SMART Bus Stop Design Standards Manual *(JAN 2025)*

Quickstart Guide

SMART Bus Stop Design Goals

1. Safety for all
2. Considerate of all street users
3. Consistent and barrier free
4. Unified street, vehicle, and platform design
5. Universal design is equitable design
6. Integrated into the surrounding streetscape

What is the Manual?

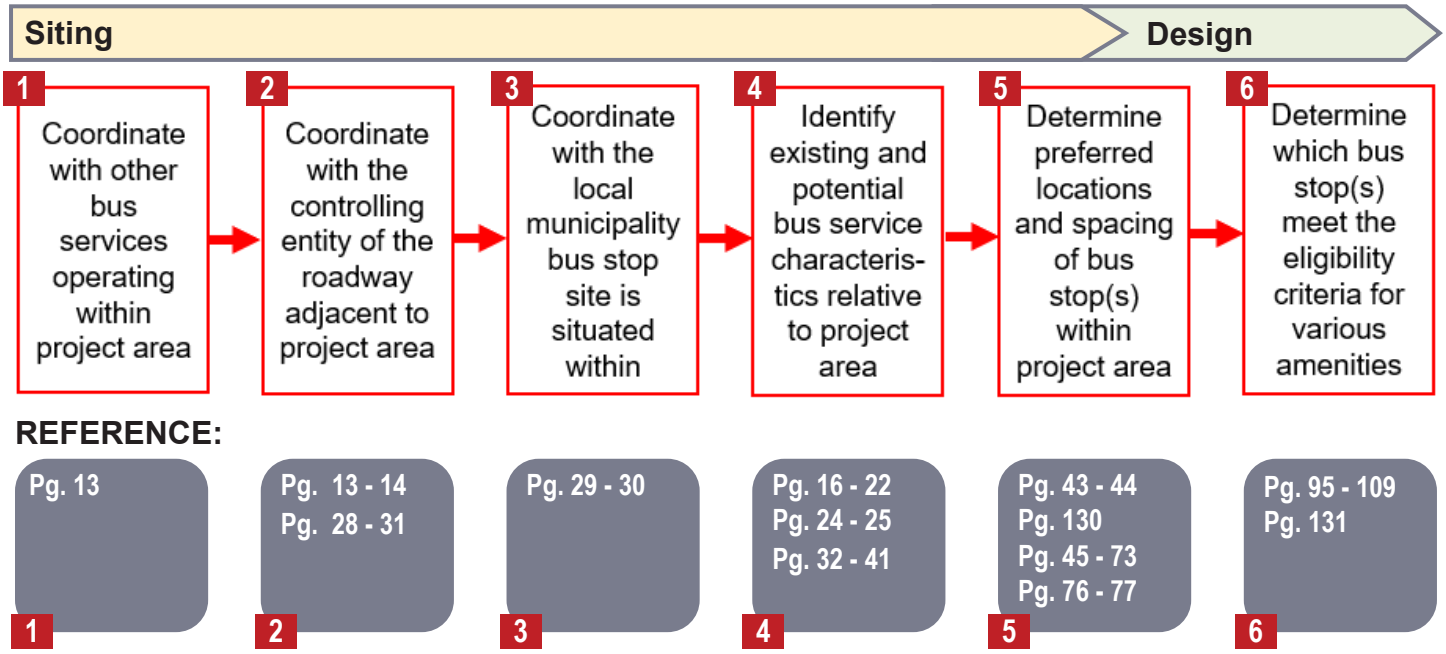
The SMART Bus Stop Design Standards Manual (the Manual) provides the following to help guide effective planning, design, and placement of bus stops:

- Comprehensive, up-to-date stop design standards that are compliant with local, state, and federal regulations
- Stop design criteria informed by national best practices, tailored to the southeast Michigan region

Page 10 of the Manual includes more on the Goals, see left, and page 12 includes a guide on how to use the Manual based on your role in bus stop projects (transportation planners and designers, agency officials, and bus operators).

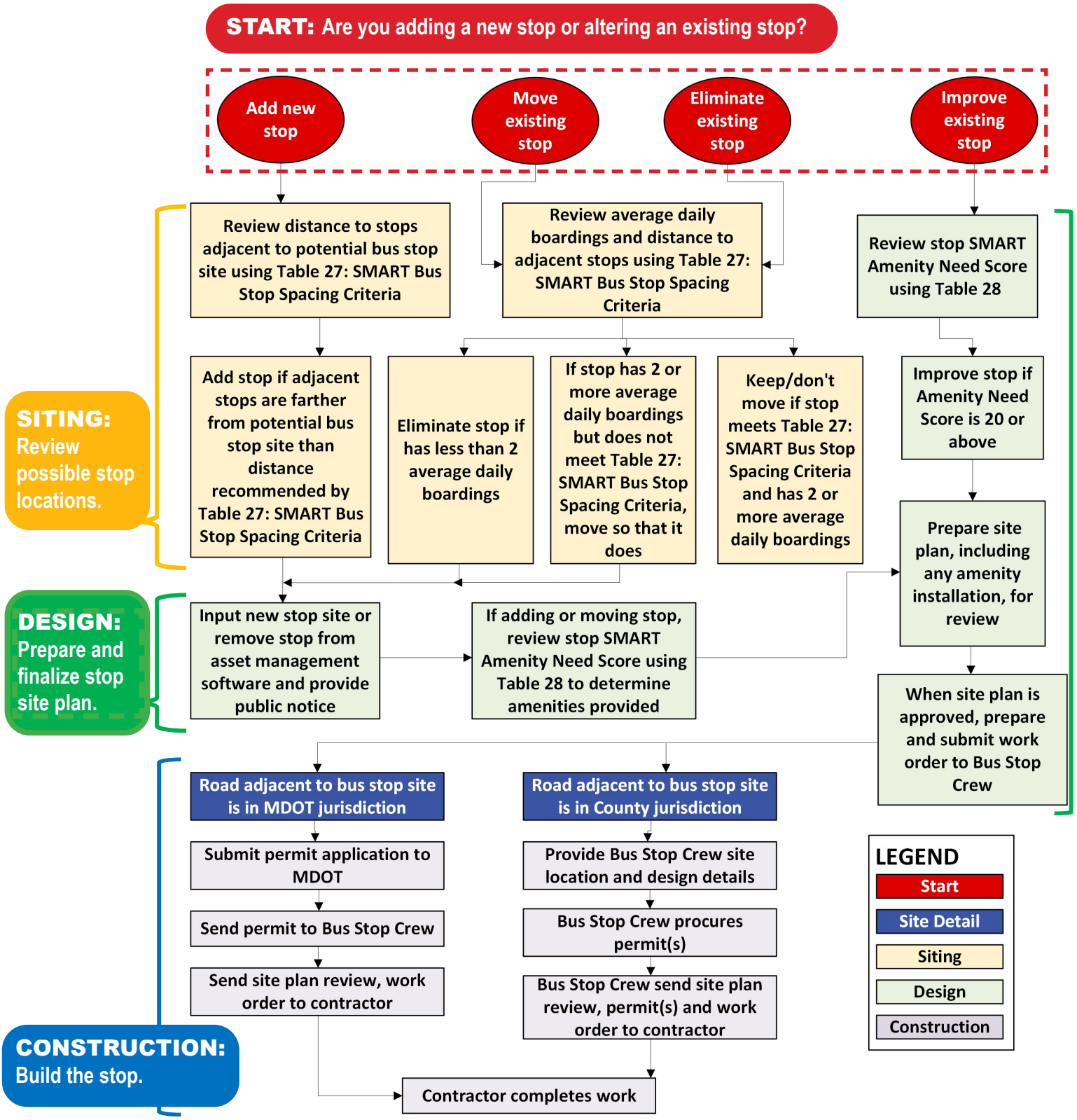
Siting, Design, and Construction Process

The Manual is best used following SMART's standard bus stop siting, design, and construction process. A summary of the major siting and design steps for any bus stop project is provided below, and can be found on page 13 in the Manual. 'Siting' is determining where the stop will be placed, and 'design' is deciding what the stop should look like.



Bus Stop Request Flowchart

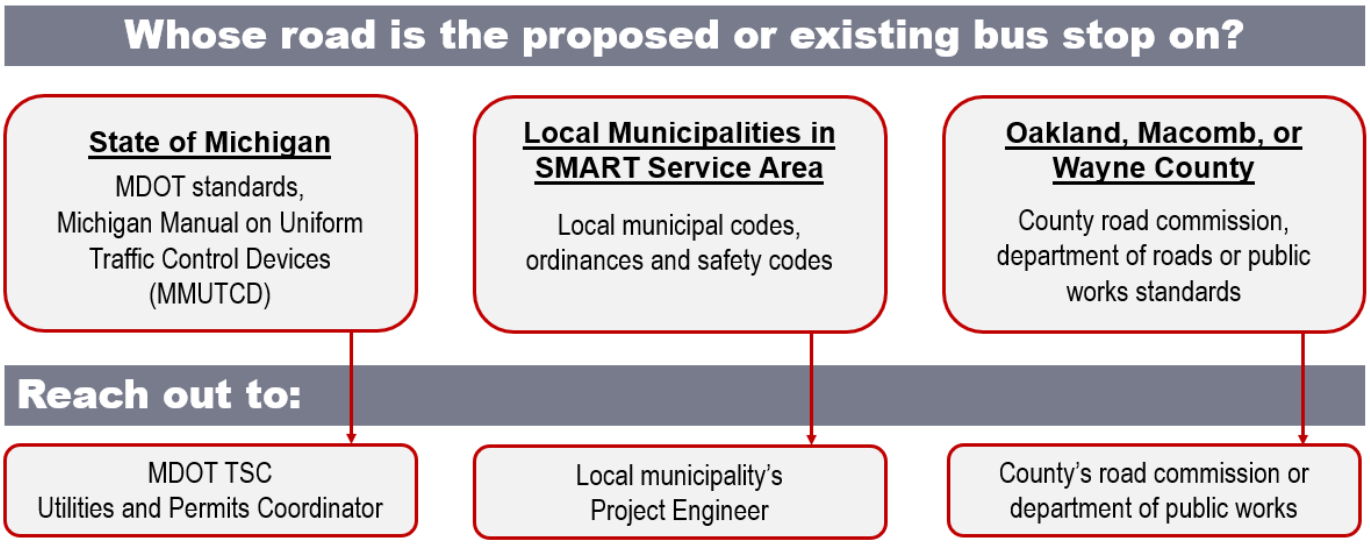
The Bus Stop Request Flowchart walks through the necessary siting, design, and construction steps depending on the action proposed by SMART or local stakeholders for a certain stop or location: adding a new stop or moving, eliminating, or improving an existing stop. Found on page 129 in the Manual, the Bus Stop Request Flowchart is the starting point for each proposed bus stop project, and should be referenced throughout the duration of the project.



1 Bus Stop Siting

Agency Coordination

When siting a new stop or updating an existing stop, the first question to ask is who the owner, i.e. controlling entity, responsible for that road is. Bus service typically operates on roadways that are neither owned nor controlled by the transit agency providing service. Generally, the owner of roadways with transit service is either the state, county, or the local municipality the road is located within. Identifying the owner of the roadway informs who you should coordinate with regarding your bus stop project, and what standards and regulations you will need to follow in the siting, design and construction of your stop. See pages 13 - 14 and pages 28 - 31 for more information on who to coordinate with during your project and when.



Stop Spacing

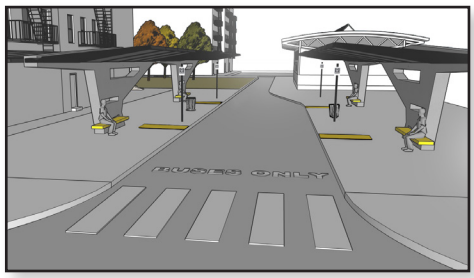
SMART Bus Stop Spacing Criteria

Service Type	Local Land Use Type	People per Mile²	Recommended Distance between Bus Stops (Miles)
Standard Fixed-Route	Residential Areas	Less than 2,880	0.42 – 0.50
		2,880 – 9,660	0.33 – 0.42
		More than 9,660	0.25 – 0.33
	Central Business District (CBD) and Near CBD		2 blocks and/or every block with high passenger boarding/alighting rates
Express Limited-Stop			1 – 2

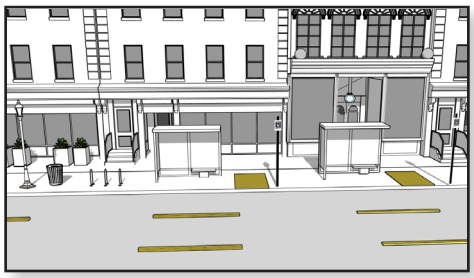
Next, use SMART's Bus Stop Spacing Criteria (pages 130) to determine the spacing between the proposed or existing stop and adjacent stops. First, identify the stop service type (express or standard). Then, consider local land uses and population densities near the stop to determine the recommended distance between stops. See pages 43-44 for more on stop spacing and pages 24-26 for more on population density and land use impact bus stop siting.

General Stop Type

1 Off-Street Transfer Center



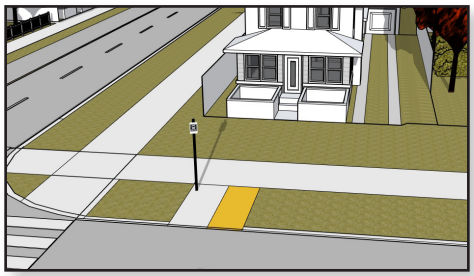
2 On-Street Transfer Center



3 Network Hub Stop

4 Standard Stop

5 Coverage Stop



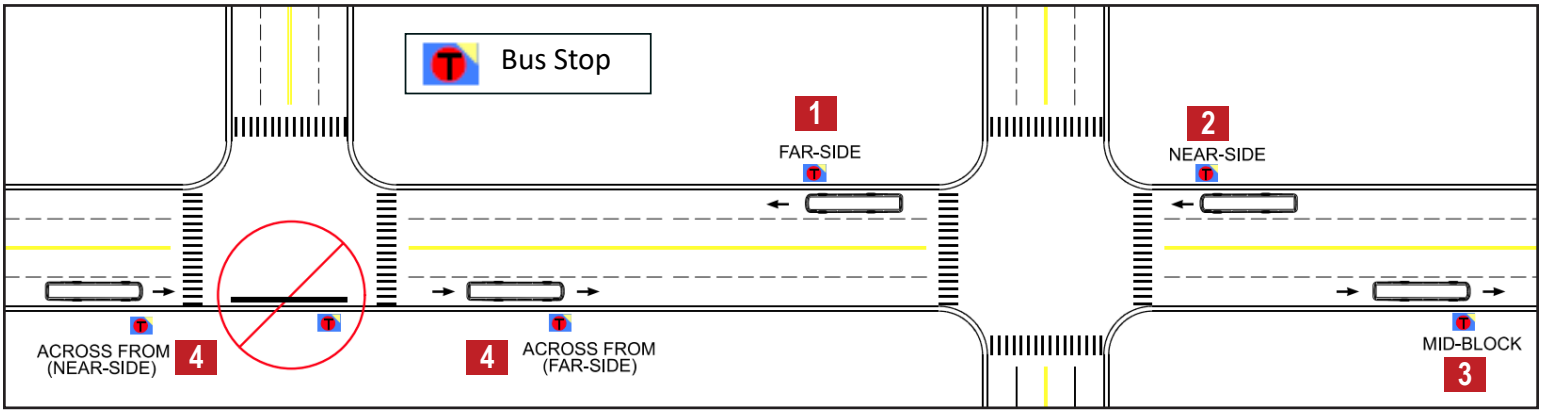
6 Flag Stop

Once the approximate site for the stop has been chosen, you need to decide what type of stop it will be. There are six different types of stops within SMART's network. Pages 16-22 of the Manual discuss the advantages, disadvantages, and application context for each of the six stop types. The major distinguishing factors between the different types are how many people and routes the stop has the capacity to serve, and the streetscape it is most appropriate within.

Stop Position

The last major stop siting decision that must be made is the stop's position, i.e. where it is placed relative to the adjacent intersection(s). There are four different stop positions, all shown below: far-side [1], near-side [2], mid-block [3], and across-from [4]. The Manual includes general guidance about what stop position to use in common street situations. Recommendations for when to apply each possible stop position in a wider variety of situations are also provided. These recommendations depend on the intersection and street characteristics. Traffic volumes and maneuvers in addition to pedestrian conditions are most important to stop position decisions.

- **Where are far-side stops recommended?** *See pg. 46-47, Table 3*
- **Where are near-side stops recommended?** *See pg. 47-48, Table 4*
- **Where are mid-block stops recommended?** *See pg. 48, Table 5*
- **Where are across-from stops recommended?** *See pg. 48, Table 6*



2 Bus Stop Design

Stop Configuration

Common Configurations	
Pull-Out Stop *(pg. 51-54)*	Buses shift out of the travel lane and into part of the parking lane signed as a bus stop.
In-Lane Stop *(pg. 55-58)*	Buses stop in signed section of travel lane adjacent to the curb.
Boarding Bulb Stop *(pg. 59-62)*	Buses stop at a type of curb extension, a bulb-out, rather than pulling in and out of the parking lane.
On-Street Transfer Center *(pg. 63-65)*	Provide multiple adjacent stops serving one or more routes to streamline areas where multiple buses need to stop.
Configurations Commonly Paired with Bicycle Facilities	
Boarding Island Stop *(pg. 66-68)*	Provide a boarding/alighting area separate of the cycle track on an island situated between the cycle track and travel lane.
Shared Cycle Track Stop *(pg. 69-70)*	Buses shift into a section of the cycle track to pull to the curb and stop.

Stop design starts with deciding on a stop configuration. See pages 49-70 for advantages, disadvantages, and recommended applications of the six different configurations discussed in the Manual. See pages 71-73 for minimum dimensions by configuration, stop position, and maximum bus length.

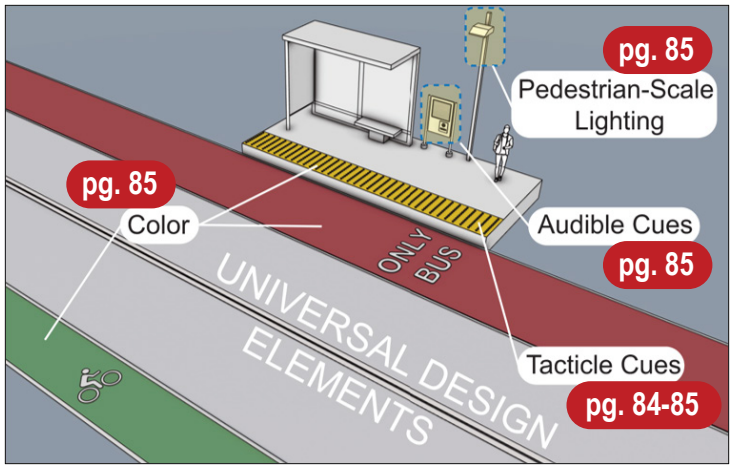
Certain configurations are recommended for specific street contexts.

However, if a street meets the minimum dimensional requirements for a configuration, you can use that configuration even if it's not specifically recommended, as long as it's not explicitly advised against in that context.

Stop Accessibility

Centering accessibility in bus stop design is essential to the success of transit networks. Bus stops are key links in every bus passenger's journey. The Manual provides an overview of accessibility regulations and key stop accessibility considerations (see pages 80-83 and 86-94). Examples of inaccessible stops are also included for reference (see pages 76-77). Further, universal design and the primary bus stop universal design elements are discussed (see pages 84-86). At each stop, start with a review of any relevant key accessibility considerations, for which the Manual lists both the requirements for ADA-compliance and universal design guidelines. Amend your design as necessary to ensure ADA-compliance and if possible, to incorporate universal design elements.

Accessibility Regulations (pages 80-82)
US DOT ADA
ABA
PROWAG
ANSI
Title VI



Key Accessibility Considerations

- Adjacent Paths of Travel (pg. 86-87)
- Adjacent Street Crossings (pg. 88-89)
- Shelters (pg. 90-91)
- Bus Stop Landing Pads (pg. 92-93)
- Bus Stops without Sidewalk Access (pg. 94)

Stop Amenities

Bus Stop Amenity Need Scoring

	Bus Stop Name/Location		Bus Stop Number	
	Amenity Need Factor	**Range**	**Point Value**	**Point Total**
1	What is the average number of daily boardings at the stop?	N/A	1 per boarding	
2	How frequent is bus service to the stop?	Less than 15 minutes	0	
		15 – 29 minutes	1	
		30 – 44 minutes	3	
		45 – 59 minutes	5	
		60 minutes or more	7	
3	How many different bus routes serve the stop?	1	1	
		2	3	
		More than 2	5	
4	Is the stop a transfer point between buses or buses and other modes of transportation?	No	0	
		Yes	1	
5	What major passenger generators are within a quarter mile of the stop?	Medical	2	
		Grocery	2	
		Educational	2	
		Multi-family Housing	2	
		Elderly/Assisted Living	2	
6	How many wheelchair ramp deployments per week are there at the stop on average?	0 times per week	0	
		1 or more times per week	2	
		TOTAL AMENITY NEED SCORE:		

Amenities based on Need Score	Less than 20	No Amenities
	20 to 30	Bench, Trash Can
	More than 30	Shelter, Trash Can
Reasons for Disqualification	Not enough space for amenity No connecting sidewalk* Slope or conditions make amenity cost prohibitive	

*Amenity should not be an island.

After deciding on a configuration and evaluating stop accessibility, it's time to figure out what amenities should be included at the proposed or existing stop. Use SMART's Bus Stop Amenity Need Scoring (page 131) to determine whether a stop needs a bench, trash can, and/or shelter. Signage should be provided at all stops. Wayfinding information and real-time information displays should be provided in specific situations. Note that the Manual discusses both amenities that SMART provides and does not provide.

SMART Funded, Installed, and Maintained	NOT SMART-Funded, Installed, or Maintained
Signage	Lighting
Shelters	Heating or Cooling
Benches	Bicycle Parking
Trash Cans	Landscaping
Wayfinding Information	Emergency Response Phones
Real-Time Information Displays	

Stop Safety and Security

Passenger and pedestrian safety and security are vital to stop design, and should always be evaluated prior to finalizing the stop site plan. The Manual groups safety and security concepts into two buckets: collision mitigation and CPTED. Collision mitigation is discussed via design factors that lower the risk of potential vehicle/people collisions and bus/other vehicle collisions. A summary of what CPTED is, its core principles, and subsequent design strategies is also included.

Collision Mitigation Factors

1 Preventing collisions between vehicles and pedestrians/passengers (pg. 120-123)

- Bus Stop Placement
- Visibility
- Road/Street Design
- ADA Accessibility

2 Preventing collisions between buses and other vehicles (pg. 123-125)

- Visibility
- Road/Street Design
- Opportunities for Incursions with Other Vehicles

Crime Prevention through Environmental Design (CPTED)

- Multidisciplinary approach to deterring criminal behavior, reduce victimization, and build community sense of safety

- **CPTED Design Strategies** (pg.126-127)**:**
  - Natural Surveillance
  - Natural Access Control
  - Territorial Reinforcement
  - Activity Support and Maintenance
  - Mechanical Reinforcement

3 Bus Stop Construction

High-level guidance on the bus stop construction process and how the bus stop crew should handle implementation of final stop site plans can be found within the Bus Stop Request Flowchart (page 129).

Modifications During Construction

When construction work on an existing bus stop or other construction project directly adjacent to the stop occurs, there are several coordination and accessibility standards that must be followed.

All construction/maintenance plans affecting bus stops should be shared with SMART.

Temporary Traffic Control and Maintenance of Traffic plans must include temporary stop alterations.

SMART must provide passengers notice of temporary alterations to stops.

Temporary Alterations to Stops

Traffic control devices for temporary stop alterations:

1. Must not block pedestrian stop access
2. Should be on the same side of the road as the existing stop
(pg. 78)

- If routes to a stop are blocked, a channelized alternative route must be provided.
- If a channelized alternative route is not feasible, a temporary bus stop must be provided.

Contact Information

Contact SMART at innovations@smartbus.org with any questions or needs for expert advice relative information contained within the Manual.

Contact the SMART Marketing Department at marcomm@smartbus.org for more information about signage and advertising.

ECLIPSE ARCH

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ECLIPSE **ARCH**

The Eclipse Arch bus shelter from Brasco is a modern and bold addition to any public space. This shelter boasts clean roof lines and panoramic glass applications that are sure to catch the eye of any passerby. Each element of this innovative shelter has been meticulously designed by our team of designers, ensuring durability and longevity in any location. The Eclipse Series shelter is a perfect canvas to incorporate public art projects or add custom branding elements. Brasco's collaborative, client-centered approach guarantees that each project's unique expectations are exceeded.

GET IN TOUCH

For more information on Brasco's shelter selection, contact our team of dedicated sales representatives at info@brasco.com or call 313-393-0393 x 203.

BUILD YOUR SHELTER

WIDTH	5', 7'
LENGTH	8', 10', 12', 16', 20'
COLUMNS	4.5" Round Pocketed Extrusions 6" Round Pocketed Extrusions
ROOF GLAZING	Structured Polycarbonate Acrylic Aluminum Sheet
WALL GLAZING	Clear Tempered Safety Glass Perforated Aluminum
CONFIGURATION	Full Side Walls with Open Front Right Front Windscreen Left Front Windscreen Centered Front Windscreen Partial Side Walls with Open Front
FINISH OPTIONS	Powder Coat Painted Finish
INCLUDED	Pocketed Columns Conceal Hardware Anchor Boots (4" Adjustability) Concrete Mounting Hardware 1 Year Manufacturer's Warranty Buy America Compliant

Different Bus Stop Designs

Art

Shizuoka, Japan

Photo: Toshiyuki Yano

In Shizuoka, not far from Tokyo, the Japanese studio Suppose Design Office designed this bus shelter that looks like it could be in an anime film. Offering commuters shelter underneath giant umbrellas, it’s a poetic and functional reinterpretation of the bus stop.

Shodoshima, Japan

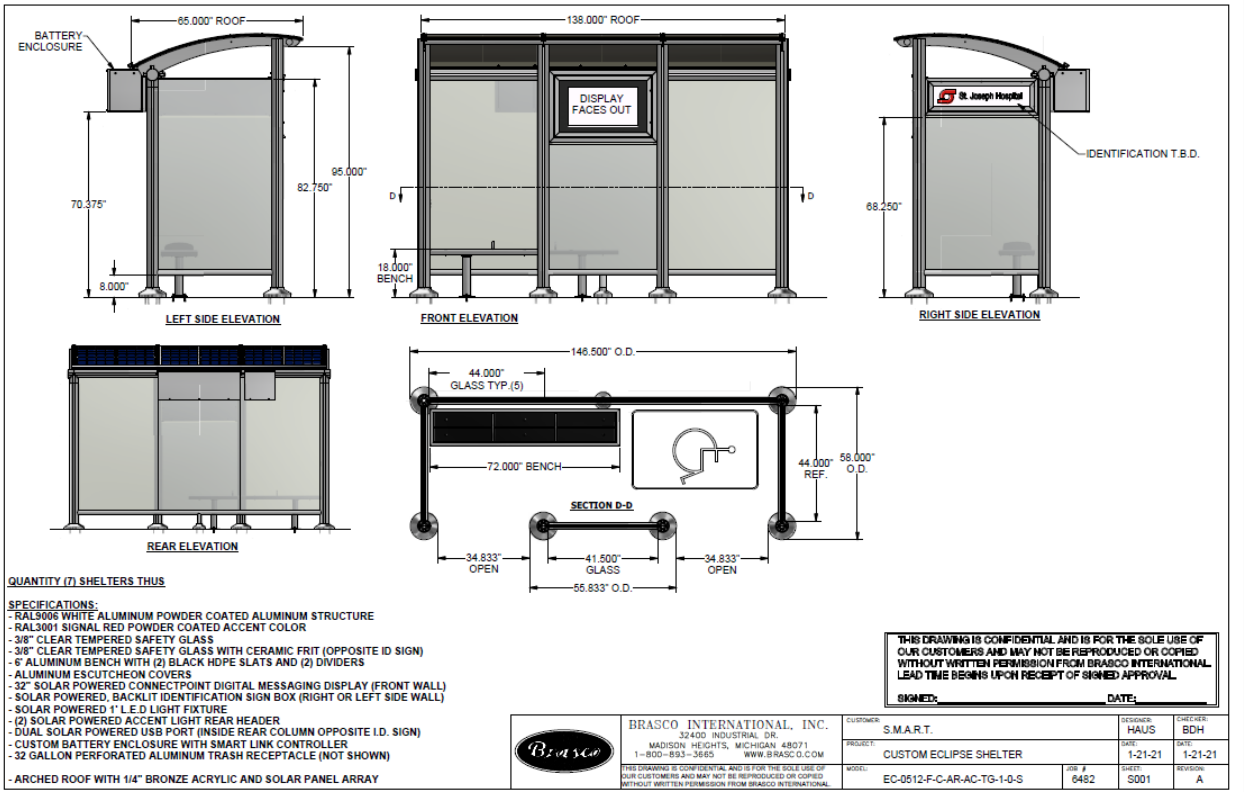
This dreamy bus stop, located on the small island of Shodoshima, was designed by Japanese architect Yo Shimada of the firm Tato. Overlooking a beautiful green valley, it is designed to look like water lilies floating on a pond, with the pads made of 90 steel discs. “For people waiting for a bus, these disks can serve as benches or tables, or they can offer shade, depending on their needs,” says the architect.

Baltimore

Artist Emilio Alarcon told Slate that the goal of the project was “to create a very friendly bus stop to contrast with the industrial city,” while still employing conventional industrial materials like wood and steel.

Basic/Traditional

SMART Standard Bus Stop Design



Los Angeles, CA

Detroit, MI

The Suburban Mobility Authority for Regional Transportation (SMART Bus), in Detroit, MI continues to invest in bus stop shelter amenities for its riders. SMART is in the middle of a multi-year deployment of its new FAST shelters that feature a mix of solar powered digital technologies aimed to improve the ridership experience as well as reduce SMART's operational overhead.

City of Abbotsford, CA

Abbotsford council has approved a program to provide $50,000 per year for the supply and installation of new bus shelters..

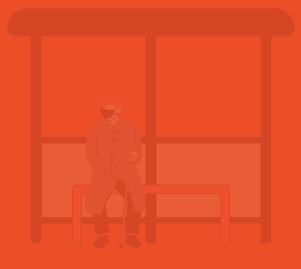
The annual cost for maintenance of the shelters is estimated to be $20,000 through existing funding.

Best Practices in Bus Stop Shelters

Ride New Orleans

Written by Policy Manager, Dustin Robertson






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%.

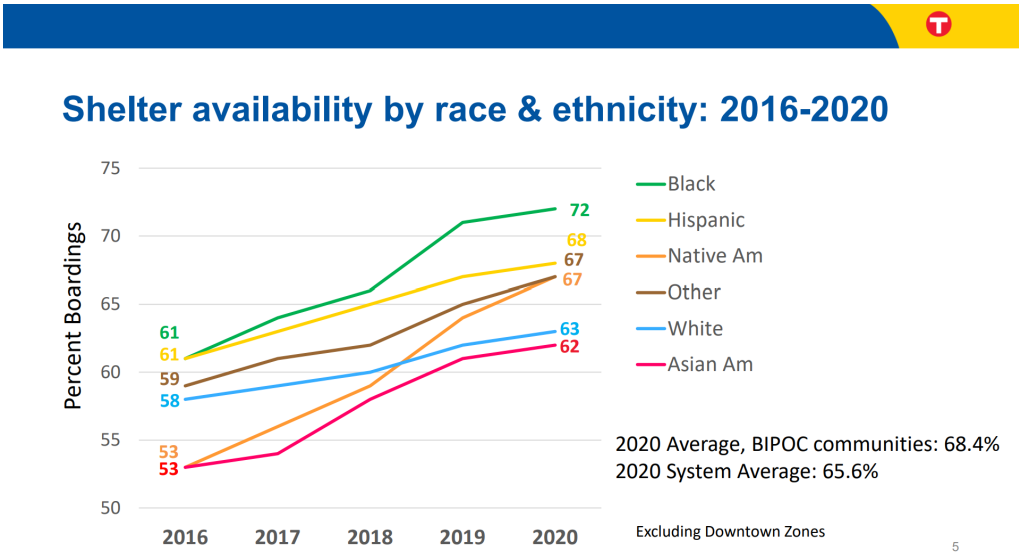


Figure 7: Improvements in sheltered boardings (Source: Metro Transit)

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

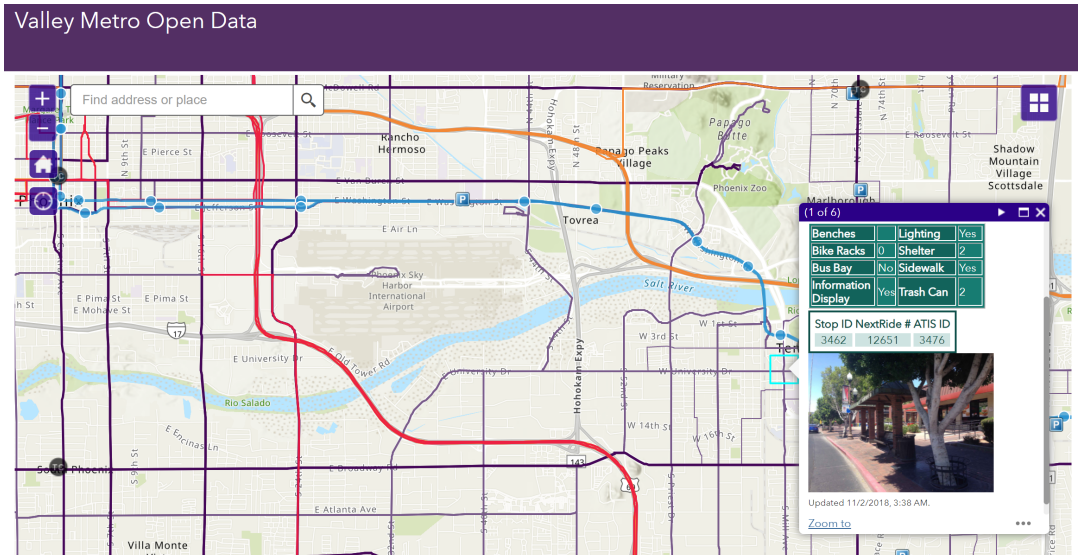
Transit agencies create and manage tons of data and as the technological capabilities of the public increase with computers and smartphones, agencies are finding new

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.

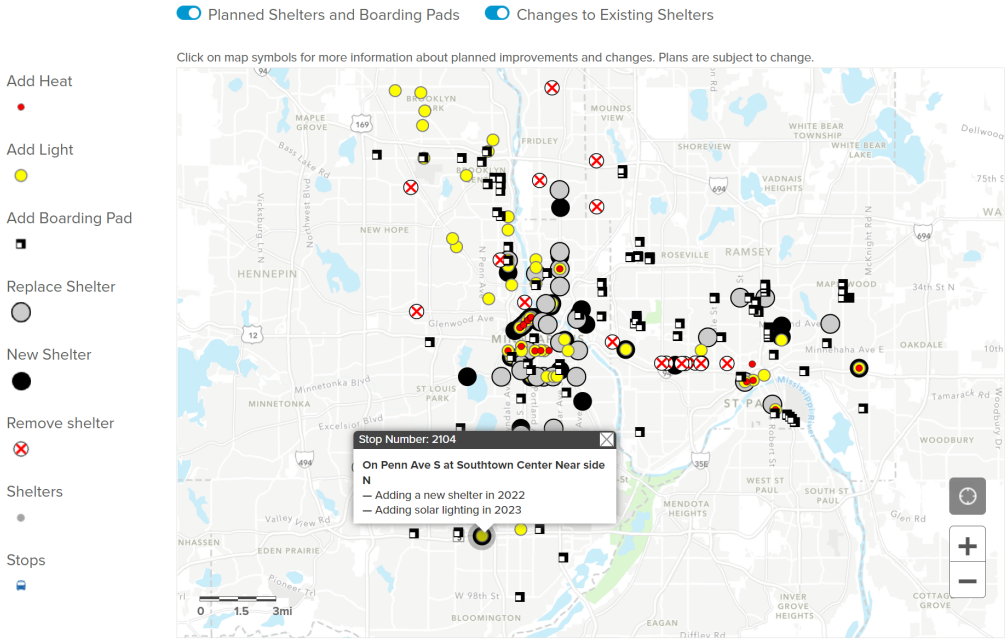
Several of the agencies included in this report are making strides towards increased data access. Some pointed out benefits such as reducing requests for data. While one agency simply stated that "if we are going to do something related to shelters, we need to be able to show the public how and why we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

Acknowledgments

We are extremely grateful for the time and information given by representatives from the following agencies and departments: EMBARK, Metro Transit, City of Phoenix Public Transit Department, Tri-County Metropolitan Transportation District of Oregon, Utah Transit Authority, and VIA Metropolitan Transit. We are also guided by the important work of other transit advocacy organizations such as TransitCenter which published a fantastic resource called "From Sorry to Superb: Everything You Need to Know about Great Bus Stops." And we are inspired by grassroots organizations like MARTA Army which pushes for better bus stops in Atlanta.