Best Practices in Bus Stop Shelters

Ride New Orleans

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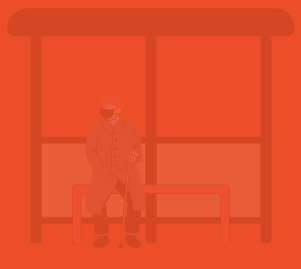


I. Introduction

This report brings together best practices in bus stop shelters. It is based on research and conversations with transit agencies from across the United States. The six cases include cities and systems of varying size, geographies, and ridership, but they are all places that have prioritized bus stop shelters in recent years and made significant progress toward ensuring bus riders have convenient and comfortable places to catch the bus.

Although New Orleans has some bus stop shelters, they are currently insufficient in many ways. The poor state of shelters in the city is particularly problematic. The region has frequently oppressive weather including heavy rain, strong wind, and extreme heat. Furthermore, because bus routes in the area are infrequent (>15 minutes), riders are exposed to these elements for long periods of time.

The Regional Transit Authority (RTA) has signaled its intentions to improve the status of New Orleans bus stop shelters. The agency's Strategic Mobility Plan calls for 90% of stops with >15 boardings to have benches or shelters by 2027. To reach this goal, the agency will need to double the current number of shelters in the next 5 years. The agency has budgeted significant funds for shelters in the coming years and recently hired a bus stops manager for the first time. However, without clear guidelines and a robust bus stop inventory, we are concerned about whether the agency can reach this goal, and if it will be done in a fair and equitable manner. With this report, RIDE hopes to provide useful insights about how agencies can do bus stop shelters right.

Specifically, we recommend the RTA should:
1. Develop a master plan or public guidelines with clear and logical rules and protocols for installing and managing bus stop shelters.
2. Increase the resources dedicated each year to bus shelter installation and maintenance.
3. Make data about stop shelters available to riders and the public through an open data portal.
4. Establish clear processes for community input on shelter priorities and maintenance needs.
5. Optimize existing shelters by regularly maintaining them and adding amenities such as lighting and updated service information.

II. Bus stop shelters matter

Sheltered bus stops are an essential component of a high-quality transit system. Shelters are key representations of how a city views transit and transit riders. A system with many well-designed and maintained shelters signals to riders that they matter, while an absence of shelters suggests they are not a priority and tells non-riders to feel fortunate that they do not rely on transit.[1]

Shelters offer a number of important benefits. They can significantly reduce temperatures and keep riders cool in hot climates.[2] They also provide protection during inclement weather.[3] Shelters and other amenities such as benches can also make waiting for the bus more pleasant and even reduce the perceived waiting time for riders.[4] They can also be used to provide important information such as schedules and route maps. For these reasons and more, bus stop shelters are both a symbolic and pragmatic way to dramatically improve the transit experience.

Bus stop shelters should be designed based on the needs and conditions of each place. However, some general design guidelines are given by the National Association of City Transportation Officials in their Transit Street Design Guide. Other important recommendations for ensuring equal and equitable access for all can be found in the American Public Transportation Association's Transit Universal Design Guidelines. Although the design specifications may vary, bus stop shelters are a vital part of any high-quality transit system.

III. Cases and best practices

A. Phoenix

[1] Philip Law and Brian D. Taylor, "Shelter from the Storm: Optimizing Distribution of Bus Stop Shelters in Los Angeles," September 1, 2010.
[2] Yuliya Dzyuban et al., "Public Transit Infrastructure and Heat Perceptions in Hot and Dry Climates," *International Journal of Biometeorology*, January 26, 2021.
[3] Qing Miao, Eric W. Welch, and P. S. Sriraj, "Extreme Weather, Public Transport Ridership and Moderating Effect of Bus Stop Shelters," *Journal of Transport Geography* 74 (January 1, 2019): 125–33.
[4] Yingling Fan, Andrew Guthrie, and David Levinson, "Waiting Time Perceptions at Transit Stops and Stations: Effects of Basic Amenities, Gender, and Security," *Transportation Research Part A: Policy and Practice* 88 (2016): 251–64.

Phoenix has made huge strides in bus shelter development in recent years. Following a voter-approved tax that went into effect in 2016, the city began ramping up its efforts. Currently, around 60% of the 4,000+ bus stops within city boundaries have shelters. However, they are not stopping there. The city has ambitiously targeted 100% coverage! Intense heat and sun are major concerns in Phoenix, so the Public Transit Department installs innovative shelters to provide maximum shade for riders. The design of each shelter considers the site in relation to the sun. For example, East and West facing shelters are to have seating on both sides to provide shade as the sun moves overhead. And the efforts go beyond shade as the department also often installs other amenities such as trash cans, solar lighting and has even experimented with misting machines.

Although the goal is to eventually reach 100% coverage of bus stops with shelters, the Phoenix Public Transit Department installs shelters based on guidelines that prioritize ridership but also other criteria including transfers, proximity to activity centers, and population density.

To ensure transparency and provide valuable information to the public, Valley Metro—the regional transit system that includes Phoenix and surrounding areas, has a user-friendly open-data platform. Users can view detailed system maps, information and photos of each stop, ridership data, and various other useful items.

Examples of Phoenix bus shelters are below:

Figure 1: Two different designs for Phoenix shelters (Source: Phoenix Public Transit Department)

New Orleans can benefit from the Phoenix case by improving access to data either on the RTA's website or the city's open data website.

B. Salt Lake City

Bus stops in Salt Lake City and the surrounding areas are managed by the customer experience team of UTA (Utah Transit Authority). In the past, bus stop shelters were a largely neglected low priority for the system and only a handful would be added each year. However, in 2016 the agency reconsidered its approach to shelters and made them a top priority. The agency conducted a comprehensive inventory of its bus stops and in 2018 created a "Bus Stop Master Plan." This plan was created from the customer/rider perspective and includes detailed instructions and designs for shelters and other bus stop amenities. The plan also details a matrix for assessing and allocating resources for bus stop improvements which prioritize criteria such as ridership, ADA compliance, ramp deployments, amenities in the area, and whether or not the route serves a Title VI community. The plan is regularly revisited and updated to meet the needs of riders.

This shift in prioritization has led to big changes on the ground as well. Whereas in the past, UTA only updated or installed shelters at a few stops per year, they now average over 100 interventions per year! Shelters are part of comprehensive improvements to stops which can also include adding ADA accessibility and other components like benches, trash cans, bike racks, and lighting.

The following images show the transformation of one site into an accessible and sheltered stop:

Figure 2: Before and after installation of new shelter (Source: Google Maps and UTA)

New Orleans can also create a master plan or guiding document dedicated to bus stops.

C. San Antonio

VIA, the largest bus-only transit system in the United States, serves San Antonio and 13 surrounding municipalities. In the past, bus stop shelters were sporadically funded and constructed in a non-strategic manner, when resources became available. However, beginning in 2011 the agency began to take a more serious and deliberate approach to shelters with the NextGen Shelter Program. In 2013, VIA revisited its bus stop database and refined it with new details including ridership data as well as customer inquiries and complaints about each stop. The agency then used this database to prioritize stop improvements, and the results were incredible. Within five years, the number of bus stop shelters nearly doubled as 1,000 new shelters were added to the system.

This was not always easy, though. San Antonio's old street network made installing shelters in some places quite challenging. Furthermore, simultaneously managing dozens of shelter installations required significant strategic coordination. However, thanks to dedicated financial and human resources as well as strong partnerships with city and state government agencies, VIA has achieved remarkable success.

Today the system has around 6,800 bus stops, and of these, over 2,400 (≈34%) have shelters. However, by strategically placing shelters in the highest ridership areas, around 95% of trips at sheltered stops. Shelters are allocated according to a scoring system in VIA's "Line Service Policies and Design Standards." Each stop in the system

is scored based on average daily boardings, average headways, route connections, and the presence of amenities such as hospitals, schools, and groceries. The thresholds and scoring have changed somewhat over time, but these four categories have remained constant.

Figure 3: Before and after installation of new shelter (Source: Google Maps and VIA)

The San Antonio case shows that with a robust database and strong coordination it is possible to install hundreds of shelters in just a few years—something New Orleans is aiming to do by 2027.

D. Portland

Portland's TriMet is a pioneering agency that began increasing its bus stop shelter coverage in the early 1990s. The initial target was to build 500 shelters, but after reaching that goal they just kept going. Today the agency has around 1,000 shelters out of 6,000 total stops.

In addition to adding new shelters, the agency is constantly maintaining and replacing existing shelters and making upgrades such as new e-paper readers which use solar energy to display bus arrival and service information.

Figure 4: An e-paper reader in a TriMet bus stop shelter. (Source: TriMet)

TriMet's shelters are managed by a team of dedicated professionals and stop improvements are prioritized based on the agency's comprehensive "Bus Stop Guidelines." As in other places, ridership is the primary criterion for installation of a shelter (with 50 average weekday boardings as a minimum threshold), but other factors considered include equity, infrequent service, lift usage and proximity of certain facilities such as senior housing. Although TriMet allows advertising in some of its shelters to generate revenue, the agency maintains ownership and control of key decisions such as placement.

Figure 5: Before and after the creation of new bus stop shelter and pedestrian infrastructure (Source: TriMet)

From the Portland case, New Orleans can learn the importance of creating a multidisciplinary team of dedicated professionals which may include engineers, planners, and customer service personnel to install and manage bus stops.

E. Oklahoma City

Oklahoma City is another place that has made great strides in bus stop shelter development over the last decade. In 2015, EMBARK, the transit system which serves the city and surrounding areas, began implementing a bus stop management program that had the goals of adding as many new shelters as possible and making all new bus stops ADA-compliant. The push for these improvements initially came from EMBARK's board of trustees and funding came from a combination of a penny sales tax, grants, and local funds. The system of around 1,300 stops currently includes around 300 (≈23%) bus stop shelters, a significant increase considering the system had only about five percent shelter coverage before this initiative. The current goal is to add 500 more in the near future and place bicycle racks at most shelters.

According to EMBARK's Title VI Program, shelters are added and upgraded based on daily boardings, with a minimum threshold of 10 average boardings per day. Other factors such as rider requests and amenities like grocery stores, job centers, and hospitals are also considered. All shelters include lighting and trash receptacles as well as other amenities such as electronic bus arrival signage at stops with high ridership.

To achieve its ambitious targets, EMBARK relies on strong working relationships with city agencies such as the Department of Public Works which has been simultaneously upgrading the city's sidewalks. When this department is building or modifying a sidewalk in areas with bus stops, they go ahead and make them large enough to accommodate a shelter meaning EMBARK does not need to spend resources and time to modify the space later.

Figure 6: Local councilwoman celebrating Embark's 100th shelter in May 2019 (source Embark)

From this case, New Orleans can learn the importance of collaboration among agencies and departments. When it comes to bus stop shelters there are many opportunities for collaboration, synergy, and piggybacking.

F. Minneapolis—Saint Paul

In many cities, bus stop shelters are inequitably distributed which leaves some of the highest ridership stops unsheltered. This was historically the case in Minneapolis—Saint Paul before activists and journalists drew attention to this inequity as well as disproportionate funding for costly infrastructure projects while the needs of the most transit riders were neglected. However, Metro Transit recognized this and decided to change the way it did things. From that point the agency treated inadequate shelters as a serious problem to fix and began revising its guidelines for bus stop shelters. To ensure shelters would meet the needs of riders, the agency partnered with two nonprofits and the University of Minnesota to conduct a large outreach program to gather input from the public.

Following this community engagement, Shelter Placement Guidelines were updated in 2018. Previously the guidelines held two different minimum boarding thresholds for shelters—40 daily boardings in central Minneapolis and Saint Paul while only 25 were

required in suburban areas. The updated guidelines adopted a warrant of 30 daily boardings for the entire service area. In addition to boardings, other factors considered for shelter placement include the rate of car ownership in the area and proximity to important amenities like hospitals, social service providers, and major transfer points.

Today the system features around 900 shelters out of 12,000 total stops. However, thanks to strategic and targeted placement, over 65% of boardings occur at sheltered stops. Furthermore, the percentage of sheltered boardings has increased significantly since 2016 across all racial groups. The percentage of black bus riders boarding from sheltered stops is the highest of all—72%.

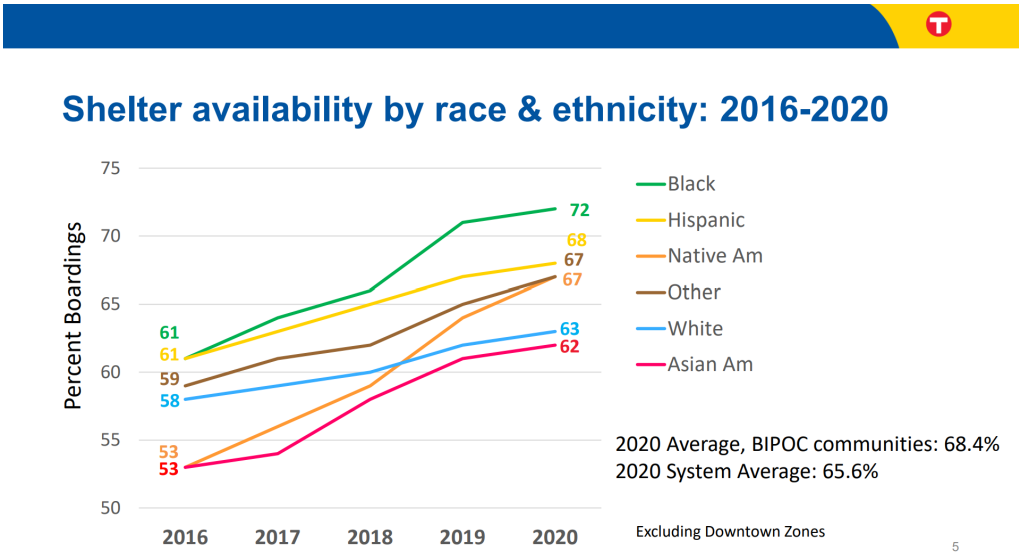


Figure 7: Improvements in sheltered boardings (Source: Metro Transit)

Figure 8: Bus stop shelter in downtown Saint Paul (Source Metro Transit)

This case models how a city like New Orleans can install shelters in a strategic, but equitable manner to ensure fair distribution, especially in places that need them most.

IV. Recommendations

A common thread uniting each of these cases is that the transit agency in each city adopted a serious and strategic approach to bus stop shelters. They began treating shelters as a priority, not just an afterthought to add when convenient.

Beyond this, the cases also reveal several important elements to consider for transit agencies seeking to increase and improve bus stop shelters. Five key recommendations are:

1. Clear and logical rules and protocols for creating and managing bus stop shelters

Shelters should not be installed in a haphazard manner. There must be a rhyme and reason to the process to ensure efficiency as well as equity in decision-making. These rules should also be publicly available to increase transparency and help the public understand how decisions are made and what they can do to request a new shelter or

changes to an existing one. In terms of prioritizing stops, all agencies included in this report prioritize stops with the highest boardings, although the minimum thresholds can vary. This approach means that even with a relatively low percentage of sheltered stops, an agency can ensure that most riders are protected. For example, in San Antonio, although 34% of stops have shelters, around 95% of riders start their trips from sheltered stops. However, the agencies in this report also incorporate other criteria to ensure equity and make sure that shelters are available for riders who need them most. In terms of documentation, there are a variety of approaches. Salt Lake City shelter rules are included in UTA's *Bus Stop Master Plan*. Similarly, Portland has comprehensive Bus Stop Guidelines. On the other hand, Minneapolis-Saint Paul has "Shelter Placement Guidelines"—a brief, four-page document that includes pertinent information about how Metro Transit approaches bus shelter installation and management.

2.) Dedicated resources for bus stop shelters

Installing and managing bus stop shelters is neither simple nor inexpensive. The agencies in this report have each been able to secure funds for their shelters over an extended period. The exact sources of funds can vary. For example, Salt Lake City originally ramped up its bus stop shelter efforts thanks to a 2015 voter-approved local sales tax. Today UTA relies on other taxes as well as contributions and partnerships with the city government. Oklahoma City uses a combination of sales tax, local funds, grants, and advertising revenue to fund its shelters. San Antonio, for its part, was able to redirect funds towards shelters after another infrastructure project was canceled.

In addition to purchasing materials to build and repair shelters, however, it is important to invest in human resources as well. Several agencies from this report have formed teams of professionals to oversee the implementation and maintenance of shelters. The size and composition of these teams can vary depending on the context, but if they are guided by clear directives and empowered with resources, such a team can substantially improve the status of shelters within a transit system.

3.) Transparency and open data

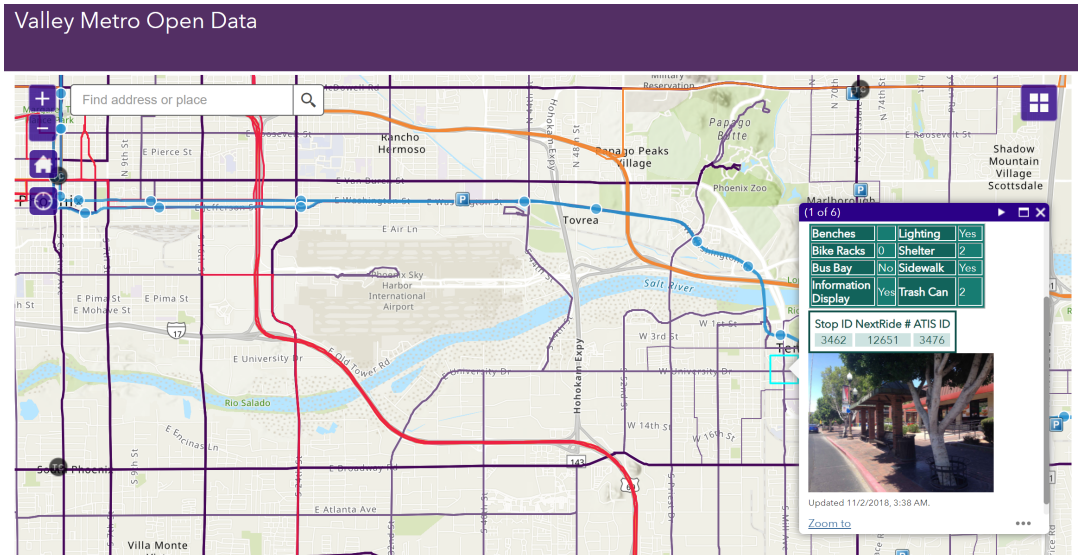
Transit agencies create and manage tons of data and as the technological capabilities of the public increase with computers and smartphones, agencies are finding new

ways of making data accessible to the public.[5] Increasing data transparency provides numerous benefits for transit agencies including efficiency and increased public trust as well as for transit riders such as helping them plan their trips.[6]

Information about bus stop shelters should be available and accessible for anyone who wants to see it, whether they are researchers and developers seeking large datasets or a typical rider who wants to know which stops in their area have shelters. There are many ways an agency can improve access to data about shelters including open data available online, user-friendly maps showing which stops are sheltered, and where new shelters are planned. Agencies can also consider adding accessibility and shelter information to their web-based applications.

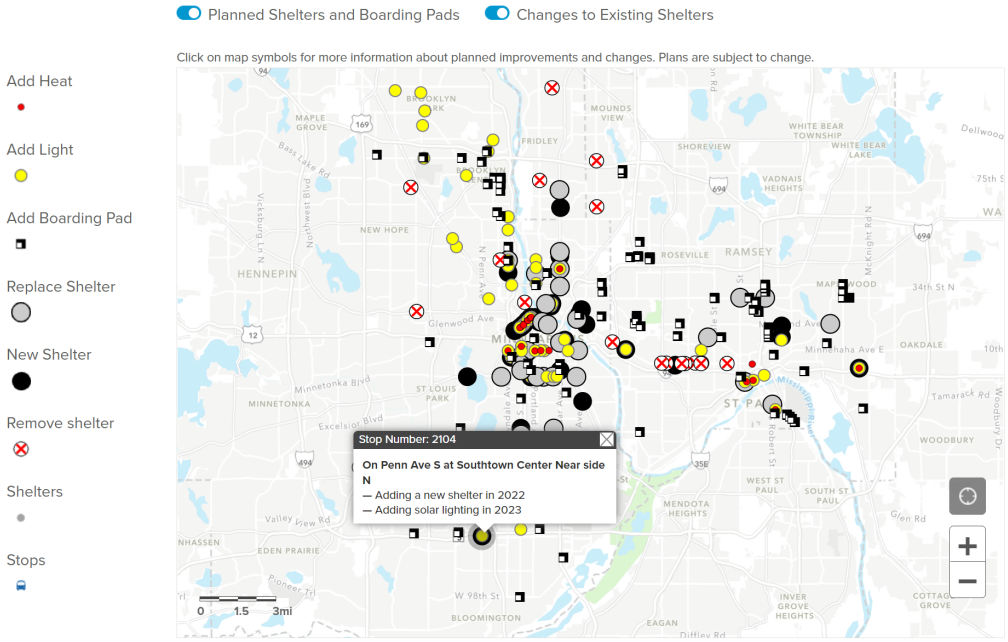
Several of the agencies included in this report are making strides towards increased data access. Some pointed out benefits such as reducing requests for data. While one agency simply stated that "if we are going to do something related to shelters, we need to be able to show the public how and why we are doing it."

Phoenix Valley Metro is working to include data about stops on its Open Data Portal. This user-friendly site includes a number of relevant datasets as well as maps of the service area which users can view via a web browser.



[5] Francisca M. Rojas, "Transit Transparency: Effective Disclosure through Open Data," *Ash Center for Democratic Governance and Innovation.*, 2012.
[6] American Public Transportation Association, "Public Transportation Embracing Open Data," 2015.

Another example comes from Minneapolis-Saint Paul. To inform the public about shelter additions, removals, and modifications, Metro Transit includes an interactive map as seen in the following image.



4.) Participation

Shelters should not simply appear or disappear overnight. Engaging the community can help agencies ensure that shelters are placed where they are needed most, and also reduce conflicts or resistance. The surrounding communities (and anyone else who is interested) should be able to find information and give input about shelters. There should be clear procedures for riders to request new bus shelters or maintenance and report issues. A more thorough approach to public participation would be even better. In Minneapolis-Saint Paul, Metro Transit conducted extensive community engagement along with nonprofit organizations to understand the needs of riders and to empower communities to lead bus stop improvements.

5.) Maintain and improve shelters

Designing and installing shelters is an important first step, but agencies' responsibilities do not end there. Managing, maintaining, and improving shelters is also crucial.

Agencies should ensure that shelters are regularly cleaned and inspected for damage. They should also think about improvements that can optimize the shelters. Once San Antonio achieved their targets for installing bus stop shelters, they shifted its focus to maintaining and improving shelters with amenities like lighting. Portland is adding e-paper readers to provide relevant real-time service information. And Metro Transit in Minneapolis-Saint Paul has been adding heating as well as lighting to its shelters. Essentially, agencies need to think about how to advance from just having shelters to having great shelters!

About RIDE

Ride New Orleans is an independent nonprofit 501(c)3 organization. We envision a region in which taking transit enables full access to jobs, education, health care, and other needs that ensure the equitable, thriving community that all residents deserve. Our mission is to win world-class and equitable public transportation that works for all residents across the New Orleans region. Visit rideneworleans.org for more information. For questions or comments about the report, contact Dustin Robertson—Dustin@rideneworleans.org.

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