Salem-Keizer Transit Flexible Service Plan

June 2014
Acknowledgments

Paradigm Planning would like to acknowledge the following individuals and groups who helped us with this project:

**Salem-Keizer Transit**
Ted Stonecliffe, Sadie Carney, Allan Pollock, Steve Dickey, Jared Choc, Chris French, Jenny Furniss, and transit operators of Cherriots

**Portland State University**
Sy Adler, Marisa Zapata, Gil Kelley

**Community Organizations**
Kenji Sugahara, West Salem Neighborhood Association
TJ Sullivan, South Gateway Neighborhood Association
South Salem Senior Center
Sunnyslope Neighborhood Association
Faye Wright Neighborhood Association
Southwest Association of Neighbors
Morningside Neighborhood Association
Northgate Neighborhood Association
Greater Gubser Neighborhood Association
West Keizer Neighborhood Association

**The People of the Cities of Salem and Keizer**

**Jarrett-Walker & Associates**

**Also thanks to:**
Roth’s Fresh Market
Annie Battee and Corinne Fletcher, City of Salem
Ryan Farncomb for his advice and expertise
Jamin Kimmell for workshop assistance
Lewis Kelly for workshop assistance
Bureau of Planning and Sustainability
Portland Bureau of Transportation
CH2M Hill

Finally, a special thanks to our friends and families for supporting us through this process.
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Introduction

The Team

Paradigm Planning is a team of Master of Urban & Regional Planning student consultants from Portland State University. The team brings together diverse interests and backgrounds in transportation, land use, policy, and community engagement. Together, the team provides planning and outreach services to develop innovative transit solutions that balance the need for efficiency, coverage, and convenience.

**Darwin Moosavi, Project Manager**
Darwin has a BS in Environmental Policy and Planning from UC Davis. He has experience working on sustainability projects, as well as transportation research projects. He currently works in planning at the City of Portland.

**Brenda Martin, Communications Manager**
Brenda studied political science and communications at UC Berkeley. She worked in local politics in the Bay Area. She currently works as a transportation planner and public involvement specialist for a Portland-based planning firm.

**CJ Doxsee, Research & Data Analyst**
CJ brings a communications background from the University of Colorado to this project. He has a penchant for balancing goals from diverging interests through collaborative processes. He also enjoys volunteering for community-building activities in the local area.

**Mike Sellinger, Executive Editor**
Mike is from Seattle and studied economics and politics at Brandeis University. He subsequently worked in the planning division of Seattle Parks and Recreation. He currently conducts research on active transportation at OTREC.

**Lauren Wirtis, Public Outreach Coordinator**
Lauren grew up in Portland and has a BA in planning and environmental studies from the University of Oregon. She has worked on community-based active transportation projects for transit agencies in Eugene and Portland.

**Matt Berggren, Design Lead**
Matt was born and raised in the Chicago area. He studied public policy at DePaul University, and brings GIS and design skills to the team. He is interested in active transportation, particularly bicycling and public transit.
Introduction

The Client

This plan was produced for Salem-Keizer Transit. The transit agency provides public transit and paratransit service to the Salem-Keizer region in Marion and Polk Counties located in Oregon’s Willamette Valley. Cherriots is Salem-Keizer Transit’s primary fixed-route service, providing over 3.4 million rides a year and connecting people with places through safe, friendly, and reliable service. Salem-Keizer Transit is interested in improving service and increasing accessibility through safety, service excellence, communication, innovation, and accountability.

The Project

Capturing the Ride is an exploration of flexible transportation options for low-density communities in Salem and Keizer. The current transit system does not serve Keizer, South Salem, and West Salem well; each of these communities has areas with limited or no access to current bus routes. The project intends to provide a service that will better meet the communities’ transit needs than the current system.

Over a five-month planning process, Paradigm Planning conducted extensive research and reached out to the public in Keizer, South Salem, and West Salem (herein referred to as the study areas) to determine what kind of flexible transit might work and whether the communities would be receptive to using this service. This report is a comprehensive overview of Paradigm Planning’s process and its set of recommendations for making flexible transit a successful reality in Keizer, South Salem, and West Salem. This set of recommendations will be reviewed by the Salem-Keizer Transit Board of Directors and considered for further action.

This plan contains a glossary that helps explain flexible transit terminology. Take a look at page 65 for definitions.
Cherriots is a great transportation service and just needs a little bit of work.

—Cherriots Rider
What is the Problem?

Over the last half-century, the United States has witnessed rapid and increasing suburbanization. Non-gridded suburban street patterns, low-density neighborhoods, and car-oriented development can be found throughout the nation. In an era of auto-dependence, suburbanization became increasingly prevalent and spread farther outward from city centers as new development occurred. The land use patterns of such suburban developments have made it difficult to effectively serve such areas with public transit. The lack of gridded streets, large residential enclaves, and no through streets make it difficult for riders to get to buses traveling on major roads without walking long distances. In addition, many of these developments lack pedestrian and cycling infrastructure, making automotive transportation a necessity.

Meanwhile, with an aging baby-boomer population in the United States, the country is now facing the largest population of seniors in its history. As of 2010, 13% of the nation was over 65 years-old, and this number will continue to increase over time (Figure 1). This generation of seniors is the same one that led the suburbanization movement over the years. Many of these seniors still call suburban neighborhoods home, even as their personal mobility decreases with age. Concurrently, as urban areas across the country have become increasingly popular for younger and more affluent residents, minorities and low-income populations are being displaced to outer suburban neighborhoods as housing becomes less affordable near city centers.

This results in a new transportation mobility epidemic: auto-oriented neighborhoods are increasingly being inhabited by transit-dependent individuals with mobility restrictions due to not being able to own or operate a car. Furthermore, the Great Recession has meant significant cuts in federal and local funding, cutting transit agency budgets and leading to subsequent cuts in service. Transit agencies are now tasked with the responsibility of figuring out how to serve transit-dependent communities in auto-oriented developments with less funding.

Figure 1. Projected Change in Percent of Seniors in the United States through 2050

Source: Administration on Aging
As seniors continue to age in place, transit improvements are essential to their mobility.

Large lot, single-family homes make up the majority of housing within the three study areas.

The high number of cul-de-sacs and non-gridded streets in Salem and Keizer create obstacles for bus riders in the area.
Why Salem and Keizer?

Suburban Characteristics

Salem-Keizer Transit is no stranger to the issues being faced across the country. Similar to many American cities, Salem’s downtown street network has a grid pattern. However, in Keizer, South Salem, and West Salem the street network becomes disjointed and irregular, with many loops and lollipops and few through streets (Figure 2). The lot sizes are larger, commercial and residential areas are separated from each other, sidewalk infrastructure is lacking, and there are steep hills, inevitably creating auto-dependent communities.

All of these issues have made it difficult to serve Keizer, South Salem, and West Salem with reliable fixed-route service. Buses tend to be one-way loops that run infrequently and are often nearly empty in these areas. Since population density is low in these suburban neighborhoods, an increase in frequency is not a viable solution for low ridership. Rather, these areas need transit service that is demand responsive and connects riders to frequent bus routes.

Figure 2. Street Networks in Salem Neighborhoods and Keizer
Due to a decline in local, state, and federal funding for transit and programs that support and incentivize transit service, Salem-Keizer Transit has been forced to make cuts to service over the last few years. In addition, the aging population in the area has resulted in an increase in CherryLift rides, which have high per-rider costs. As a result, there is less funding available for Cherriots service, requiring additional cuts. The areas that have been hit hardest by the cuts have been the areas with the lowest ridership, particularly Keizer, South Salem, and West Salem. Frequencies have been decreased and routes have been cut. This has created a downward spiral of lower ridership causing service cuts, and service cuts leading to even lower ridership. Additionally, the absence of weekend service in Salem and Keizer creates another barrier to increasing ridership.

The study areas have a lower percentage of minorities and seniors compared to the region. However, these areas are still subject to the issues of aging in place and the suburbanization epidemic. Approximately two-thirds of all Cherriots users are transit dependent. While there may be a greater concentration of these populations in other areas of Salem-Keizer, the transit-dependent populations in the study areas have less access to transit. The fact that a group of riders that need services the most are also in areas that receive the least is an equity concern that Capturing the Ride hopes to address.

Transit-dependent populations rely on the bus system to travel within the city.
Project Mission

Paradigm Planning was charged with exploring mode and route options to develop flexible transit alternatives to current inefficient bus routes in Keizer, South Salem, and West Salem, while meeting the needs of the communities.

The project mission is to create greater accessibility to transit by expanding coverage with flexible transit solutions, while also ensuring that populations that are transit dependent—including seniors, minorities, and people with disabilities—are accommodated.
What is Flexible Transit?

Flexible transit is a type of hybrid transit service that combines elements of fixed-route bus service with those of fully demand-responsive transit (such as dial-a-ride and paratransit). The concept and practice of on-demand service is not new; paratransit has been in place for approximately 40 years. However, flexible transit as a hybrid between fixed-route service and dial-a-ride is a relatively new concept that has been explored by public transit agencies to meet the growing and diverse needs of communities.

Transit agencies commonly define the purpose of flexible transit as providing service in areas that are difficult to serve with traditional fixed-route service for various reasons including demographics, street layout, or community preferences. A primary reason why transit agencies provide this service is because fixed-route service is inefficient and relatively costly in such areas. The benefit is that flexible service can respond to community needs, accommodate the different types of trips people make, and help people who have difficulty walking to a regular bus stop.

Each flexible transit service is unique because of the need to balance predictability and flexibility in response to community values. With flexible transit, buses are flexible in regard to where they can go to pick up and drop off riders. However, they can still maintain some elements of fixed-route service, such as fixed stops and time points. There are a myriad of different types depending on how flexible the route is. Flexibility can vary depending on the size of the zone the bus covers, the type of stops, and what kind of advance notice is required to coordinate on-demand service.
I have ridden the Cherriots bus system since I was very young and now it helps me get to school because we have no car at my house due to my mom being a single mother raising me and my sister, and riding with cherriots has helped. Thank you.

—Cherriots Rider
Process Goals

1. Listen to the Community

Community members have expressed that in the past their voices have not been adequately heard by Salem-Keizer Transit. From the onset of this project, we decided our most important goal was to make sure the community had a say in how transit in their neighborhoods would look. Additionally, we wanted to set a precedent of community engagement that Salem-Keizer Transit could build off of for future projects and decision-making processes.

2. Communicate Effectively

Flexible transit is not a simple concept. Both the number of nuances between different types of flexible transit and the use of jargon to describe most of the features of flexible transit make it difficult to explain and understand. With this in mind, we made it one of our goals to ensure that we were explaining flexible transit in a way that was accessible and informative. We believe proper communication of the concepts was vital to making sure the opinions of the community were informed and meaningful.

3. Create a Comprehensive Study

We sought to develop a comprehensive understanding of flexible transit. We wanted to both read the literature on flexible transit and reach out to transit agencies across the country who have implemented flexible transit in their systems.

4. Develop a Replicable Framework

Finally, we sought to create a framework that other small cities facing similar issues could use to explore flexible transit. A flexible transit system will likely look different in every place it is implemented, but a framework for understanding and assessing the potential of flexible transit can be universal. We focused on community participation as a framework for designing a flexible transit system that placed an emphasis on public engagement.
The purpose of Phase I was to introduce ourselves to the community and gather data about how and why people currently use the Cherriots bus system.

Paradigm took what was learned from Phase I and used it to create flexible transit options that would be brought to the public for the purposes of educating them and getting their initial reaction to flexible transit.

Phase III built off of the community’s responses to the flexible transit options while utilizing best practices to create three options for each of the study areas.

Paradigm considered all of the community input gathered throughout the project while keeping in mind best practices, existing conditions, and feasibility in order to determine our final recommendations.
Phase I: Information Gathering

Community Meetings

We attended three community meetings during February and March 2014. Attendance ranged from 20 to 30 people at each meeting. We introduced ourselves, described the Capturing the Ride project and its goals, and provided information about upcoming events and how the communities could stay up-to-date and involved in the project.

Rolling Roadshow

The Rolling Roadshows were day-long events during which our team rode buses and visited businesses in the study areas. The main purpose of this outreach tool was to introduce ourselves and our project to the community. We spoke to riders and explained the project timeline, how the project could impact them, and why they should be involved. We then collected their contact information and gave them flyers with information about our upcoming workshops. We also posted flyers at local businesses throughout the study areas.

75 people reached

50 people reached
Phase I: Information Gathering

Intercept Survey
We conducted intercept surveys throughout Salem and Keizer. The surveys were designed to gather information about why people did or did not ride transit. The survey split respondents into two categories, transit riders and non-riders, with separate questions for each group.

Online Survey
The first online survey was open for one month and asked respondents about their current use of the Cherriots system, as well as their general transit values and preferences. As with the intercept survey, different questions were asked to riders and non-riders.
Phase I: Information Gathering

Existing Conditions Research

We collected and analyzed information on the three study areas to produce an Existing Conditions Report (see Appendix A). The report collected information on land use, transportation routes and facilities, and the demographic profile of the populations within each of the study areas.

Best Practices Research

Paradigm Planning reached out to transit agencies with flexible service. We interviewed nine agencies in the United States and Canada, and asked them about the type of flexible services they used, cost, performance standards, productivity, technology, marketing and branding, and educational components. Additionally, we consulted eight reports from the Transit Cooperative Research Program (TCRP) on flexible transit. All this information was used to create a Best Practices Report (see Appendix B).
Phase II: Flexible Transit Types

Flexible Types Development

Our research found there were six common categorizations of flexible transit. In order to make these concepts easier to explain to the public, we combined the six forms into two concepts, the Deviator and the Hopper (see Appendix D).

Workshops

We conducted one workshop in each study area. The purpose of the workshops was to introduce participants to and educate them about flexible transit in general, and the Deviator and the Hopper in particular. Attendees rotated among several stations to learn the basic concepts of the two service types. At the end of the events, participants were able to provide feedback through comments and a short survey. A simplified version of the information from the workshops was placed on our website. This gave people who were unable to attend the workshops a chance to learn about flexible transit and provide feedback.
Phase III: Alternatives

Alternatives Development

Based on responses to the Deviator and the Hopper at the workshops and online, we began to formulate alternative flexible transit systems for each study area. This process involved taking what we learned from existing conditions, best practices, and community outreach, and applying it to on-the-ground possibilities. Three alternative transit systems were developed for each study area. Each alternative explored route options as well as the six features of flexible transit: stop type, number of deviations, planning ahead, vehicle type, flexible zone size (or buffer size), and frequency.

We attempted to create alternatives that presented trade-offs among the six features of flexible transit (e.g. larger buffers result in fewer deviations per trip). This helped us understand what mattered most to the community. Additionally, we made it clear that the alternatives were drafts and the final recommendations for the study areas could fall somewhere in between the alternative options. The alternatives and a description of the methodology used to create them were compiled into the Alternatives Report (see Appendix D).
Phase III: Alternatives

Transit Operator Focus Group

A focus group was held with six transit operators to gather their opinions on flexible transit and to learn from their on-the-ground insight. The focus group was structured with an educational component on flexible transit followed by guided discussion with our team. This discussion included nine questions based around values and operating flexible transit. Themes for the discussion included comfort with schedule variability, operations communication, operator responsibilities, and general concerns.

Flexible Transit Transit Open House

An open house was held in the lobby of Salem Courthouse Square to present our flexible transit alternatives for the three study areas and to receive feedback from the community. After an introduction to flexible transit, attendees browsed through the alternatives for each study area and had the opportunity to speak with us about the trade-offs between each of the transit alternatives. Finally, participants were asked to fill out a brief comment card and offer their feedback. We put the information from the open house on our website, providing an opportunity for those who could not attend the open house to submit their comments regarding the alternatives. After the open house, we created the Community Outreach Report to document the community feedback we received throughout our entire project (see Appendix C).
Phase IV: Final Recommendations

Final Recommendations Process

Our final recommendations included a recommendation for each study area as well as a set of recommendations that apply to all of the proposed flexible service routes. The study area recommendations were created by refining or combining aspects of the alternatives. In particular, we drew on the feedback we had received during the Open House. This allowed us to take the characteristics most supported by the community from each of the alternatives and create the final recommendations. The system-wide recommendations drew heavily on our best practices research and community feedback.
Evaluation of Process Goals

Paradigm Planning worked diligently toward achieving our process goals. The first goal, **listen to the community**, was emphasized throughout the project. Given the time constraints of the project timeline, we were pleased with the level of community engagement we were able to achieve. Our team took every possible opportunity to connect with the community and receive their input on the current transit system and the potential for flexible transit. Our main barrier to reaching out to the community was a lack of a base network of community groups linked to Salem-Keizer Transit.

The most innovative aspect of Capturing the Ride was the extent to which Paradigm Planning made an effort to **communicate effectively**. Flexible transit is a complex concept, so engaging the community hinged largely upon our ability to communicate these concepts and explain trade-offs. The team worked to condense the types of flexible transit service as they are described in TCRP reports into the two concepts of the Deviator and the Hopper. When we were able to interact face-to-face with community members to explain flexible transit and trade-offs between alternative systems, the rich level of feedback indicated that the community both understood and could use the language of flexible transit.

We attempted to **create a comprehensive study** of flexible transit systems from across the United States in order to inform our Best Practices Report (see Appendix B) and make subsequent recommendations. This study could help guide other agencies across the country when considering flexible transit options. While the team was able to reach out to nine different agencies operating flexible transit systems, many more could not be reached during a reasonable time frame.

The final goal was to **develop a framework** that other transit agencies who wish to develop a flexible transit system could use. Every community will have unique concerns and values regarding transit, and the flexible transit system design should be customized to reflect community preferences. However, we provided a framework for how to effectively communicate the complex concept of flexible transit to the community through graphics and hands-on teaching.

For a detailed description of the community outreach framework for designing a flexible transit service see Paradigm Planning’s FLEXIBLE TRANSIT OUTREACH GUIDEBOOK.
Transportation is a key thing to have in the modern world. Some people only have the option of the bus.

—Cherriots Rider
The City of Salem should really promote transit on a bigger scale. The people of Salem need to be aware that Cherriots buses are available to them and can make a difference.

—Cherriots Rider
Keizer Overview

The City of Keizer is located just north of Salem. In 2012, it had an estimated population of just over 36,000 people. Since 2000, density has increased 15%, nearly twice the growth rate of the Salem-Keizer region as a whole. Outside of the area along River Road N and the Keizer Station Shopping Center, Keizer is predominantly residential. There is a high number of single-family homes, as well as a few apartment complexes scattered throughout the area. The street network does not follow a grid pattern, and is characterized by many small, disconnected local streets radiating off arterials. The lack of connected streets makes it difficult to serve many of these areas with traditional bus service.

The median household income is the lowest of the three study areas and the share of families in poverty is the highest. Keizer also has the greatest share of minorities and households that do not own a car, and both of these numbers are increasing. There are fewer seniors in Keizer compared to the other study areas, but this number has been increasing.

The lack of pedestrian infrastructure in Keizer makes it difficult to reach bus stops and transit centers.

Many of the intersections in Keizer are large with fast-moving vehicles.

Keizer Overview

<table>
<thead>
<tr>
<th>Keizer</th>
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<tbody>
<tr>
<td>Population</td>
<td>36,402</td>
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<tr>
<td>Area (Square Miles)</td>
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<td>Population Density (Per Sq Mile)</td>
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<td>Median Household Income</td>
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<td>Income Change since 2000</td>
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<td>Youth (Under 18)</td>
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<tr>
<td>Seniors (65 and Over)</td>
<td>13.5%</td>
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<td>Minority (Non-White)</td>
<td>25.4%</td>
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<td>Households with No Car</td>
<td>7.2%</td>
</tr>
<tr>
<td>Families in Poverty</td>
<td>12.2%</td>
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</tbody>
</table>

Keizer Routes

Figure 5. Keizer Bus Routes

Legend

Bus Routes
- Route 9
- Route 14
- Route 18
- Route 19

Keizer
Willamette River
Streets

Source: Salem-Keizer Transit
Keizer Routes

Figure 6. Boardings by Stop in Keizer

Legend

Boardings Per Day
- 1
- 10
- 100

Bus Lines
- Keizer
- Other
- Willamette River
- Streets

Source: Jarrett Walker + Associates
Keizer Routes

Route Descriptions

There are four bus routes in the Keizer study area. Routes 9 and 19 are corridor lines that connect riders from downtown Salem, along River Road, to north Keizer and the Keizer Transit Center, respectively. Both routes have 30-minute headways that are offset, yielding 15-minute service along River Road where the routes overlap. Productivity on both of these routes is above the system average from the AM peak to the PM peak. Routes 14 and 18 are both one-way loops, the former providing coverage to the Kroc Center and south Keizer, and the latter running as a feeder out of the Keizer Transit Center. Both Routes 14 and 18, which run on 30-minute headways, are extremely unproductive, making them good candidates for replacement by flexible transit service.

A frequent service Cherriots bus leaving the Keizer Transit Center on its way to Lancaster.

Figure 7. Boardings by Route in Keizer

Source: Jarrett Walker + Associates
Keizer Route Recommendations
Keizer Route Recommendations

The route recommendation for Keizer includes a flex route starting at the Keizer Transit Center and ending at the intersection of Portland Road NE and Madison Street NE, where it will intersect with a fixed route. The flex route would have a flex zone which extends a quarter-mile off the route in all directions. Activated stops would be placed throughout the flex zone, allowing the bus to deviate off the main route to pick up and drop off passengers that have turned on the activated stops with an advance reservation.

Two buses would run in opposite directions and serve the route with one-hour headways. The flex route would be able to serve at least four activated stops each trip. In addition, the flex route would have fixed stops along the route where riders could get on and off the bus without an advance reservation. Some of the fixed stops would have scheduled time points. Most, however, would have time windows within which the bus would arrive.

Three of the fixed stops would be transfer points to fixed routes: one at Keizer Transit Center, one at the intersection of Dearborn Avenue NE and River Road N, and one at the intersection of Portland Road NE and Madison Street NE. There would also be a fixed stop at the Kroc Center. It is more efficient to have a fixed stop than an activated stop at the Kroc Center because the schedule would need to account for a potential deviation regardless of whether or not the stop was activated. Every time the Kroc Center stop was not activated, the bus would have to sit for a long time to stay on schedule.

In this recommendation, Route A would run with frequent service at around 15-minute headways. Route B and Route C would run at 15- and 60-minute headways, respectively. The flex route would require 28 revenue hours to operate from 7:00 AM to 9:00 PM every weekday.

This flex route, which has many opportunities for transfers, meets the needs of community members who stated they use bus service to connect from home to downtown and other neighborhoods. The areas currently covered by Routes 14, 18, and the upper loop of Route 9 (see page 26) would continue to be served. Additionally, this line would connect the riders of the current Route 18 to downtown more easily and add coverage on and around Brooks Avenue. Paradigm Planning believes this flexible service would be more efficient compared to current one-way loops (Routes 14, 18, and the top of Route 9).

The decision to recommend a single flex route for Keizer was derived from community outreach. Forty-seven percent of community members who attended the open house preferred the single route to the other alternative options. A flex zone with a one-quarter mile buffer from the route provides coverage without overlapping fixed routes and providing redundant service.

Features

- Activated Stops
- Minibus capacity of 22
- 1/4 Mile Buffer
- 1 Hour between buses
- At Least 4 deviations per trip are possible
- Optional activation
While I don’t ride the #1 or #21 bus, I have wondered about the areas in South Salem that are further south of these routes that don’t have easy access to bus stops. I could see where there would be a potential need in those areas.

—Cherriots Rider
South Salem encompasses a number of neighborhoods. For the purposes of this project, South Salem is defined as the area within Salem’s city limits, south of Madrona Avenue S, west of Pringle Road SE (which turns into Battle Creek Road SE), and east of Croisan Creek Road S. This area is home to nearly 40,000 people. Since 2000, population density has increased just over 10%, similar to the growth rate of the region as a whole. The area is primarily residential with a mix of single- and multi-family housing and pockets of commercial development (largely big-box retail stores and strip malls) on Commercial Street SE.

Of the three study areas, South Salem has the smallest share of minorities, households without a car, and families in poverty. However, the share of minorities and households without a car has been increasing since 2000. South Salem does have the greatest share of seniors, with a large concentration in the southeast corner of the study area, and the population is aging in general. The median household income has been decreasing, but at a slower rate than in the Salem-Keizer region.

South Salem has many commercial strips like these along its main corridor on Commercial Street SE.

<table>
<thead>
<tr>
<th>South Salem</th>
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<tbody>
<tr>
<td>Population</td>
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<tr>
<td>Area (Square Miles)</td>
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<td>Population Density (Per Sq Mile)</td>
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<tr>
<td>Median Household Income</td>
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<td>Households with No Car</td>
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<tr>
<td>Families in Poverty</td>
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Big-box retail stores and large parking lots define the character of the commercial corridors in South Salem.
South Salem Routes

Figure 8. South Salem Bus Routes

Legend

Bus Routes
- Route 1
- Route 6
- Route 8
- Route 21

Source: Salem-Keizer Transit
South Salem Routes

Figure 9. Boardings by Stop in South Salem

Legend

Boardings Per Day
- 1
- 10
- 100

Bus Routes

- South Salem
- Other
- South Salem Streets

Source: Jarrett Walker + Associates
South Salem Routes

Route Descriptions

There are four routes in the South Salem study area. Routes 1, 6, and 8 are all corridor lines that connect South Salem to downtown, but each has a one-way loop at its southern end. All of these routes double their frequency during the AM and PM peaks and are consistently productive throughout the day. Route 21 is a one-way loop circulator that provides coverage between Routes 1 and 8 and into the southernmost part of the study area. This one-way loop has a 30-minute headway and low productivity, suggesting it could likely be replaced by flexible transit.

A standard bus shelter in front of the Fred Meyer in South Salem, along Madrona Street SE.

Figure 10. Boardings by Route in South Salem

Source: Jarrett Walker + Associates
The South Salem recommendation is for a flex route that starts at Kuebler Boulevard and Skyline Road S and ends at the South Salem Senior Center on Commercial Road SE. The flex route would have a flex zone which extends a half-mile off the route in all directions. Activated stops would be placed throughout the flex zone, allowing the bus to deviate off the main route to pick up and drop off passengers that have turned on the activated stops with an advance reservation.

One bus would run this route with hour-long headways and it would be able to serve at least five activated stops each trip. In addition, the flex route would have fixed stops along the route where riders could get on and off the bus without an advance reservation. Some of the fixed stops would have scheduled time points. Most, however, would have time windows within which the bus would arrive. Two of the fixed stops would be transfer points, one at Kuebler Boulevard and Skyline Road S, and one at Barnes Avenue SE and Commercial Street SE.

Route D and Route E, would be fixed routes ending in downtown Salem running every half-hour and every 15 minutes, respectively. Route F would provide a connection to the eastern part of the South Salem neighborhood and downtown and would run every hour. The South Salem flexible route recommendation would require 14 revenue hours to operate from 7:00 AM to 9:00 PM every weekday.

This recommendation was favored by participants of the open house. Fifty-six percent of community members who attended the open house preferred this route over the other alternatives. This recommendation provides coverage to the area south of Barnes Avenue SE, while allowing the fixed route to downtown running more frequently for faster trips. The portion of Commercial Road south of Walmart has lower ridership than the portion to the north covered by Route E, so running a flex route service here would allow for greater coverage for more of suburban outer South Salem.

In South Salem, riders reported that they ride the bus mainly to get to work and for leisure activities. The recommendation allows people to either transfer to a fixed route and head downtown, or travel east-west within South Salem. As was discovered through best practices, integration with fixed-route transit is considered critical to designing flexible transit. Well-timed transfers between flexible and fixed-route services at sheltered and safe transfer locations are contributors to success.
I used to take Cherriots to downtown when I lived near a bus stop. Since I moved to Salemtowne, there is no convenient bus stop. Therefore, I have not ridden the bus in almost two years.

—Cherriots Rider
West Salem Overview

West Salem is comprised of the area of Salem that is west of the Willamette River. It is connected to the rest of Salem by a motor vehicle bridge and a parallel pedestrian bridge. These bridges provide the only access points to Salem, which to some extent isolates West Salem from the rest of the city. There are approximately 20,500 people living in West Salem and the population density is the lowest of the three study areas. However, this area is rapidly densifying in relation to the region. Since 2000, the population density in West Salem has increased by 35%. West Salem is composed largely of single-family residential homes with two main retail cores on Wallace Road NW and Edgewater Street NW. There are significant hills throughout the area, creating a barrier to transit access.

In West Salem, the percentages of minorities, families in poverty, seniors, and households without a car all fall between the two other study areas. These groups are concentrated mostly along the north and south edges of the study area. However, West Salem is also the only study area where the population is getting younger and car ownership is increasing. The area also has the highest median household income of the three study areas.

<table>
<thead>
<tr>
<th>West Salem</th>
<th>Population</th>
<th>20,486</th>
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</thead>
<tbody>
<tr>
<td>Area (Square Miles)</td>
<td>6.11</td>
<td></td>
</tr>
<tr>
<td>Population Density (Per Sq Mile)</td>
<td>3,352</td>
<td></td>
</tr>
<tr>
<td>Median Household Income</td>
<td>$62,668</td>
<td></td>
</tr>
<tr>
<td>Income Change since 2000</td>
<td>-2.5%</td>
<td></td>
</tr>
<tr>
<td>Youth (Under 18)</td>
<td>24.6%</td>
<td></td>
</tr>
<tr>
<td>Seniors (65 and Over)</td>
<td>14.2%</td>
<td></td>
</tr>
<tr>
<td>Minority (Non-White)</td>
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<td></td>
</tr>
<tr>
<td>Households with No Car</td>
<td>6.3%</td>
<td></td>
</tr>
<tr>
<td>Families in Poverty</td>
<td>8.2%</td>
<td></td>
</tr>
</tbody>
</table>


Many arterial streets in West Salem lack pedestrian infrastructure.

A pedestrian walking along Edgewater Street NW toward Eola Drive NW.
West Salem Routes

Figure 11. West Salem Bus Routes

Legend

Bus Routes
- Route 12
- Route 22
- Route 23
- Route 24
- Route 25
- Route 25CX

West Salem

Willamette River

Streets

Source: Salem-Keizer Transit
West Salem Routes

Figure 12. Boardings by Stop in West Salem

Legend

Boardings Per Day
- 1
- 10
- 100

Bus Lines
- West Salem
- Other
- West Salem
- Willamette River
- Streets

Source: Jarrett Walker + Associates
West Salem Routes

Route Descriptions

The West Salem study area has five regular bus routes and one commuter route. The commuter line, Route 25CX, only makes three trips in both the AM peak and PM peak and riders use it consistently. Route 12 runs between the north part of West Salem and downtown with 30-minute headways except during midday when it runs every hour. Route 12 is one of the least productive in the Cherriots system, though this could be due to other overlapping routes taking some of the ridership.

Routes 22 and 23 are partially overlapping one-way loops in the northern half of West Salem. One bus is used to run both of these routes, changing between Routes 22 and 23 every time it reaches the Glen Creek Transit Center. These routes run every hour except during midday when they run every two hours. Productivity is quite low on both routes with ridership coming predominantly from West Salem High and West Salem Middle Schools. The area covered by these two inefficient routes could be served instead by flexible transit. Routes 24 and 25 are both downtown connectors from the south part of West Salem and the Glen Creek Transit Center, respectively. Both have 60-minute headways, but overlap heading into downtown, providing 30-minute service. They are some of the most productive routes in the Cherriots system.

Figure 13. Boardings by Route in West Salem

Source: Jarrett Walker + Associates
West Salem Route Recommendations

Legend
- Flex Zone
- Transfer Stop
- Willamette River
- Street

West Salem Route Recommendations

Legend
- Flex Zone
- Transfer Stop
- Willamette River
- Street
The recommendation for West Salem provides a flex route that starts at Glen Creek Transit Center and travels to Gibson Creek Retirement Community where it connects to a fixed route on Wallace Road. The flex route would have a flex zone which extends three-quarters of a mile off the route in all directions (except in certain areas west of Doaks Ferry Road NW due to the street network). Activated stops would be placed throughout the flex zone, allowing the bus to deviate off the main route to pick up and drop off passengers that have turned on the activated stops with an advance reservation.

This bus would have hourly service based out of the Glen Creek Transit Center. The flex route would be able to serve at least three activated stops each trip. In addition, the flex route would have fixed stops along the route where riders could get on and off the bus without an advance reservation. Some of the fixed stops would have scheduled time points. Most, however, would have time windows in which the bus would arrive. Two of the fixed stops would be at each end of route, where there are transfer points to fixed-route service. The West Salem flex route recommendation would require 12 revenue hours to operate from 7:00 AM to 7:00 PM every weekday.

Route G represents a frequent service fixed route that would run every 30 minutes, while Route H would run every hour. These routes are covered by existing routes that have high ridership and would provide access to most of the commercial and community services in the neighborhood. The flex route would be able to connect residential neighborhoods to these more popular routes for residents to reach services or go downtown.

At the open house, West Salem community members’ preferences were evenly split between two of the flexible transit alternatives. One of these alternatives had more extensive coverage, but less frequency than the other. As a result, Paradigm Planning’s final recommendation for West Salem is a hybrid of those two alternatives, and seeks to balance coverage with frequency to meet the varied needs of the community.

In this recommendation, in order to serve a larger three-quarter mile buffer and still offer hourly frequency, only three maximum length (i.e. traveling to the edge of the flex zone) deviations per trip are possible. However, the larger flex zone allows the flex route to reach existing and potential future multi-family housing complexes based on the location of multi-family zoning in the area.
As long as I can have a guaranteed drop off time for work, then I would have no issue with rides taking longer. Not walking a mile or more in the rain before work would be awesome.

—Flexible Survey Respondent
**Introduction**

The following set of recommendations apply to all of the proposed flexible routes in Salem and Keizer. The recommendations were created using information gathered from existing conditions, best practices from other agencies, and community values. These recommendations for flexible transit are categorized by vehicle type, stop type, planning ahead, cost, dispatching and technology, community outreach and education, marketing and branding, and transit operator training.
Vehicle Type

Minibus

Vehicles should be minibuses. Current Cherriots buses would not be able to travel down many neighborhood streets and the community preferred minibuses over vans and taxis. Best practices also indicated that most agencies that provide flexible transit also use smaller buses (usually around 30 feet long), which can maneuver better on smaller streets. Agencies like Winnipeg Transit, Denver RTD, and PRTC all use minibuses because they are able to negotiate local streets better than full-size buses. Over three-quarters of participants in Paradigm Planning’s flexible transit workshops and flexible online survey indicated they were willing to ride in a minibus. With the use of minibuses, transit operators are able to get into residential communities and pick people up closer to their home.

CASE STUDY

Pierce Transit’s Bus PLUS service used minibuses with wheelchair lifts in order to provide service to all residents.

FURTHER RESEARCH

Further research will need to be conducted on the length and capacity of the minibuses. The length of the bus will be limited by the size of the streets the bus needs to travel on, as well as the bus’s turning radius. Bus drivers should be consulted to discuss what streets various-sized buses could travel down. At minimum, the capacity of the bus (sitting and wheelchair) should be equal to the capacity of current CherryLift buses. Salem-Keizer Transit should also look into low-floor buses. Low-floor buses have ramps instead of lifts for wheelchair accessibility, which would cut down on the amount of time it would take for each pickup and allow for heavier wheelchairs.
Transfer Stops

Flexible Route Coordination

The flexible routes put forth in this plan are primarily for connecting riders to high-frequency fixed-route service. As a result, stops that connect flexible service to fixed-route service are essential for flexible transit. These transfer stops are fixed stops and should have schedules that are timed or pulsed to ensure riders are able to transfer between bus routes without long waits. They also provide an anchor point for scheduling the flexible route segment. Transit operators agree that having transfer points that are coordinated with fixed-route services is a critical component to success, especially during peak commute times.

Shelters

Salem-Keizer Transit should make a special effort to create a safe and comfortable environment for riders waiting at transfer stops. This can be done by installing bus shelters with seating and giving riders access to information regarding route schedule and transit agency contact. A majority of flexible services use transfer points and these locations typically have shelters, seating, and other amenities. This is particularly important at transfer stops where riders may wait for extended periods of time.

“Sheltered places are much needed for us elderly and disabled to sit.”

—Cherriots Rider
Flexible Service Recommendations

Fixed Stop Spacing

Compared to regular fixed-route service, there should be fewer fixed stops and they should be placed further apart. This was a common feature among all the transit agencies that Paradigm Planning interviewed because it allows for more flexibility in the deviations. Fixed stops should be placed a minimum of a half-mile apart from each other. Additionally, only some of the fixed stops should have scheduled time points. Most stops should have time windows, which will allow buses to accommodate larger volumes of activated stops before or after reaching each fixed stop.

CASE STUDY

The Minnesota Valley Transportation Authority (MVTA) refers to its scheduled stops as TimePoints and its intermediate stops at FlagStops. On Route 420, the MVTA has three TimePoints (represented by letters along the route), with two FlagStops between each pair of TimePoints.

Further research will need to be conducted on stop spacing. Salem-Keizer Transit should decide which fixed stops will require scheduled time points and which can have time windows.
Activated Stops

Why Activated Stops

Activated bus stops are stops where riders can board or alight a bus, but only with a reservation. In Salem and Keizer, activated stops are preferable to curb-to-curb service. Activated bus stops enable bus routes to be flexible while maintaining some predictability. The community overwhelmingly indicated that they are willing to walk to a bus stop if they could have a smaller wait window. We also heard conclusively from transit operators that activated stops would be preferable to curb-to-curb service. For them, the use of activated bus stops limits the variability in locations served and reduces the amount of planning necessary for the changing route schedules.

Stop Placement

The placement of activated bus stops is a critical element for successful flexible transit. The goal for placing activated bus stops should be to allow riders to reach common destinations such as shopping centers, hospital facilities, office complexes, and senior centers, and to provide transit access to transit-dependent communities and multi-family developments. After prime locations for activated stops have been determined, additional stops should be strategically placed at semi-regular intervals throughout the service area (no closer than a five-minute walk from each other) to take advantage of people’s comfort with walking distances.

CASE STUDY

DART in Winnipeg, Canada, uses activated stops for its flexible lines. Every activated stop is given a stop number, which is represented on maps. When riders call in to activate the stop for their drop-off, they simply have to tell the dispatcher which stop number they want to activate, without needing to provide an intersection.
Activated Stops

Street Network Layout

Street network layout should be considered in order to ensure activated stops can be easily and safely reached by bus, and to avoid unnecessary backtracking for reaching the next destination when possible. To accomplish this, stop locations should be primarily located on streets such as minor arterials, collectors, and local through streets. Local streets without through connections (cul-de-sacs and loops) should be avoided.

FURTHER RESEARCH

Further research will need to be conducted on which streets the buses will feasibly be able to go down. Transit operators with intimate knowledge of the streets will be a good resource.

Signage

Activated bus stops will require some form of signage to indicate the location riders can expect a bus to arrive at. Since there can potentially be a large number of activated bus stops in a service area, Paradigm recommends the use of painted sidewalks or curbs as a cost-effective tool for indicating stop locations. Painted sidewalks or curbs can also provide a limited amount of rider information including transit agency contact information and the route number. Placing shelters or installing signposts can be used in circumstances warranted by ridership, rider requests, or to accommodate special needs.

CASE STUDY

Muni in San Francisco, California sometimes uses spray paint to indicate the location of bus stops.

“MY main personal concern as I get older is the last 5 minutes of my trip. I need to walk up a steep hill from Burley and Glenn Creek to home. Old knees like that work less every day.”

—Workshop Attendee

Source: Eric Fischer
Planning Ahead

1- or 2-Hour Advanced Notice

In order to use flexible transit, riders will need to plan further ahead than with the regular bus system. Paradigm Planning recommends that all flexible service systems require planning ahead of one or two hours. This means that for a flexible service bus leaving at 9:00 AM, requests would stop being accepted at 8:00 or 7:00 AM. Salem-Keizer Transit should advise riders to plan as far ahead as possible, since reservations will be granted on a first-come, first-served basis.

The review of other transit agencies operating flexible transit indicates there is a wide range of requirements for planning ahead, varying from a half hour to three days in advance. Feedback from the community clearly illustrated that people are willing to plan ahead. Approximately two-thirds of respondents are willing to plan at least 1-2 hours in advance, and only 12% are not willing to plan ahead.

10-Minute Wait Window

Riders should be given a ten-minute wait window during which the flexible service will show up at the activated stop. Buses will not be required to wait for riders if they are not at the activated stop during the wait window. The policy for missing a reservation should be the same as the policy used for CherryLift’s reservation system.

In other transit agencies operating flexible transit wait windows typically range from five minutes to a half hour. Through Paradigm Planning’s initial online survey, the community expressed, by and large, that they are willing to wait for buses. However, half of respondents are not willing to wait longer than ten minutes. A ten-minute wait windows strikes a balance between system flexibility and the needs of the community.

“ I usually have to be somewhere at a certain time and usually need to make transfers and plan my transportation ahead so I can keep appointments. You have some good ideas. ”

—Workshop Attendee
Planning Ahead

Subscription Service

Salem-Keizer Transit should implement a subscription service that allows people to schedule recurring trips without having to make a reservation each time. This is especially useful for commuters who will use the service on a daily basis. Subscription services are used by many of the flexible transit systems that Paradigm Planning investigated. Additionally, it is an easy feature to implement and would not substantially alter the cost of the service.

CASE STUDY

Omnitrans’ OmniLink service in San Bernadino, California, has a subscription service for riders making at least three recurring trips a week. Same-day requests can be made as availability allows.

User Cost

No Additional Fee

Some agencies charge an extra fee for deviations on their flexible route services. In the case of Salem and Keizer, Paradigm Planning does not recommend charging extra for flexible service. The purpose of flexible transit in this region is to create greater transit accessibility, especially to transit-dependent individuals, and to offer a larger coverage area. Instituting an extra charge for deviations would take away from achieving this goal. Additionally, keeping this service the same price as regular Cherriots service could better help attract new transit users. The price difference between this service and CherryLift may also incentivize individuals who are CherryLift eligible but capable of using the flexible service to use flexible service instead of CherryLift when possible.

“Most of the people who ride the bus are already low-income, so raising fares would be wrong. If you raise fares too high, it will make the entire system inaccessible for many.”

—Cherriots Rider
Dispatching & Technology

Calling for Reservations

Paradigm Planning collected data on how riders currently get information about Cherriots and what technology they have access to. The majority of riders receive information on Cherriots from the website. Less often, riders gain information through the Cherriots call center or from flyers on the buses. The majority of respondents have Internet access at home with fewer having access at work or on their phones. Not surprisingly, then, in order to make flexible transit reservations community members preferred speaking to a person on the telephone or making reservations on a website. Developing a smartphone app should not be a priority, since only about 35% of the community said they would use it. Instead, Salem-Keizer Transit should focus on training call center and dispatch staff to field calls for flexible transit service.

If calling is the main method of making reservations, the number of employees working at the call center will have to be increased. Call center employees will need to be educated on how to negotiate reservation times and locations for people activating stops. Although most people said they preferred to talk to a live person, an automated call system might be a good addition to this service for people who have become comfortable with making reservations.

“ I’d rather talk to a person than a computer any day. ”

—Cherriots Rider

Real-Time Tracking

Paradigm Planning recommends providing real-time tracking of buses on flexible routes. One downside of flexible transit is that there is more uncertainty about when a bus will be at a stop. One way to counteract this uncertainty is with the real-time tracking of buses. By allowing riders to call in or text a service to determine how far away their next bus is, they will have the certainty of knowing their bus is on the way and that they did not miss it. Paradigm found that about two-thirds of riders in the study areas have texting on their phones. Since most riders do not have smartphones, an app for tracking would not be crucial at this time.
Routing using CAD

A computer-aided dispatch (CAD) system should be used for creating routes. Computer-aided dispatch allows for quicker route creation, easier communication of routes to the bus drivers, and it makes real-time bus tracking possible. Real-time scheduling and dispatching tasks become especially important when the system has to handle a large volume of requests. When calls are not answered, service requests cannot be accommodated, trips are missed, and riders are discouraged from using the system.

Salem-Keizer Transit should also install mobile data terminals (MDT) on their buses. This makes it possible to send routes to bus drivers, as well as last-minute notifications. It also helps bus drivers navigate streets they are less familiar with.

If using a CAD is not possible, it is also possible to rely on the dispatcher to create routes, and then communicate those route changes to bus drivers over their two-way radios. However, this would be a much more cumbersome and time-consuming way of communicating routes to the bus drivers. More resources would likely need to be dedicated to coordinating the dispatch of flexible transit.

CASE STUDY

St. Joseph Transit uses RouteMatch for scheduling and dispatch. They also have three part-time dispatchers that rotate shifts. These dispatchers process reservation requests and help determine which route each trip should be on. Bus drivers have mobile computers on the buses that tell them where to go. If a deviation is requested while a bus driver is out on his or her route, a notification will be sent to the driver alerting them of the new deviation. Additionally, bus drivers will use the radio system to ask questions.
Community Outreach and Education

Paradigm Planning recommends continuous education and outreach to the community for flexible transit. Community outreach includes education on the reason and need for flexible transit service, and most importantly, how to use it. Paradigm Planning began this process during the Capturing the Ride project, and it is recommended that Salem-Keizer Transit carry forward similar community outreach while incorporating education on flexible transit.

Salem-Keizer Transit should expect an initial increase in rider complaints after implementing a flexible transit service. Several transit agencies that have implemented flexible transit reported an increase in rider complaints. However, these agencies also reported that complaints returned to a normal level as the community became comfortable with the service. Thus, Salem-Keizer Transit should remain patient when evaluating early public feedback. The use of outreach and education during the planning phases of flexible transit can minimize community pushback. Riding flexible transit is a different experience than riding a traditional bus and will take some adjustment for users.

Outreach and education will also be crucial in understanding how riders feel about the system once its launched. Engaging riders, especially in the pilot phase, can help inform changes that may help make the service better serve the community’s needs once they have had a chance to test out the system.
Marketing & Branding

Flexible transit is commonly distinguished with a particular type of branding. Branding is commonly recognized as an important aspect of attracting new riders. Paradigm Planning recommends the new system should be branded as part of the Cherriots transit service, but establish that this service is different and offers more service than a regular Cherriots bus. The reason for not establishing a stand-alone service, such as RED Line, is due to the integration with and dependence on the network of routes provided by Cherriots service. Branding names such as Cherriots+ (CherriotsPLUS) or Cherriots FLEX would help users associate the flexible service with the overall system while also showing that there is an additional service element.

Paradigm Planning also recommends that Salem-Keizer Transit create an easy-to-understand guide for riding flexible transit. Research from best practices found the most common materials suitable for marketing flexible transit include presentations, websites, route maps, and system maps. Less common marketing mediums include paid ads, bus ads, and mailings.

CASE STUDY

The Minnesota Valley Transportation Authority (MVTA) integrates its flexible lines into its system-wide maps. Flex routes are shown with flex route deviation areas around them.
Paradigm Planning recommends that Salem-Keizer Transit provide special training and consult their staff, schedulers, and drivers during the planning and implementation of flexible transit. During a focus group with transit operators, Paradigm found that transit operators were enthusiastic to learn about and contribute to the successful operation of flexible transit. Education on flexible transit can be administered through a training program similar to the one already in place for CherryLift drivers.

Salem-Keizer Transit should anticipate that some operators will not be aware of what flexible transit is and what its benefits are. Best practices research suggests that staff often need to be educated on the value of providing flexible service. This commonly takes into account how flexible services are used to help conserve the budget in a constrained funding environment while providing a service that increases coverage and adapts to riders needs.

Salem-Keizer Transit should consult transit operators on the design and operation of flexible transit service. Transit operators offer many years of experience, and consulting them will provide a unique perspective due to their on-the-ground operations. Overall, operators interviewed during the focus group felt comfortable at the prospect of operating flexible transit and were able to assist in the identification of barriers to safety and efficiency. Operator feedback during and after a pilot project will also be beneficial in identifying and rectifying issues for system wide improvements.
Further Consideration

Through the outreach efforts and research for this project, several other system-wide issues were identified that may inhibit flexible transit from reaching its full potential. Addressing these issues would help the Salem-Keizer Transit system as a whole become more complete, but would not be essential to implementing flexible transit.

Weekend Service

The lack of weekend bus service was a point brought up by the community throughout the planning process. It is clear that weekend service should be a major priority for Salem-Keizer Transit and that reinstating the service would help increase ridership, likely making flexible transit more successful. Additionally, non-riders of Cherriots repeatedly mentioned that weekend service would make them more likely to ride Cherriots.

“Try to get Saturday service first in some form. If we do anything else I can see a backlash from the public.”

—Cherriots Rider

Pedestrian Infrastructure

The lack of a complete network of pedestrian infrastructure in some residential areas of Salem-Keizer may prevent people from reaching transit service. While participants did not identify infrastructure as one of their main concerns, the lack of sidewalks and crosswalks on certain streets will make flexible transit service difficult to implement in some neighborhoods.

RED Line

Since flexible transit mimics some of the characteristics of the RED Line, it may make parts of the RED Line or all of it unnecessary. Resources could be potentially be redistributed to flexible transit in order to run the service more frequently.

Flagging

Salem-Keizer Transit may also want to consider allowing ‘flagging,’ in which users of the system can signal the bus to stop at any point. However, this may be a safety issue in places and put more stress on the drivers.
Implementation

The purpose of a pilot project is to test flexible transit in one area in order to determine if flexible transit could succeed system-wide. Paradigm Planning found it was common for transit agencies to implement flexible services through pilot programs with probationary periods between one and three years. Furthermore, Cherriots bus drivers said that they preferred a pilot project.

If Salem-Keizer Transit needs to minimize the up-front costs of the system for the pilot project, some modifications to the aforementioned flexible service recommendations can be made. Specifically, if purchasing new low-floor vehicles is too expensive, current CherryLift vehicles could be used instead. Additionally, if CAD technology is not available to communicate routes to flexible transit drivers, handwritten maps and two-way radios could be used. Dispatch would radio the flexible transit driver and tell him or her which stops had been activated.

Where to Locate It

Paradigm Planning believes a pilot project should be located in the study area where it would be most likely to succeed. This should primarily be determined by two criteria: community demand for flexible transit (including the existence of transit-dependent populations and preferences expressed during community outreach), and flexible transit’s ability to make the study area’s routes more efficient.

Ultimately, Paradigm Planning believes flexible transit could be successful in any of the three study areas. Further research and cost considerations will be necessary to choose a location for the pilot project. Salem-Keizer Transit should consider the strengths and weaknesses of each study area discussed in the following sections.

Keizer

Keizer has a population that could be better served by flexible transit along the proposed route. There is a substantial transit-dependent population as indicated by the growing minority population, the highest share of families in poverty, and the increasing rate of carless households. Keizer currently has the smallest share of senior population, but the population has been aging at a rate that is faster than in the Salem-Keizer region as a whole.

The area also has the potential to be served more efficiently with the proposed flexible transit service. Density in Keizer is the greatest of the study areas and it has increased at twice the rate of the Salem-Keizer area since 2000. This creates a better environment for supporting public transit. However, there is a chance that demand would be too high for effective flexible transit service.
Pilot Project

South Salem

South Salem could also support a successful pilot project. The area has the greatest number of wheelchair boardings, the largest share of elderly population, and the overall population is aging. The current share of carless families is the lowest of the study areas, but car ownership is decreasing. South Salem also has the lowest share of minority populations and families in poverty of any of the study areas.

West Salem

Flexible transit could also be a useful tool in West Salem. However, West Salem demographics do not indicate that there are large populations in need of flexible transit in the area. West Salem has the highest median household income and the lowest population density of any of the study areas. The population is getting younger and car ownership is increasing. Thus, it is hard to make a case for large amount of demand for this service beyond the existing riders and transit-dependent populations along inefficient routes.

West Salem, however, has the largest number of inefficient routes (Routes 22, 23, 24, and part of Route 12 which collectively serve 176 riders daily). These riders may be more efficiently served by the proposed flexible transit service.
Evaluating Success

Performance metrics among transit agencies varied widely. The most commonly used metric was passengers per revenue hour. However, this will likely not be the final determinant of success. The primary purpose of flexible transit is not high ridership, but rather coverage and service to transit-dependent populations that would not otherwise have access to transit. Therefore, the best way Salem-Keizer Transit can measure success of its flexible transit service pilot project is by explicitly defining the objectives and goals of the service (e.g. coverage) and then determining whether these goals are being met. The achievement of such goals is best monitored by talking to the community themselves, preferably through multiple avenues. Overall, the evaluation of success will be specific to the service and the population, and will be best informed by qualitative rather than quantitative data.
The need for innovative alternatives to traditional bus service in suburban areas has never been so crucial. Suburban street patterns and increasing sprawl continue to cause issues that preclude efficient transit service. Concurrent demographic trends such as aging in place and the suburbanization of poverty continue to add to the problem.

These problems can all be addressed by a project like *Capturing the Ride*. Flexible transit helps overcome land use barriers in suburban communities while giving community members access to efficient transit service. In the post-Great Recession era of transportation budget cuts, such services help provide transportation options that are specifically aligned towards community needs, provide similar levels of service to fixed-route buses, while using resources efficiently so as to not raise agency costs. *Capturing the Ride* opens up an opportunity for Salem-Keizer Transit to better serve the transit needs of the Salem-Keizer region.
**Activated Stop:** A type of bus stop where riders can board or alight a bus, but only when requested ahead of time. Riders will contact the transit agency and be given a wait window. The next available bus will then be rerouted to that location.

**American Disabilities Act (ADA):** The American Disabilities Act of 1990 is a civil rights law that prohibits discrimination based on disability. In regard to transit, it mandates that transit agencies provide paratransit everywhere where fixed-route transit is offered.

**Arterial:** A high-capacity road. Arterials typically carry less traffic than highways but more than local streets.

**Cherriots:** Cherriots is the name of the fixed-route transit service provided by Salem-Keizer Transit.

**CherryLift:** CherryLift is the name of the paratransit service provided by Salem-Keizer Transit.

**Computer-aided Dispatch (CAD):** A method of dispatching buses with the assistance of computer software. The software can be used to send, store, and retrieve data to or from Mobile Data Terminals (MDT).

**Demand-Responsive Transit:** Transit that operates in response to calls or requests from riders. Transit operators receive the request, who then dispatch a vehicle to pick up riders and take them to their destinations. These vehicles do not operate on a fixed route or fixed schedule and typically pick up several passengers at different locations before taking them to their respective destinations.

**Deviated Fixed-Route:** A type of flexible service where buses have a regular route and make some regular stops, but can also go off of the route, when requested, to pick up and drop people off.

**Deviator:** A variation of flexible transit service that Paradigm Planning created to represent flexible transit service that is closer to fixed-route transit. The Deviator has a regular route with fewer fixed stops that fixed-route service and even fewer time points. The Deviator can deviate off of its regular route within a given zone to pick up and drop off passengers according to reservation and, when possible, upon request. *(For more information regarding the creation of The Deviator see Appendix D).*

**Fixed-Route Transit:** Fixed-route transit is a type of transit where vehicles have a consistent predetermined route and schedule. This is the traditional bus service offered by transit agencies.

**Flex Route:** A transit service that has elements of both fixed-route service and flexible service. It will have some fixed stops, a few of which are time points, and will also serve on-demand stops (activated or curb-to-curb) that are made by reservation.

**Flex Zone:** The zone surrounding the flex route. Within this zone, riders may make reservations to be picked up and/or dropped off by flexible service.

**Flexible Transit:** This is an umbrella term for any type of transit that falls between fixed route and fully demand-responsive transit.

**Headway:** the time interval between buses at a given location. For example a 60-minute headway indicates that a bus will arrive at a stop on that line every 60 minutes.
**Hopper**: A variation of flexible transit service that Paradigm Planning created to represent flexible transit service that is closer to dial-a-ride. The Hopper has no regular route. Instead, its route is based upon the most efficient way to allow for picking up and dropping off passengers within a given zone. Pick ups and drop offs are available upon reservation and, when possible, upon request. (For more information regarding the creation of The Hopper see Appendix D).

**Intermediate Stop**: A type of bus stop where a bus will arrive within a designated time window rather than at an exact time. For example, a bus will arrive between 9:10 and 9:20. Riders can board or alight at these locations without a reservation.

**Local Through Streets**: Local streets with connections to arterials and collectors.

**Loops and Lollipops**: A street pattern characterized by cul-de-sacs (loops) set at the end of neighborhood streets (lollipops), creating the circuitous street network that often characterizes suburban development.

**Minibus**: A bus that is smaller than a full-size bus and can seat up to 30 passengers. Minibuses can travel on more narrow streets than full-size buses.

**Mobile Data Terminal (MDT)**: A mobile computer used on buses and other commercial vehicles to communicate with a central dispatch center. They can be used to display mapping and information necessary for operating buses.

**Paratransit**: This is a type of transit service specifically designed for people with disabilities. It is often provided in the form of demand-responsive transit.

**Point Deviation**: Transit that provides service to all points within a corridor or service area, making scheduled stops at fixed bus stop locations. This type of service does not follow a fixed route because the path is determined based on the requests of riders within the zone.

**Pulse**: A pulse occurs when buses from multiple routes have concurrent layovers to allow for easy transfers between routes. The Cherriots system uses pulses at all of its transit centers.

**Schedule Stop**: A type of stop where a bus is planned to arrive at regularly scheduled intervals. Schedule stops are the traditional type of stops where riders can board or alight spontaneously.

**Time Point**: This refers to a scheduled time for a bus stop. For the proposed flex routes in this plan, some stops will have time points and some stops will have time windows.

**Transit Dependant**: A term for individuals whose only means of transportation is public transit (often due to a lack of access to a car, or physical mobility restrictions). Certain populations such as low-income individuals, minorities, and seniors are more likely to fall into this group.