Sandy Transit Master Plan

City of Sandy, Oregon
September 2009

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Joint Citizen Advisory and Technical Advisory Committee

Don Allen, Sandy City Council Representative, Transit Advisory Committee Member
Tom Belanger, Oregon Trail School District Business Director
Jackie Bollinger, Sandy Planning Commission Alternate
Diane Brandon, Representative for People with Disabilities
Teresa Christopherson, Clackamas County
Sherrin Coleman, ODOT Public Transit
Nancy Enabnit, City of Sandy, Senior Services Director
Liz French, City of Sandy Engineer and TSP Project Lead
Olga Gerberg, Sandy City Council Representative
Eleanor Green, City of Sandy Transit Assistant
Cindy Brown, Youth Representative
Myrna Gonzales, Sandy Transit Driver
Stew Hedges, Representative from First Student
Christine Heycke, Consultant, CPH Planning, Inc.
Sonya Kazen, ODOT
Joyce LeDoux, Oregon Housing and Associated Services,Transit Operations Supervisor
Hollis MacLean-Wenzel, Sandy Chamber of Commerce
Tom Mills, TriMet
Daniel Rathman, Transit Driver, Dispatcher
Julie Stephens, City of Sandy Transit Manager
Caren Topliff, Sandy Transit Advisory Committee
Bill Wardy, Sandy Transit Advisory Committee

City Council

Linda Malone, Mayor
Jeremy Pietzold
Lois Coleman
Dave Beitler
Phil Moyer
Don Allen
Olga Gerberg

Planning Commission
Jerry Crosby, Chair
Donald Carlton
Ron Lesowski
Carl Exner
Jackie Bollinger
Susie Jenkins
Nancy Szofran

City Staff
Scott Lazenby, City Manager
Tracy Brown, Planning Director
Mike Walker, Public Works Director

Prepared by:

CPH Planning

Portland, Oregon

With assistance from Landsman Transportation Planning

Special thanks to:
Alta Planning + Design
DKS Associates

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Chapter 1 - Introduction

Plan Overview

The Sandy Transit Master Plan (TMP) represents a community vision and blueprint for transit development in Sandy over the next twenty years. The TMP is an element of the Sandy Transportation System Plan (TSP) and was developed in coordination with the concurrent TSP update. The goals, policies, and implementation measures contained in the TMP will help guide Sandy Transit in maintaining a service that meets the needs of a growing and changing community and also emphasizes efficiency. By addressing gaps in the pedestrian, bicycle, and street networks and proposing transportation demand management (TDM) strategies, other elements of the TSP will help to sustain a successful transit service in Sandy. Maintaining supportive land-use policies is also crucial for the long-term viability of transit service.

Sandy Transit plays an important role in providing transportation within Sandy and as a link in the regional multimodal transportation network. The connections to TriMet, Mountain Express, and bicycle and pedestrian networks allow for an increased level of mobility for people in and around Sandy, whether they are traveling to jobs, school, shopping, parks, or social and recreational events. Sandy Transit services also help support a growing local economy, providing easy access to Sandy businesses for both workers and shoppers.

An effective transit system places emphasis on providing mobility and independence for people who rely on transit to meet their basic travel needs. Transit-dependent individuals often include people with disabilities, youth, elderly, and people with low-incomes. Providing effective service ensures that transit-dependent and other individuals are able to get to the places they need to go. However, in order for transit to effectively reduce automobile trips and the overall demand on the transportation system, Sandy Transit must also provide a service that is an attractive alternative to driving. For all those who use transit as a mode of transportation, it must be a safe, reliable, and inexpensive option.

Goals and Policies

The Plan goals focus on both effectiveness and efficiency of service.

Goal 1 - To provide an effective, safe, and equitable transit service that responds to the mobility needs of citizens, employees, businesses, and visitors.

Goal 2 - To create an efficient transit system that offers a viable alternative to the automobile, connects with the regional transportation system, maximizes efficient use of existing roadways, and minimizes air pollution and energy use.

The Plan policies are designed to support the two goals.

Policy 1-Provide service that is safe, comfortable, and effective.

Policy 2-Provide efficient public transportation that connects to the regional transportation system and allows for convenient transfers between transit systems.

Policy 3-Expand service to meet the demands of a growing population and employment base in Sandy.

Policy 4-Promote improved connections and accessibility to transit for pedestrians, bicyclists, motorists, and special-needs groups.

Policy 5-Increase public awareness of Sandy Transit and its connectivity to other transit systems and transportation modes.

Policy 6-Operate in a manner that maximizes operational efficiency and fiscal responsibility.

Policy 7-Strive to reduce air pollution and energy use through conservation, improved technology, and alternative fuels.

Each policy is in turn supported by implementation measures, which are detailed in Chapter 4.

Plan Organization

Chapter 1- Introduction. Provides an overview of the TMP and the role of the TMP in relation to other federal, state, regional, and local plans and goals.

Chapter 2 - Existing Conditions. Includes the history of Sandy Transit, current service, facilities, and fleet.

Chapter 3 – Transit Demand. Examines factors that affect transit demand, including demographic changes, land use, and cost factors.

Chapter 4 – Public Involvement and Customer Preferences. This chapter includes a detailed analysis of the results from the two surveys conducted as part of the TMP process and input from public outreach efforts.

Chapter 5 – Future Transit Needs. Proposes future transit service and facilities, based on transit demand, an assessment of existing route performance, and a comparison of Sandy Transit performance with that of neighboring transit systems.

Chapter 6 – Goals, Policies, and Implementation Measures. Outlines Sandy Transit's goals and the actions needed to realize those goals.

Chapter 7 – Funding Resources. Examines past funding sources and levels as well as future funding needs and opportunities.

Appendix A – Glossary of Terms

Appendix B – Transit Design Guidelines

The Role of the Transit Master Plan

The TMP must be consistent with federal, state, regional and local goals and objectives. Overall, these goals and objectives contribute to:

- Providing safe, efficient, accessible, and equitable transportation
- Providing mobility to people of all ages and incomes; and
- Reducing air pollution, energy use, and traffic congestion.

The TMP is also a tool for local implementation of transit-related provisions in the Oregon Transportation Plan (OTP) and the Coordinated Human Services Transportation Plan (CHSTP). Finally, in order to provide effective service, Sandy Transit must ensure that its proposed service connects well with TriMet services.

Applicable provisions from various plans include:

U.S. DOT
The United States Department of Transportation goals target transportation infrastructure, congestion, reliability and access. Its strategies are designed to produce improvements in these measures of mobility throughout the U.S. transportation network in an effort to reduce energy consumption and improve commerce, air quality and quality of life.

Federal strategies also state that, "it is our obligation to ensure that transportation is not only safe and efficient, but that it is also accessible. Transportation must be within reach of all Americans, including those with low incomes, the elderly and persons with disabilities. Where barriers to accessibility exist, we will seek to eliminate them."

ADA
The Americans with Disabilities Act (ADA) requires public entities that operate fixed-route local systems to provide paratransit or other special service to individuals with disabilities that is comparable to the level of service provided to individuals without disabilities who use the fixed route system.

Oregon Public Transportation Plan (OPTP) 1997
The OPTP is the public transportation element of the Oregon Transportation Plan required by Oregon's Transportation Planning Rule (TPR.) The OPTP provides guidance for the development of transit, rideshare, and transportation demand management services in Oregon. The OPTP sets first priority on service to those who are most dependent on the public transportation system (seniors, people with disabilities, low-income, and youth). The plan describes transit service as a lifeline for many people in need of transportation to medical appointments, employment, and educational services.

The OPTP also recognizes the value of transit service to serve those who use transit by choice, in particular commuters. These services are cited as having a positive impact on traffic congestion, air quality and community livability and serving to protect and enhance the quality of life in Oregon's larger communities.

In order to effectively meet the transportation needs of the State's residents, the OPTP emphasizes the importance of coordination and cooperation between jurisdictions as a means of achieving a comprehensive, interconnected, and dependable public transportation system. The OPTP also sets a minimum level of service for transit of 1.7 service hours annually per capita in cities of 2,500 or more by 2015.

ODOT Critical Needs for Public Transportation

ODOT has identified statewide critical needs for public transportation and proposed improvements in the public transportation system provided additional resources can be identified. The identified critical needs include:

- Taking care of the existing system, including vehicle replacement and maintaining special transportation service levels.
- Making the system work better with innovative approaches, best practices, and signal priority.
- Improving safety with critical investments in the area of sidewalk and bus stop improvements.
- Increasing capacity with high-capacity transit, additional special-needs transportation service, and improved connectivity between cities and towns.

The Coordinated Human Services Transportation Plan (CHSP) 2006

The CHSTP seeks to support the creation of a regionally-coordinated transportation system for the elderly, disabled, and low-income population, that is efficient, effective and founded on present and future need. Although the Plan addresses the provision of specific transportation services and coordination among providers, it also places a very strong emphasis on land use and design that supports and encourages walking and transit.

Guiding Tenets:

1. Coordinate. To make best use of service hours and vehicles, assure that services are coordinated and well organized. Assure that customer information is useful and widely provided throughout the region. Work with others to achieve results.

2. Innovate. Increase options available to elderly and disabled (E&D) customers by providing innovative, flexible, attractive and cost-effective alternatives to standard fixed-route buses, rail and paratransit. Expand outreach and education on how to use services.

3. Involve the Community. Include elders and people with disabilities, social services staff, private non-profit providers, and other community partners in the dialogue and decisions about services. Advisory committees working on E&D issues should have over 50% representation of elders and people with disabilities.

4. Improve the Service Foundation. Fixed-route service frequencies and coverage in some suburban areas, as well as ways to get to the fixed routes, will need to be improved. The total fixed route transit system from the waiting area, customer service by the operators, priority seating, and security will need to be continually monitored for accessibility and improvement.

Regional Transportation Plan (RTP) 2004
The RTP is currently being updated. It establishes regional transportation policies and objectives to meet projected transportation needs in the Portland Metro Region. The RTP is an important tool in the implementation of Metro's 2040 Growth Concept, linking urban form to transportation and serving all forms of travel.

The draft RTP update designates Sandy as a Neighbor City and states that, **"**Communities such as Sandy, Canby, Newberg and North Plains have a significant number of residents who work or shop in the metropolitan area. Cooperation between Metro and these communities is critical to address common transportation and land-use issues."

Clackamas County Transportation Plan (2008)
In addition to provisions for efficient, affordable transit service, the Transit section of the Clackamas County Transportation Plan strongly emphasizes the link between land use and transportation. It calls for increasing transit use by encouraging land use patterns, development designs and street and pedestrian/bikeway improvements that support transit. It also calls for requiring major developments or road construction projects along transit routes to include provisions for transit shelters, pedestrian access to transit and/or bus pullouts where appropriate.

GOALS

- Develop an integrated transit system that complements and supports the road, pedestrian, and bicycle system and encourages the use of alternative transportation modes within, to, and from the County's urban areas.
- Encourage transit ridership through development of a transit system that is fast and comfortable at low cost.
- Encourage land use patterns, development designs and street and pedestrian/bikeway improvements that support transit.
- Provide transit for people who cannot use or do not have adequate private transportation. Provide transit that is accessible to people with disabilities.
- Develop a transit system that supports residential, commercial and industrial development to help reduce new investment in roadway capacity.
- Develop a transit system that meets the County's local needs.
- Develop a system of light rail transit (LRT) routes to serve selected corridors in the north urban area of the County.

Sandy Transportation System Plan (TSP)
The TMP will form the transit component of the TSP, the document that guides transportation related planning and land use in the City.

The goals of the current Sandy TSP are to:

- Enable transportation facilities to adequately support planned land uses over the next 20 years;
- To the extent possible, provide context, certainty and predictability for the siting of new roadways, transit, pedestrian and bicycle facilities, and other transportation related improvements;
- Help reduce the cost and maximize efficiency of public spending on transportation facilities and services by coordinating land use and transportation decisions;
- Identify and make land use code and guideline revisions needed to protect and develop a safe and efficient transportation system;
- Assess financial feasibility and funding options for transportation improvements.

Chapter 2 - Existing Conditions

Overview

The City of Sandy is located near Mt. Hood in Clackamas County surrounded by farmland and nurseries. According to the 2000 US Census, Sandy's population in 2000 was 5,385. By 2008, the population had grown to 8,000. Based on projections by the City of Sandy and ECONorthwest, Sandy will reach a population of 11,023 by 2029.

Sandy was founded in 1913 and named after the nearby Sandy River. The city is located east of Gresham and west of the Villages at Mt. Hood and about 25 miles from Portland. Skiing and other recreational activities such as fishing, hiking, swimming, and biking attract visitors to the Sandy area.

US 26 serves as the major transportation route through Sandy. In town, the highway divides into a one-way couplet, providing a more pedestrian and transit friendly downtown. US 26 also serves as a major regional route for commerce and travelers, connecting Portland with Mt. Hood and Central Oregon. Many Sandy residents commute to work in Portland. Highway OR 211 also provides local access and connects Sandy with Eagle Creek, Estacada, Molalla, and Woodburn.

Retail and services account for 71% of Sandy's employment base, with another 17% employed in industry (including agriculture and manufacturing) and 12% in government.

History of Sandy Transit

The City of Sandy was granted a withdrawal from the TriMet District in 1999 and began providing transit service in 2000. Initially, the City had one transit vehicle and provided fixed-route service between Sandy and Gresham. Shortly thereafter, door-to-door demand-response service was offered for all residents within a quarter mile of Sandy's City limits, ensuring that all residents would be able to connect to the fixed route system. By the ninth month of operation, peak-hour service was added and the route was extended to serve more of Sandy's neighborhoods. During its second year of service, Sandy Transit provided 125,000 rides.

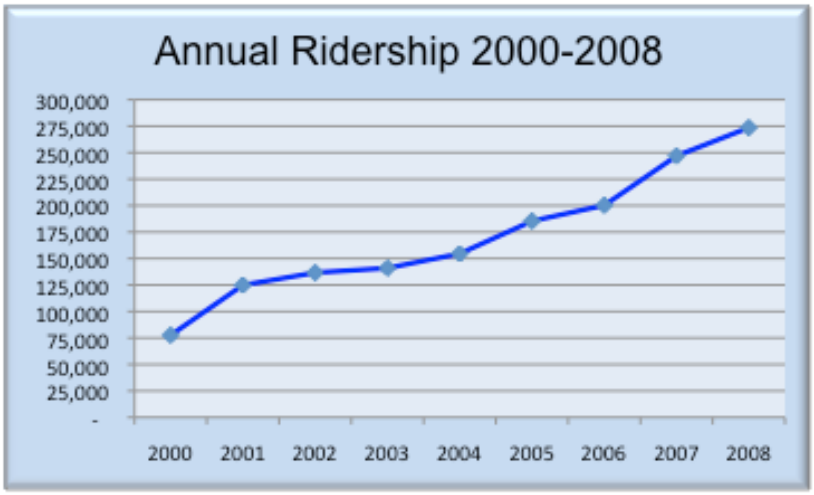


Figure 2-1- Sandy Transit Annual Ridership

In 2003, the City added commuter service between Sandy and Estacada. The following year, the City assisted the Mountain Community in implementing fixed-route service between Sandy and the Villages at Mt. Hood. Sandy Transit service has grown from one fixed-route with one vehicle to three fixed routes, a demand-response route, and eleven vehicles. The number of annual trips provided has also more than tripled from 77,000 to 273,616.

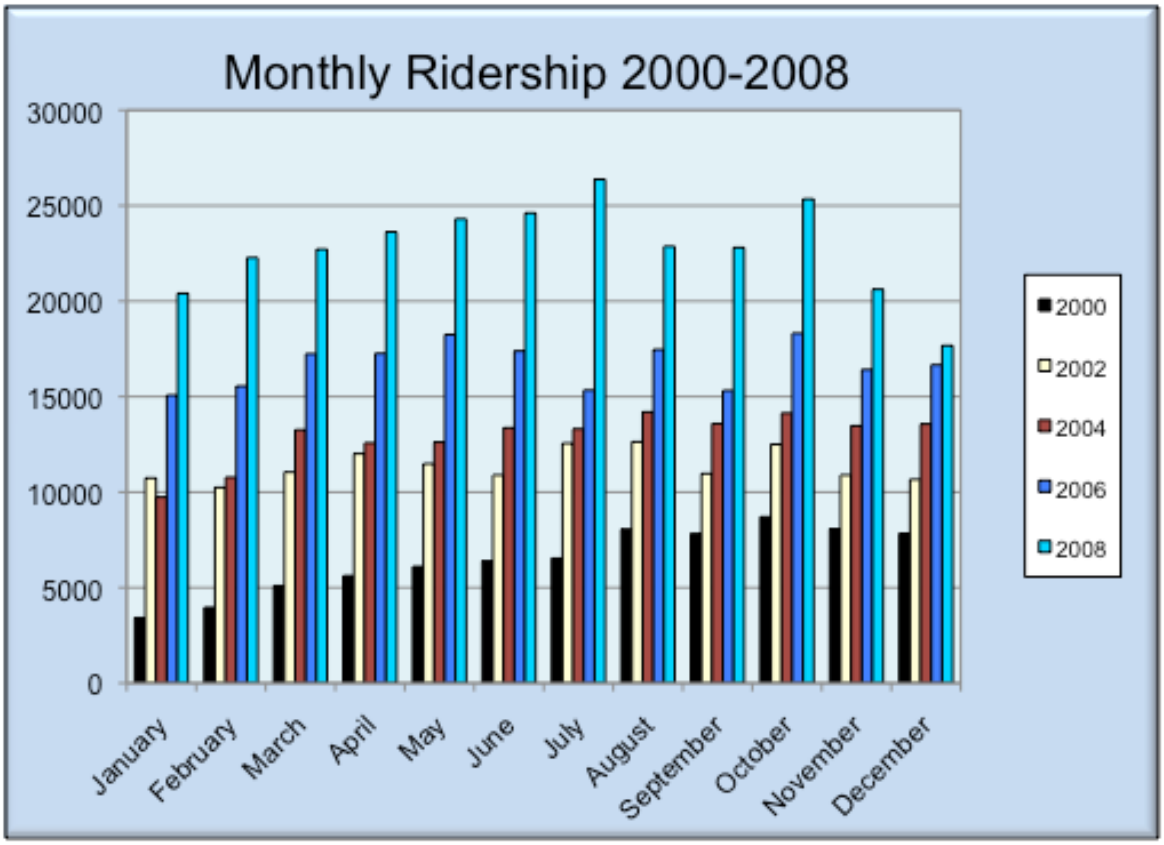


Figure 2-2- Monthly Ridership 2000-2008

Between 2000 and 2008, the newly formed Sandy Transit provided increasing levels of service and also saw a steep increase in ridership. Although ridership has increased steadily each year, dramatic increases in the ridership levels for 2006-2008 can also be attributed to an increase in frequency on the Gresham route to half-hourly and rising gas prices.

Operations and Administration

Sandy Transit operates under the Community Services Department of the City of Sandy. Oregon Housing and Associated Services, Inc. (OHAS), a non-profit based in Salem, provides Sandy Transit's operations services under contract with the City. The City is responsible for administration, program management, budgeting, fiscal control, public relations, marketing, fleet maintenance, service scheduling, monitoring, evaluation and planning. OHAS contracts

to coordinate shared rides for elderly and disabled passengers residing in the outlying areas for the Sandy Senior Center with those living in the transit area (City limits.) OHAS also contracts with Clackamas County for the provision of the Mountain Express operations from the same location. Staff and equipment are shared to maximize efficiencies.

The City of Sandy has a Transit Advisory Committee that meets on a quarterly basis. All meetings are publicized and open to the public. The committee consists of twelve members from the greater Sandy area and three associate members representing Estacada and the Villages at Mt. Hood. The committee includes representation from the business community, school and youth, with seniors and people with disabilities making up more than three-fourths of committee membership. The Committee makes service recommendations to City Council.

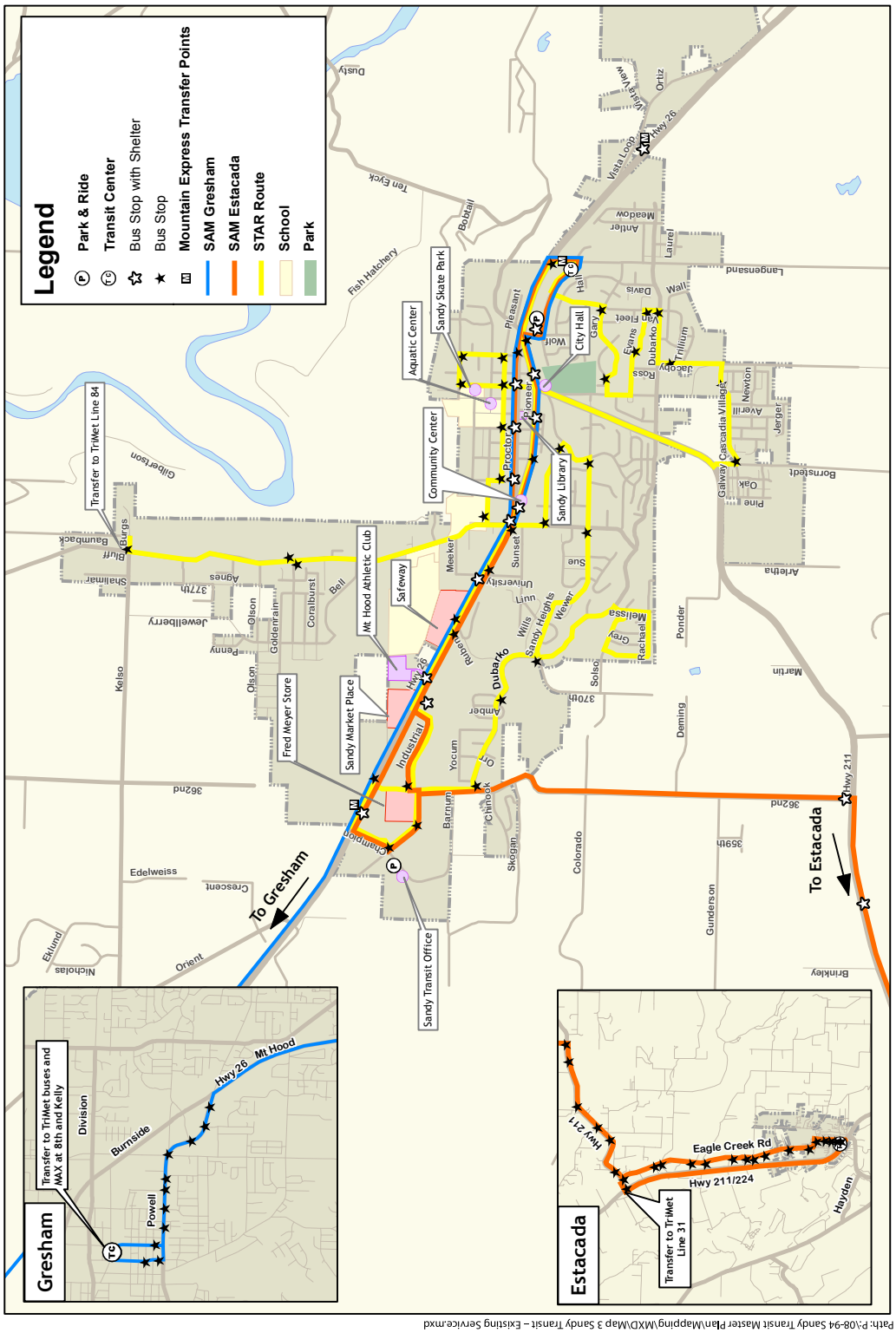
Budget

The City's transit budget for 2007-2009 is $5,054,316. This budget cycle is not representational as it includes approximately $2 million for a one-time capital project, the Operations Facility. It includes $1,995,000 in federal grants, $1,236,000 in state grants, and $830,000 in transit tax. Annual operation costs are approximately $1.1 million during this period. Sandy Transit is supported by a tax of .06% of payroll for businesses located within Sandy City limits. The rate is slightly lower than the rate in the TriMet district. Although the local tax revenue only accounts for about 46% of the overall operating budget, this revenue is particularly important in serving as a local match to leverage grant funds.

Fares

Sandy Transit's fixed-route service to Gresham and Estacada is fareless. The STAR route, which provides demand-response service, charges a 50-cent fare, although eligible riders ride for free. The fixed-route service was based on a fareless system for several reasons. For one thing, costs for fare collection, including fare boxes, interagency transfers, and administrative costs can easily exceed the resulting revenue. Additionally, Sandy Transit did not want to penalize Sandy passengers with a higher fare due to change of service providers. A fareless system also eliminates confusion, encourages ridership, and can result in faster service times since there is no delay to collect fares.

In the past, Sandy Transit has explored the option of charging a fare. The issue was brought to the Transit Advisory Committee for their consideration back in 2002, and at that time they opted to maintain fareless service. The issue has not been addressed since then. Fluctuating fuel prices in 2008 have dramatically increased service costs. At the same time, it has resulted in increased demand from passengers who are finding driving too expensive. The combination of factors has put increased pressure on Sandy Transit to start charging fares. This Plan examines fares as an option along with other funding sources.



Path: P:\08-94 Sandy Transit Master Plan\Mapping\MXD\Map 3 Sandy Transit – Existing Service.mxd

Figure 2-3 Sandy Transit - Existing Service

Sandy, Oregon
Sandy Transit Master Plan

Current Service

Sandy Transit provides service on three fixed routes and a demand-response route. The SAM-Gresham route has the highest ridership levels of the three routes. Although this route is particularly full during morning and evening commute hours, ridership is consistently high during mid-day, as people use the service to get to local destinations for shopping and errands. In 2007, the SAM-Gresham route provided a total of 218,240 rides, operating at more than 50% capacity averaged over all hours.

SAM - Gresham

DESCRIPTION	*DAYS*	*HOURS*	*FREQUENCY*
Fixed route service to Gresham and connection to TriMet at Gresham TC	Monday-Friday	5:25 am - 8:57 pm	Half hourly
	Saturday	10:30 am – 11:27 pm	Hourly

The SAM Estacada route started service in 2003 and provides five runs between Sandy and Estacada each weekday. In 2007, the route provided 9,455 rides. Ridership levels were substantially higher in 2008, with a total of 15,135 rides.

SAM - Estacada

DESCRIPTION	*DAYS*	*HOURS*	*FREQUENCY*
Fixed route service to Eagle Creek and Estacada, connection to TriMet # 31	Monday-Friday	7:30 am – 7:49 pm	Varies between 2 and 4 hours

The STAR route around town provides transportation to all quadrants of the City, enabling residents to reach in-town destinations for work, recreation, and shopping, and make connections to the other two SAM routes, Mountain Express and TriMet. STAR operates as a fixed route for two hours in the morning and two hours in the evening. This schedule ensures reliable transfers to other fixed-routes for commuters. During these hours, passengers can flag the driver for pick-up anywhere along the route where it is safe to stop. Riders who are over 60 or ADA eligible can also request deviations.

STAR – Around Town

DESCRIPTION	*DAYS*	*HOURS*	*FREQUENCY*
Service around Sandy. Fixed route with flag stops. Route deviations and door-to-door service available for eligible riders*	Monday-Friday	5:28 am – 7:20 am 6:28 pm – 8:20 pm	Hourly, during morning and evening peak hours
Demand response	Monday-Friday	7:30 am – 6:28 pm 8:20 pm – 9:00 pm	
Demand response	Saturday	10:30 am – 4:30 pm	

*over 60 and ADA eligible.

During mid-day, late evening, and on Saturdays, STAR operates as a general public demand-response service. Curb-to-curb service is offered during the hours when the bus operates as demand-response service. Riders are encouraged to make their travel requests by 5 pm the day prior to service, although same-day requests are accommodated whenever possible. The STAR route provided 16,771 rides in 2008. STAR service charges a fare of 50 cents, but service is free for passengers who are over 60, ADA eligible, low-income or under 8 years old and accompanied by an adult. In 2008, the STAR route generated $1,883 in revenue.

Facilities and Fleet

The City of Sandy recently completed construction of a joint Transit and Public Works Operations Facility. This facility houses the administrative and transit operations, maintenance, bus washing facilities, and a park-and-ride. Buses are also parked at the facility in a secure gated lot with garages. The Operations Facility Master Plan includes future fueling capability.

Figure 2-4 - Sandy Public Works and Transit Operations Facility

Table 2-1 provides an inventory of the Sandy Transit service fleet. There is a total of 11 vehicles, three of which are small wheelchair accessible vans for dial-a-ride services. The smaller buses (14-19 passengers) are used for the in-town STAR service and the Estacada route. Larger low-floor buses, including two recently delivered 32-passenger Gillig buses are used for the Gresham route. All of the vehicles are wheelchair accessible and all but the small vans are also equipped with bicycle racks.

Table 2-1 - Sandy Service Vehicle Inventory - September 2008

YEAR	MAKE	MODEL	MILEAGE	CONDITION	SEATS	ROUTE/S
2000	Chevy Venture	Ricon Activan PT	201,977	Poor	5	ED* Reserve
2002	Chance Coach	OPUS	442,007	Poor	25	SAM Gresham Reserve
2002	El Dorado	Escort RE 30	347,249	Poor	25	SAM Gresham Reserve
2002	Ford	E-350 Starcraft	189,178	Poor	8	STAR/ED Reserve
2003	Ford	E-450 Goshen	201,977	Poor	14	SAM Estacada Reserve
2004	Opus	Low floor bus	226,070	Poor	31	SAM Gresham
2006	Chevy	Uplander Conversion Amerivan	102,395	Good	5	ED
2008	Ford	E-450 Elkhardt Coach II	26,435	Excellent	19	SAM Estacada
2008	Ford	E-450 Elkhardt Coach II	24,521	Excellent	14	STAR
2008	Gillig	Low floor bus	400	New	32	SAM Gresham
2008	Gillig	Low floor bus	400	New	32	SAM Gresham

* Elderly and disabled.

Figure 2-5 – Gillig low-floor bus

Figure 2-6 – Interior of Gillig bus

Bus Stops and Amenities

Bus stops are located every two-three blocks within town for the fixed-route service. Eleven of these stops include shelters and an additional two include benches only. Route schedules are posted at bus stops and inside shelters. Passengers can flag the STAR bus anywhere along the route where it is safe to stop. The SAM Estacada route includes the option of flex stop pickups at the Big Valley Mobile Park and the Barlow Mobile Park with prior notice.

Figure 2-7 – Bus shelter in front of Community Action Center

Figure 2-8 – Bus Shelter at Langensand

Park & Ride

There are three park & ride lots in Sandy, allowing people from outlying areas to park their cars and get on a bus or a carpool. The newest park & ride is located at the Sandy Transit operations facility at 16610 Champion Way; it has space for 35 vehicles with plans for 15 additional vehicle spaces in the future. Two lots are located at the east end of town, one at Langensand and McCormick with 5 spaces for disabled parking, and another at the Assembly of God Church on McCormick, with 20+ spaces. All the park & ride lots are currently underutilized.

Connections to Other Transit Providers

Eight TriMet routes and the Max Blue Line serve the Gresham Transit Center, allowing for convenient transfer to and from Sandy Transit's SAM-Gresham route. In addition to the many Portland connections provided by these routes, TriMet Lines 80 and 84 also provide connections to Troutdale, Wood Village, Fairview, Boring, and Kelso.

Sandy Transit also connects with the Mountain Express, which provides service between Sandy and Rhododendron, with stops in ZigZag, Welches, Wemme, and Brightwood.

Regional Planning and Coordination

The Tri-County Metropolitan Transportation District serves as the coordinator of public transportation throughout Washington, Multnomah and Clackamas counties. In this role, Tri-Met oversees Sandy Transit's service and compliance with the State's Special Transportation Fund (STF) and State Management Plan for Transportation Programs. TriMet is responsible for allocating STF funds and serves as the STF Agency for the three-county area.

Service for Seniors and People with Disabilities

All Sandy Transit service vehicles are wheelchair accessible and compliant with the American with Disabilities Act (ADA). General public demand-response service provides ADA service all hours of the fixed-route schedule and gives priority to seniors and people with disabilities. In coordination with the Sandy Senior Center, the STAR demand-response service will pick up eligible passengers within a five-mile radius of Sandy city limits. Senior citizens and persons with disabilities make up 55 percent of the STAR ridership, accounting for over 9,000 rides per year.

All transit operators are trained to assist people with disabilities on and off the vehicle and to ensure that passengers using a wheelchair are properly secured. Door-to-door or door-through-door service (ED) is available for frail seniors and people with disabilities who are not eligible for Medicaid for medical appointments in the tri-county area. Sandy Transit provided a total of 1,343 out-of-district rides. The Senior Center also provided 945 rides in 2007.

ADA Eligibility and Registration

The Transit Manager is responsible for reviewing all applications to determine ADA and ED eligibility. Individuals complete an application form providing information on the type of mobility aid used, the temporary or permanent status of their mobility impairment, and a functional assessment of the individual's ability to use various services.

Special Events

In July of every year, Sandy Transit provides shuttle transportation to the Mountain Festival, an arts and music festival in Sandy's Meinig Park. In 2008, Sandy Transit provided 1,488 rides to the Mountain Festival.

Chapter 3 - Transit Demand

Overview

Future growth in Sandy and the surrounding area will result in increased demand for transit service. A number of other factors will also influence the level of demand and the specific nature of the services needed. An effective transit system is built around demonstrated travel needs and responds to customer preferences. For this reason, surveys are particularly important in planning for system changes and growth. Information on future trends and developments, service analysis, along with customer preferences and availability of funding form the basis for planning future service. This chapter looks at specific factors that will affect future demand for transit in Sandy, including demographic and population changes.

Due to the many factors influencing transit ridership, it can be difficult to accurately predict future demand. A variety of studies have measured the effects of various transit system changes on ridership. For instance, a report prepared for the Transportation Research Board (TRB) in 2004 found that service expansions resulted in a ridership increase between 0.6% and 1% for every 1% increase in service. [1] Another study in 2005 concluded that, "The most significant ridership increases are generally the result of a combination of initiatives or actions. Seldom does a single initiative result in significant or sustained increases." [2] A third study from 1997 found that external factors have the largest effect on ridership. "Factors such as land use, parking availability, and population density are very important determinants of transit ridership."[3] As a rule of thumb, the Transit Research Board (TRB) has identified the minimum densities to support hourly service as three household units per gross acre or four jobs per gross acre.

[1] Pratt, Richard and Evans, John, *TCRP Report 95,* Chapter 10 – Traveler Response to Transportation System Changes: Bus Routing and Coverage, 10-4,

[2] Cambridge Systematics, Inc. *TCRP Research Results Digest 69,* Evaluation of Recent Ridership Increases, 1.

[3] Charles River Associates, *TCRP Report 27* – Building Transit Ridership: An Exploration of Transit's Market Share and the Public Policies that Influence It, 11.

Population and Employment Changes

Future Growth

In August, 2008, ECONorthwest and the City of Sandy developed population and employment forecasts as part of the *Sandy Urbanization Study*. The forecasts indicate a population growth of 37% for Sandy between 2009 and 2029. The growth from 8,034 in 2009 to 11,023 in 2029 represents an annual compounded rate of 1.6%.

The study also forecasts increased employment overall, but particularly in retail and services, which are expected to account for 75% of employment in Sandy by 2029, with an addition of 1,421 jobs. A number of the demographic groups with a greater propensity to ride transit, including workers age 17-29, would likely be employed in these jobs. The areas slated for increased employment are centered around downtown Sandy and US 26, an area already well served by transit.

Aging Population

The City of Sandy had a population of 5,385 according to the 2000, U.S. Census of Population. At that time, 9% of the City's population was 65 or older. Beginning in 2011, baby boomers will start to reach retirement age and seniors will account for a larger proportion of the population. This will inevitably create an increased demand for dial-a-ride and medical trips over the next twenty years. Elderly residents who are less confident in their driving abilities may also add to the increased demand for fixed route transit service.

Other Demographics

Although the demographic profile of transit riders varies somewhat from one place to another, there are particular groups that are more likely to commute by transit than others. According to one study, the groups that are more likely to use transit include[4]:

- Workers with no household car
- Workers with work or mobility limitations
- Women
- Hispanics
- Asians
- Immigrants (regardless of the number of years they have been in the United States)
- Workers with household incomes below $20,000
- Workers age 17-29, and
- Workers age 60 and over.

With the exception of low-income households, the study indicated that all of the other groups still had higher than average transit use to work even in higher-income groups. Of these groups, Hispanics in particular, represent a growing sector of the community in Sandy.

[4] Rosenbloom, Sandra, *TCRP Report 28* – Transit Markets of the Future: The Challenge of Change, 8.

Land Use and Transit

Dense development favors transit service since more people will share the same destinations. Density at both origins and destinations affect travel behavior. One study found that increasing urban residential population density to 40 people per acre increased transit use from about 2% to 7%, while increasing densities in commercial centers to 100 employees per acre resulted in an additional 4% increase in transit use. Significant shifts from the single-occupant automobile to transit can be seen with a density of 20-75 employees per acre. Population and employment densities affect both work trips and shopping trips[5].

The *Sandy Urbanization Study* provides an inventory of buildable land and identifies future housing needs over the next twenty years. Based on the study's forecast of an average residential density of 6.8 residential dwelling units per acre in 2029 and an average household size of 2.7, Sandy will have just over 18 people per acre[6]. Overall, this does not represent a population density conducive to high levels of transit use, however there are already areas of Sandy where population densities approach 26 people per acre. Future development in high-density and surrounding areas will add to existing transit demand.

If household size declines over the next twenty years, the resulting reduction in population density could add to the difficulty in providing efficient transit service, particularly in the lowest-density residential areas.

The locations of bus stops and the layout of buildings at destinations are also important. If passengers have to cross parking lots to get from the bus stop to their destinations, they are less likely to take the bus. Building entrances should be located as close as possible to crosswalks, streets, and bus stops to encourage transit use. Parking lots should be located to the side or the back of buildings. Although much of the existing development in Sandy doesn't conform to these standards, Sandy's Development Code includes provisions for special setbacks on transit streets to ensure convenient, direct, and accessible pedestrian access to and from public sidewalks and transit facilities.

Access to Transit

Most transit riders walk to the bus stop, so the sidewalk is the primary access. Areas without sidewalks can present a disincentive to potential riders who have to walk on the street to reach a bus stop. Areas without sidewalks can be particularly hazardous for people in wheelchairs and may prevent them from being able to use fixed-route service. US 26 and the Proctor/Pioneer couplet through downtown Sandy have sidewalks, but many of the residential areas do not. Completion of a sidewalk network throughout Sandy would greatly support transit use.

A connected street network also greatly facilitates transit accessibility and efficient transit service. Sandy currently has many existing neighborhoods with cul-de-sacs. As a result, riders may have to walk longer distances to reach a bus stop and buses have to make circuitous trips

[5] Frank, Lawrence, & Pivo, Gary (1995). Impacts of Mixed Use and Density on Utilization of Three Modes of Travel: SOV, Transit and Walking. *Transportation Research Record 1466* , 44-52.

[6] ECONorthwest, (2008). The City of Sandy Urbanization Study, 4-9.

to reach all areas. Although an existing street system cannot be easily changed, connecting paths or walkways can provide effective pedestrian connections. The Sandy Transportation System Plan (TSP) also calls for many future street connections throughout the City, which would greatly benefit transit. The City's Transportation System Plan Update will consider ways that local streets and accessways can be improved to enhance access to transit.

Free Parking

Free and plentiful parking acts as a subsidy and as a powerful incentive to drive instead of using alternatives like transit, or even carpooling. Transit and other transportation options are most successful in areas where parking is constrained or where there is a charge for parking. Although free parking is relatively plentiful in Sandy, the parking cost and limited supply in downtown Portland and Gresham create an incentive for commuters from Sandy to use transit instead of driving.

Cost Factors

Fares

A fareless transit system helps to attract maximum ridership by making transit more competitive with the automobile. Service times are also reduced, as there is no need to collect money or issue tickets at each stop. The objective of transit pricing is to increase revenue while minimizing ridership loss. In a 2004 study, researchers found that on average, transit systems can expect a 4% loss in bus ridership for every 10% increase in fare.[7] However, formulas such as this are not very useful in calculating the effects of initiating a fare for the first time.

A more useful local example is South Metro Area Rapid Transit (SMART) in Wilsonville, Oregon, which was fareless for over ten years, but recently began charging a fare for out-of-town service. SMART now charges a regular fare of $1.25 - $2.50, depending on the distance traveled. Although ridership dropped initially, the decline was short-lived, especially as gas prices continued to rise. Since implementing a fare, SMART has had to increase service to meet demand.

If Sandy Transit started charging a fare for the SAM service to Gresham and Estacada, and was also able to negotiate fare reciprocity with TriMet, the impact on ridership levels would be greatly reduced. On the rider survey, several people commented that they already pay a TriMet fare and some stated they wouldn't want to pay two separate fares to reach their destination. Fare reciprocity would ensure that passengers would not have to pay twice. Nearly half of people surveyed on board said they had to make at least one transfer. Except for a few Mountain Express riders, these would all be TriMet transfers.

Of those passengers who said they did not transfer during their trip, 44% said they would be willing to pay a dollar or a dollar-fifty. Thirty-six percent said they would be willing to pay 75 cents and 21% said they would be unwilling to pay a fare.

[7] McCollom, Brian, and Pratt, Richard, *TCRP Report 95, Chapter 12* – Traveler Response to Transportation System Changes: Transit Pricing and Fares, 12-1.

Fuel Prices and Income

Higher fuel prices and lower levels of expendable income tend to increase transit ridership levels. Although a depressed economy may result in slower housing and employment growth, there may also be a resulting growth in demand for transit service if household incomes decline.

Service Quality

Providing quality service that meets the needs of the customers is one of the most important factors affecting overall demand. Customer-oriented public transportation provides service to the destinations people want to reach, at the appropriate times, and as directly as possible. Factors such as lighting, shelters, benches, clean buses, and friendly drivers add to the overall quality of service. These factors are addressed in more detail in the following chapter, with the analysis of survey results.

Connectivity and Coordination

As TriMet and other transit providers increase service frequency and add routes, transfer options also tend to improve, which can lead to an increase in overall demand for transit. Other improvements in park & ride lots, sidewalks, bike lanes, and trails can also increase the options for connecting with transit and thus affect overall demand. Coordinating schedules between Sandy Transit and TriMet helps to attract and retain riders by reducing overall travel times.

Marketing and Service Information

Marketing and service information are key elements in maintaining and increasing ridership. Sandy Transit can provide transit service that meets passengers' needs, but the passengers have to be aware of it before they can use it. Signs, schedules, and website information provide most of the necessary information, however additional efforts may be needed to reach specific groups such as seniors, people with disabilities, youth, and people who don't speak English well. Community events provide an opportunity for people who are interested in transit to find out how they could use it. There is also a great opportunity to leverage outreach efforts with other transportation providers and existing resources. Finally, services such as Flash Alert™ ensure that passengers are aware of delays or interruptions in service. The alerts are provided on radio, television and on a website. Customers can also subscribe at no cost to receive notifications via email or text message.

Traffic Congestion

Regionally and locally, traffic congestion has increased with population growth. Increased traffic congestion tends to make transit a more attractive option vis-à-vis the automobile. Bus riders may also be stuck in traffic, but there is less stress, and riders are able to read, sleep or work.

Balancing Needs

The greatest challenge of transit service planning is finding and maintaining the delicate balance between the many divergent and often conflicting needs of passengers. Although most routes are planned based on a particular passenger need, ideally these routes are also able to effectively accommodate other needs at the same time.

Commuter service vs. local service

The travel needs of commuters are generally very different from the needs of local residents traveling to school, shopping, medical, and recreational destinations. Commuter trips tend to be very time-sensitive, with commuters being less tolerant of frequent stops. On the other hand, local bus riders have a variety of trip destinations and require many stops.

The preferred destinations of commuters and local users are often divergent enough that a single route cannot effectively meet both needs. In many cases, the travel times of commuters and local users are also very different.

Service on transit corridors vs. into the neighborhoods

Limiting transit service to transit corridors ensures a shorter travel time from route beginning to end. It also ensures that neighborhoods do not have the traffic and noise impacts of buses traveling down small streets. While bus service into neighborhoods makes for longer route times and potential neighborhood impacts, it also ensures the greatest level of access, particularly for those who cannot walk very far.

Transit dependent vs. choice riders

Transit serves an important role in providing mobility to people who do not have access to automobiles, including the young, old, people with disabilities, and people with low incomes. Sandy Transit's first priority must always be to provide transportation for transit-dependent individuals who rely on transit as a lifeline to doctor's appointments, jobs, and social interaction. However, in order for transit to effectively reduce automobile trips and the overall demand on the transportation system and the environment, transit must also provide a service that is attractive as an alternative to those who can choose to drive. Decreased travel times and increased convenience and comfort are most likely to attract additional choice riders.

Although the needs of transit dependent riders and choice riders are not mutually exclusive, they are likely to have differing priorities. Choice riders are likely to place a greater value on fewer stops and faster travel times, whereas transit dependent passengers may prefer more closely spaced stops that allow for shorter travel distance to the bus stop.

Chapter 4 – Public Involvement and Customer Preferences

Overview

Survey data collection and public involvement strategies are some of the most important steps in the development of the Transit Master Plan because they provide information on the customer's preferences and travel needs. They also provide information on the reasons that people don't ride transit and what changes could be made to attract non-riders. Current and potential passengers include people of all ages and residents as well as employees, visitors, and people connecting to and from TriMet and other transit systems. The Joint Technical and Citizen Advisory Committee included representation from people with disabilities, seniors, senior services, youth, the school district, First Student School Bus Transportation, the Latino community, the Chamber of Commerce, transit operators and dispatchers, representatives from other City departments and the Planning Commission, Clackamas County/Mountain Express, TriMet, Metro, and ODOT.

The Sandy Transit Master Plan process included the following strategies to encourage broad-based public participation and representation:

- The Transit Master Plan Joint Technical and Citizen Advisory Committee met three times to review and discuss draft Plan elements. The City of Sandy publicized the meetings, encouraged public participation, and posted relevant Plan elements and meeting minutes on the City's website for public review. The City also sent meeting announcements and Plan elements to representatives from Metro, ODOT, TriMet, and neighboring jurisdictions and agencies for review as the Plan was being developed.
- An on-board survey of Sandy Transit riders was conducted in both English and Spanish on all runs on October 1, 2008.
- A community-wide or general survey was conducted throughout October and November 2008. The surveys were available online and on paper in both English and Spanish. Paper surveys were available at the Community Center, Library, and City Hall. The City of Sandy also posted an invitation and a link to the survey on the City web page, sent out notices with utility bills, and sent press releases to the *Sandy Post*, *Gresham Outlook*, and *Estacada News*.
- The Sandy Chamber of Commerce made an announcement about the survey at one of its meetings and distributed survey announcements at the Chamber office.
- An employer survey was developed to help determine how transit can better serve the business community and to assess the business community's preference for financing options, including fares. The Sandy Chamber of Commerce sent an email invitation and a link to the survey to all Sandy businesses. The Chamber also made an announcement and provided handouts at a Chamber meeting and had copies available at the office front counter.
- The City of Sandy held a joint public workshop for the TSP update and the Transit Master Plan on January 29, 2009 and a workshop for the Transit Master Plan on June 10, 2009.

On-Board Survey

The on-board survey was conducted on Wednesday, October 1, 2008 in both English and Spanish. Spanish–language surveys accounted for 7% of the returns. On the SAM Gresham and Estacada routes, the survey was conducted on inbound buses only, to avoid duplicate responses. The returns represent approximately half of the total riders for that day.

Bus Routes

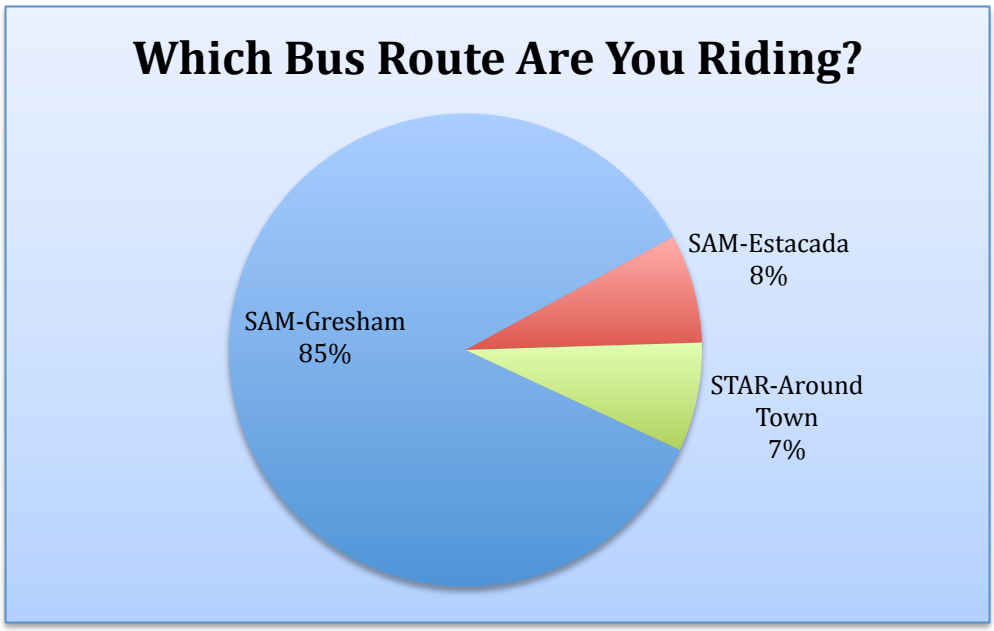


Figure 4-1 Which bus route are your riding?

Survey responses reflect overall ridership levels, which are highest on the SAM-Gresham route. Just over 85% of riders use the bus on a regular basis; well over half use it on a daily basis.

Table 4-1 How often do you ride this bus route?

Answer Options	Response Percent	Response Count
Every day	59%	125
At least once a week	26%	55
At least once a month	10%	20
Less than 10 times a year	1%	3
This is the first time	4%	8
		211
	skipped question	4

Destinations

In response to the question, "Where are you going?" just over 35% responded that they were going to work. Nearly eighteen percent were going into Sandy for shopping or errands. The surveys were only taken on the inbound direction, although there were a few instances where riders who would not be making a return trip were allowed to fill out a survey in the outbound direction. As such, the survey gives a fairly good indication of the use of transit for employment and shopping destinations in Sandy.

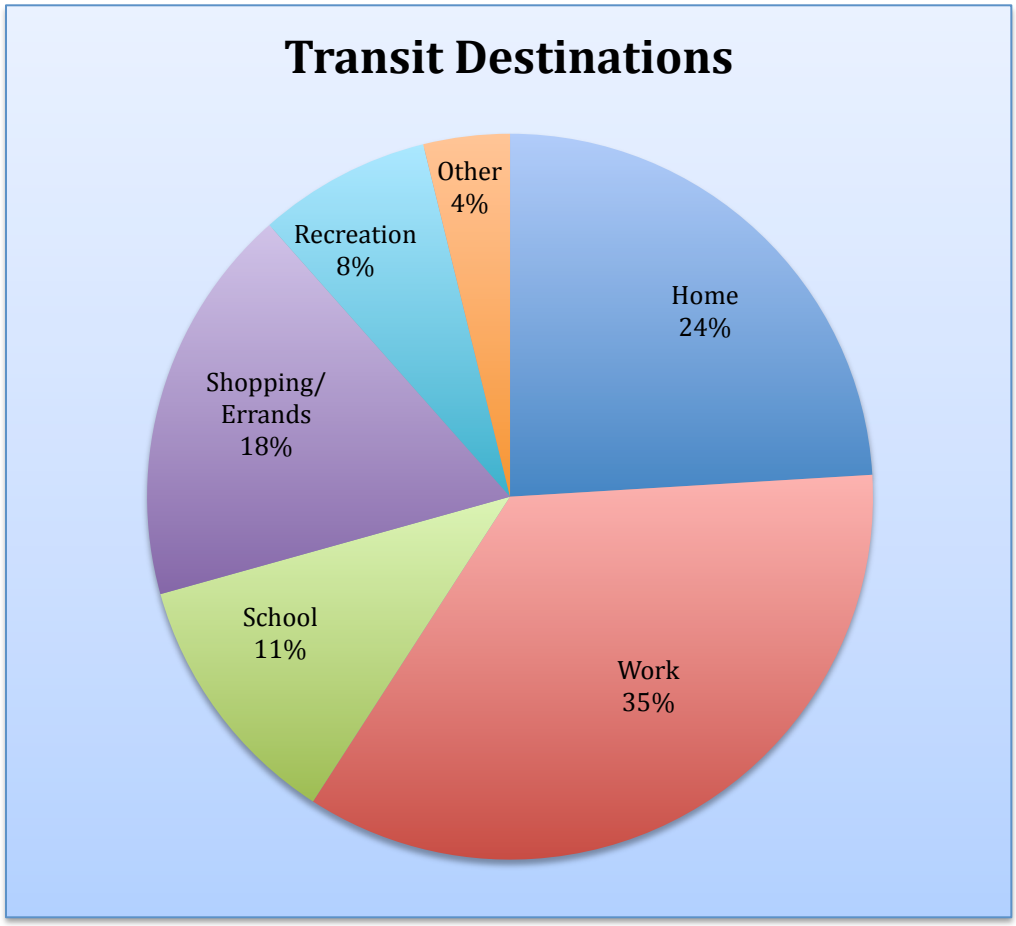


Figure 4-2 Transit Destinations

Satisfaction with Service

Transit riders appear to be very satisfied with Sandy Transit service. There were many positive comments, and 75% of riders rated the service as very good. Many of the comments cited the friendliness and helpfulness of drivers and expressed thanks for the service.

Table 4-2 How would you rate the service provided by Sandy Transit?		
Answer Options	**Response Percent**	**Response Count**
Very Good	75.4%	144
Good	23.0%	44
Fair	1.0%	2
Poor	0.5%	1
	answered question	**191**
	skipped question	**24**

Home City of Sandy Transit Passengers

Nearly half of all Sandy Transit riders are Sandy residents, with another 32% living in Gresham, and 9% coming from Portland. The rest live in outlying areas, including Estacada, Mt. Hood Villages, Eagle Creek, and Boring.

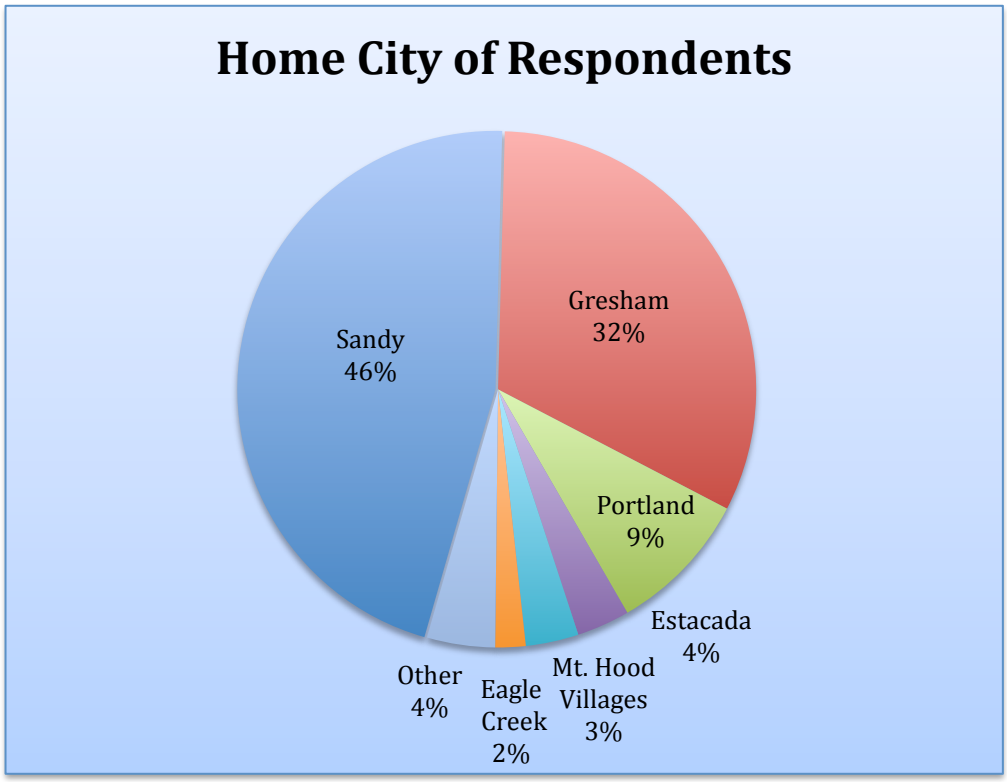


Figure 4-3 Home City of Respondents

Mode of Transportation to the Bus Stop

Not surprisingly, the majority of passengers walk to the bus stop. This percentage would likely be significantly higher if Sandy Transit only offered fixed-route service, since the STAR demand-response service accounted for 8% of passengers that either flagged the bus or called for pickup.

The percentage of passengers walking to bus stops highlights the importance of sidewalks, shelters and lighting for passenger safety and as a way to encourage transit use. The percentage of people who bicycle to the bus stop would likely be higher with the provision of secure bicycle parking at destinations and near bus stops.

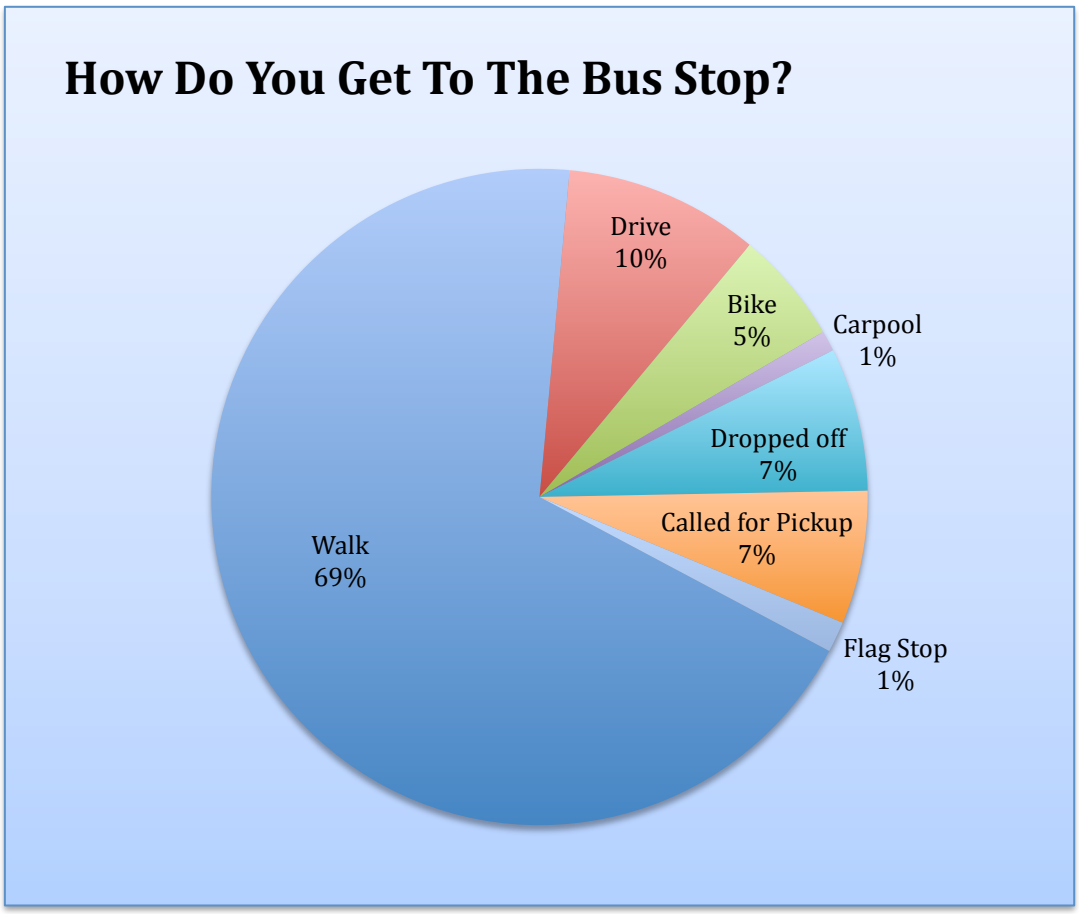


Figure 4-4 How do you get from your house to the bus stop?

Willingness to Pay a Fare

Survey questions about fares can be problematic. There is a strong incentive to understate the level of fare one would be willing to pay, because nobody wants to pay more if they don't have to. One can expect the results for questions like this to be skewed towards the lower fares and a total unwillingness to pay a fare. Because of this, the percentage of respondents who express a willingness to pay a particular fare can be interpreted as the minimum that would be willing to do so. The likelihood is that many more are actually willing to pay that fare.

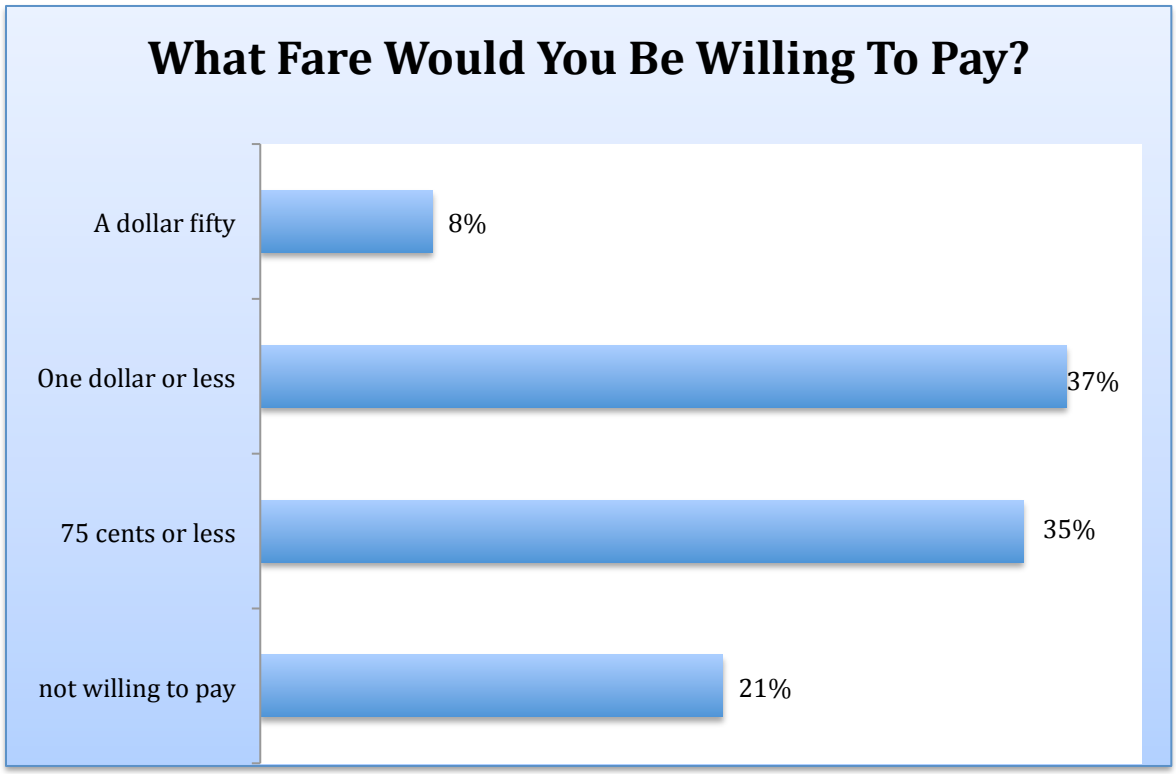


Figure 4-5 What fare would you be willing to pay?

Considering the propensity for skewed results for this type of question, the results are surprising, with 45% of respondents expressing willingness to pay a dollar or more. Some respondents commented that they don't want to pay both TriMet and Sandy Transit fares. As mentioned earlier in this chapter, fare reciprocity between Sandy Transit and TriMet would be an important factor in maintaining ridership levels if a fare were implemented.

Household Income of Sandy Transit Passengers

The responses to the question about fares are perhaps even more surprising considering the household incomes reported by survey respondents. Forty-six percent reported household incomes of $20,000 or less. Filtering the results to show only responses from those with household incomes of $20,000 or less, reveals that people in this income bracket are generally just as willing to pay a fare as people with higher incomes. Although the percentage of those unwilling to pay at all was slightly higher (24% vs. 21%), the percentage of those who were willing to pay $1.50 was also higher (11% vs. 8%). In this group, 34% expressed willingness to pay 75 cents and 31% said they would be willing to pay a dollar.

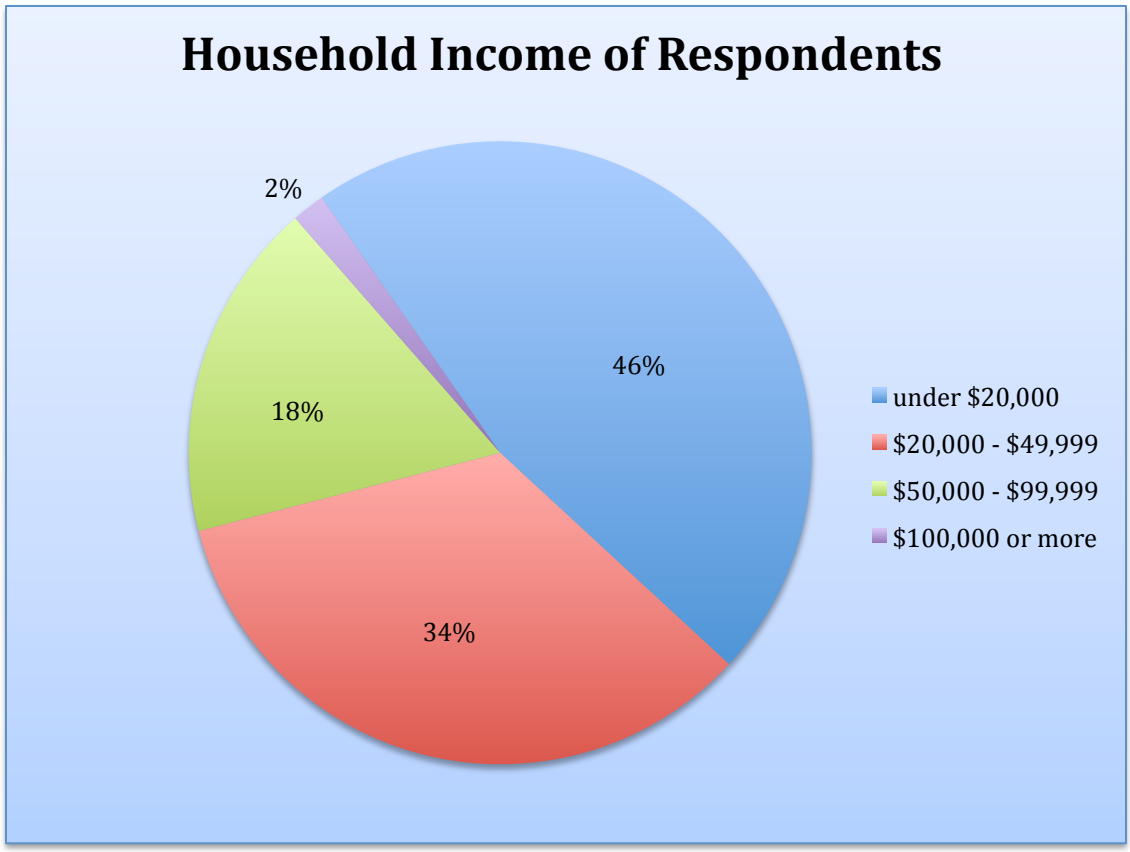


Figure 4-6 Household Income of Survey Respondents

Transit Dependency and Reasons for Riding Sandy Transit

Some of the most surprising survey results came in response to the question, "Why do you ride Sandy Transit?" Respondents were asked to check all answers that applied to them. Sixty-three percent responded that they didn't have a car or didn't drive. The responses indicate that this relatively high percentage of riders is entirely dependent on transit for their travel needs.

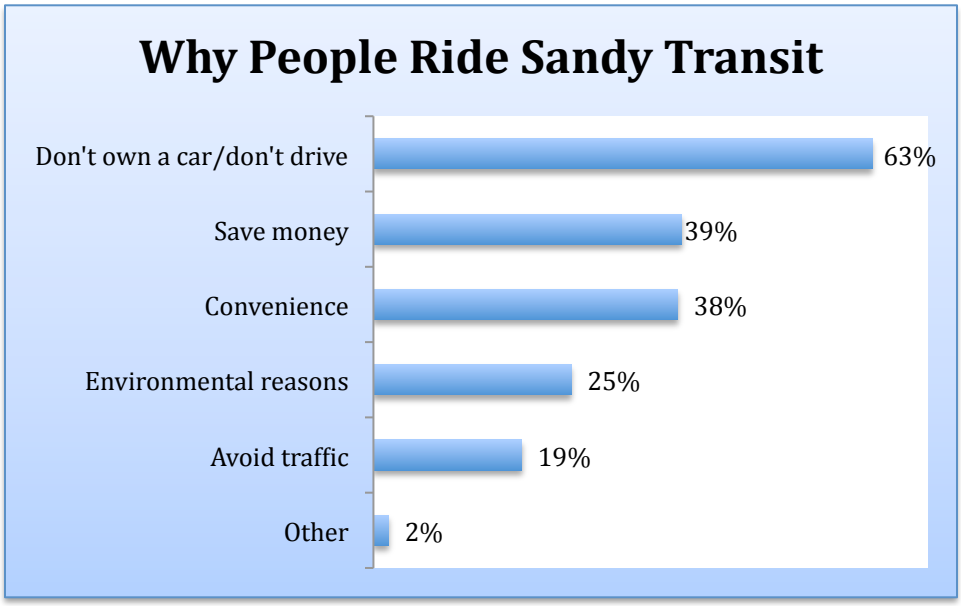


Figure 4-7 Why People Ride Sandy Transit

Responses to a follow-up question as to how people would make the trip if there were no transit service, suggest that the percentage may be even higher. Although only 44% said they would be unable to make the trip, another 24% said they would have someone else drive them, suggesting that they do not drive or have access to a car. It is also likely that some of the people who said they would walk or ride a bike do not have access to a car and would be dependent on transit for longer trips. As such, the percentage of transit riders who are transit dependent is probably closer to 70%.

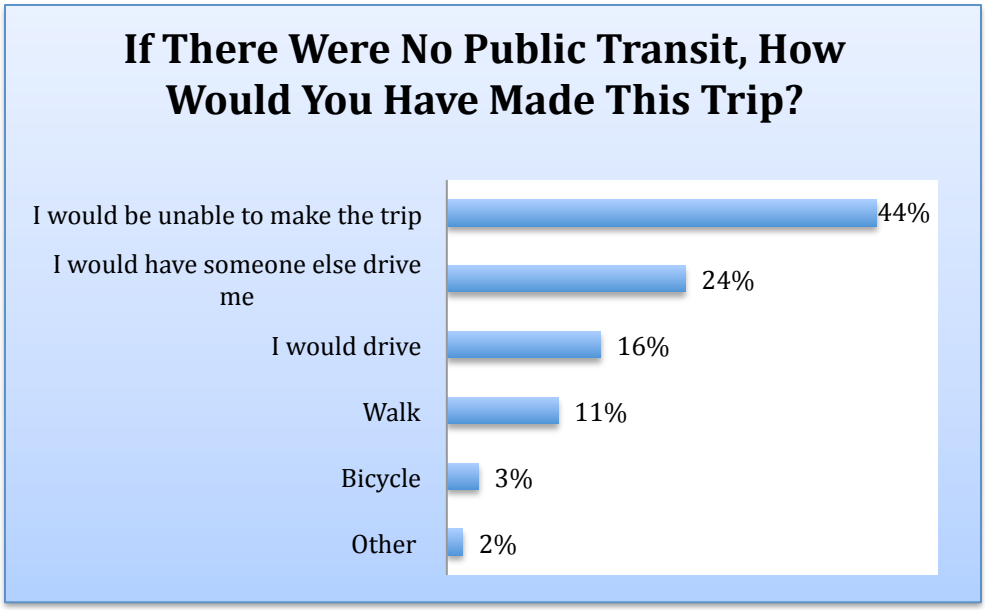


Figure 4-8 If There Were No Public Transit, How Would You Make This Trip?

Relative Importance of Transit Improvements

Respondents were asked which transit improvements would be important to them. Later service, more frequent service, and the addition of benches and bus shelters were the improvements that were most frequently rated as very important. There were also comments from seven people (3% of respondents) who said they would like to see service on Sundays. Ten people also suggested Sunday service in the general comments at the end of the survey, although some of these may have been duplicates.

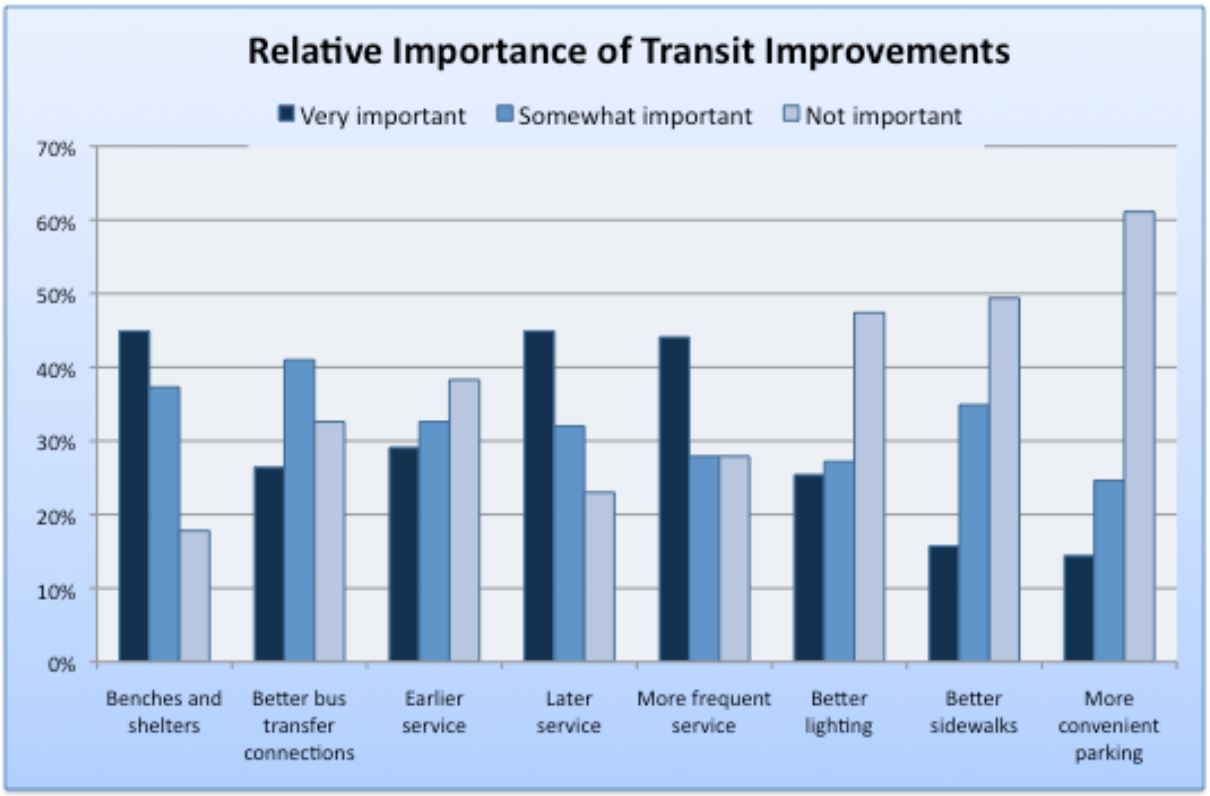


Figure 4-9 Relative Importance of Transit Improvements

A similar question on the general survey provided similar results. The general survey was conducted from October through December 2008 and included non-riders in addition to bus riders. The general survey is described in more detail later in this chapter. The top responses to the question "What improvements might influence you to ride transit more often?" were service on Sundays, later service, and more frequent service.

Although more convenient parking was ranked lowest on the list of priorities, non-transit riders and infrequent riders on the general survey ranked it as the top choice for an

improvement that might get them to ride transit more often. Despite its overall low ranking, better parking options should therefore be considered as a way to attract new riders.

Race and Ethnicity of Sandy Transit Riders

The racial/ethnic distribution of Sandy Transit riders does not mirror Sandy's general population as reported in the 2000 U.S. Census. The Census indicated that 96% of Sandy's population in 2000 was White or Caucasian, with 4.1% Hispanic or Latino, 1.5% Asian and 0.4% Black or African American.

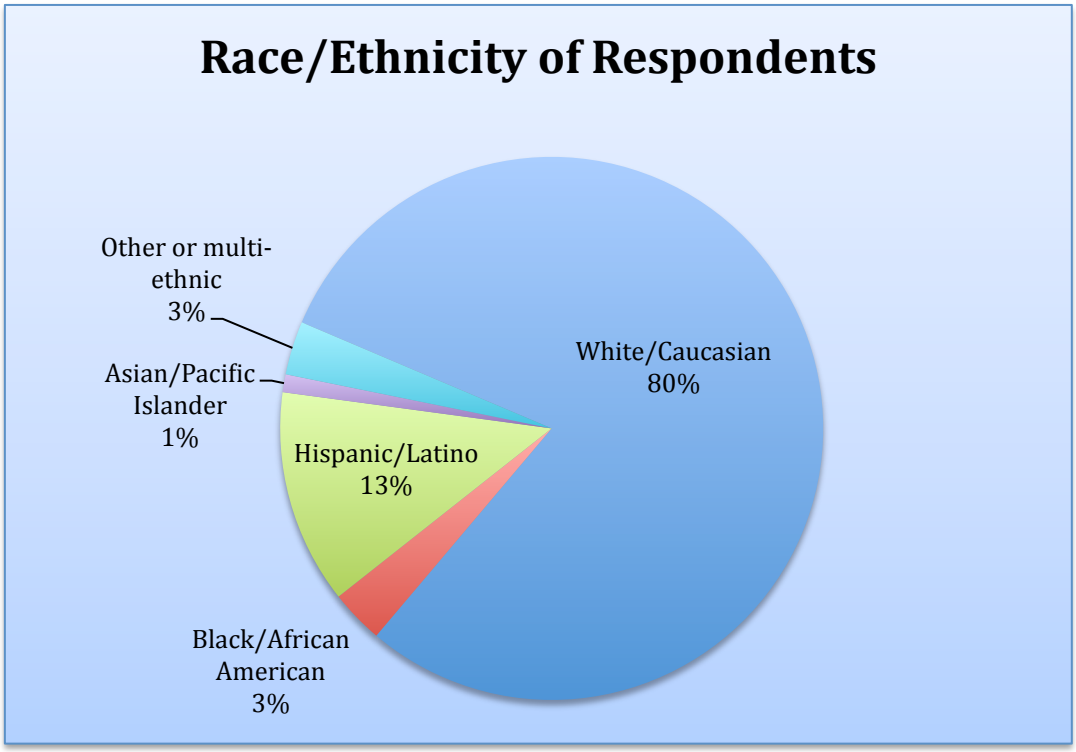


Figure 4-10 Race/Ethnicity of Respondents

Survey respondents reflected a higher proportion of all minorities, particularly Hispanic/Latino. It should be noted that Hispanics/Latinos likely account for a greater proportion of the total population now than they did in 2000. Although there is no current data available for Sandy, the U.S. Census estimates that Hispanics/Latinos accounted for 7.8% of the population in Clackamas County in 2007, up from 4.9% in 2000. During this time, the Asian population of Clackamas County was also estimated to have grown from 2.5% to 3.6% of the total population. It is likely that demographic changes in Sandy have followed a similar trend to those in Clackamas County.

Age Distribution of Sandy Transit Riders

The age distribution of Sandy Transit riders is also different from the general age distribution of Sandy residents. In particular, those between the ages of 16-34 account for a much larger proportion of transit riders than they do of the general population.

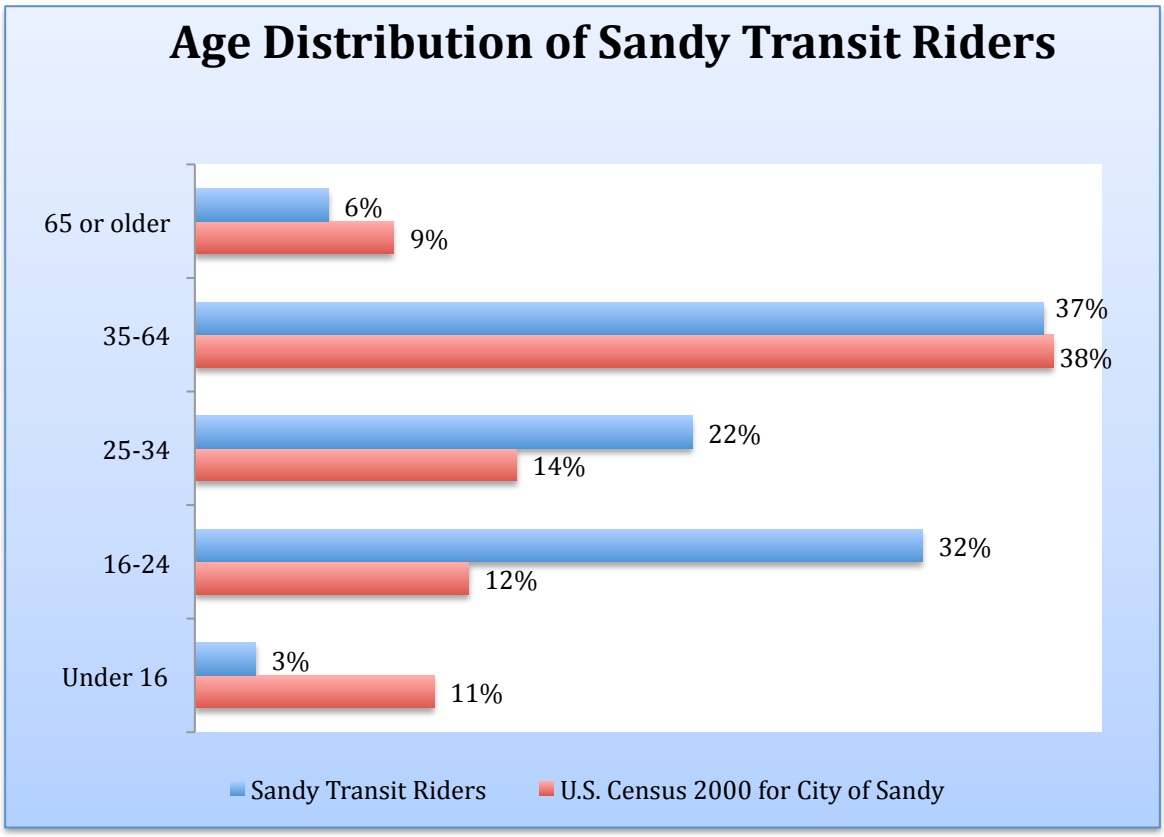


Figure 4-11 Age Distribution of Riders Compared with General Population

The gender balance of riders is also different from that of the general public. While the female population in Sandy slightly outnumbers the male population, male bus riders outnumber female riders.

Gender Balance of Sandy Transit Riders

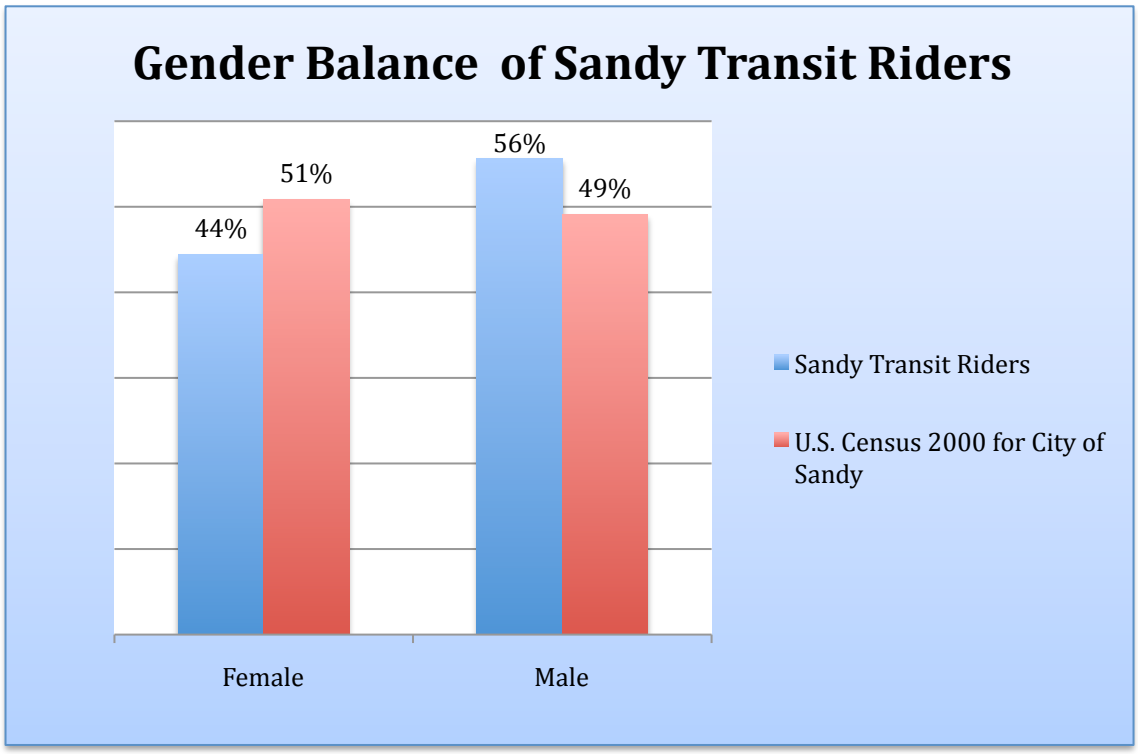


Figure 4-12 Gender of Sandy Transit Riders Compared with General Population

General Survey

A general survey was conducted online, with paper copies available at the Sandy Library, City Hall, and the Community Center from October through December of 2008. A total of 162 surveys were filled out, 121 in English and 41 in Spanish. Just over half of respondents filled out paper copies of the survey. The general survey provides useful and interesting information, but cannot be considered statistically valid due to the relatively small sample size and the fact that the demographic profile of survey respondents does not accurately reflect the general population.

The general survey supported findings from the on-board survey, including that Hispanic residents are more likely to be transit-dependent, that there is generally high satisfaction with Sandy Transit services, and that there is an overall willingness to pay a fare for service.

When asked where they would like to be able to go with Sandy Transit, the top picks overall were Damascus and Boring, followed by Government Camp and Timberline. Spanish-speaking respondents strongly favored Damascus, while English-speaking respondents favored Government Camp.

Since the survey primarily captured responses from residents and employees in Sandy, Gresham, and Estacada, it cannot accurately reflect the travel needs of visitors from outside the area. Although Sandy Transit has no plans to provide service to Mt. Hood, it is important to recognize the importance of recreational travel and the need to coordinate with any future service providers.

Overall the survey showed a strong call for Sunday service, later service, and more frequent service. Non-riders and infrequent riders were interested in more convenient parking and later service, although they also expressed interest in later/earlier service and better transfer connections. Non-riders and infrequent riders were also much less interested in Sunday service than regular riders.

Community Workshop

The City of Sandy held a joint community workshop for the Sandy TSP update and the Transit Master Plan on January 29, 2009. The Transit Master Plan outreach included a dot exercise. Participants were each given four dots that they could use to identify their top priorities on a wall poster. Participants were able to write their own priorities or use ones already listed. The listed priorities were ones that had been identified by current bus riders and the general public in earlier surveys. The intent of the dot exercise was to refine the information collected in the surveys. For instance, the surveys indicated a demand for Sunday service, but not specific to one route.

The following priorities are listed in the order of most dots received:

Service on Sundays – SAM Gresham – 7
Add service to Government Camp – 5
Later service weekdays on SAM-Gresham – 3
Later service Saturdays on SAM Gresham – 3
Earlier service on Saturdays on SAM Gresham – 2
Transit to Ski Bowl & Timberline to reduce congestion and skier traffic – 2

There were also a number of priorities that received one dot, including:

Later service on Saturdays on STAR
Earlier service on Saturdays on STAR
Sunday service on STAR
Later weekday service on STAR
Later service on Mtn. Express
More frequent service on SAM-Gresham, and additional bus stops.

Comments

The following comments from the on-board survey, the general survey, and the community workshop are unedited to avoid inadvertent changes to the intended meaning. In addition to the comments about Sunday service, there were many comments praising the service and several who emphasized their reliance on the system:

- Since I have health problems that prevent me from driving or riding a bike I really appreciate the SAM/Star program + the workers/staff that run it.
- So many of us appreciate sam + its wonderful drivers very much without them I'd have to seek work elsewhere. The drivers are Terrific.

Other respondents also used the comments to discuss the option of fares:

- The Sandy area metro transit is a great system. The program is a great way to help the community. It is important in its entirety and would be worth it if fare for the service is required. Thanks Sam! If you charge a fare, it would be awesome if it was transferrable with TriMet fare.
- The bus should run every 30 min on Saturday & Sunday other than just Mon-Fri. the people that use the SAM ride it because not only do they not have money they don't drive. Why would you want to start charging?
- I go to college and this bus is extremely useful to me. The drivers are great and the buses are friendly. I can understand if the bus must start charging and I would be willing to pay at least a small fee to keep the SAM running.
- "Fareless Sam" needs to lose the "fareless" part of its name and start charging its riders. It is time to alleviate the burden off Sandy businesses and business owners (Perhaps-it will encourage new business growth in Sandy, and help the remaining businesses survive. The streets are looking empty downtown). In addition- Why is Sam carting around Gresham local around Gresham for free?!
- I would be willing to pay a small fare if it is good for 2 to 4 hours, but not if I go to Fred Meyer and then have to pay to go home, or what if I start at Avemere, get off at US Bank and then back on to Freddy's and then to Gresham, would a rider have to pay for each segment?
- I think that the transit system is awesome. If there is going to be a charge for SAM riders. Will Sandy transit accept Tri-Met passes as payment as the ctran in vancouver does? If Not what are the chances of a monthy pass w/ discount being offered that would not only cover SAM but also Mt Express? Thankyou!
- I would like to make a comment on fares. I would like to see an affordable and reasonable fare for the Sam busses. I would hope this would help offset the rising costs but in addition aid in keeping the current services to their existing standards. As a driver I believe it would cut down on Gresham passengers commuting only in

Gresham for the free ride. Some schedules are very tight and stopping for people to go 10-15 blocks really adds on time. We also seem to end up transporting some of the more undesirable troublemakers. Feedback from passengers for me has gone both ways.

And others had suggestions on ways to improve service:

- Bus stop on Palmquist would be wonderful
- More than four around town trips every day would be helpful.
- You should invest money in busses that don't break down. That way the busses could actually be on time.
- I would like to see more route about town for Star - more than morning or evening only.
- I would like to see Saturday service start earlier and weekday service run later. I often take public transit in to Portland for events but have to drive to Gresham to catch MAX because I know SAM won't be running when I need to get back to Sandy. Would also love to see some service on Sundays. Thanks for this great service. I love SAM!
- Comments: I like the Mountain Express. I X-country ski at Lolo Pass, so I go to ZigZag, then bike 4 miles on Lolo Pass Road. Suggestions: If you can get a route to Gov't Camp for the skiers, that would be awesome.

Chapter 5 – Future Transit Needs

Overview

This chapter assesses future transit needs and proposes future service scenarios based on transit demand, an assessment of Sandy Transit's existing routes, and a comparison of Sandy Area Metro (SAM) services with neighboring services. The review of these services is based on discussion with staff, existing ridership and other reports and boarding data from April 2008 and September 2008.

Sandy Transit currently has eleven bus stops with shelters. The bus shelter at Langensand Road serves as the Sandy Transit Center, providing a transfer location between routes and between Sandy Transit and Mountain Express. In order to accommodate future growth, allow for bus driver breaks, and support convenient connections between transportation modes, Sandy Transit needs to consider developing a more substantial transit center in a central location. Future transit service will have to continue to be flexible to ensure coordination with other services, including TriMet, Mountain Express, and any future Mt. Hood transit service.

The City of Sandy provides four transit services. Recommendations and findings for each of these services include:

- SAM Gresham weekday service, with half-hour headways, provides a high level of service. It does, however, have some difficulty keeping on schedule during afternoon runs. Sandy Transit should consider eliminating some low-use stops in Gresham to help keep the bus on schedule.
- SAM Gresham Saturday service has low ridership on the last two runs of the day and high ridership on the first run. Sandy Transit should consider starting one hour earlier and ending this service one hour earlier.
- STAR service is currently able to meet demand using just one vehicle. This may change in the future as Sandy grows and the population ages. At that time, Sandy Transit should consider developing a deviated-route service running south of US 26 connecting with SAM at Langensand Road and at Fred Meyer. If the SAM Saturday service is changed to start one hour earlier as recommended above, the STAR service should also be started earlier to provide better connections with SAM.
- SAM Estacada service has an average hourly ridership of 10 to 12. Sandy Transit should assess total ridership and ridership by run in six and twelve months before making any additional changes.

Transit Facilities

Transit Center

Transit centers serve as major nodes in the transit network, allowing for transfers between bus routes, transit systems, and other transportation modes. Transit centers are designed to facilitate transfers between bus routes and other transportation modes, including bicycling and walking. Currently, the bus stop and shelter at Langensand Road serve as Sandy's Transit Center. Although this location functions adequately, it also has deficiencies that are likely to increase in magnitude along with increases in service and ridership:

- The residential location does not allow for amenities such as large shelters, retail services, and restrooms for drivers and passengers.
- The lack of on-the-street activity in the area, particularly after dark, can make the location seem isolated and unsafe for people waiting at the bus stop.
- The residential location cannot serve as a multi-modal hub, because it is not near activity centers.
- The activities associated with a transit center, such as multiple bus layovers and transfers are incompatible with the qualities of a residential neighborhood.

Ideally, Sandy Transit would have a transit center located at the hub of activity near the center of town. The location should provide a layover area for at least three buses and be located in an area of high visibility that is convenient for pedestrians and bicyclists. Shelter, secure bicycle parking, and restroom facilities should be provided on site. Retail services should be located nearby. Although automobile parking would be desirable, it is not nearly as important as pedestrian and bicycle facilities.

The City of Sandy needs a transit center in the short term to provide a transfer point and layover location with bathroom facilities for bus drivers and passengers. The City should consider using the existing Civic Plaza at Hoffman St. between Pioneer Blvd. and Proctor Blvd. as a transit center, since it has a number of factors in its favor:

- The existing facility is already owned by the City and requires no land purchase.
- The plaza is centrally located, providing a convenient, safe, and visible transfer location.
- There are nearby shops and services, so that passengers waiting for buses can purchase food and drink while they are waiting.
- The plaza is in the heart of Sandy, adjacent to the Historical Society Museum, in the vicinity of the Sandy Public Library, City Hall, Meinig Park and other attractions.
- The location would reduce the route time slightly, helping to keep the buses on time.
- Hoffman Street can serve as a layover area for buses.
- Although there is currently no restroom in the plaza, there is a stub for a facility, so adding one would be relatively easily.
- There is room available to add bicycle parking.

Ideally, a transit center has available parking nearby for passengers transferring from cars. Although there is no parking at the plaza, parking could be leased from a nearby parking lot, such as the Goodwill site. The addition of parking would also facilitate coordinated service with ski shuttles or a future Mt. Hood transit service.

The estimated cost to build the bathroom facilities, purchase and install a 12-foot shelter with solar lighting, secure bicycle lockers for four bicycles, and three u-shaped bike racks would be $150,000.

Bus Shelters

Implementation Measure 1.8 in Chapter 6 calls for construction of bus shelters wherever feasible at bus stops with at least 10 passenger boardings per day. The following bus stops without bus shelters currently meet that threshold:

1. Safeway/Ruben Lane – 33 boardings
2. US 26 & 362nd westbound – 17 boardings
3. US 26 at University eastbound – 13 boardings
4. US 26 at Ruben Lane (eastbound) - 12 boardings

Many of the listed stop locations present challenges for siting a shelter, including lack of space, slope, and proximity to driveways and residential yards. When possible, bus stops should be moved to a nearby location with fewer siting challenges. This will not always be possible, leaving some popular bus stops without shelters. Bus shelters currently cost approximately $7,000 each, including installation on a prepared site.

Bus Pullouts

A bus pullout enables a bus to load and unload passengers in an area separated from traffic lanes. Pullouts or turnouts may be helpful on roads that function at higher speeds (over 40 miles per hour) because there is less risk of rear-end collision while the bus is stopped to load or unload passengers. A pullout also prevents a stopped bus from impeding traffic flow, which could be a significant advantage for traffic flow on a highway such as US 26. Three locations have been identified as locations for future bus pullouts on US 26:

The north side of US 26 just west of University Avenue
The south side of US 26 just east of University Avenue
The north side of US 26 at Champion Way

Transit Service

The four existing services provide Sandy with excellent citywide coverage. While SAM connects locations on US 26 to Gresham, Estacada, and TriMet, the STAR route provides door-to-door service throughout Sandy and up to five miles past its boundary.

Comparison with Neighboring Services

As Table 5-1 shows, the City of Sandy compares favorably with its neighbors. It provides more rides than do Molalla and Canby and about 10 percent fewer than Wilsonville. Both its system cost per ride and its operating cost per ride are the lowest among the four providers.

Table 5-1 Comparison with Neighboring Systems

	Sandy	Molalla	Wilsonville	Canby
Transit Service District Population (2000 Census)	17,483	16,687	19,170	12,790
Transit Service District Square Miles	78.54	100	80	51.7*
City Square Miles	3.06	8	7	6
Total Rides	262,490	88,316	295,266	249,252
Fixed-Route Boardings	247,556	88,316	276,771	235,288
Elderly and Disabled Boardings	45,040	30,449	18,135	31,801
Operating Cost	$1,012,280	$503,951	$1,898,108	$614,023
System Cost	$1,075,129	$520,725	$2,561,218	$1,079,494
Operating Cost per Ride	$3.32	$9.51	$8.29	$4.34
System Cost per Ride	$4.10	$9.51	$9.68	$5.54
System Cost per Vehicle Mile	$2.57	$3.61	$5.30	$2.93

Data source: TriMet

**Includes fixed-route ¾ mile deviation and TriMet grandfathered destinations*

SAM Monday-through-Friday Service

With all-day half-hour headways, SAM provides a very good level of service, especially for a small city. Ridership is very strong, ranging from a daily average of 28 to 32 riders an hour; it is even higher in the beginning of the month. Industry standards consider ridership of 20 to 22 riders an hour to be good for small-city service. Figure 5-1 shows ridership by hour for each run, which is one-hour long. Ridership remains very strong throughout the day; it does fall below 20 riders per hour for the first and last runs of the day. This is typical, and many services have much lower early morning and evening run ridership than does SAM. It also has

somewhat weaker ridership for the three runs between 8 and 9:30 a.m., perhaps indicating the end of the morning peak. Interestingly, this service has two afternoon peaks: one from 2:00 to 3:30 p.m. and another from 4:00 to 5 p.m. These may represent student and commuter peak times.

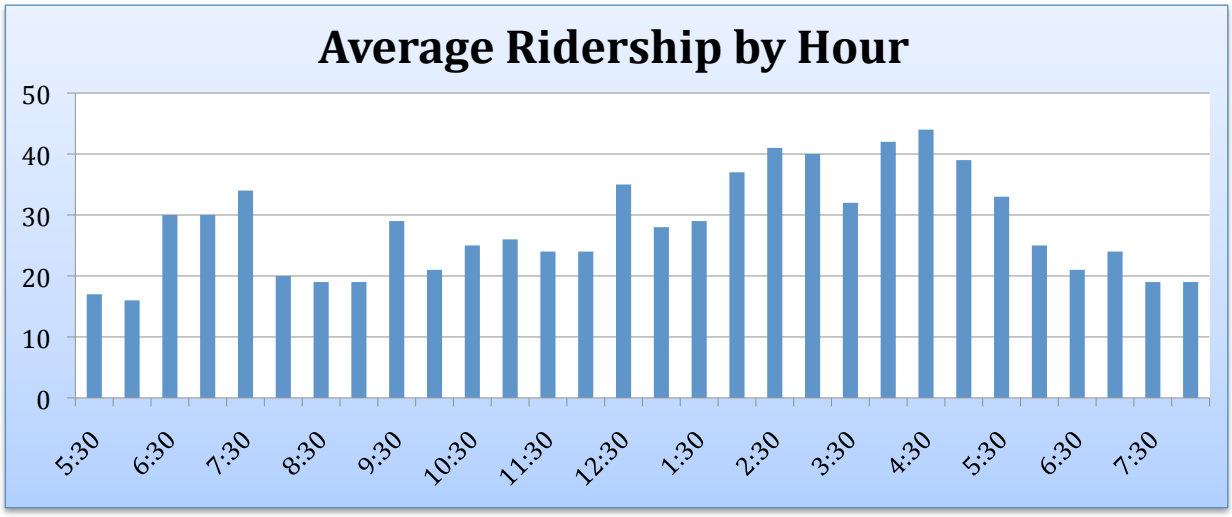


Figure 5-1: Average Ridership per Hour

Data Source: boarding data for the week of April 14, 2008

Most bus stops, especially within Sandy, are well used. The busiest stops, with at least five percent of daily boardings, are the Transit Center in Gresham, Langensand Road, and Meinig Ave, westbound. The least-used stops with three or fewer boardings per day are:

- Third Street westbound in Gresham
- Vista Ave westbound and eastbound in Gresham
- Cleveland Ave westbound in Gresham
- Linden Ave westbound in Gresham
- Hogan Ave eastbound in Gresham
- Industrial Way westbound in Sandy

On-time statistics show that SAM is on time more than 90, and more often 95, percent of the time. However, discussions with Sandy Transit staff suggest that afternoon runs are having difficulty maintaining the schedule. On occasion one bus follows another by only a few minutes. One solution to this problem would be elimination of some bus stops, especially the ones in Gresham identified above, that are not well used. Charging a fare on SAM for service outside of Sandy would also reduce the number of short rides within Gresham, helping to keep buses on schedule.

SAM Saturday Service

SAM Saturday service runs hourly from 10:30 a.m., with the last run leaving Sandy at 10:30 p.m. Like its weekday counterpart, this is a very well used service with average hourly ridership ranging from 28 to 33 riders. Ridership is strong throughout the day. However, as Figure 5-2 shows, the ridership on the first run of the day is high, while the last two runs have significantly reduced ridership per hour. This suggests that there is strong demand in the morning but not in the evening. Sandy Transit should consider starting this service one hour earlier and ending two hours earlier.

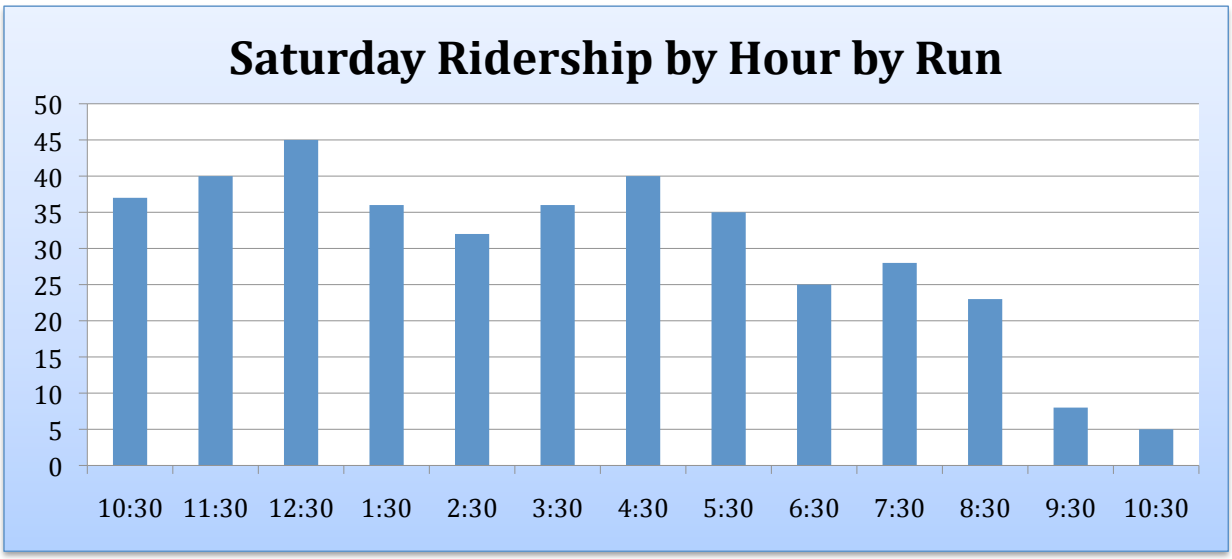


Figure 5-2: Saturday Ridership per Hour by Run

Data Source: April 2008 Saturday Boarding Data

Boardings by locations are similar to those on weekdays with several stops in Gresham having low or no usage. These stops include:

- Vista Ave westbound and eastbound in Gresham
- Liberty Ave westbound and eastbound in Gresham
- Cleveland Ave westbound and eastbound in Gresham
- Linden Ave westbound and eastbound in Gresham
- Hogan Ave eastbound in Gresham
- Third Street eastbound in Gresham

STAR Route Around Town

The Star route provides door–to-door demand-response service weekdays between 7:30 a.m. and 6:30 p.m. and again from 8:30 to 9 p.m. and Saturdays between 10:30 a.m. and 4:30 p.m.

within the city and extending out five miles past the city boundary. During the commuting hours of 5:30 to 7:30 a.m. and 6:30 to 8:30 p.m., STAR runs along a deviated route to connect riders to SAM.

Average weekday ridership for the demand-response service ranges between 3.4 and 5.8 riders per hour. This is very good for a dial-a-ride (DAR) service. Industry standards consider 3 riders per hour to be good. Ridership on the commuter service ranges between 2 and 6.3. For DAR this is good, but it is very weak for fixed route or deviated route service. However, since this is part of the intra-city service, it can be considered acceptable because it does not require a second bus and continues to provide DAR service if needed during this time.

While STAR responds to requests for rides throughout its service area, most boardings are south of US 26 where there is a higher residential concentration. Figure 5-3 shows the locations for boardings for one week in April 2008.

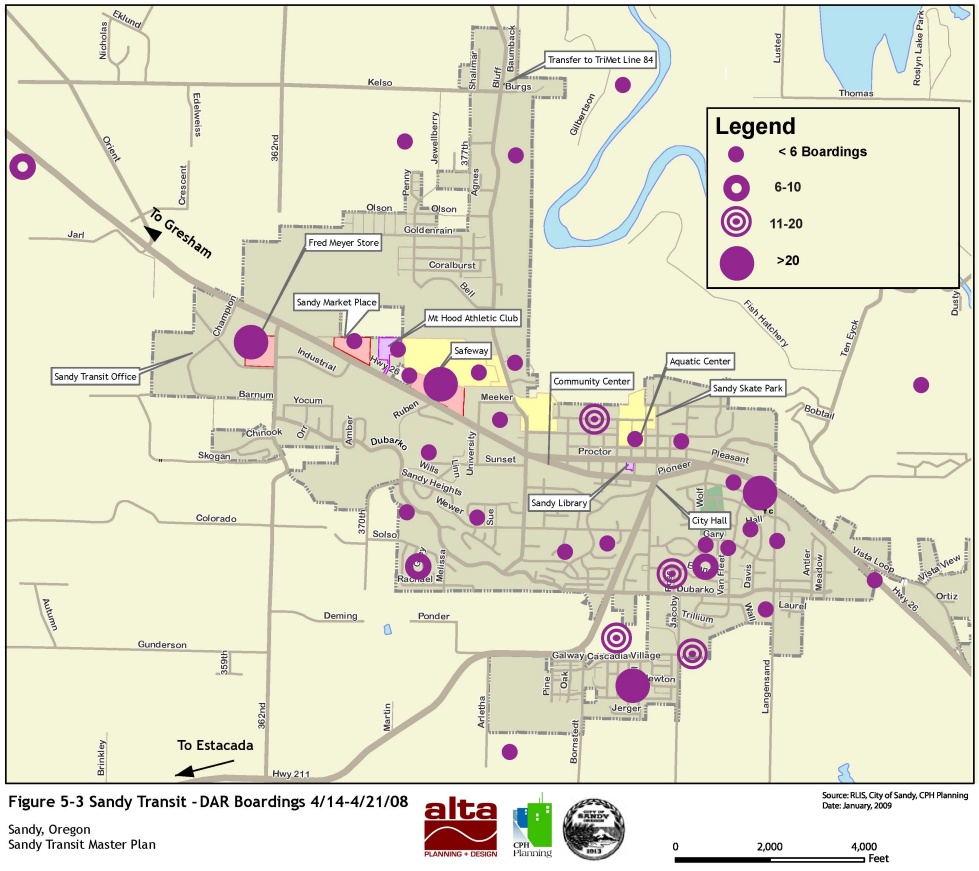


Figure 5-3 Sandy Transit - DAR Boardings 4/14-4/21/08

Sandy, Oregon
Sandy Transit Master Plan

Figure 5-3: STAR DAR Passenger Boardings by Location

The deviated STAR route can run more efficiently taking advantage of newly constructed streets. Figure 5-4 depicts proposed improvements to this route.

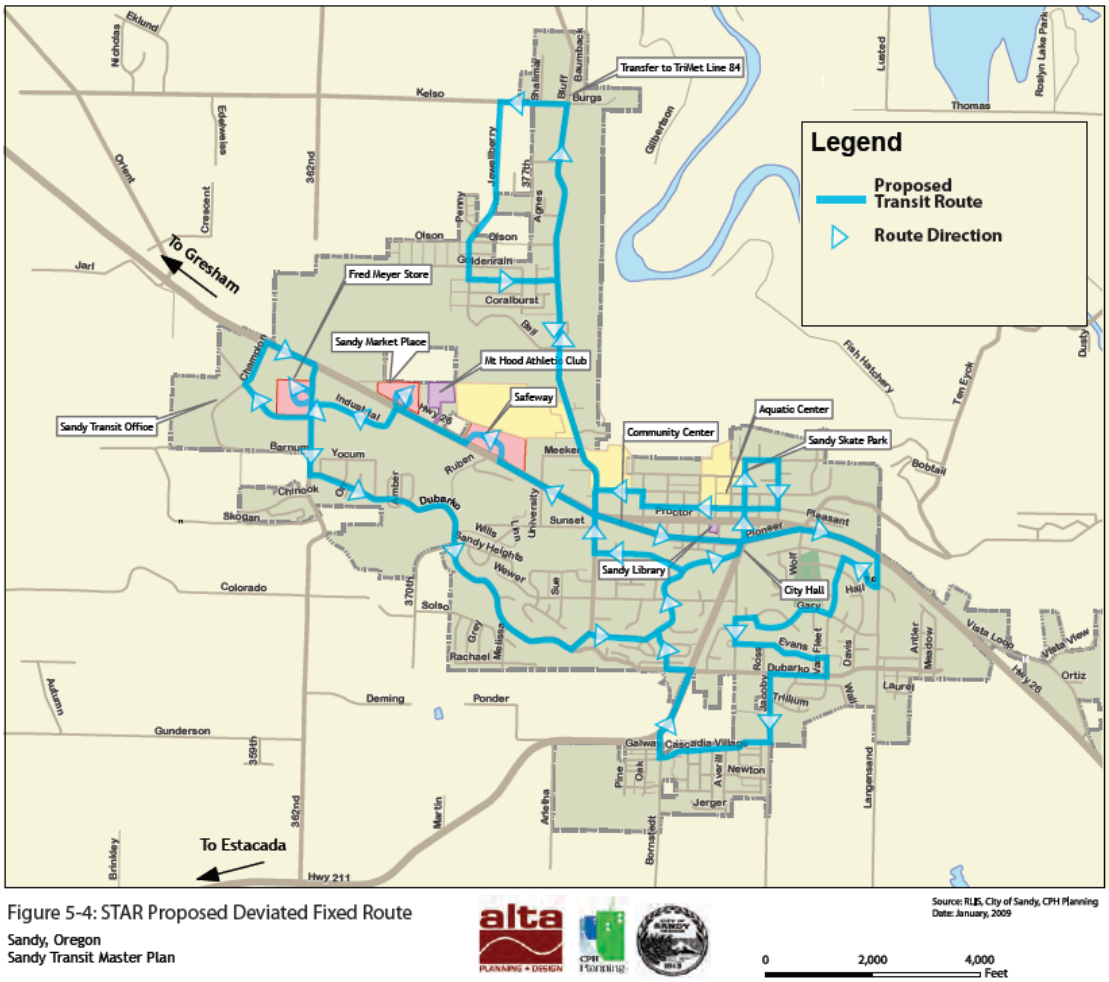


Figure 5-4: STAR Proposed Deviated Fixed Route
Sandy, Oregon
Sandy Transit Master Plan

Figure 5-4: STAR Proposed Deviated Fixed Route

There are very few no-shows and last-minute cancellations. In 2008, no-shows ranged between 8 and 24, and cancellations ranged between 5 and 22 per month. Currently, STAR is able to meet all requests for rides from elderly and disabled passengers when the request is received a day in advance. Same-day requests cannot always be accommodated. However, as the city grows and the population ages, the requests will likely increase. When two vehicles are needed to meet demand during peak-ridership hours, a deviated route should be implemented that extends the residential areas on the existing southern half of the STAR route and Vista Loop, with commercial areas. This service would free up the other vehicle to meet demands throughout the other parts of the service area or for those who need door-to-door service. Initially it could run from 2:00 to 4:00 p.m. and then, as needed, peak a.m. hours could be added. Figure 5-5 depicts a proposed route.

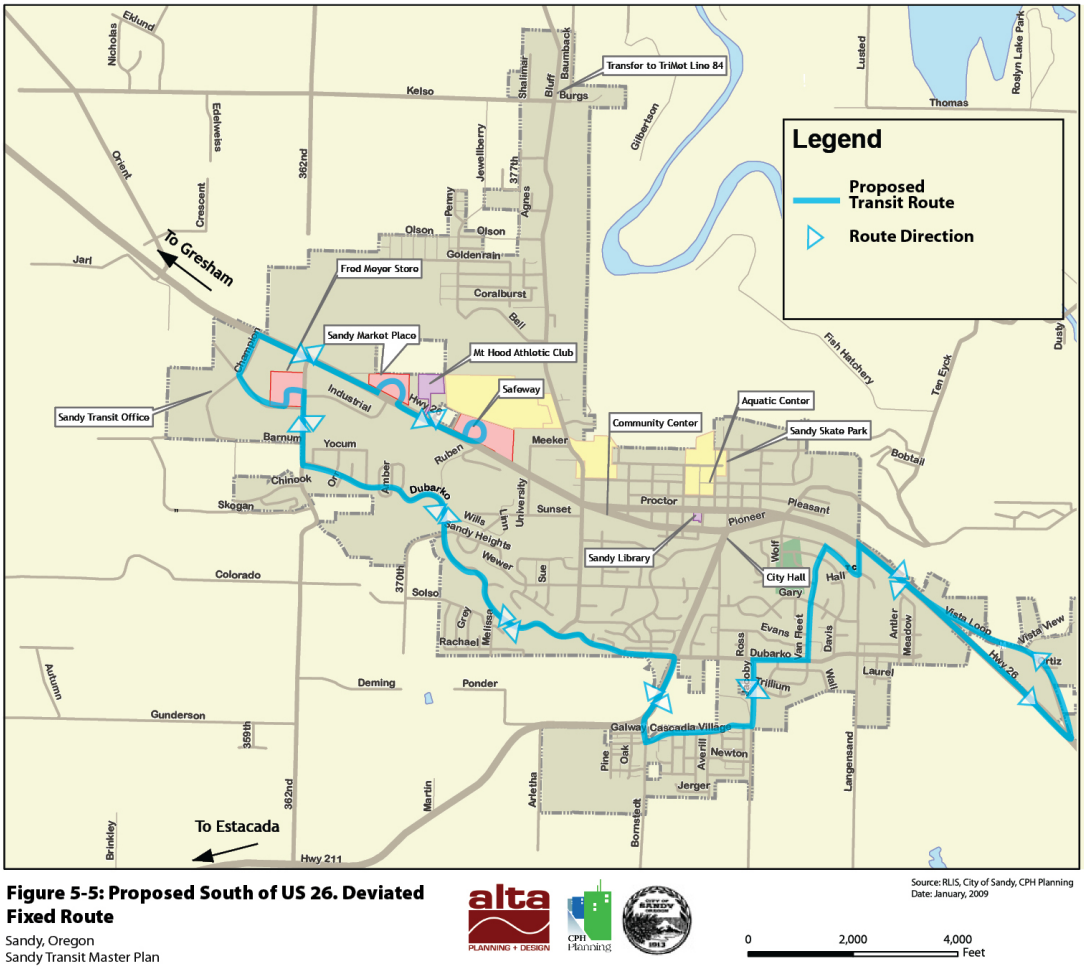


Figure 5-5: Proposed South of US 26. Deviated Fixed Route
Sandy, Oregon
Sandy Transit Master Plan

Figure 5-5: Proposed STAR Route South of US 26

SAM Estacada Service

Sandy Transit operates this route five times daily on weekdays. It leaves from Langensand Road at 7:30 a.m., 10:30 a.m., 2:30 p.m., 4:30 p.m. and 7:00 p.m. The route was modified in August 2008 to loop through a more populated area in Estacada.

Ridership on this route is not strong, with average hourly ridership ranging from 10 to 13. It should be noted that overall ridership increased about 8 percent from April 2008 to September 2008. However this increase may not have much to do with the service change. During the last week of September 2008, there were only six boardings at the new stops. The biggest increase seems to be boardings at Langensand. This increase in ridership may be a response to high gas prices and may not continue.

Based on data from the last week in September 2008, the following stops had at least five percent of total boardings:

- Langensand Road in Sandy
- Estacada City Hall in Estacada
- Fred Meyer in Sandy
- Barlow Trail in Estacada

Many other stops had very few if any boardings, including:

- Michael's Precast through Risberg Lane in Clackamas County
- Riverside Way in Clackamas County
- Heiple Road through Stubhar Lane in Estacada
- Eagle Creek Elementary School in Estacada
- Highway 211/362nd Ave. in Clackamas County
- 362nd Ave./Forest Service Office through Langensand Road in Sandy

In the past, boardings were significantly lower on the 10:30 a.m. and the 7:00 p.m. run than on the three others. In April 2008, boardings on the 10:30 a.m. run and the 7:00 p.m. run accounted for only 14 and 13 percent respectively. But as Figure 5-6 indicates, while the 7:00 p.m. run is still weak, the 10:30 a.m. one has increased its percentage of the overall ridership to 19 percent.

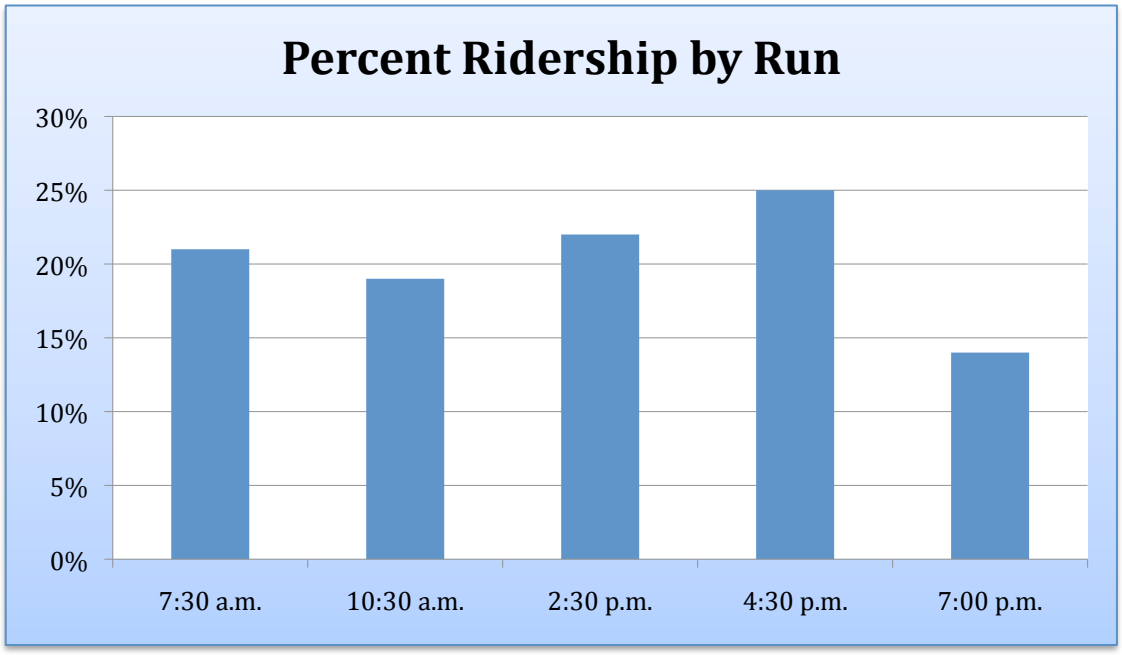


Figure 5-6: Percent Ridership by Run

Data Source: September 8-26, 2008 ridership counts. Total of 939 boardings.

A survey of SAM Estacada riders indicated they would like the 10:30 a.m. run replaced by an early morning one. However, these data suggest that may no longer be the case. This transit plan recommends that SAM review overall ridership, ridership by hour and ridership by run time in another 6 months and 12 months before making any changes.

New Services, Scenarios and Costs

The results of on-board surveys conducted for this plan suggest that riders would like later evening service, more frequent service and Sunday service. It is interesting to note that weekday service is below 20 riders per hour for the last two runs of the evening. This suggests that demand for later service might not be very strong. However, service could be extended one hour on weekday nights for a cost of $18,615 per year. This estimate is based on an operating cost of $73 per service hour and five annual weekday holidays. Sunday service operating from 9:00 a.m. to 6:00 p.m. would cost $43,524 per year.

Table 5-2: Cost of Additional Services

Service	Yearly Cost	Additional Vehicles
Late-night Service	$18,615	No
Sunday Service	$43,524	No
Increased Weekday Frequency	$109,500	1
Additional STAR Runs During Peak Hours	$109,500	1
Start Saturday Star service 15 minutes earlier	$876	No

SAM could provide 20-minute headways for six peak hours during the week for a cost of $109,500 per year. This would also require an additional bus. The cost of providing the proposed additional STAR service for six hours a weekday would cost the same amount per year as well as an additional bus. Sandy Transit staff indicates that there are also requests for service to Boring. There is a possibility that the SAM route could deviate to Boring by turning left on Kelso Road to 282nd Avenue. This deviation would add about five minutes in each direction. To achieve this would require a change in headways to 35 minutes and does not seem worth it since TriMet already travels to Boring.

Proposed Scenarios

Three proposed service scenarios are presented here: no change, preferred alternative and high service.

No Change

Service would remain the same incurring no new costs. However the impact of not changing service at all could be afternoon buses running late and not providing needed service on

Saturday mornings. If the afternoon buses were consistently running behind schedule, Sandy Transit could be forced to change the schedule to reflect the longer headways.

Preferred Scenario
This scenario includes two no-cost changes, which could be implemented immediately:

- Eliminate stops in Gresham to help the service run on time.
- Start SAM Saturday service one hour earlier in the morning and end it one hour earlier in the evening.

The STAR route could also be re-routed to take advantage of new street connections as shown on page 5-8 without incurring additional cost.

There are two components that would incur additional expense:

- Start Saturday STAR service at 10:15 (15 minutes earlier) to provide increased transfer opportunities with the earlier SAM service. The increased service would add approximately $876 in annual operating costs.
- Add a route that serves the area south-of-US 26 (as shown on Figure 5-5) when additional DAR capacity is needed. This service would provide 6 hours of additional service during peak hours on weekdays and require the addition of a new bus, with operations costs of about $110,000 annually.

High Service Scenario
This scenario includes the preferred scenarios plus three new or improved services:

- Increase weekday SAM headway to 20 minutes during six peak hours of service.
- Add nine hours of Sunday service from 9:00 a.m. to 6:00 p.m..
- Extend weekday service one hour later.

The service additions would cost about $172,000 a year and require one additional bus. These services would be implemented in the mid- to long-term.

Chapter 6 – Goals, Policies, and Implementation Measures

Overview

This chapter outlines Sandy Transit's goals and the actions needed to realize those goals. The goals, policies, and implementation measures in this chapter build on each other to define specific actions that work to support the broader vision. The goals represent the broad vision or statement of purpose, while the policies provide a more detailed approach for realizing the goals. Implementation measures under each policy detail the specific actions to be taken in order to implement the policies.

Goals

1. To provide an effective, safe, and equitable transit service that responds to the mobility needs of citizens, employees, businesses, and visitors.
2. To create an efficient transit system that offers a viable alternative to the automobile, connects with the regional transportation system, maximizes efficient use of existing roadways, and minimizes air pollution and energy use.

Policies

1. Provide service that is safe, comfortable, and effective.
2. Provide efficient public transportation that connects to the regional transportation system and allows for convenient transfers between transit systems.
3. Expand service to meet the demands of a growing population and employment base in Sandy.
4. Promote improved connections and accessibility to transit for pedestrians, bicyclists, motorists, and special-needs groups.
5. Increase public awareness of Sandy Transit and its connectivity to other transit systems and transportation modes.
6. Operate in a manner that maximizes operational efficiency, and fiscal responsibility.
7. Strive to reduce air pollution and energy use through conservation, improved technology, and alternative fuels.

Policy 1. Provide service that is safe, comfortable, and effective.

Implementation Measure 1.1
Provide regular training for bus drivers in customer service, lift operation, defensive driving, sensitivity, and emergency preparedness.

Implementation Measure 1.2
Provide drivers with a specific transit-related language tool to aid in communication with low-English-proficiency passengers.

Implementation Measure 1.3
Inspect and repair all buses according to manufacturers' maintenance schedule to ensure that there are no breakdowns during service hours. Ensure that buses are kept clean during service and that they are thoroughly cleaned at the end of each day.

Implementation Measure 1.4
Strive to maintain a record of 90% on-time service on all routes.

Implementation Measure 1.5
Maintain 0% turn down of Dial-A-Ride requests from ADA-eligible passengers who request a ride by 5 p.m. the previous day.

Implementation Measure 1.6
Continue to maintain a record of customer service calls, comment cards, letters, and e-mail along with resolution or action taken.

Implementation Measure 1.7
In selecting sites for bus stops, give preference to locations that can accommodate a future bench or passenger shelter within the public right-of-way, and at locations that operate safely given roadway traffic conditions.

Implementation Measure 1.8
Construct bus shelters whenever feasible at bus stops with at least 10 boardings per day. In the event that there is insufficient funding to install shelters at eligible bus stops, establish a priority list based on the following criteria:

Number of passenger boardings per day
Proximity to major activity centers
Seniors or special-needs population in the vicinity
Availability of space to construct shelter and waiting area
Adjacent land use compatibility

Implementation Measure 1.9
Maintain a priority list for bus stop benches, where bus shelters might otherwise be warranted, but the ridership isn't high enough or the site is unsuitable.

Implementation Measure 1.10
Provide lighting at all bus shelters to enhance safety and visibility. Timeline: 2011

Implementation Measure 1.11
Continue to subscribe to the Flash Alert service to provide automatic electronic, radio, and television alerts of service delays or interruptions.

Policy 2. Provide efficient public transportation that connects to the regional transportation system and allows for convenient transfers between transit systems.

Implementation Measure 2.1
Coordinate SAM schedules as closely as possible with TriMet service to ensure that connections are convenient and wait times are minimized.

Implementation Measure 2.2
Work with TriMet and Mountain Express to develop fare reciprocity agreements and ensure easy transfers between systems.

Implementation Measure 2.3
Encourage TriMet to update its website to include transfer information on the Trip Planner and to include transfer points to Sandy Transit on the interactive and system maps.

Implementation Measure 2.4
Join the Google™ Transit Partner program to provide transit service and schedule information for online transit trip planning.

Implementation Measure 2.5
Participate in transportation/transit planning for Mt. Hood and rural Clackamas County, and coordinate with transit providers to develop park and ride facilities in Sandy to ensure that they facilitate intermodal connectivity and are safe and convenient for Sandy Transit riders.

Implementation Measure 2.6
Support efforts to streamline the process for Dial-a-Ride trips between districts, so that reservations for one trip can be made with a single phone call.

Policy 3. Expand service to meet the demands of a growing population and employment base in Sandy.

Implementation Measure 3.1
Strive to provide service within ¼ mile of all existing and new development.

Implementation Measure 3.2
Establish a site for a future Sandy Transit Center.

Implementation Measure 3.3
Conduct regular sample surveys of employers and citizens to determine working hours and destinations, as a way of assessing unmet transit needs.

Implementation Measure 3.4
Re-assess additional need for services for seniors, people with disabilities, low-income, and Spanish-speaking populations when 2010 U.S. Census data becomes available.

Policy 4. Promote improved connections and accessibility to transit for pedestrians, bicyclists, motorists, and special-needs groups.

Implementation Measure 4.1
Continue to require new development on transit streets to be designed to support transit use through site planning and pedestrian accessibility.

Implementation Measure 4.2
Continue to require new developments to provide transit improvements such as bus shelters, bus stop signs, benches, and lighting where necessary. Larger developments may also need to provide bus pullouts and on-site circulation to accommodate transit service.

Implementation Measure 4.3
Improve pedestrian and bicycle connectivity to transit routes to the maximum extent possible, by constructing bicycle lanes, and bicycle parking and storage, sidewalks, crosswalks and other provisions for safe pedestrian crossings such as curb ramps, bulbouts, medians or pedestrian refuges, flashers or signals, and traffic-calming measures.

Implementation Measure 4.4
Make accommodations for bicyclists and walkers at park-and-ride lots and transportation transfer locations, including bicycle lockers or racks, sidewalks, pedestrian refuges, and marked crossings as appropriate.

Implementation Measure 4.5
For all new bus purchases and all replacement racks, purchase bicycle racks that accommodate three bicycles, subject to risk assessment.

Implementation Measure 4.6
Continue to coordinate with the Sandy Senior Center to provide seniors with the ability to reach medical appointments, run errands and socialize.

Implementation Measure 4.7
Conduct an ongoing evaluation of the transit system's accessibility for seniors and people with disabilities through the Transit Advisory Committee.

Implementation Measure 4.8
Ensure that all new transit facilities meet ADA requirements.

Implementation Measure 4.9
Continue to purchase low-floor buses whenever possible to facilitate easy boarding for seniors and people with disabilities.

Implementation Measure 4.10
Continue to provide Spanish-language rider information on printed schedules and include it on the Sandy Transit website.

Implementation Measure 4.11
Ensure that any proposed fare structure includes provisions for discounted fares for seniors, people with disabilities, and youth, as well as discounted monthly passes.

Policy 5. Increase public awareness of Sandy Transit and its connectivity to other transit systems and transportation modes.

Implementation Measure 5.1
Publicize the STAR and SAM Estacada routes with newspaper announcements and advertisements to increase public awareness and ridership levels.

Implementation Measure 5.2
Advertise schedule and route changes in the local newspapers.

Implementation Measure 5.3
Maintain schedule racks in civic buildings, and large businesses.

Implementation Measure 5.4
Add signage at park & ride lots and include information on park & ride lots on schedules and on the Sandy Transit web page.

Implementation Measure 5.5
Present information at appropriate community meetings and in local school classrooms to let people know what services are available.

Implementation Measure 5.6
Market Sandy Transit services in a way that also promotes local businesses and services.

Implementation Measure 5.7
Work with the schools and community organizations to organize group trips as a way of familiarizing people with the transit system and how to ride.

Implementation Measure 5.8
Continue to recruit and train volunteers to provide one-on-one travel training.

Implementation Measure 5.9
Participate in community events and festivals to raise public awareness of available transit services.

Implementation Measure 5.10
Support the Sandy business community by promoting businesses in the bus interiors.

Implementation Measure 5.11
Participate in regional, State, and national campaigns that promote transit and other transportation options.

Implementation Measure 5.12
Update the Sandy Transit website to include additional information on how to use the system and provide answers to frequently asked questions.

Implementation Measure 5.13
Ensure that Citizens' Advisory Committee meetings are well publicized and that public input is encouraged.

Policy 6. Operate in a manner that maximizes operational efficiency and fiscal responsibility.

Implementation Measure 6.1
Maintain a capital improvement plan that identifies needs, costs, and funding sources.

Implementation Measure 6.2
Assist local agencies and social service organizations in acquiring vans or small buses to transport their clients.

Implementation Measure 6.3
Explore the possibility of establishing vanpools where there is a demonstrated demand for service to a particular location, but at levels insufficient to support fixed-route service.

Implementation Measure 6.4
Evaluate bus pullouts on a case-by-case basis to ensure safety for passenger loading and unloading, feasibility with roadway operations, and to balance delays to cars and buses.

Implementation Measure 6.5
Conduct regular fare reviews to establish and maintain a fare structure that balances the maximization of revenue, while minimizing loss of ridership.

Implementation Measure 6.6
Evaluate routes regularly based on ridership levels, overall cost, passenger boardings, and cost per passenger mile in order to establish route viability, optimal frequency, and stop locations.

Implementation Measure 6.7
Continue to explore all available funding options, including grants, BETC, fares, and adjustments in the payroll tax rate.

Implementation Measure 6.8
Work with TriMet to transfer all land within Sandy's Urban Growth Boundary into the Sandy Transit service area as provided under ORS 267, so that payroll taxes from new development support additional transit service to the area. Timeline 2011.

Implementation Measure 6.9
Maintain a contingency fund to finance future transit shelters.

Policy 7. Strive to reduce air pollution and energy use through conservation, improved technology, and alternative fuels.

Implementation Measure 7.1
Encourage employers to implement transportation demand management programs at their worksites to reduce auto emissions, decrease peak-hour travel, and increase use of transit, carpooling, bicycling, and walking.

Implementation Measure 7.2
Work with employers to assess the viability of vanpools from various locations, based on employee zip code data and shift times. Assist in setting up vanpools where sufficient interest exists.

Implementation Measure 7.3
Switch to alternative fuels for transit vehicles when viable, with a focus on environmental sustainability as well as cost efficiency.

Implementation Measure 7.4
Install photovoltaic lighting at new bus shelters, whenever the cost is reasonable compared with conventional power. Explore the use of photo-luminescent materials as another option for visibility and lighting at shelters.

Implementation Measure 7.5
Explore the viability of transportation system management (TSM) techniques, such as traffic signal priority and queue bypass to help reduce bus travel times and make transit more competitive with the automobile.

Chapter 7 – Funding Resources

Overview

This chapter examines past funding sources and levels as well as future funding needs and opportunities for additional funding. Sandy Transit's 2009-2011 budget is supported by federal and State grants, payroll tax, Business Energy Tax Credits (BETC), and assorted smaller revenue sources, including fare revenue from the STAR route.

A few of Sandy Transit's funding sources are based on congressional earmarks. If earmarks are reduced or eliminated, the funding may disappear. Similarly, if the Oregon Legislature decides to eliminate the BETC program, Sandy Transit would stand to lose $500,000 from its biennial budget. At the same time, New Stimulus funding, available in 2009, will provide a temporary funding boost.

As State and federal funding sources fluctuate, it is particularly important for Sandy Transit to focus on stable and reliable funding sources such as payroll tax and fare revenue. Sandy Transit should also explore new funding sources and opportunities to provide transit improvements.

Funding History

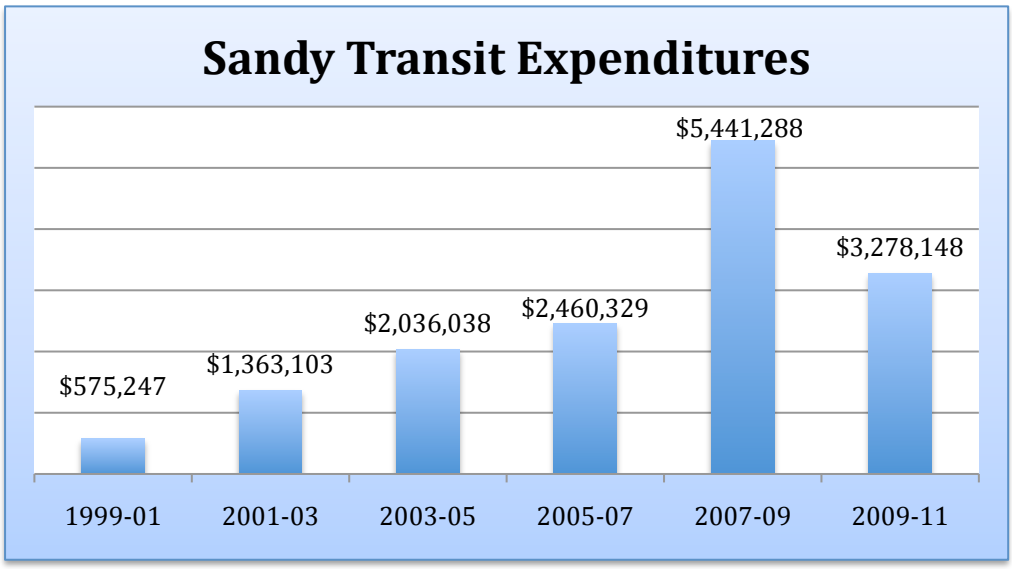


Figure 7-1- Sandy Transit Expenditures

Note: Figures for 1991-2007 are actual expenditures, those for 2007-2009 are estimated, and those for 2009-2011 are budgeted. Expenditures for the 2007-09 biennium include one-time costs of approximately $2 million for the Operations Center and are therefore not typical.

Sandy Transit started service in 2000. As service expanded to meet growing demand, grants and expenditures grew as well. In 2008, a new Transit/Public Works Operation Center was completed. The Operations Center was financed with federal earmarks, Connect Oregon grant funds, and local reserves.

Current Budget

Sandy Transit's current preliminary budget is shown below. Many of the budget categories are relatively stable, however fuel costs, vehicle insurance, and employee benefits have the potential to fluctuate unpredictably. If fuel prices rise again, actual fuel expenditures could exceed the budget by $45,000. Rising fuel prices can also affect the price of materials, supplies, and equipment.

Table 7-1 – Sandy Transit Preliminary Budget

2009-2011 Preliminary Budget	
Personnel	$181,289
Benefits	$65,640
Materials & Supplies	$18,850
Meetings, Employee Recruitment & Training	$11,500
Fuel	$320,000
Maintenance, Repair, and Licenses	$195,400
Contract Services	$871,000
E&D Service	$318,000
Utilities	$55,960
Bus Shelters	$45,000
Insurance	$70,000
Transfers & Fees	$163,000
Equipment	$323,000
Contingency	$350,000
Total	**$2,988,639**

Sandy Transit's budget is increasingly reliant on federal grants, with BETC and payroll taxes also playing a significant role.

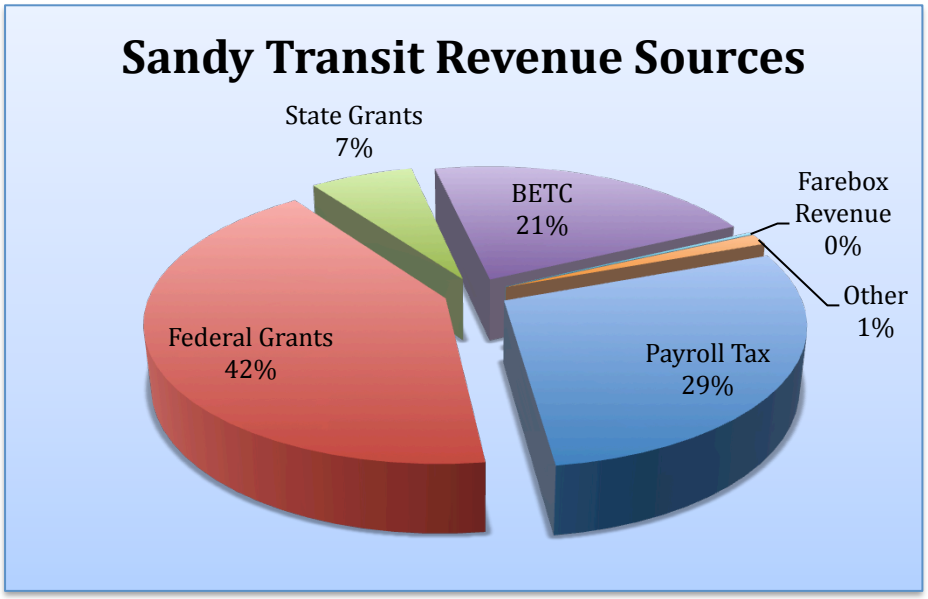


Figure 7-2 Sandy Transit Revenue Sources (Total budget 2009-2011- anticipated)

Federal Funding Sources

Federal funding increased dramatically in the 2007-09 biennium as a result of one-time costs for the Operations Center. Even without the one-time increase, federal funding plays an increasingly important role in financing Sandy Transit operations and capital expenditures.

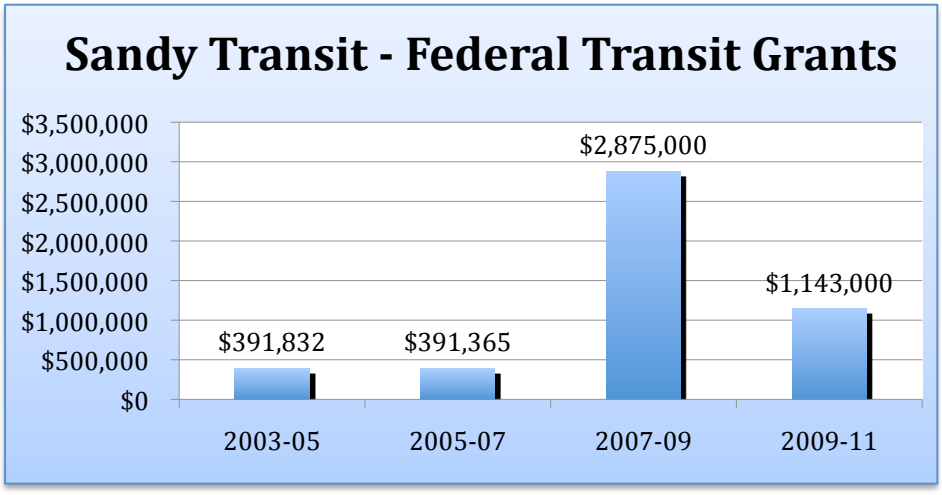


Figure 7-3- Federal Transit Grants

Note: The 2007-2009 grant totals include one-time grants for a Transit/Public Works Operations center and are therefore not typical.

FTA Section 5309 Bus and Bus Facility Earmark Program
These funds are distributed through a competitive congressional earmark process and can only be used for purchase of vehicles or construction of transit facilities. The funding process is highly competitive. Future awards are dependent upon the continuation of the earmarking process.

FTA Section 5310 Transportation for Elderly Persons and Persons with Disabilities
FTA Section 5310 provides funding to benefit the elderly and people with disabilities. The State of Oregon receives an annual apportionment by formula and then allocates the funds through a biennial discretionary grant process. All projects funded with Section 5310 funds must be derived from a locally developed, coordinated public transit-human services transportation plan. TriMet is the State designated STF Agency through which the coordinated public transit-human services transportation plan is developed for the local area.

FTA Section 5317 New Freedom Grants
The New Freedom formula grant program aims to provide additional tools to overcome existing barriers facing Americans with disabilities seeking integration into the work force and full participation in society. New Freedom funds finance projects that go beyond ADA requirements for fixed-route systems and new projects that benefit individuals with disabilities in rural areas. Oregon receives an annual apportionment by formula. Just as with Section 5310 funds, New Freedom-funded projects must be derived from a locally developed coordinated public transit-human services transportation plan.

FTA Section 5311 Small City and Rural Program Funds
This federal grant program is administered by ODOT and provides formula funding for public transportation in small cities and rural areas. Funds may be used for capital, operating, and administrative activities.

The goals of the non urbanized formula program are: 1) to enhance the access of people in non urbanized areas to health care, shopping, education, employment, public services, and recreation; 2) to assist in the maintenance, development, improvement, and use of public transportation systems in rural and small urban areas; 3) to encourage and facilitate the most efficient use of all Federal funds used to provide passenger transportation in non urbanized areas through the coordination of programs and services; 4) to assist in the development and support of intercity bus transportation; and 5) to provide for the participation of private transportation providers in non urbanized transportation to the maximum extent feasible.

Surface Transportation Program (STP)
STP funds are distributed by FHWA and can be transferred into other U.S. Department of Transportation programs. Some of these funds are already used for transit, as they are transferred into the FTA Section 5310 program on an annual basis. There are additional opportunities for transit projects to get STP funds, however the projects would have to compete with other transportation projects such as road maintenance, bridge repair, safety enhancements, and bicycle/pedestrian improvements.

FTA Section 5316 Job Access Reverse Commute (JARC)

Job Access and Reverse Commute (JARC) funds are allocated based on a formula process. The program is designed to address the transportation needs of welfare recipients and low-income people seeking employment. Often, the available jobs are located in suburban areas that are not well served by transit. The JARC program also funds reverse-commute transit services available to the general public. Non-urban area funds are distributed by the State through a competitive process.

New Stimulus Funding

In February 2009, the American Recovery and Reinvestment Act of 2009 was signed into law, providing a one-time funding stimulus for transit projects. Sandy Transit received just under $285,000 of these funds, which will be used to purchase an additional heavy-duty transit vehicle.

State Funding Sources

State funding is limited and has declined steadily since the 2003-2005 biennium.

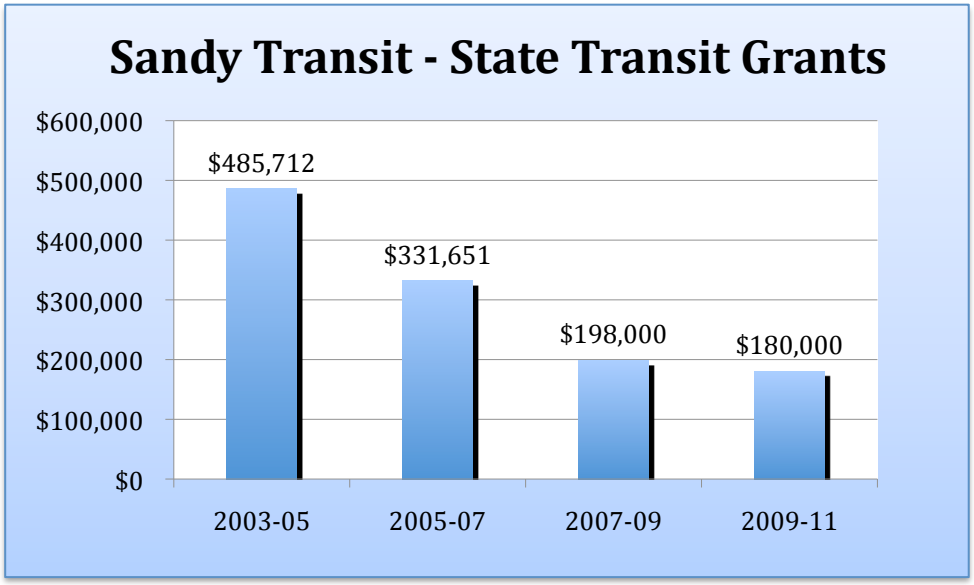


Figure 7-4- State Transit Grants

STF

The purpose of the Special Transportation Fund (STF) program is to provide an ongoing source of support for Elderly persons and Persons with Disabilities.

The STF program is a state-funded program derived from cigarette tax and other State sources approved by the Legislature. The funds can be used as a local match for federal transportation grants. The majority of funds are allocated on a population-based formula, with the remainder distributed through a discretionary grant process, usually in conjunction with FTA Section 5310 funds.

Other Revenue Sources

BETC

The Oregon Department of Energy administers the Business Energy Tax Credit (BETC) program, providing tax credits to businesses that implement energy-saving projects. Public agencies can participate in this program by working with a private business, which then passes on a portion of its tax credit to the public agency. Public transportation is considered an energy-saving activity, because it reduces the number of automobile trips. BETC has provided a steady source of revenue for Sandy Transit; however continued funding is dependent upon the availability of a private-sector partner and the Oregon Legislature's willingness to continue the program.

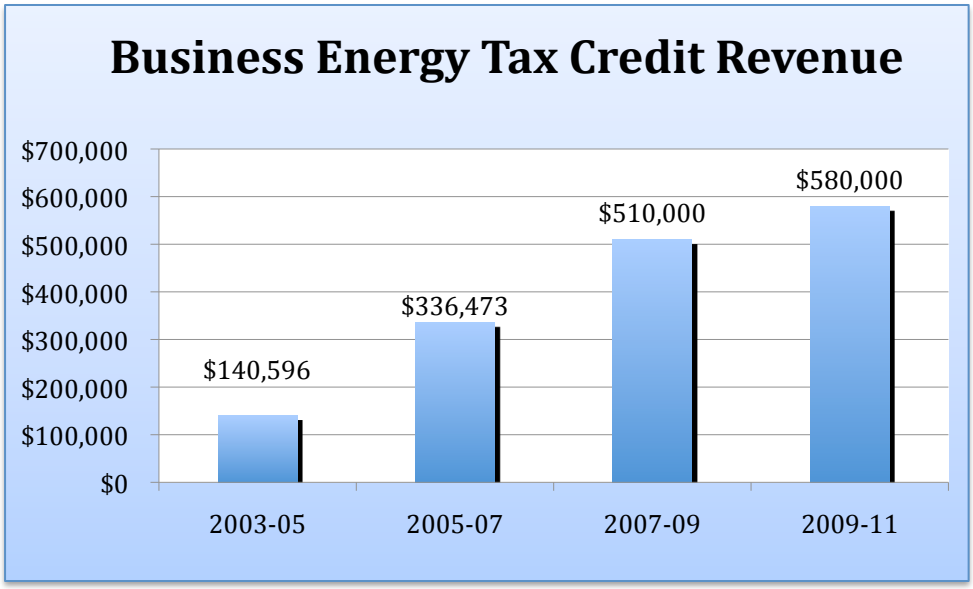


Figure 7-5- Business Energy Tax Credit Revenue

Fares

Past fare revenue has been minimal, since most of Sandy Transit's service is fareless. Fare revenue from the STAR service is generally in the range of $3,000 per year. If Sandy Transit institutes a fare for out-of-town service as described below, it could generate as much as $130,000 annually.

Sandy Transit staff met with TriMet staff in October 2008 to discuss fare reciprocity between the systems. The proposed arrangement included the following elements:

- SAM service within Sandy would continue to be fareless (zone 1).
- Service to Gresham would cost $1 (zone 2).
- Service beyond Gresham would cost $2.30 and would provide the rider with a TriMet all-zone transfer (zone 3.)

- Passengers travelling into Sandy could also use a TriMet all-zone transfer or pass to ride Sandy Transit.
- Monthly passes for zone 2 would be available at a discounted price.
- Reduced-price fares would be offered for seniors, people with disabilities, and students.
- Sandy Transit drivers would count transfers and TriMet pass media to provide an accounting to TriMet.
- TriMet would reimburse Sandy Transit on a quarterly basis for rides provided.

Payroll Tax

Sandy employers pay a payroll tax at the rate of 0.06% of payroll. The payroll tax is used to fund operations and leverage funding from federal and State grants that require a local match. Over the years, payroll tax has represented a stable funding source. In the long-term, this should continue to be the case, although there may be a short-term decline in revenue from payroll due to the economic downturn.

The payroll tax of 0.06% has remained the same since Sandy Transit started operating, and is somewhat lower than TriMet's rate of 0.06718%. TriMet has scheduled annual payroll tax increases of 1/100 of a percent. Sandy Transit should consider implementing a similar incremental rate increase to support service growth.

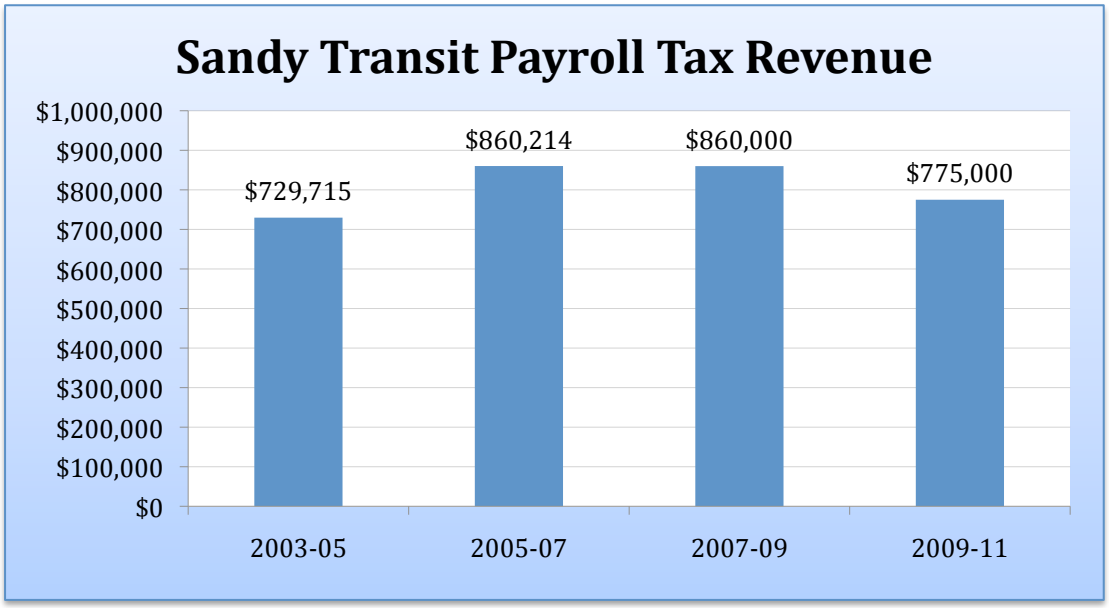


Figure 7-6- Payroll Tax Revenue

System Development Charges (SDCs)

The objective of a system development charge (SDC) is to recover all or part of the jurisdiction's cost of providing the additional system capacity needed to serve new development. Transportation SDCs are generally calculated based on the number of trips that will be generated by the particular use. This establishes the rational nexus or reasonable

relationship between the required infrastructure improvement and the charge to the developer. SDCs must also be based on specific projects included in an approved Capital Improvement Plan or similar plan that lists the capital improvements, estimated cost, timing, and improvement fee revenue.

SDCs can only be used for capital improvements. While transit projects can legally and logically be included in SDCs, it is not common practice. Since SDCs only pay for a portion of the improvement, and transit improvements such as shelters are fairly low cost, it is probably not worthwhile to pursue for smaller improvements, although it may be worth considering for a transit center. The Oregon Revised Statute (ORS 223.297) provides policy language governing the application of SDCs in Oregon.

Development Conditions

Development conditions do not provide additional revenue, but they can reduce the need for additional revenue by providing transit improvements as part of the development process. Transit development conditions require developers to include transit improvements in their development plans. Requirements are based on the use or the projected traffic generation from the development. The development conditions can require the developer to build a pad for a bus shelter or provide and install bus shelters and other amenities, such as bus stop signs and poles. Larger developments could require bus pullouts and approved bus circulation. There is no doubt that new development generates additional transit demand or that it benefits directly from the provided transit improvements. However, there will be instances where new development is located in areas that already have the needed transit infrastructure. In these cases, the developer might not have to provide any improvements.

Expand Service Area

New development generates additional transit demand. If the new development includes businesses, payroll taxes will help to support transit in the area. However, some of the development within Sandy's urban growth boundary but outside of the current city limits would remain within TriMet's service district even after the area is annexed into the Sandy city limits. The businesses located in this area would remain in the TriMet service district until action is taken to transfer them out. Without the transfer to the Sandy Transit service area, the City of Sandy would not receive any payroll tax to support transit service to the area. ORS 267 details the procedures needed to change the district boundaries.

The Bornstedt Village area is an example of an area that is located partially within Sandy city limits and partially within Sandy's urban growth boundary, but outside of the current Sandy Transit service area. The City of Sandy should take action to ensure that all of the area within the Sandy urban growth boundary is moved to Sandy Transit's service area. If a petition for withdrawal is required as part of the process, it can only be filed from January 1 to August 30 in calendar year 2011. The next opportunity would be in 2016.

Advertising in buses and on shelters

Advertising can be located on the sides and back of buses and/or on the inside of the buses. Outside vendors can be hired to construct and maintain shelters in exchange for allowing the vendor to sell advertising on the shelters. Often the jurisdiction also receives a share of the advertising revenue. Although advertising can increase revenues and provide additional shelters, the content of advertising can be difficult to control. As an alternative to advertising, these resources can also be used for goodwill or public relations. Although this use does not generate revenue, it can create a valuable sense of community ownership by promoting schools, the Chamber of Commerce, and local artists.

Appendix A-Glossary of Terms

A

Access Board
Common name for the Architectural and Transportation Barriers Compliance Board, an independent federal agency whose mission is to develop guidelines for accessible facilities and services and to provide technical assistance to help public and private entities understand and comply with the Americans with Disabilities Act (ADA).

Accessibility
The extent to which facilities, including transit vehicles, are barrier-free and can be used by people who have disabilities, including wheelchair users.

ADA
Americans with Disabilities Act: Passed by the Congress in 1990, this act mandates equal opportunities for persons with disabilities in the areas of employment, transportation, communications and public accommodations. Under this Act, most transportation providers are obliged to purchase lift-equipped vehicles for their fixed-route services and must assure system-wide accessibility of their demand-responsive services to persons with disabilities. Public transit providers also must supplement their fixed-route services with paratransit services for those persons unable to use fixed-route service because of their disability.

Alternative Fuels
Vehicle engine fuels other than standard gasoline or diesel. Typically, alternative fuels burn cleaner than gasoline or diesel and produce reduced emissions. Common alternative fuels include methanol, ethanol, compressed natural gas (CNG), liquefied natural gas (LNG), clean diesel fuels and reformulated gasoline.

Alternative Mode
Any type of commuting transportation other than single occupancy vehicle that results in reduction of automobile commute trips, e.g. carpooling, vanpooling, bicycling, walking, transit, and telework.

Alternative Work Schedules
Any programs, such as compressed work weeks, flex time, telecommuting, staggered shifts, or any other program that eliminates pm peak hours trips through the impacted intersections.

Annual Passenger Trips
The number of passengers who board operational revenue vehicles. Passengers are counted each time they board vehicles no matter how many vehicles they use to travel from their origin to their destination. Trips should be counted regardless of whether an individual fare is collected for each leg of travel. It includes passenger trips on volunteer vehicles.

Annual Vehicle Hours
The total amount of time in hours for the reporting period that all vehicles travel from the time they pull out to go into revenue service to the time they pull in from revenue service. This includes the

hours of personal vehicles used in service.

Annual Vehicle Miles
The total number of miles for the reporting period that all vehicles travel from the time they pull out to go into revenue service to the time they pull in from revenue service. This includes the miles of personal vehicles used in service.

Appropriation
The point at which a legislative body and chief executive have agreed and signed into law an approval to spend public funds on specified programs and projects. Within the federal government, no funds may be spent unless their appropriation has been approved by Congress and signed into law by the President.

AoA
Administration on Aging. The agency within the U.S. Department of Health and Human Services that oversees the implementation of the Older Americans Act, including senior nutrition programs, senior centers and supportive services for elders.

Automobile Dependency
Transportation and land use patterns that result in high levels of automobile use and limited transportation alternatives. In this case, "automobile" includes cars, vans, light trucks, SUVs and motorcycles.

B

Bonds
Financing mechanism used to raise funds. Bonds are secured debt offered through a legal entity (usually a state or local government) that guarantees two rights to the purchaser: the right to receive a fixed interest payment on the par value of the bond, and the right to be paid the par value of the bond at a definite future date when the bond matures.

Bus Pullout or Turnout
A pullout is a specialized bus stop where a transit vehicle can load or unload passengers in an area separated from the traffic lanes.

Buy America
Federal transportation law, which requires that all purchases of vehicles, equipment or any other manufactured item be of US-made and assembled components, unless the total procurement is less than $100,000 or the DOT has given the purchaser a Buy America waiver.

C

Capital Costs
Refers to the costs of long-term assets of a public transit system such as property, buildings and vehicles. Under TEA-21, FTA has broadened its definition of capital costs to include bus overhauls, preventive maintenance and even a share of transit providers' ADA paratransit expenses.

Carpool
A prearranged ridesharing service in which a number of people travel together on a regular basis in a car. Some carpool arrangements involve the exchange of money in exchange for driving, while others simply trade off driving.

CarpoolMatchNW.org
A regional carpool-matching database for Oregon and SW Washington, sponsored by Metro. Carpool matching on the database is free to users.

CDL
Commercial Drivers License: The standardized drivers license required of bus and heavy truck drivers in every state. Covers drivers of any vehicle manufactured to seat 15 or more passengers (plus driver) or over 13 tons gross vehicle weight. The CDL is mandated by the Federal government in the Commercial Motor Vehicle Safety Act of 1986.

Clean Air Act
Federal regulations which detail acceptable levels of airborne pollution and spell out the role of state and local governments in maintaining clean air.

CMAQ
Congestion Mitigation and Air Quality Project: A flexible funding program administered by the Federal Highway Administration (FHWA) which funds projects and programs to reduce harmful vehicle emissions and improve traffic conditions. CMAQ funds may be used flexibly for transit projects, rideshare projects, high-occupancy vehicle lanes or other purposes.

Community Transportation
Transportation services that address the transit needs of an entire community, including the needs of both the general public and special populations.

Commuter Rail
Commuter rail is passenger train service that often shares tracks with freight or inter-city trains. Commuter rail trains are usually made up of coaches hauled by a locomotive and serve downtown travel markets. Most train service is concentrated in peak hours of travel. Train stations are usually about five miles apart to allow the heavier trains to accelerate and decelerate.

Complementary Paratransit Services
Transportation service required by the Americans with Disabilities Act (ADA) for individuals with disabilities who are unable to use fixed route transportation systems. This service must be comparable to the level of service provided to individuals without disabilities who use the fixed route system. The complementary services must be origin-to-destination service (demand response) or on-call demand response service to an accessible fixed route where such service enables the individual to use the fixed route bus system for his or her trip.

Compressed Work Week
An on-going alternative work schedule, in accordance with employer policy, that regularly allows a

full-time employee to eliminate at least one work day every two weeks through working longer hours during the remaining days, resulting in fewer commute trips by the employee.

Curb-to-Curb Service
A common designation for paratransit services. The transit vehicle picks up and discharges passengers at the curb or driveway in front of their home or destination. In curb-to-curb service the driver does not assist the passenger along walks or steps to the door of the home or other destination.

Cutaway
A vehicle in which a bus body is mounted on the chassis of a van or light-duty truck. The original van or light-duty truck chassis may be reinforced or extended. Cutaways typically seat 15 or more passengers, and typically may accommodate some standing passengers.

CTAA
Community Transportation Association of America. A national professional association of those involved in community transportation, including operators, vendors, consultants and federal, state and local officials.

CTAP
Community Transportation Assistance Project. This program of the U.S. Department of Health and Human Services offers training materials, technical assistance and other support services for community transportation providers across the country. CTAP services are currently delivered by CTAA through the National Transit Resource Center.

D

Demand-Response Service
The type of transit service where individual passengers can request transportation from a specific location to another specific location at a certain time. Transit vehicles providing demand-response service do not follow a fixed route, but travel throughout the community transporting passengers according to their specific requests. Can also be called dial-a-ride. These services usually, but not always, require advance reservations.

Deviated Fixed Route
This type of transit is a hybrid of fixed-route and demand-response services. While a bus or van passes along fixed stops and keeps to a timetable, the bus or van can deviate its course between two stops to go to a specific location for a pre-scheduled request. Often used to provide accessibility to persons with disabilities.

Disabled
Any person who by reason of illness, injury, age, congenital malfunction or other permanent or temporary incapacity or disability is unable, without special facilities, to use local transit facilities and services as effectively as persons who are not so affected.

Discretionary Grant
Financial assistance that is awarded on the basis of competitive merits from among proposals that are

submitted. Even in cases where projects are identified, or earmarked, by members of Congress, grant-making agencies generally will require recipients to file applications and abide by the procedures of what was designed as a competitive grant-making process.

Door-to-Door Service
A form of paratransit service which includes passenger assistance between the vehicle and the door of his or her home or other destination. A higher level of service than curb-to-curb, yet not as specialized as door-through-door service (where the driver actually provides assistance within the origin or destination).

DOT
Department of Transportation, the federal agency that overseas how transportation money is spent and programs are conducted in the U.S.A. The DOT oversees over a dozen other agencies, including FTA, FHWA, FRA, and many others.

Drug and Alcohol Testing Regulations
DOT implemented the Omnibus Transportation Employee Testing Act in December 1992. The act requires drug and alcohol tests for all safety-sensitive employees of agencies receiving Section 5307, 5309 or 5311 funding (Section 5310 agencies are not included), including drivers, maintenance workers, dispatchers and supervisors.

E

E&D
An abbreviation commonly used to refer to services for the elderly and disabled.

Emergency Ride Home
Program that encourages employees to carpool, use transit, bike or walk to work by guaranteeing them a ride home in the event of an emergency. A free taxi ride is provided when an employee becomes ill at work, has to work unexpected overtime, or has a family emergency such as a sick child. Also referred to as "Guaranteed Ride Home".

Employee Commute Options (ECO) Rule
Part of House Bill 2214, which was adopted by the 1992 Oregon Legislature. The rule directs the Environmental Quality Commission to institute an employee trip reduction program. The rule is designed to reduce 10 to 20 percent of commuter trips for all businesses employing 100 or more persons.

Employment Transportation
Transportation specifically designed to take passengers to and from work or work-related activities.

F

Far-Side Bus Stop
A bus stop that is located immediately following an intersection.

Fare Box Revenue
A public transportation term for the monies or tickets collected as payments for rides. Can be cash, tickets, tokens, transfers and pass receipts. Fare box revenues rarely cover even half of a transit system's operating expenses.

FHWA
Federal Highway Administration. A component of the U.S. Department of Transportation, provides funding to state and local governments for highway construction and improvements, including funds must be used for transit. FHWA also regulates the safety of commercial motor vehicle operations (vehicles which require a CDL to drive). FWHA is the lead agency in federal intelligent transportation activities and regulated interstate transportation.

Fixed-route
Transit services where vehicles run on regular, pre-designated, pre-scheduled routes, with no deviation. Typically, fixed-route service is characterized by printed schedules or timetables, designated bus stops where passengers board and alight and the use of larger transit vehicles.

Flex Schedules
An employer policy allowing individual employees some flexibility in choosing work schedules. Flex schedules allow employees to start earlier or later, avoiding peak traffic times.

FTA
Federal Transit Administration (before 1991, Urban Mass Transportation Administration). A component of the U.S. Department of Transportation that regulates and helps fund public transportation. FTA provides financial assistance for capital and operating costs and also sponsors research, training, technical assistance and demonstration programs. FTA was created by the passage of the Urban Mass Transportation Act of 1964.

G

Grant
The award of government funds to an entity. Federal funds are typically awarded either as formula (or block) grants, where a predetermined legislative process establishes the level of funding available to an entity, or discretionary grants, where the funding agency is free to determine how much (if any) funding an entity will be given based on the relative merits of the proposal. Private foundations also give grants based on their own criteria.

Guaranteed Ride Home
Program that encourages employees to carpool, use transit, bike or walk to work by guaranteeing them a ride home in the event of an emergency. A free taxi ride is provided when an employee becomes ill at work, has to work unexpected overtime, or has a family emergency such as a sick child. Also referred to as "Emergency Ride Home".

H

High-Occupancy Vehicle (HOV)
A passenger vehicle carrying more than a specified minimum number of passengers. HOVs include

carpools, vanpools, and buses. HOV requirements are often indicated as 2+ (two or more passengers required) or 3+ (three or more passengers required).

High Transit Service
This level of service is achieved when a location is served by multiple bus routes at intervals of 15 minutes or less during peak commuting hours.

HOV Lane
This is a traffic lane limited to carrying high occupancy vehicles (HOVs) and certain other qualified vehicles.

Human Services Transportation
Transportation related to the provision of human or social services. Includes transportation for the elderly and people with disabilities when the transportation is provided by an arrangement other than the public service available to all.

I

Intercity Transportation
Transportation service between two urban areas. Under FTA's Section 5311 (f), intercity transportation service must receive no less than 15 percent of each state's total Section 5311 funding, unless a state's governor certifies that these needs are already being met.

J

JARC (Jobs Access Reverse Commute)
Federal formula funds available to provide transportation to jobs.
This program pertains to:
1. Access to jobs projects for the development and maintenance of transportation services designed to transport welfare recipients and eligible low-income individuals to and from jobs and activities related to their employment.
2. Reverse commute projects for public transportation designed to transport residents of urbanized areas and other than urbanized areas to suburban employment opportunities.
Sandy Transit receives JARC funds to operate the SAM Estacada route.

Jitney
A privately-owned small vehicle that is operated on a fixed route but not on a fixed schedule.

L

Layover / Recovery Time
The hours scheduled at the end of the route before the departure time of the next trip. This time is scheduled for two reasons:
1. To provide time for the vehicle operator to take a break (layover)
2. To provide time to get back on schedule before the next trip departs if the trip arrives late at the end of the route (recovery).

Linked/Unlinked Trip
An unlinked trip is a passenger trip make on a single vehicle, such as a single automobile or bus ride. A linked trip is a person's entire trip between an origin and destination, which may involve transferring between vehicles (e.g., Park & Ride or bus and rail transit), or multiple stops, such as stopping at a daycare center or store along a commute trip.

Low Transit Service
A location that has some transit service, but not enough to be considered medium- or high transit service.

M

Match
State or local funds required by various federal or state programs to complement funds for a project. A match may also be required by states in funding projects that are joint state/local efforts. Some funding sources allow services, such as the work of volunteers, to be counted as an in-kind funding match. Federal programs normally require that match funds come from other than federal sources.

Medicaid
Also known as Medical Assistance, this is a health care program for low-income and other medically-needy people, which is jointly funded by state and federal governments. The Medicaid program pays for transportation to non-emergency medical appointments if the recipient has no other means to travel to the appointment.

Medium Transit Service
This level of service is achieved when at least two bus routes serve a location with no longer than 20-minute intervals during peak commuting hours.

Metro
Metro is the regional government for the Oregon portion of the Portland metropolitan area. Metro provides land-use planning and is responsible for designating the urban growth boundary (UGB), a legal boundary, which is designed to limit urban sprawl. Metro is also the metropolitan planning organization for the area, responsible for the planning of the region's transportation system.

Metro Vanpool
A regional vanpool program , sponsored by Metro.

Mode
A method used by people or goods to get from one place to another, such as using cars and trucks, freight and passenger trains, walking, bicycling, and riding buses.

Mode Split
Travel modes include walking, biking, auto, and bus and light rail. The mode split is the percentage of total travel by each mode. For example if the mode split is 80% auto, this means that 80% of all trips are made by auto.

MPO
Metropolitan Planning Organization. The local bodies that set coordination standards and select projects in urban areas to be funded by SAFETEA-LU. In the Portland Metropolitan area, Metro serves as the MPO.

N

National Transit Database Reports
Annual reports formerly known as Section 15, report financial and operating data, required of almost all recipients of transportation funds under Section 5307.

Near-side Bus Stop
A bus stop that is located immediately preceding an intersection.

New Freedom Funds
Federal formula funds that provide services to people with disabilities that are above and beyond what the ADA requires.

NTRC
National Transit Resource Center: Provides technical assistance, information and support to the community transportation industry. Most services and materials are available at no charge. Funded in part by the U.S. Department of Transportation, the U.S. Department of Health and Human Services and the people and members of the Community Transportation Association of America.

O

OAA
Older Americans Act. Federal law first passed in 1965. The act established a network of services and programs for older people. This network provides supportive services, including transportation and nutrition services, and works with public and private agencies that serve the needs of older individuals.

Operating Assistance
Funding that helps support the day-to-day costs of operating or providing services; in transportation settings, this category often includes driver salaries and operating staff expense, as well as fuel, and other routine, ongoing costs of having and operating a transportation service.

Operating Costs
Non-capital costs associated with operating and maintaining a transit system, including labor, fuel, administration and maintenance.

Oregon Department of Transportation (ODOT)
State agency that oversees and maintains the State highway system and other transportation in Oregon, under the guidance of the Oregon Transportation Commission.

Oregon's Statewide Planning Goals
The 19 goals that provide a foundation for the State's land use planning program. The 19

goals can be grouped into four broad categories: land use, resource management, economic development, and citizen involvement. Locally adopted comprehensive plans and regional transportation plans must be consistent with the statewide planning goals.

P

Paratransit
Types of passenger transportation that are more flexible than conventional fixed-route transit but more structured than the use of private automobiles. Paratransit includes demand-response transportation services, subscription bus services, shared-ride taxis, car pooling and vanpooling, jitney services and so on. Most often refers to wheelchair-accessible, demand-response van service.

Park-and-Ride
A mode of travel usually associated with movements between work and home, that involves use of a private auto on one portion of the trip and a transit vehicle, carpool, or vanpool on another portion of the trip. Thus, a park-and-ride trip could consist of an auto trip from home to a parking lot, and transfer at that point to a bus, carpool, or vanpool in order to complete the trip to work.

Parking Management
Strategies aimed at making better use of available parking supply. Parking management strategies include preferential parking or price discounts for carpools and/or short-term parkers, and disincentives, prohibitions and price supplements for those contributing more to congestion.

Parking Cash-Out
This means that people (typically commuters, and sometimes residents of multi-family housing) who are offered a free parking space are also offered the cash equivalent when they use alternative transportation modes and so do not impose parking costs.

Payroll Tax
This tax is imposed for the provision of public transportation services in the local transit area and is currently based on a rate of 0.06% of payroll.

Peak Hours
The rush hours of the day, generally 7-9 a.m. and 4-6 p.m.

Pre-Award/Post-Delivery Audit Requirements
Since 1991, FTA has required recipients of Sections 5307, 5309, 5310 and 5311 funds to carry out audits of vehicles and other rolling stock purchased with FTA money. These audits are to ensure that vehicles are manufactured according to specification and comply with applicable Buy America and Federal Motor Vehicle Safety Standards.

Q

Queue Bypass
A systems that gives buses priority at signalized intersections, often by allowing the bus to use a right turn-only lane.

R

Regional Transportation Plan (RTP)
The guiding document developed by Metro for all federally funded transportation planning efforts in the region, with a twenty year horizon and updated every three years.
The RTP is the region's transportation system plan that is required by the Transportation Planning Rule.

Revenue Service (Miles, Hours, and Trips)
The time when a vehicle is available to the general public and there is an expectation of carrying passengers. These passengers either directly pay fares, are subsidized by public policy, or provide payment through some contractual arrangement. Vehicles operated in fare free service are considered in revenue service. Revenue service includes layover / recovery time. Revenue service excludes deadhead, vehicle maintenance testing, school bus service, and charter service.

Rideshare Program
A rideshare program facilitates the formation of carpools and vanpools, usually for work trips. A database is maintained for the ride times, origins, destinations and driver/rider preferences of users and potential users. Those requesting to join an existing pool or looking for riders are matched by with other appropriate persons.

Rideshare
A motor vehicle, carrying two or more people for any trip purpose, including work and shopping.

S

SAFETEA-LU
On August 10, 2005, the President signed into law the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU), with guaranteed funding for highways, highway safety, and public transportation totaling $244.1 billion. SAFETEA-LU authorizes the Federal surface transportation programs for highways, highway safety, and transit for the 5-year period 2005-2009

SDC or Systems Development Charge
A system development charge (SDC) is a one-time fee imposed on new or some types of re-development at the time of development. The fee is intended to recover a fair share of the costs of existing and planned facilities that provide capacity to serve new growth.

Seating Capacity
The number of people who can be seated in a bus, based on the seats that are actually installed in the vehicle.

Section 5307
The section of the Federal Transit Act that authorizes grants to public transit systems in all urban areas. Funds authorized through Section 5307 are awarded to states to provide capital and operating assistance to transit systems in urban areas with populations between 50,000 and 200,000. Transit

systems in urban areas with populations greater than 200,000 receive their funds directly from FTA.

Section 5309
The section of the Federal Transit Act that authorizes discretionary grants to public transit agencies for capital projects such as buses, bus facilities and rail projects.

Section 5310
The section of the Federal Transit Act that authorizes capital assistance to states for transportation programs that serve the elderly and people with disabilities. States distribute Section 5310 funds to local operators in both rural and urban settings, who are either nonprofit organizations or the lead agencies in coordinated transportation programs.

Section 5311
The section of the Federal Transit Act that authorizes capital and operating assistance grants to public transit systems in areas with populations of less than 50,000.

Signal Preemption
A system that allows the normal operation of traffic signals to be preempted in order to allow emergency vehicles to change the signals in their path to green and stop cross traffic. Signal preemption is also occasionally used to allow transit vehicles priority access through intersections to reduce commute times.

Special Transportation Fund (STF)
State funds for transportation for elderly and people with disabilities

Surface Transportation Program (STP)
The STP provides flexible funding that may be used by states and localities for projects on any federal-aid highway, including the NHS, bridge projects on any public road, transit capital projects, and public bus terminals and facilities.

Standing Capacity
The number of standing passengers that can be accommodated aboard the revenue vehicle during a normal full load (non-crush) in accordance with established loading policy or, in absence of a policy, the manufacturer's rated standing capacity figures.

State Implementation Plan (SIP)
The statement of how the transportation, environmental, and health communities expect to meet federal air quality safety standards.

T

TEA 21
The Transportation Equity Act for the 21st Century was enacted June 9, 1998. TEA-21 authorized the federal surface transportation programs for highways, highway safety, and transit for the 6-year period 1998-2003.

Telework or Telecommute
This term refers to a transportation demand management strategy whereby an individual substitutes working at home for commuting to a work site on either a part-time or full-time basis.

TOD
Transit Oriented Development—Development in which public transportation, walking, and biking are designed to play a large role in mobility. TODs sometimes have the features often identified with New Urbanism—that is—using traditional town planning strategies to increase livability.

Traffic Calming
Various design features and strategies intended to reduce vehicle traffic speeds and volumes on a roadway as a means of promoting safe and pleasant conditions for motorists, bicyclists, pedestrians, and residents. These measures can include medians, bicycle lanes, roundabouts, curb bulb-outs, tighter curb radii, landscaping, and narrower streets.

Transit
This term refers to publicly-funded and managed transportation services and programs, including bus service, light-rail, and paratransit.

Transit Center
A transit center or hub is a fixed location served by at least two transit lines, where passengers can transfer between routes. Major transit centers often include passenger amenities and layover area and may accommodate transfers between neighboring transit systems.

Transit Street
Any street that is currently served by fixed-route transit or planned for future transit service.

Transportation Options Program
A program that seeks to promote a variety of transportation options and alternatives to the single-occupant automobile.

Transportation System Management (TSM)
Strategies and techniques for increasing the efficiency , safety , or level-of-service of a transportation facility without increasing its size. Examples include, but are not limited to, traffic signal improvements, traffic control devices (including installing medians, channelization, access management, and ramp metering), incident response, targeted traffic enforcement, preferential transit measures, and restriping for high-occupancy vehicle lanes.

Transportation System Plan (TSP)
A plan for one or more transportation facilities that are planned, developed, operated, and maintained in a coordinated manner to supply continuity of movement between modes and within and between geographical and jurisdictional areas.

Transportation Demand Management (TDM)
Various strategies that change travel behavior (how, when and where people travel) in order to

increase transport system efficiency and achieve specific objectives such as reduced traffic congestion, road and parking cost savings, increased safety, improved mobility for non-drivers, energy conservation and pollution emission reductions. Also referred to as *Travel Options* or *Mobility Management*.

Transportation Improvement Program (TIP)
The multi-year capital program of transportation projects updated each year

TriMet
Tri-County Metropolitan Transportation District, the transit agency for most of Clackamas, Multnomah, and Washington Counties.

Trip
A one-way movement of a person or vehicle between two points. Many transit statistics are based on unlinked passenger trips, which refer to individual one-way trips made by individual riders in individual vehicles. A person who leaves home on one vehicle, transfers to a second vehicle to arrive at a destination, leaves the destination on a third vehicle and has to transfer to yet another vehicle to complete the journey home has made four unlinked passenger trips.

U

U.S. DHHS
United States Department of Health and Human Services. Funds a variety of human services transportation through AOA, Head Start, Medicaid and other programs.

Urban Growth Boundary (UGB) The UGB controls urban expansion onto farm, forest and resource lands. Metro, the regional government, manages the UGB as required by state law.

User-Side Subsidy
A transportation funding structure in which qualified users (usually economically disadvantaged persons) are able to purchase vouchers for transportation services at a portion of their worth. The users then may use the vouchers to purchase transportation from any participating provider. The vouchers are redeemed by the provider at full value and the provider is reimbursed by the funding agency for the full value.

V

Vanpool
A prearranged ridesharing service in which a number of people travel together on a regular basis in a van. Vanpools may be publicly operated, employer operated, individually owned or leased.

Vehicle Hours (Miles)
The hours (miles) that a vehicle is scheduled to or actually travels from the time it pulls out from its garage to go into revenue service to the time it pulls in from revenue service. It is often called platform time.

Vehicle Revenue Hours
The hours that vehicles are scheduled to or actually travel while in revenue service. Vehicle revenue hours include layover / recovery time; but excludes deadhead, operator training, and vehicle maintenance testing, as well as school bus and charter services.

Vehicle Revenue Miles
The miles that vehicles are scheduled to or actually travel while in revenue service. Vehicle revenue miles include layover / recovery time; but excludes deadhead, operator training, and vehicle maintenance testing, as well as school bus and charter services.

Vehicles in Operation
The maximum number of vehicles actually operated to provide service on an average weekday, average Saturday and average Sunday.

VMT
Vehicle Miles of Travel, the measure of how many miles vehicles travel in a given period. VMT is used to assess the amount of roadway travel in the region.

Appendix B–Transit Design Guidelines

Infrastructure design strongly affects transit operations, passenger safety, and access to transit. This chapter provides an overview of transit design guidelines and a discussion of factors that are likely to influence transit operations and design decisions. The examples provided here are intended as guidelines; the Sandy Transit Manager should be consulted for specific requirements.

Sandy Transit can provide better service when developments are designed with transit in mind. Better service means that riders are offered more convenient bus stops with designed infrastructure, more desirable routing, and reduced travel times. To the developer, good transit service is a means of offering residential and commercial occupants a more accessible location, an expanded labor market, and an overall reduction in transportation and traffic mitigation problems. In terms of the final outcome, designing for transit leads to bus stops within the development that are attractive yet unobtrusive. In general, designing for transit means planning for transportation as an asset, rather than considering transit as an afterthought.

Bus Dimensions

Figure B-1 presents the basic vehicle specifications for the largest buses Sandy Transit is likely to have in its fleet. Vehicles in the current fleet with different specifications will operate within these guidelines. Special consideration needs to be given when designing facilities that will be used by transit buses. Compared to automobiles and most other types of vehicles, transit buses have longer wheelbases, more overhang, are wider, longer, and taller, have slower acceleration and deceleration rates, and have a wider turning radius.

Table B-1. Bus Dimensions

Length	40 feet
Width	8 feet, six inches for body only. Total width may be 11 feet with mirrors.
Wheelchair Lift (Extension from bus)	5 feet, 8 inches
Wheel Base	22 feet, 9 inches
Height	10 feet, 9 inches
Weight	Full bus - 25,000 pounds
Doors	Distance from front of bus to middle of front door: 3 feet. Distance from front of bus to middle of rear door: 26 feet.

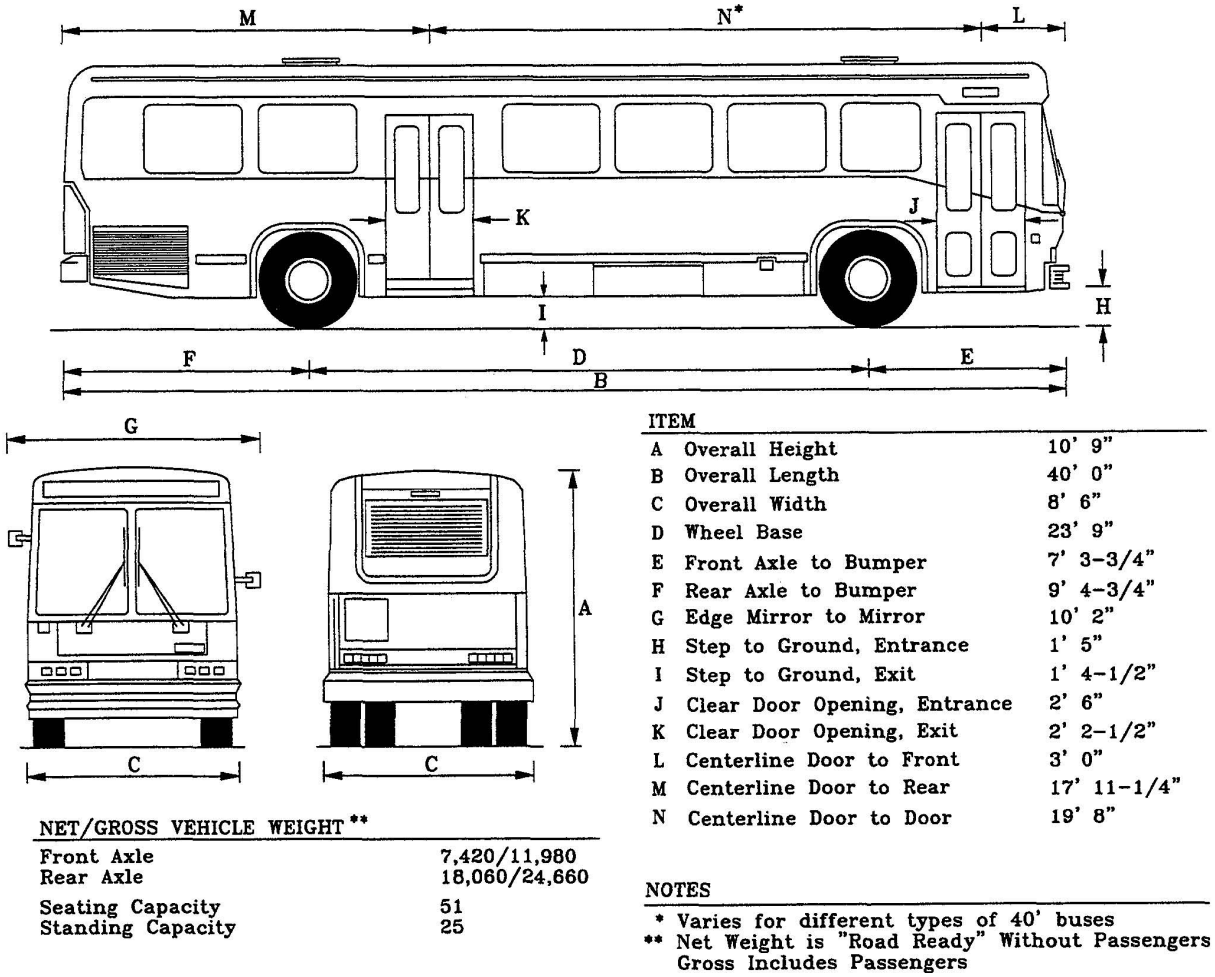


Figure B-1. Typical 40-foot Bus

Source: Transit Cooperative Research Program, TCRP Report 19

Turning Radius

The minimum effective turning radius for a 40-foot bus is 25 feet. A properly designed corner curb radius will minimize conflicts between buses, cars, bicycles and pedestrians at intersections. Standards for turning radius can vary depending on the effective radius such as whether a bicycle lane or parking lane is available or if traffic volumes are so low as to allow transit vehicles to make full use of either or both of the departure or receiving lanes. At the same time, it should be noted that the larger curb radii needed to accommodate buses and fire trucks create conditions which are less favorable for pedestrians by encouraging faster vehicle

speeds around corners and increasing crossing distances. Because of this, curb radii should be kept to the minimum required.

Bus Stop Locations

The safety of passengers, motorists, bicyclists, and pedestrians is paramount in determining the location of bus stops. Bus stops can be located either on the far or near side of intersections. There are also occasions where a mid-block bus stop is advisable. Sandy Transit generally favors far-side bus stops; however, the location of specific bus stops depends on individual site specifics. In almost all cases, there are advantages and disadvantages to either placement.

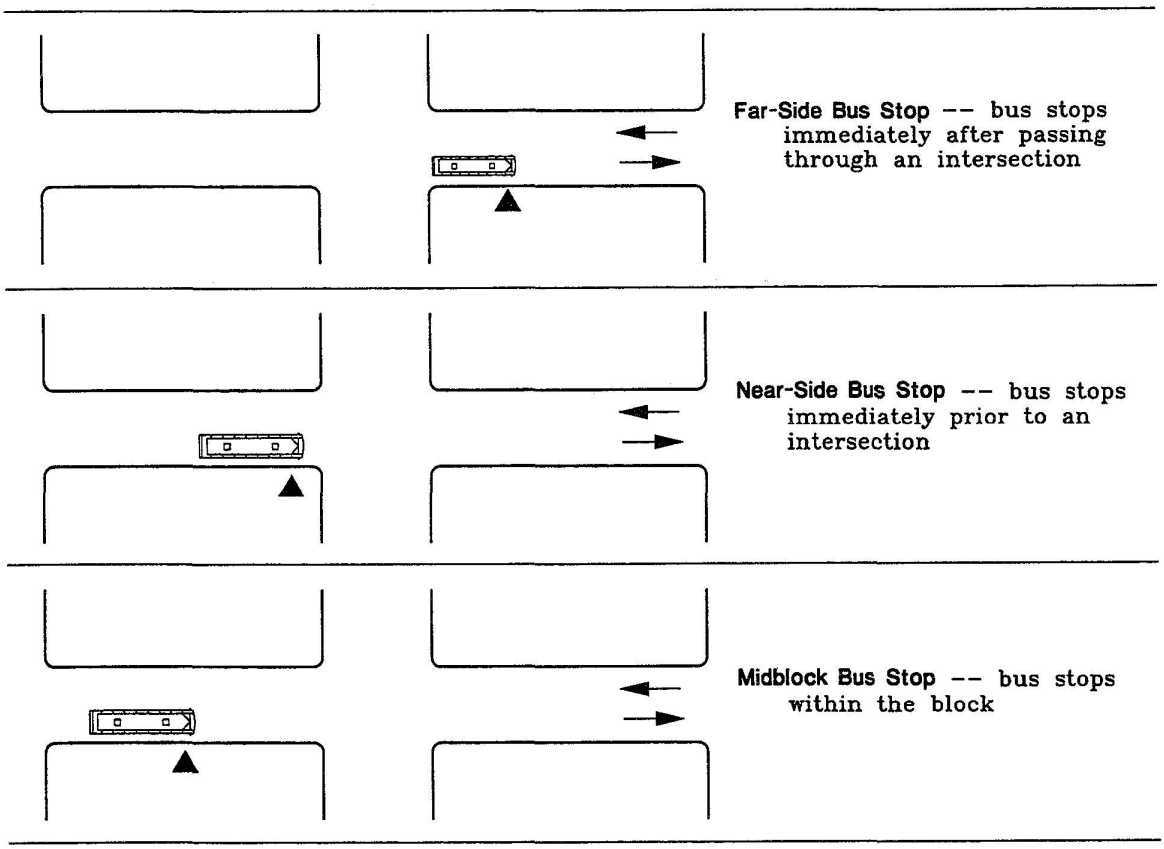


Figure B-2. Bus Stop Locations

Source: Transit Cooperative Research Program, TCRP Report 19

Far-Side Bus Stops

Far-side bus stops are recommended when:

Traffic in the direction the bus is traveling is heavier approaching the intersection than leaving the intersection.
There is a high demand for right turns in the direction the bus is traveling.

The crossing street is a one-way street where traffic flows from left to right.

Advantages of Far-Side Stops

Encourage pedestrians to cross behind the bus.
Minimize conflicts between buses and right-turning vehicles.
Gaps in traffic are created for buses re-entering the flow of traffic at signalized intersections.
Minimize sight distance problems on approaching an intersection.

Disadvantages of Far-Side Stops

Stopping on the far side after stopping at a red light interferes with bus operations and traffic in general.
A bus at a far-side stop obscures sight distance to the right of a driver entering the intersection from the right.
Intersections may be blocked if other vehicles park illegally in the stop, obstructing buses and causing traffic to back up across the intersection.

Mid-Block Bus Stops

Mid-block stops are recommended under the following conditions:

Large transit passenger generators exist and heavy ridership makes the location desirable.
Blocks are long enough to allow adequate distance for the bus to merge into a left-turn lane if required.
There is a median island in the roadway.
Traffic or street characteristics prohibit a near-or far-side stop at an intersection.

Disadvantages of Mid-Block Stops

The removal of curbside parking may be required.
Patrons from a cross street may have to walk farther to board the bus.
Pedestrian jaywalking is more prevalent, resulting in increased friction, congestion and potential accidents.

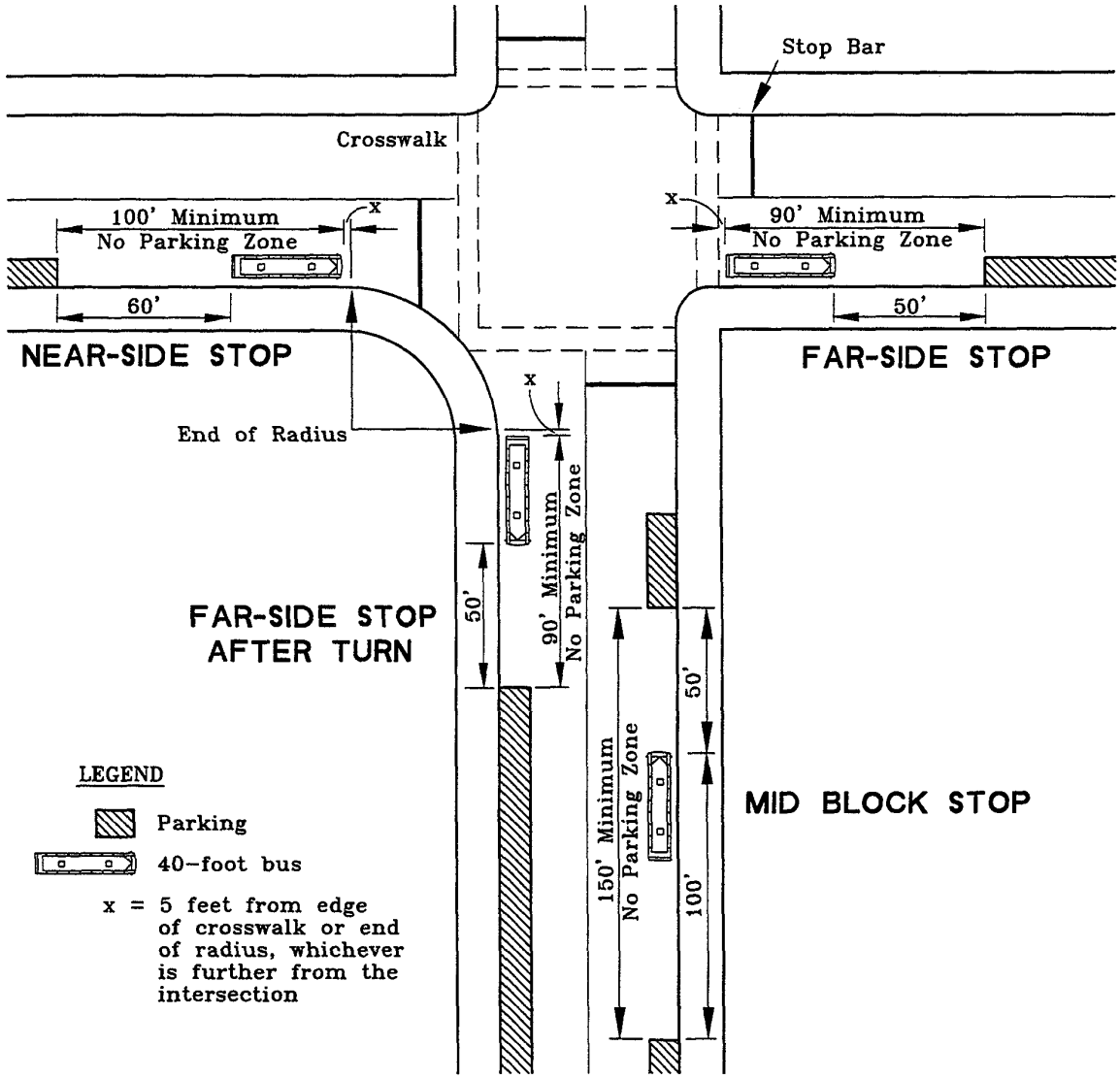


Figure B-3. Bus Stop Dimensions

Source: Transit Cooperative Research Program, TCRP Report 19

Bus Shelters and Pads

Bus shelters provide protection from the elements and a place to sit while waiting for the bus. A shelter also provides greater visibility for bus stops and an area to post route and timetable information, as well as a location for a trash receptacle. Bus shelters should either include lighting or be located in a position with existing lighting, such as under a streetlight.

New or replacement bus shelters must meet the following requirements to comply with the American with Disabilities Act (ADA):

- A minimum clear floor area of 30 inches by 48 inches, entirely within the shelter.
- An accessible connection to the bus stop landing pad.

Additionally,

- bus stop shelters should not be placed on the wheelchair landing pad.
- General ADA mobility clearance guidelines should be followed around the shelter and between the shelter and other street furniture.
- A clearance of 36 inches should be maintained around the shelter and an adjacent sidewalk (more space is preferred.)

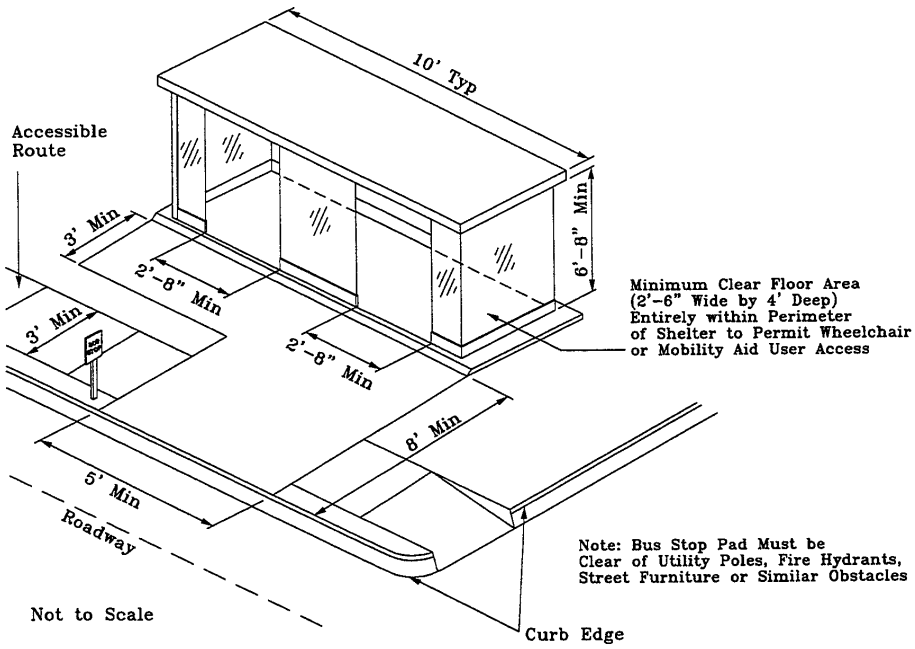


Figure B-4. Accessible Bus Stop Pad & Shelter-Minimum Dimensions

Source: Transit Cooperative Research Program, TCRP Report 19

Bus Stop Signs

Bus stops signs serve as important source of information for passengers and operators. The bus stop sign should be placed at the location where people board the front door of the bus. The bus stop sign indicates where passengers should stand to wait for the bus and also where the operator should position the bus at the stop. The bottom of the sign should be at least 7 feet above ground level and should not be located closer than 2 feet from the curb face. A shared signpost can be used to reduce the number of pedestrian obstructions.

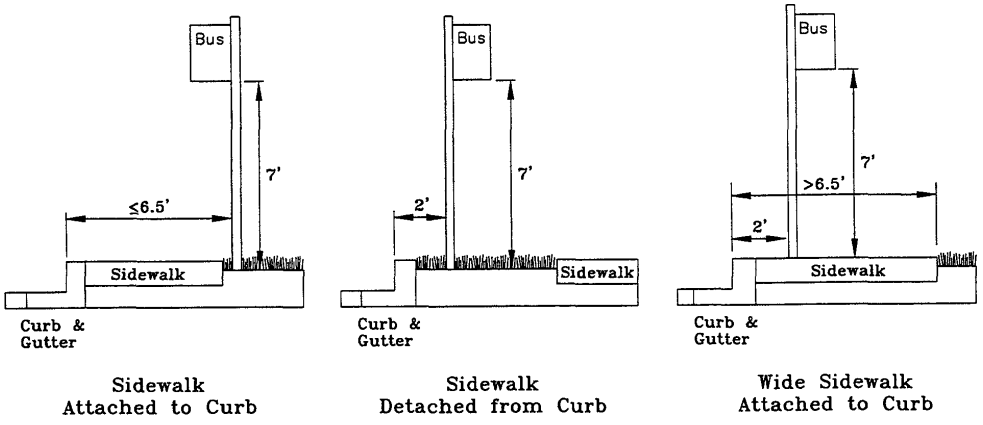


Figure B-5. Guidelines for Bus Sign Placement

Source: Transit Cooperative Research Program, TCRP Report 19

Bus Stop Lighting

The provision of adequate lighting at bus stops is important for safety reasons and to make sure that customers waiting at the bus stop are visible to the bus operator. Ideally, bus stops should be located within 30 feet of an existing light. The City of Sandy also encourages the use of photovoltaic lighting at bus shelters. Whenever possible, bus shelters should also be located to take advantage of the shade of existing trees. If new trees are planted, deciduous trees should be considered to allow for more light during winter months.

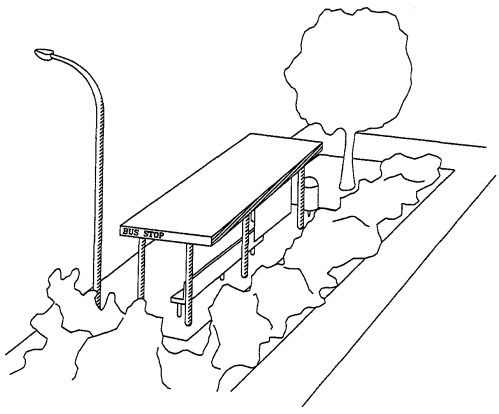


Figure B-6. Example of Shelter Location Coordinated with Existing Street Light

Source: Transit Cooperative Research Program, TCRP Report 19

Bus Pullouts

A bus pullout is a specialized bus stop where a bus can load or unload passengers in an area separated from the traffic lanes.

Safety and traffic flow are important considerations in deciding whether to install a pullout. Pullouts may be helpful on roads that function with higher speeds (over 40 miles per hour) because there is less risk of rear-end collision while the bus is stopped to load or unload passengers. A stopped bus also will not impede traffic flow, which could be a significant advantage for traffic operation on a high-speed road, especially if the stop time is long due to high passenger activity or boardings by persons in wheelchairs. Bus pullouts can also be used as a scheduled layover area. Since any bus pullouts in Sandy are likely to be limited to US 26, ODOT must be consulted regarding current design requirements.

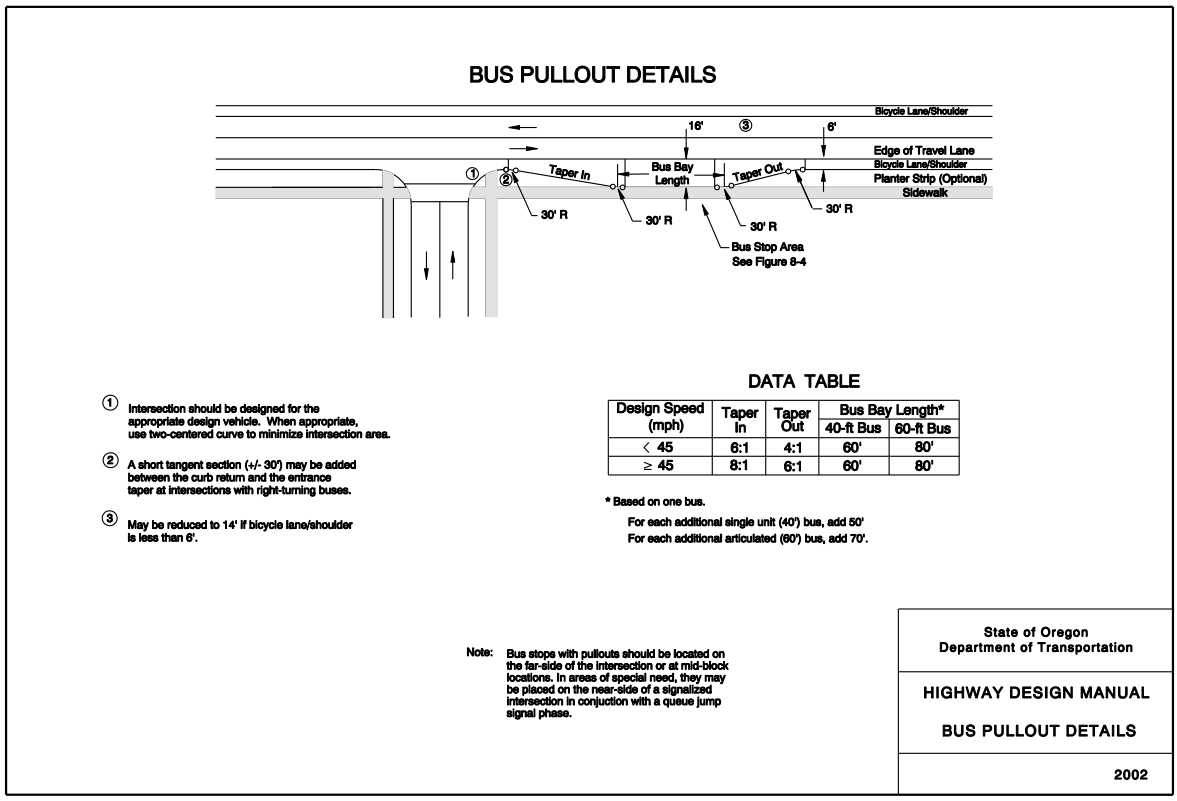


Figure B-7. ODOT Bus Pullout Details

Source: ODOT Highway Design Manual 2003

Although bus pullouts can help maintain traffic flow, they generally add travel time for buses because of delays re-entering traffic.

Bus Bulbs

A bus bulb or curb extension is an extension of the sidewalk from the curb of the parking lane to the edge of the travel lane. A bus bulb speeds up transit service by allowing buses to remain in the travel lane instead of pulling over to the curb at bus stops. It also provides increased safety for pedestrians and transit passengers.

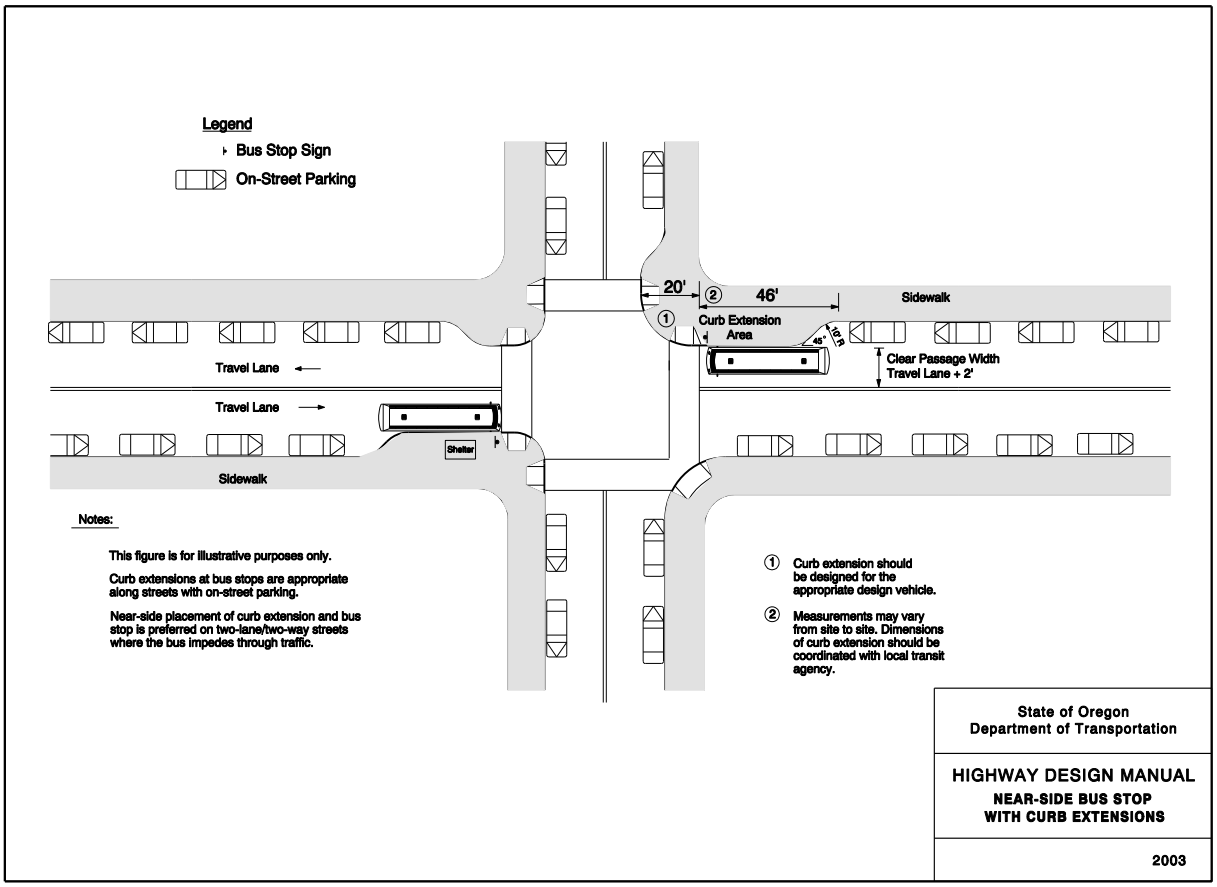


Figure B-8. ODOT Bus Bulb Details

Source: ODOT Highway Design Manual 2003

Queue Bypass

A queue bypass is a short lane used by buses to bypass traffic queues at signalized intersections. The bypass is usually a right-turn lane that allows through travel for buses only.

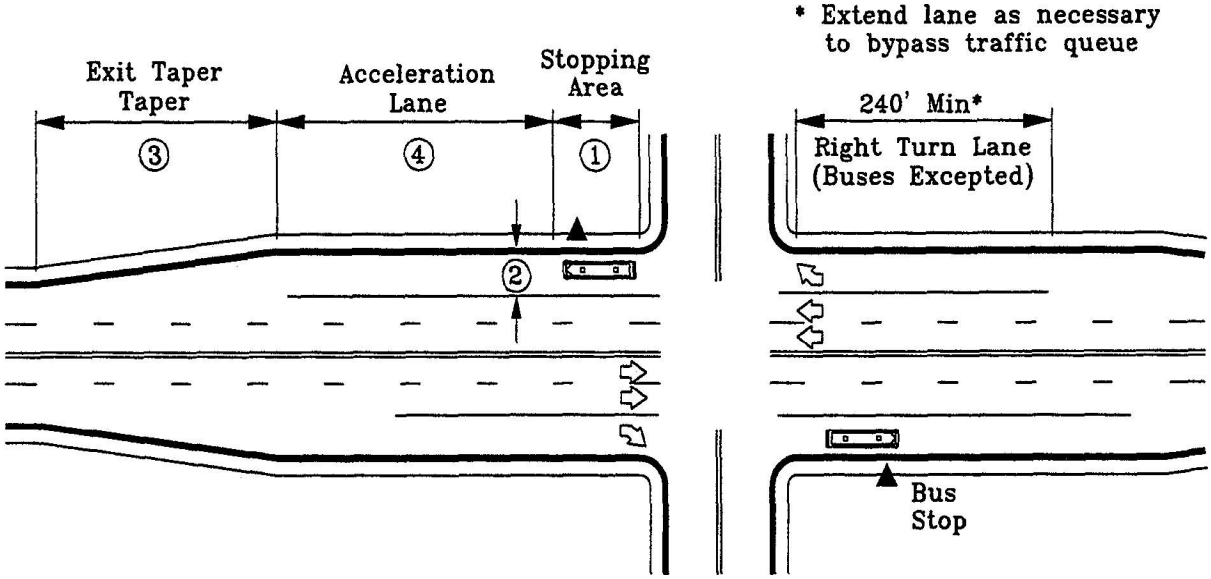


Figure B-9. Queue Bypass

Source: Transit Cooperative Research Program, TCRP Report 19

Transit Access to Development

The design and layout of buildings and developments plays an important role in either encouraging or discouraging transit walking, and bicycling. Buildings that are surrounded by parking lots or give priority to car access are often daunting for pedestrians and bicyclists and preclude safe transit access to building entrances.

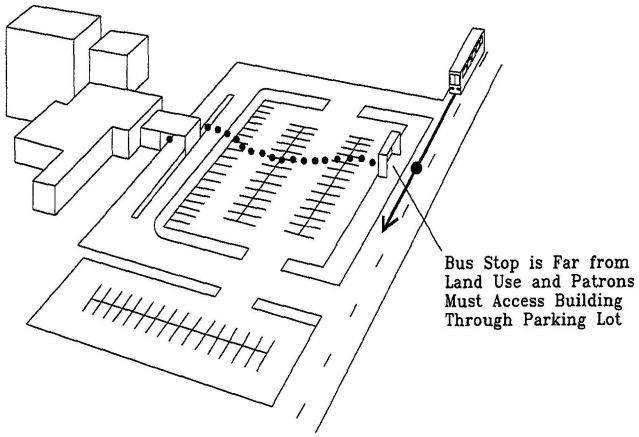
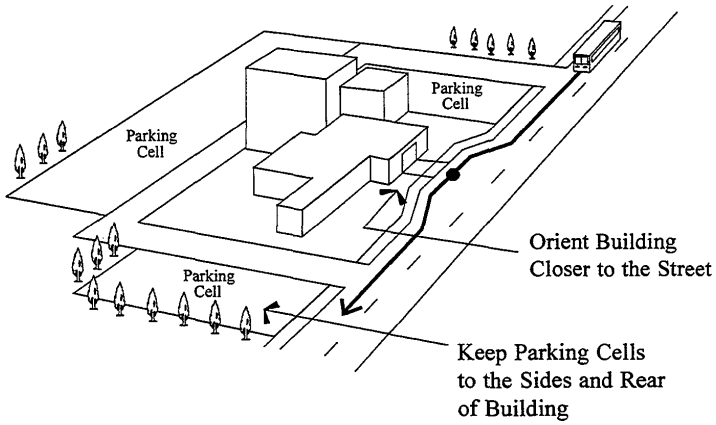


Figure B-10. Transit Access to Development

Source: Transit Cooperative Research Program, TCRP Report 19

Buildings that face the street and provide for short, safe walking distances encourage transit, walking, and bicycling, but can still provide convenient access for automobiles.



Existing sites can also be modified to allow for improved access.