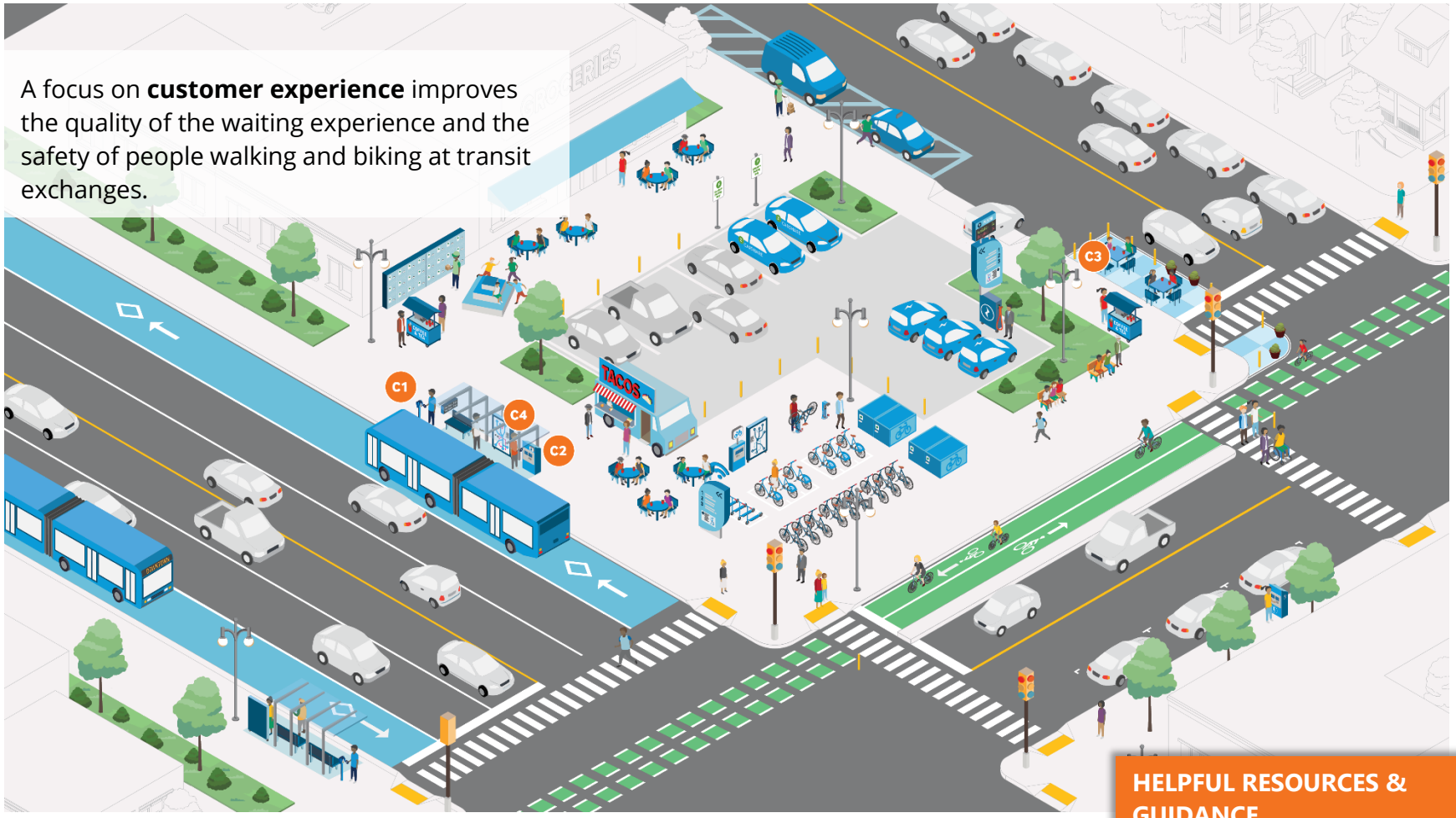
Include	Consider	Not Applicable
●	◐	○

Part		Definition	Hub Types					
			Regional Downtown	Urban District	Emerging Urban District	Suburban	Pulse Hub	Opportunity Hub
P1	Permanent and mobile vending/retail space	A mix of dedicated space for permanent retail services that are anchored to a physical location (e.g., restaurant) and flexible space for mobile vending/retail services (e.g. food trucks, florists, coffee stands) that can share the same space at different times.	●	●	●	◐	◐	◐
P2	Culturally relevant programming	The activation of public space that serves the unique needs of the community it serves (e.g., outdoor dining, cultural spaces).	●	◐	◐	◐	◐	●
P3	Community-driven design elements/tactical urbanism	A community-led approach to community building using simple, temporary, low-cost design interventions that can be altered and scaled up to better serve the community (e.g., curb bulbs, pedestrian enhancements, cultural amenities, and art).	●	●	●	●	●	●
P4	Street furniture	Objects placed or fixed in the public right-of-way that activate sidewalks and establish a sense of place (e.g., benches, planters).	●	●	●	●	●	●
P5	Pedestrian-scale lighting	Street lighting that illuminates the sidewalk and is positioned lower and spaced closer together than roadway lighting, located in areas with high pedestrian activity to improve safety and visibility.	●	●	●	●	●	●

Part		Definition	Hub Types					
			Regional Downtown	Urban District	Emerging Urban District	Suburban	Pulse Hub	Opportunity Hub
P6	Green space	An area that is partly or completely covered with grass, trees, shrubs, or other landscaping.	◐	◐	◐	◐	◐	◐

C Customer Experience

A focus on **customer experience** improves the quality of the waiting experience and the safety of people walking and biking at transit exchanges.



Example Kit of Parts

C1 Off-board payment for transit

C2 Plan, book, and pay technology with Clipper integration

C3 Place programming

C4 Digital screens for booking and trip planning

HELPFUL RESOURCES & GUIDANCE

- NACTO Better Boarding, Better Buses
- Ioby Trick Out My Trip
- TransLink Customer Experience Action Plan

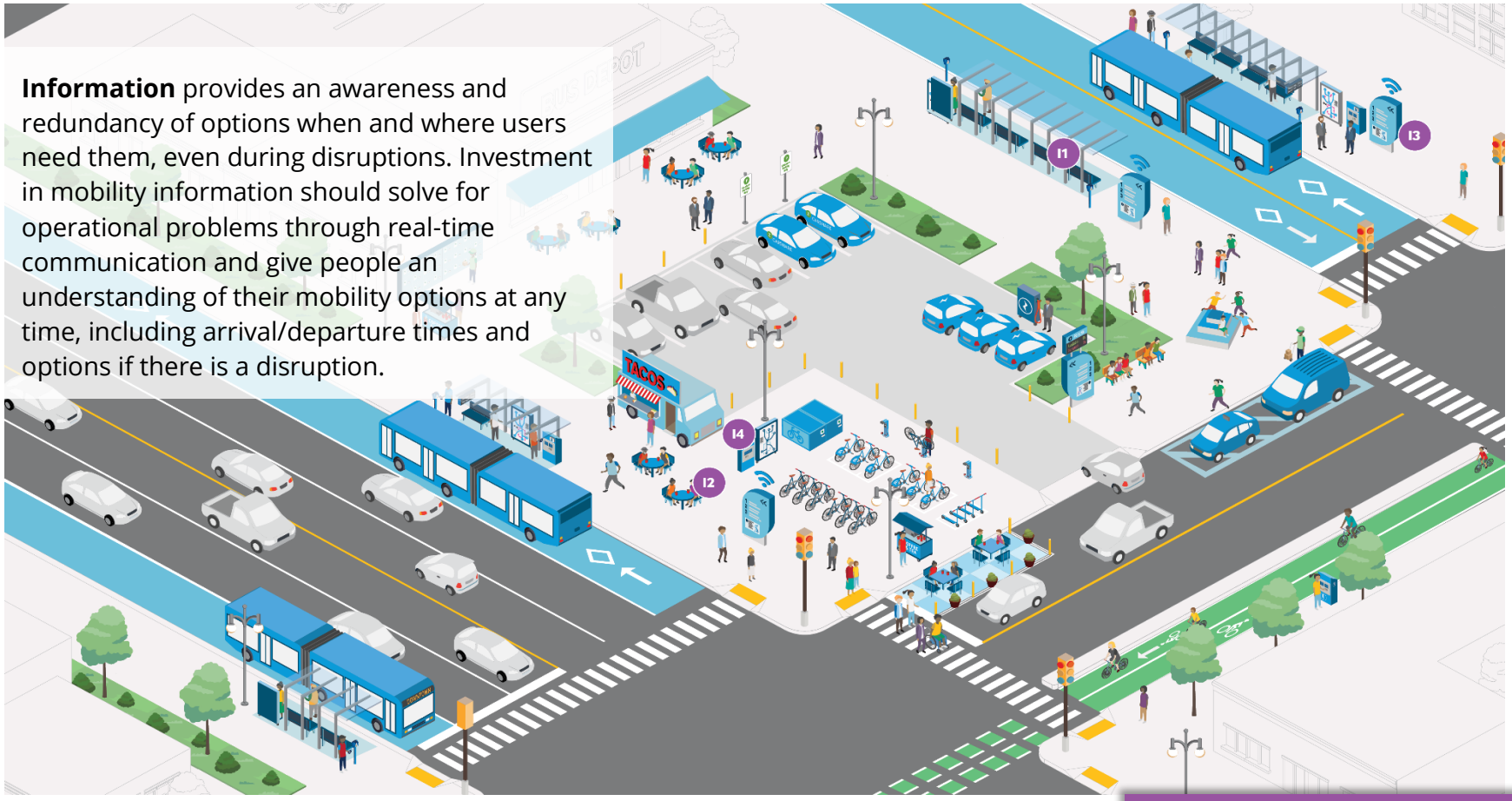
Include	Consider	Not Applicable
●	◐	○

Figure 5 Customer Experience – Kit of Parts

Part		Definition	Hub Types					
			Regional Downtown	Urban District	Emerging Urban District	Suburban	Pulse Hub	Opportunity Hub
C1	Off-board payment for transit	Payment systems located near transit stops that allow transit riders to pre-pay for transit before boarding to speed up boarding times.	●	◐	◐	◐	◐	○
C2	Plan, book, and pay technology with Clipper integration	Integrated vending machines located near transit stops that allow transit riders to pay for their trip and buy/reload their Clipper® cards.	●	◐	◐	◐	●	◐
C3	Place programming	Creation of public gathering spaces that extends the community identity outdoors and establishes a sense of place (e.g., parklets).	●	◐	◐	◐	◐	◐
C4	Digital screens for booking and trip planning	Touch screen kiosks that digitally display nearby mobility options and allow users to book and plan their trip.	●	◐	◐	○	●	○

I Information

Information provides an awareness and redundancy of options when and where users need them, even during disruptions. Investment in mobility information should solve for operational problems through real-time communication and give people an understanding of their mobility options at any time, including arrival/departure times and options if there is a disruption.



Example Kit of Parts

- **I1** Real-time travel information
- **I2** Hub area maps, amenity information, and bulletins
- **I3** Monitoring systems to measure mobility and public life metrics
- **I4** Digital and physical wayfinding (infrastructure that displays mobility and community information)

HELPFUL RESOURCES & GUIDANCE

- MTC Regional Transit Wayfinding Guidelines & Standards
- GTFS Best Practices
- RMI Transit Data Interoperability Report

Figure 6 Information – Kit of Parts

Include	Consider	Not Applicable
●	◐	○

Part		Definition	Hub Types					
			Regional Downtown	Urban District	Emerging Urban District	Suburban	Pulse Hub	Opportunity Hub
I1	Real-time travel information	Information that shares the current status of nearby mobility options to enable travelers to make informed decisions about their trips (e.g., estimated arrival/departure times, location of services).	●	●	●	◐	●	○
I2	Hub area maps, amenity information, and bulletins	Physical displays that help orient users and direct them to nearby amenities and relevant announcements.	●	◐	◐	◐	●	◐
I3	Monitoring systems to measure mobility and public life metrics	Sensor and/or survey-based tools that track and monitor how the hub is used and how often.	●	◐	◐	○	◐	○
I4	Digital and physical wayfinding	A guidance system that directs users to nearby mobility services and amenities and follows the *MTC Regional Transit Wayfinding Guidelines & Standards*.	●	◐	◐	◐	●	○

HUB CONFIGURATION & ACCESS HIERARCHY

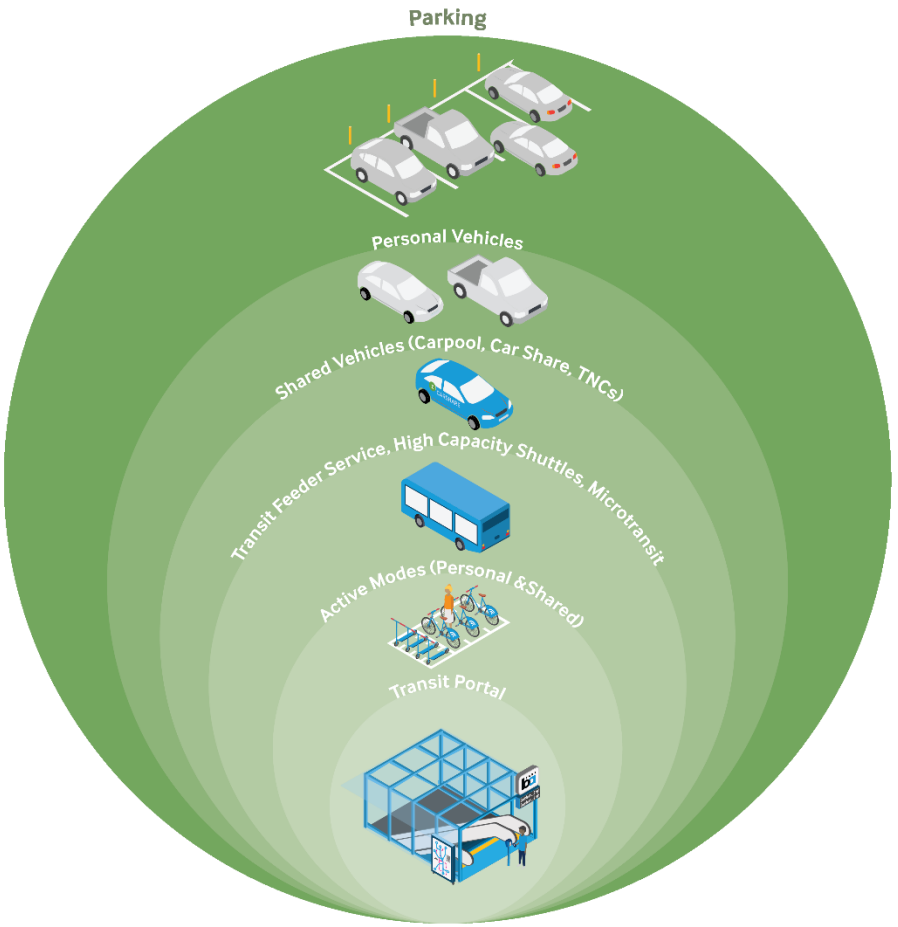
Mobility hubs can be configured in one of two layouts. **Fully integrated hubs** are the more user-friendly of the two because all hub elements are self-contained on one site or within a single development (e.g., a park-and-ride or a BART station with sufficient space to house many services and amenities). Fully integrated configurations can be applied within a larger scale facility or at a smaller, more neighborhood scale (see page 34). **Dispersed hubs** are spread across several blocks and have elements located in nearby developments in addition to the transit facility.

Each hub form entails a different level of operational complexity, programming, coordination, and exposure to risk. Dispersed hubs are more complex from an operational, management, and performance measurement standpoint, and require more coordination. However, their dispersed nature can distribute responsibilities across multiple property owners as opposed to full integrated hubs which concentrate most of the management responsibilities on a single facility owner.

Highest and Best Use Considerations

Curb management and amenity siting should align with agency policy objectives and access priorities. While site and market conditions may vary, the most prime curb and facility locations for hub amenities should be prioritized for those that advance climate mitigation, affordability, and equity. Publicly operated and low carbon anchor services should serve as the base of the access hierarchy. These services should be the closest proximity to transit portals and major demand generators in the hub area. The most proximate curbs should also be considered for enhanced pedestrian connections, Class 2 or 3 bikeway extensions to transit's doorstep, or transit priority interventions like transit-only lanes or queue jumps.

Particularly when designing dispersed hubs, implementers should also establish a curb prioritization framework – similar to frameworks developed by SFMTA, BART, and the Seattle Department of Transportation – to determine the highest and



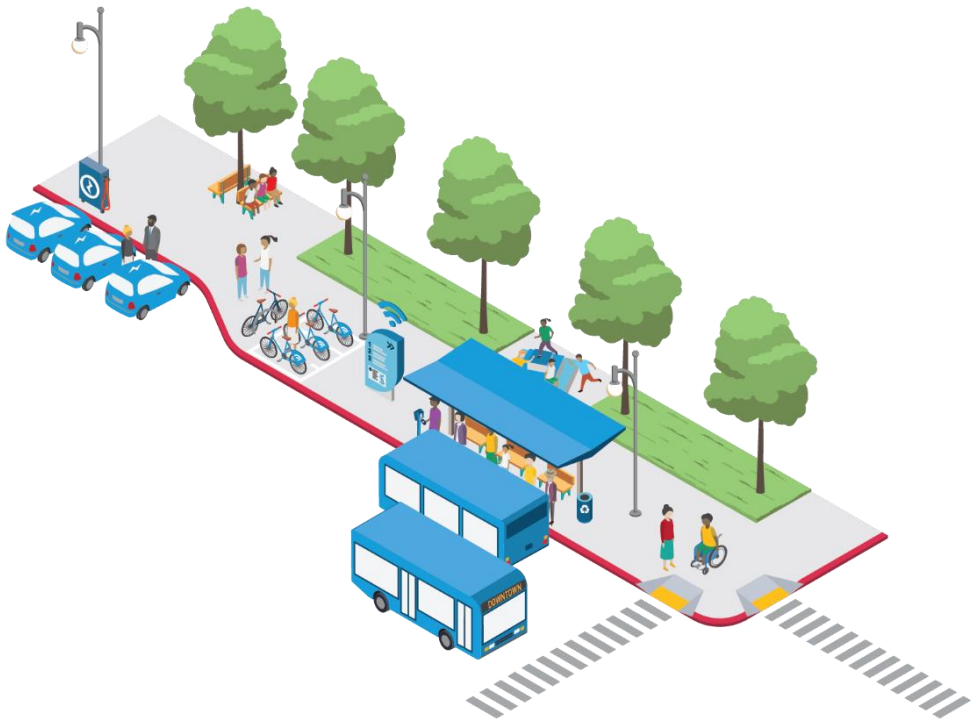
Mirroring BART's multimodal access hierarchy, anchor services like frequent transit service, personal and shared micromobility, and other private feeder services serve as the most proximate options at mobility hubs. Parking and personal vehicles rank last among the mobility hub access hierarchy.

best use of limited curb space for different mobility hub types. Agencies should prioritize active modes – like personal bikes, bike share, and scooter share – along the most proximate blocks to the anchor transit facility, reflecting the local community's and region's policy objectives to encourage and support the most sustainable and affordable mobility options for customers.

Consideration for prioritizing active modes includes mitigating or eliminating any potential conflicts with larger vehicles – most notably ridehail and taxi vehicles accessing the curb. Implementation partners should thoughtfully identify potential conflicts and safe locations for active transportation services.

Small-Scale Hubs

A sub-category of fully integrated mobility hubs, smaller scale – or "corner" mobility hubs – can be implemented with design choices and modal integrations that respond to acute mobility challenges and customer needs. Typically found in a lower density neighborhood context, or along enhanced transit corridors, corner hubs are intended to serve the mobility needs of the immediate neighborhood and meet the first-and last-mile needs of people accessing frequent bus transit.



Smaller-scale hubs might include a limited set of amenities, responding to spatial constraints and more narrowly defined access, transfer, and mobility needs.

Corner hubs fit well at locations that are:

- Not served by heavy rail
- Identified as opportunity hubs
- Served primarily by BRT, streetcar, or a connection point between two or more frequent transit routes
- Collecting people taking commuter-oriented and inter-county bus routes.

Small-scale corner hubs require trade-offs that might repurpose limited curb space from on-street parking storage to bike lane connections, transit lanes and bus queue jumps, shared mobility loading and staging space, open space, and green space.