

7 BEST PRACTICES

Center City Circulation

DENVER – MINNEAPOLIS – PORTLAND – SAN FRANCISCO

WHAT IS IT?

Seattle Center City is the hub for regional public transportation, with rail vehicles and buses arriving from all over King County as well as Snohomish and Pierce Counties. Seattle Center City avenues have some of the highest concentrations of buses in the country at peak hours. During peak travel periods, Third Avenue becomes a limited use facility for transit and bicycles. Dedicated lanes and passenger waiting areas are needed to carry large numbers of people into and through downtown; however, these types of facilities force tradeoffs with other important right-of-way functions such as on-street parking, sidewalk space, bicycle lanes, loading zones for deliveries, and general purpose travel lanes. As Seattle grows, demand for transit to downtown and throughout the Center City will expand as well. A system that supports regional access to downtown and movement around the Center City, supports a vibrant street life, and minimizes spatial and environmental impacts is a critical and challenging objective.

Generally, Center City transit operates most efficiently when service focuses around a limited number of transit priority corridors, along a linear transit facility, or a combination of both. Seattle has these features, but spatial constraints provide little room for expansion. The geography of Seattle's Center City is compact but presents challenges for the provision of efficient transit circulation. The hourglass shape of the Center City limits north-south right-of-way



between Elliott Bay to the west and Interstate 5 freeway to the east. Furthermore, access to transit is significantly limited by the steep hills from the waterfront east to First Hill. Steep grades confine the number of corridors that can be used as feasible perpendicular transfer points. Because of these physical constraints, linear circulation is limited to a few major north-south Avenues, including the 3rd Avenue Transit Mall and the Downtown Transit Tunnel.

The city is challenged to gain more capacity from existing right-of-way while improving the simplicity and legibility of the system. King County has made significant strides in recent years to clarify its

complex bus routing patterns and provide simplified public information. Still, the system is complicated and oriented toward travelers coming in and out of downtown, not those traveling within the Center City. Thinking about the distinction between these two markets is useful. Like Seattle, most major city downtowns have:

- **Inter-neighborhood or regional long-haul commute travelers** who are commuting into downtown for jobs or services. Traveling longer distances, these customers are sensitive to speed and service reliability. They often use just one or two routed services.

- **Inner-city circulation travelers** making short circulation trips within the Center City. This market includes commuters transferring to complete the last segment of their trip; downtown employees or residents running errands, attending meetings, and going to lunch or dinner; and car-free visitors to the city. Transit trips here are often short, thus travel speeds are not as important as frequency. Users demanding this type of service are more likely to be infrequent transit users, thus requiring a much higher level of transparency and user information.

- **Reduce very short auto trips on the city's most congested arterials.** Many cities have studied the amount of downtown traffic generated by people searching for parking and found 20-30% of all downtown vehicles are doing just that!
- In Portland, the city and business organizations have strategically located short-term public parking facilities on light rail and streetcar lines to allow visitors to drive into the downtown core, park once, and use transit to access downtown's services and amenities. Portland claims to have one of the largest 20-minute retail sheds reachable without a car in the nation.

- **Allow more residents to live car free.** As Seattle Center City residential densities continue to grow, efficient downtown transit circulation will promote car-free urban lifestyles. This in turn will reduce the overall transportation footprint in the Center City.
- **Evolve Seattle Center City as a world class tourist destination.** With the redevelopment of the Central Waterfront, Seattle will mark a significant event in the evolution of the city as a major world tourist destination. Travelers expect and desire high quality transportation options allowing travel between key Center City destinations.

WHY DO IT?

Transit is visible and available everywhere you go in Seattle Center City. But how easy is it to access, and does it provide a good alternative to walking or driving for people making short trips? A number of U.S. cities have recently re-structured downtown transit operations and invested in transit facilities that make transit more efficient and accessible. Efficient, transparent, and highly useable Center City transit will be critical for Seattle to meet its aggressive goals for growth in this area, mode shift, carbon neutrality, and economic development. Improved Center City circulation will be critical in helping Seattle to:

- **Attract more Seattle Center City commuters to transit.** Regional transit services such as Washington State Ferries and Sound Transit's Sounder Commuter Rail services get passengers to the edge of downtown. Providing attractive last mile connections to downtown and places like First Hill affects people's decision making. When Tacoma opened its short downtown streetcar circulator, regional bus ridership to the Tacoma Dome Station (the end of the streetcar line) increased fivefold.



During peak travel periods, Third Avenue becomes a limited use facility for transit and bicycles

Image from Oran Viriyincy, Creative Commons 2.0

WHO IS DOING IT?

In order to develop a successful center city transit environment, several key elements should be considered for implementation: service design, capital facilities development, wayfinding, and placemaking. The experience in each peer city stresses the importance of a holistic approach that addresses each of these elements. The following section discusses center city circulation systems in Portland, Minneapolis, Denver, and San Francisco.

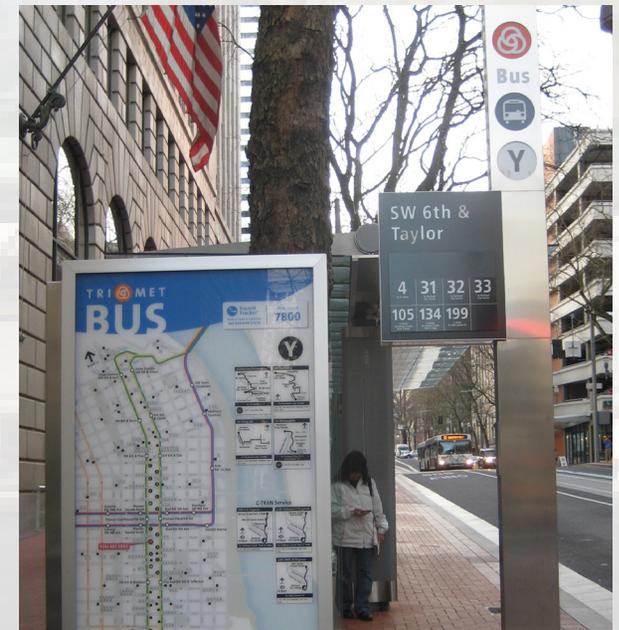
Portland: Leveraging Surface Rail through Placemaking, Wayfinding, and Reduced Bus Volumes

Many U.S. cities are making efforts to improve transit operations and capacity in their center cities. These efforts face similar challenges: how to provide dedicated transit streets or lanes while supporting multimodal access and circulation and contributing to a vital street life. Transit priority streets designed to optimize transit speed, reliability and capacity are an increasingly common approach, and one already employed in Seattle. Transit streets can benefit from traffic signal synchronization to minimize delay as buses travel through intersections. Light rail lines can feed into linear bus facilities or provide circulation itself, which is especially useful for downtown commuters looking to complete the last mile of their trip.

In many center cities, transit streets have drawn criticism from local businesses for being eyesores, being unsafe, or reducing pedestrian circulation due to waiting passengers. When it decided to rebuild its aging transit mall to accommodate light rail, Portland and its transit agency partner, TriMet, developed a planning process that considered all these concerns

and included business owners as planning and funding partners. Coupled with an integrated vision for placemaking and wayfinding, the two agencies developed the transit mall, including light rail, as the Center City's circulation centerpiece. Key challenges and approaches to this process include:

- **Challenges in Portland**
 1. Bringing new light rail lines into the Center City on surface streets.
 2. Revitalizing an aging transit mall that was a concern for businesses.
 3. Reducing the impact or negative perception associated with high bus volumes.
- **Portland's Approach**
 1. **Reduced bus volumes** in the Center City by shortening high frequency routes that run perpendicular to light rail lines. In addition, a light rail circulator was added to facilitate easy transfers. Operational re-design included increased bus and rail stop spacing in the Center City to improve transit speed, which also allowed the innovative “weave” track design and bus operating design.
 2. **Began the entire redesign process from the perspective of placemaking**, focusing on seven key nodes and conducting a great streets/great places type analysis to envision how those places would be transformed through this major street reconstruction.
 3. **Simplified wayfinding and improved route legibility** by creating a new signage program and service organization structure (“skip-stop”) that associates certain stops with geographic areas of the city/region.



The Portland Transit Mall (top) vastly improved downtown travel speeds and system transparency by reducing bus volumes. Skip-stop route structuring (bottom) organized routes into easy to remember letters (A-B-C and X-Y-Z for southbound and northbound travel, respectively). Users can look up their “stop letter” on system maps to identify where their route makes stops in downtown.

Images from Nelson/Nygaard

PLACEMAKING: TURNING TRANSIT STREETS INTO ACTIVE ENVIRONMENTS

Arguably, the most important component of center city circulation is designing pedestrian-friendly transit streets. Along with the transit stop, the streetscapes that characterize transit priority streets are the user interface for transit. Thus, the importance of placemaking cannot be overstated. Urban placemaking for seven major center city nodes or intersections was the foundational element of the redesign of Portland's Transit Mall. The desire for 24-hour active streets that support retail and activities helped drive decisions to retain a general purpose traffic lane and to reduce bus volumes by routing key services perpendicular to the transit mall and providing a high-frequency rail circulator. In addition to the transit priority features in place, Portland's Transit Mall incorporates wide sidewalks with distinctive paving, a variety of seating options, well-lit and covered bus and light rail stations, and public art. Similarly, Minneapolis' Nicollet Mall provides wide sidewalks with café seating, pedestrian lighting, park benches, and continuous retail activity.

Denver has taken a unique approach to designing a primary transit street. Sixteenth Street is a transit and pedestrian-only street that elevates the transit experience by turning the street into the destination. This mixed-use pedestrian street bisects the core of Denver's Center City and offers a bevy of street activity, restaurants, and cultural events. The 16th Street Mall FREE MallRide runs every two

minutes during peak hours, allowing customers to look up the street and see a vehicle approaching at all times.

In all cases, these linear transit corridors offer some level of tactility from increased accessible design and detectable warnings to textured pavement design and installation of brick pavers. As is the case in Minneapolis, Denver, and Portland, the most pedestrian-friendly corridors are synonymous with access to frequent transit service. Below is a list of components that transform transit corridors into great places:

- Active retail frontage
- Expansive sidewalks (in the range of 15 to 30 feet)
- Continuous and themed lighting schemes
- Pedestrian buffers such as trees and landscaping
- Space for café seating
- Coordinated public art program
- Curb extensions and pedestrian crossing features
- Level boarding features
- Enhanced bus shelters and stop amenities
- Wayfinding signage



New glass and steel transit shelters and covered bicycle facilities on the Portland Transit Mall provide weather protection while creating an open, inviting, and safe pedestrian environment.

Image from Nelson/Nygaard

Minneapolis: Prioritizing Transit in the Center City and Improving Passenger Experience

The focal point of Minneapolis' regional bus network is centered along four north-south transit priority corridors: Nicollet, Hennepin, Marquette, and 2nd Avenue. The light rail network runs perpendicular to the north-south corridors along 5th Street and currently terminates at the Northstar commuter rail station. Using dedicated transit lanes, restricted vehicle movements, and other transit priority treatments, the transit operating environment was re-designed to balance enhanced transit throughput with access to Center City offices, retail, entertainment, and services. The bullets below summarize the challenges posed along the four north-south transit corridors and the approaches to improving access into and circulation throughout the Center City:

- **Challenges in Minneapolis**
 1. Bringing new light rail lines into the Center City on surface streets with a need to distribute passengers to a large gridded area.
 2. Accommodating significant volumes of peak period buses destined for the Center City
 3. Providing a better passenger waiting experience and information in an adverse weather climate
- **Minneapolis' Approach**
 1. **Created new linear contraflow dual transit lanes** on Marquette and 2nd Avenue to absorb high bus volumes—largely regional express services. Each street provides two general purpose lanes for vehicle traffic (southbound on Marquette, northbound on 2nd Avenue). These facilities run perpendicular to the Hiawatha light rail line and provide significant peak period bus throughput capacity with two parallel transit lanes in each direction.
 2. **Promoted local bus lines as circulation** along the Nicollet Mall—Minneapolis' "main street." Metro Transit exclusively operates hybrid electric buses along the Nicollet Mall to reduce noise impacts and improve the image of transit. Transit service on the Nicollet Mall is free. The City of Minneapolis is currently studying feasibility of a streetcar circulator to supplement or replace bus circulation on Nicollet.
 - **Enhanced the pedestrian environment** with passenger waiting areas that include dynamic signage with real-time passenger information and streetscapes with wide sidewalks, street trees, planters, and public art.



Nicollet Mall in Minneapolis offers an attractive pedestrian realm well-served by frequent transit service (top). Hiawatha light rail feeds into the Nicollet Mall (bottom).

Images from Nelson/Nygaard

Denver: Regional Transit Hubs, Surface Circulation

In Denver, the City and the Regional Transit District (RTD) have strategically located regional transit hubs—Union Station and Civic Center Station—at the fringe of the city's core and created a high frequency linear transit circulator to link the two. This approach provides a highly transparent and frequent transit circulator, running on what is otherwise a pedestrian street, while also providing convenient Center City access for commuters. While commuters may have to transfer, they never need to wait for more than two minutes for the shuttle bus. The following key mobility and access challenges were addressed in Denver:

- **Challenges in Denver**

1. Accommodating heavy regional bus volume through the Center City.
2. Improving Center City access for passengers using the rapidly growing regional light rail system.



16th Street Transit/Pedestrian Mall, Denver.

Image from Nelson/Nygaard



Sixteenth Street is a transit and pedestrian-only street that elevates the transit experience by turning the street into the destination.

Image from Flickr

- **Denver's Approach**

1. **Created the FREE MallRide along the 16th Street Mall** to connect regional transit hubs at either end of downtown. The Free MallRide is the sole transit mode operating on the 16th Street Mall offering service as frequently as every two minutes. The Free Mall Ride also uses a fleet of specially designed, low-floor hybrid electric vehicles with five-door boarding and alighting that are very clearly marketed as a free circulator. Recently developed light rail services were strategically designed to cross perpendicular to the 16th Street Mall, taking advantage of the Mall Shuttle to provide perpendicular circulation to rail-serving streets.

2. **Funneled major capital improvements into the Center City** to support its level of service and provide a foundation for growth. This includes the development of the 16th Street Transit and Pedestrian Mall anchored by commuter transit service hubs at Civic Center and Union Stations—a major investment made in the early 1980's. RTD and the City of Denver are now redeveloping Union Station as a major transit hub to accommodate light rail, commuter rail, regional bus, and as an enhanced anchor to the 16th Street Mall circulator. This project includes the development of multilevel bus and rail bays with vertical circulation, a major rail platform, and integrated housing and office development.

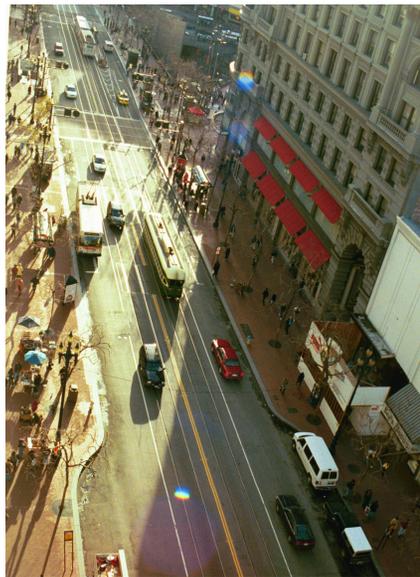
San Francisco: World Class Regional Transit Hub, Streetcar Circulators

Built in 1939, San Francisco's Transbay Terminal has long been a central hub for regional transit services. In preparing for California High Speed rail and in an effort to modernize its regional transit infrastructure as a model for transit hubs around the world, the terminal is undergoing a major (\$4 billion) redevelopment to serve 45 million annual passengers. The facility will serve multiple agencies including AC Transit, BART, Muni, Golden Gate Transit, SamTrans, Greyhound, and California High Speed Rail. The Transbay Redevelopment Authority was formed to develop a new urban neighborhood on and around the site, cleaning up a run down area through the redevelopment of 40 acres of land. The development is projected to include 3,400 new homes including many affordable units, as well as high rise office space. Construction began in 2008.

The construction of San Francisco's Market Street Tunnel as part of the BART system development, which took place in the 1960s, also developed underground facilities for Muni's local light rail transit. Traveling underground through the most congested areas of downtown greatly increased the speed and reliability of these services. In 1995, historic streetcars were returned to Market Street when the F Market line reopened using historic Electric Railway Presidents' Conference Committee (PCC) streetcars. These streetcars were restored and painted with designs from historic streetcar systems around the nation. The service was designed primarily to circulate tourists and for short local trips; Muni was surprised to find that many local commuters using the Muni subway services chose to travel on the slower surface streetcars. This emphasizes the value of surface rail transit, even in an environment where subway circulation is present.

- **Challenges in San Francisco**
 1. High regional transit ridership to a few major downtown subterranean stations (BART).
 2. Limited highway infrastructure including recent removal of the Embarcadero Freeway.
 3. Institution of a "transit first" policy requiring transit to keep up with growth demand.
- **San Francisco's Approach**
 1. **Integrated the F-Line streetcar onto Market Street as downtown's circulator.** This improved frequent connections throughout downtown and the Embarcadero. Several north-south routes feed into the F-Line and Muni Metro subway options for downtown circulation.

2. **Integrated 3rd Street Light Rail into Market Street subway operations** and will eventually route this line into a new subway tunnel to Chinatown for additional mobility to various urban neighborhoods.
3. **Redeveloping Transbay Terminal as major civic infrastructure project.** The new **Transbay Transit Center** will be the central focus point of regional rail and bus travel supplemented by simplified connections to downtown circulation via the F-Line streetcar. This is a \$4 billion transit investment that will create new transit-oriented communities and urban greenspace.



Market Street and the F-Line (left) will soon circulate to and from the Transbay Transit Center (right), a groundbreaking intermodal transit hub.

Images from Nelson/Nygaard (left) and Transbay Joint Powers Authority (right)

