

Central Salem Streetcar Feasibility Study



Final Report

Prepared for
Salem Streetcar Committee
February 2005

- Amtrak Station
- Service Track
- Proposed Maintenance Facility

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URS

ACKNOWLEDGEMENTS

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EXECUTIVE SUMMARY

Overview

In Salem, streetcars have long been a part of the city's heritage – horsedrawn streetcar lines were in place in 1889, before electric powered vehicles were available. In 1890, the Capitol City Railway Company installed the first electric streetcar lines, and by the early 20th century the streetcar system in Salem had grown into an extensive network of lines. Like most streetcar systems throughout North America, by the mid-1920's Salem's system of electric streetcars had been replaced by other modes of transportation.

Today many of the basic community and economic development principles that fueled the development of early streetcar lines are being revived. A focus on street-front retail, development of core city retail and services, restored demand for living in close-in pedestrian friendly mixed-use neighborhoods and convenient access to transportation are among the factors that have restored interest in streetcar transit. In planning for future economic growth and redevelopment in downtown Salem, streetcar has arisen as an alternative to support local circulation needs and to help codify new development in transportation efficient manner.

Key destinations within the core area that could benefit from streetcar service for improved circulation include:

- The Historic Downtown, including the many retail establishments and Salem Center;
- The State Capitol Mall;
- Willamette University;
- Salem Hospital;
- The Civic Center, including City Hall and the public library; and
- Regional transportation hubs, including the Amtrak Station and the Courthouse Square Transit Center.

While there are obvious advantages in developing a streetcar in downtown Salem, this report is designed to answer a num-

ber of critical questions about the feasibility of implementing such service. These questions include:

- Are there one or more alignments that serve the transportation needs of downtown and are feasible from an engineering perspective, given the limitations of overhead walkways, railroad crossings, utility conflicts and other physical limitations?
- What is the market for housing, retail and other commercial redevelopment in the downtown area?
- What is the potential for economic development associated with the implementation of a streetcar route?
- What would the potential ridership be on a streetcar route and how would this effect current bus ridership?
- What would the capital and operating costs be for such a route, and what are the available funding sources for construction and operation, including both public and private sources?

Streetcar Characteristics

Streetcars offer some unique benefits that are spurring cities throughout North America to invest in this technology. The following characteristics, along with others, are detailed in the report:

- Streetcars generally attract at least 15 to 50 percent more riders than bus routes in the same area. In many cases, the difference in ridership is much higher.
- Streetcars often attract private funding. Property owners are often willing to financially contribute to a streetcar system because they realize the value that a streetcar brings to their property and to the neighborhood.
- Similar to other street-running modes, streetcars are generally focused on serving destinations within a neighborhood, not just moving through it rapidly.
- Streetcars provide a visible and easy to understand routing which attracts new users.
- Streetcars attract both a visitor market and a local user market to transit.

- Streetcars catalyze and organize development.
- A number of cities with more recent streetcar investments credit the streetcar with catalyzing infill development.

Lessons Learned from Other Systems

More than a dozen North American cities have streetcar systems that have either been expanded or begun operation in the past 15 years. In addition, at least twice as many other cities have new systems or new lines under active planning. The primary advantages of streetcars are the ability to add a visible rail system at a minimum capital investment, and the ability to create a circulator that connects into a high capacity transit network without requiring additional extension or expansion of the more expensive high capacity mode. Streetcars are also popular because they are a good fit for densely developed, pedestrian-oriented, urban neighborhoods. Successful new systems in the Northwest cities of Portland, Oregon and Tacoma, Washington have been an impetus for new streetcar projects in many other North American cities.

As part of this report, several cities with streetcar systems in place were researched. From this research it is possible to derive common characteristics of streetcar lines, evaluate the conditions that contribute to successful streetcar implementation and estimate patronage. Peers in the Salem area include Portland, Tacoma and Seattle. All of these streetcars operate in larger cities and denser environments or connect to major regional transit systems. Smaller city peer systems reviewed in this study include:

- Astoria, OR
- Charlotte, NC
- Galveston, TX
- Kenosha, WI
- Little Rock, AR
- Memphis, TN
- Tacoma, WA
- Tampa, FL
- Tucson, AZ

Identifying Potential Streetcar Alignments in Salem

The development of potential alignments began with a review of existing transportation, land use and economic development plans. Key barriers and constraints in the downtown area were identified and redevelopment plans reviewed to determine where new development is likely to occur over the next five to ten years. The Nelson \ Nygaard team developed three potential streetcar alignments in conjunction with the Project Advisory Committee, the Rail Streetcar Committee and Salem-Keizer Transit (SKT) staff.

Figures ES-1 through ES-3 show the three potential streetcar alignments studied in this report; Figures ES-4 and ES-45 provide a summary of proposed alignment characteristics.

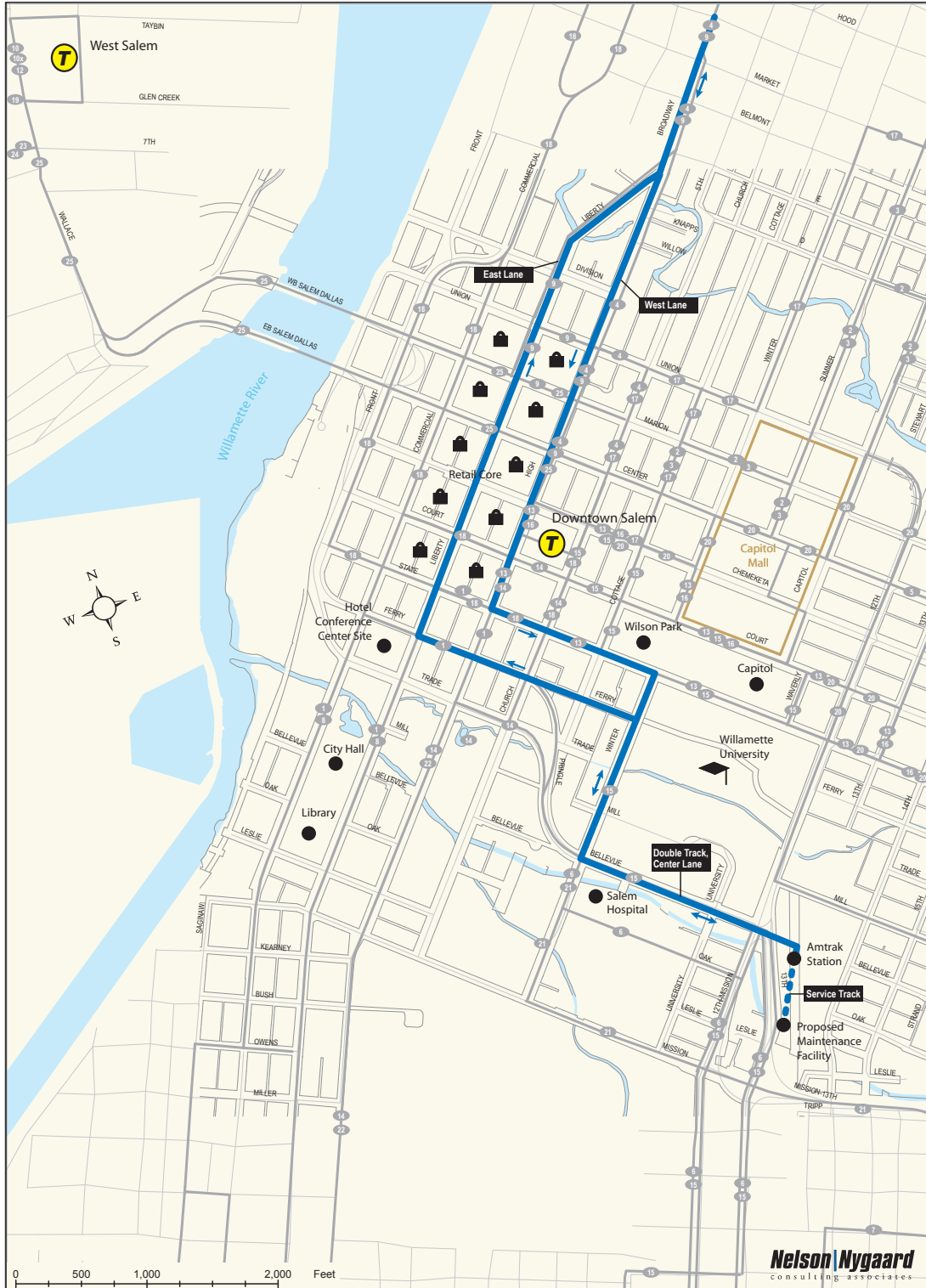


Figure ES-1:
Salem Streetcar Alignment #1

- Legend**
- Shopping Areas
 - Universities
 - Key Sites
 - Alignment #1
 - Existing Bus Routes

Base Map Data Source: City of Salem

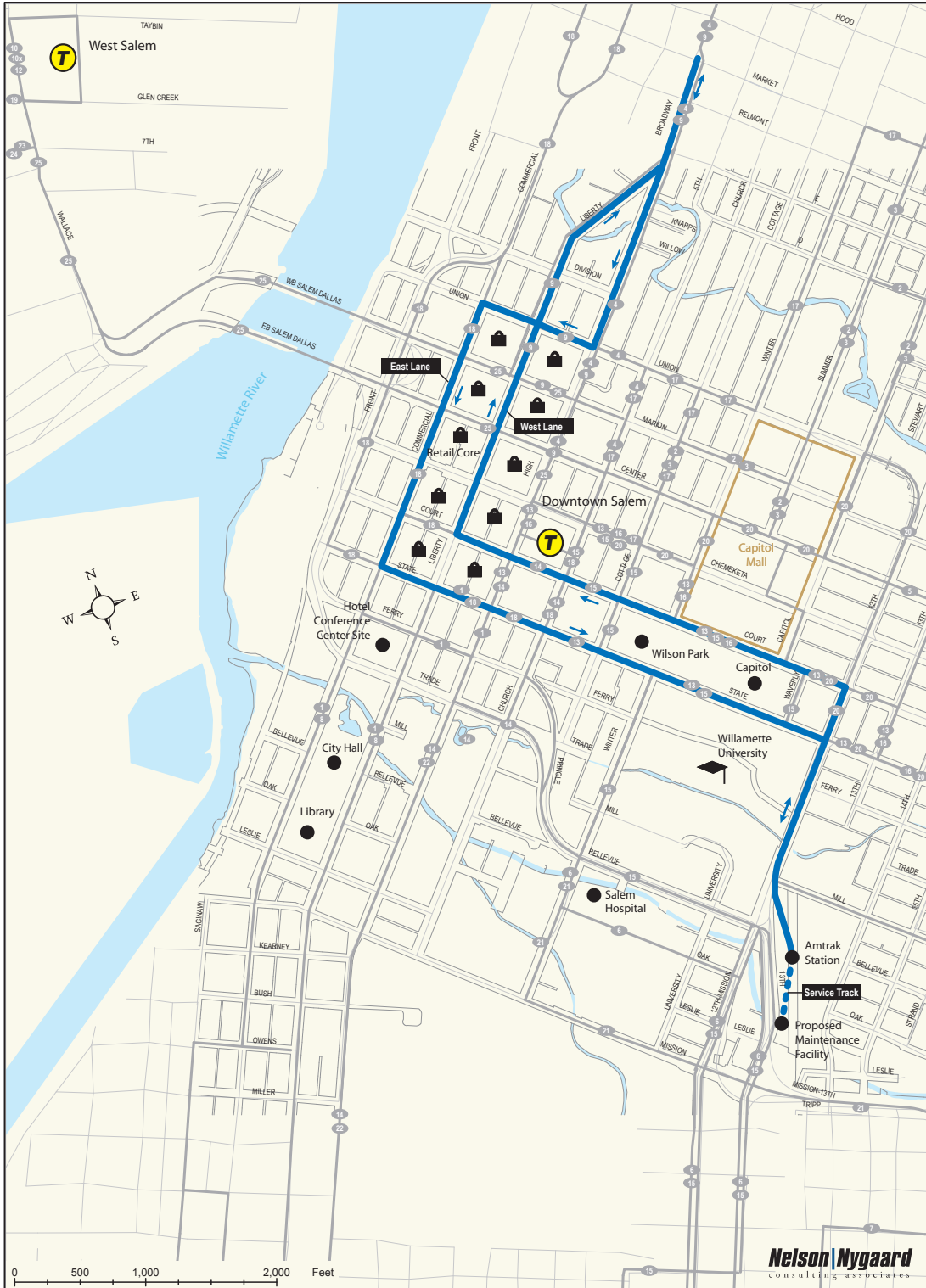


Figure ES-2:
Salem Streetcar Alignment #2

- Legend**
- Shopping Areas
 - Universities
 - Key Sites
 - Alignment #2
 - Existing Bus Routes

Base Map Data Source: City of Salem

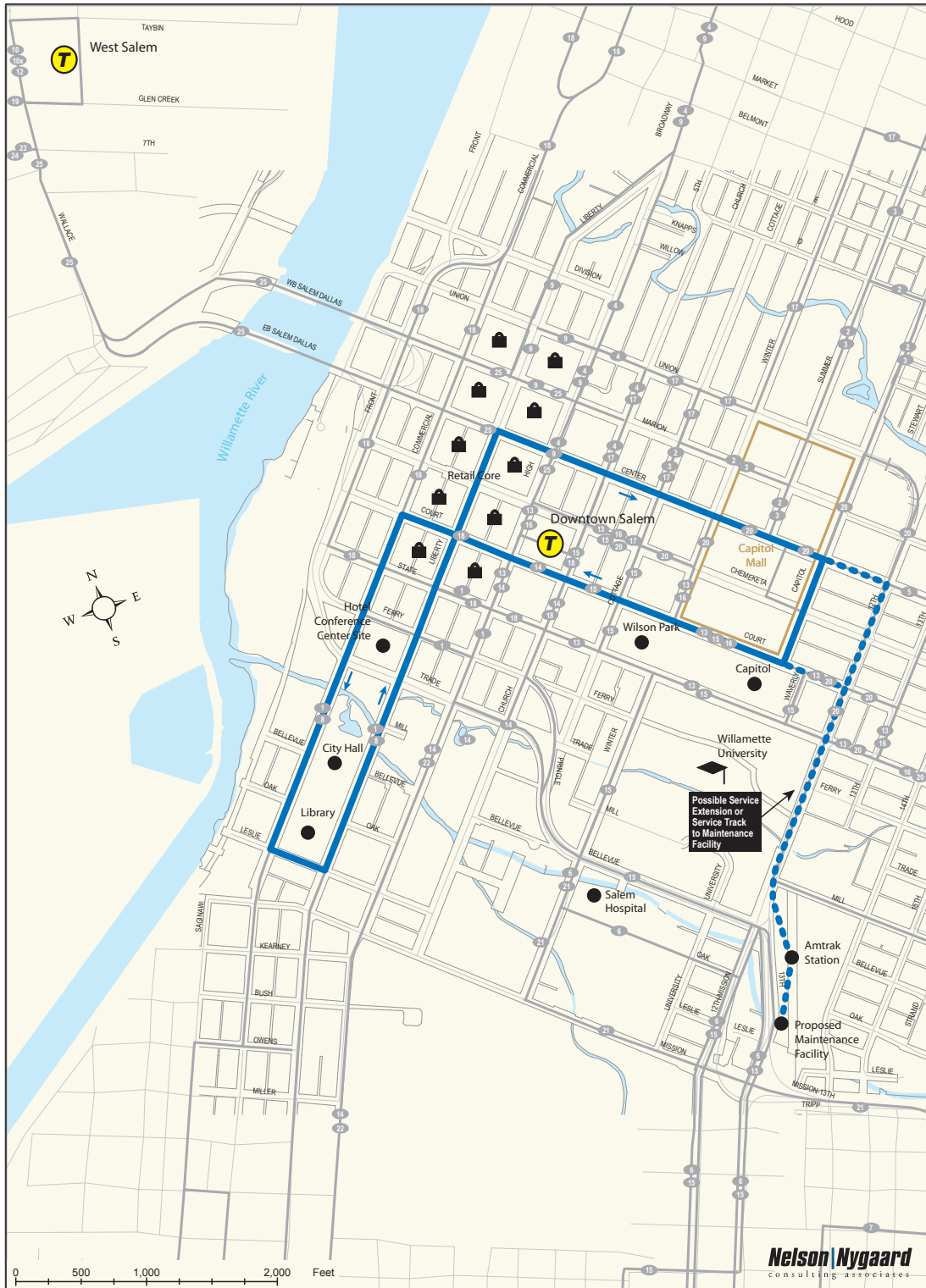


Figure ES-3:
Salem Streetcar Alignment #3

- Legend**
- Shopping Areas
 - Universities
 - Key Sites
 - Alignment #3
 - Existing Bus Routes

Base Map Data Source: City of Salem

Figure ES-4 Summary of Streetcar Alignments

Attributes	Alignment 1	Alignment 2	Alignment 3
Possible Termini	N- Broadway and Market S- Amtrak Station	N- Broadway and Market S- Amtrak Station	N- Capitol between Center and Court or Amtrak Station S- Leslie between Commercial and Liberty
Track Miles (2 –Way)	3.8	4.1	3.2
Demand/Market	<ul style="list-style-type: none"> • Provides connection between hospital, downtown, and Transit Center. • Provides connection for students and staff at Willamette University to downtown and to Transit Center. • Connects city center to Amtrak and to Tokyo University. • Provides service to new Hotel/Conference Center, but does not provide good connection between Conference Center and Capitol. • Serves redevelopment area north of downtown. 	<ul style="list-style-type: none"> • Connections between Capitol Mall employment and downtown business district. • Connection for students and staff at Willamette University to downtown and to Transit Center. • Connects city center to Amtrak and to Tokyo University. • Provides service within 1 to 2 blocks of Hotel/Conference Center, creating a connection between Conference Center and Capitol. • Serves redevelopment area north of downtown. 	<ul style="list-style-type: none"> • Connections between Capitol Mall employment and downtown business district. • Connection for students and staff at Willamette University to downtown and to Transit Center. • Connects city center to Amtrak and to Tokyo University (with 12th Street Extension only). • Provides service to new Hotel/Conference Center and good connection to Capitol.
Land Uses	<ul style="list-style-type: none"> • Established institutional uses at University and Capitol. • Mixed uses downtown dominated by office and retail. • North downtown is focus of City redevelopment efforts. Mix of main street commercial mixed-use, office and housing is expected. 	<ul style="list-style-type: none"> • Established institutional uses at University and Capitol. • Mixed uses downtown dominated by office and retail. • North downtown is focus of City redevelopment efforts. Mix of main street commercial mixed-use, office and housing is expected. 	<ul style="list-style-type: none"> • Established institutional uses at Civic Center, Capitol and University. • Mixed uses downtown -dominated by office and retail.
Connection to Other Modes	<ul style="list-style-type: none"> • Connection to primary multi-modal hub at Courthouse Square Transit Center. Southbound alignment travels adjacent to TC; northbound it travels within one block of the TC. 	<ul style="list-style-type: none"> • Connection to primary multi-modal hub at Courthouse Square Transit Center. Westbound alignment travels adjacent to TC; eastbound it travels within one block of the TC. 	<ul style="list-style-type: none"> • Connection to primary multi-modal hub at Courthouse Square Transit Center. Westbound alignment travels adjacent to TC; northbound and eastbound alignment travels within one block of the TC.
Access to Public Parking	<ul style="list-style-type: none"> • Runs adjacent to Marion and Liberty Parkades and within one block of the Chemeketa and Pringle Parkades. 	<ul style="list-style-type: none"> • Runs adjacent to Marion, Liberty and Chemeketa Parkades. 	<ul style="list-style-type: none"> • Runs adjacent to Liberty, Chemeketa, and Pringle Parkades.
Financing Potential	<ul style="list-style-type: none"> • Development along line could be potential source of support, particularly in North Downtown. 	<ul style="list-style-type: none"> • Development along line could be potential source of support, particularly in North Downtown. 	<ul style="list-style-type: none"> • Least opportunity for new funding from development along line.
Traffic Conflicts	<ul style="list-style-type: none"> • Traffic volumes on Ferry (westbound alignment) are high. This is a state highway. 	<ul style="list-style-type: none"> • Traffic queues in western lanes on Commercial turning westbound on to West Salem bridge. 	<ul style="list-style-type: none"> • Traffic volumes on Center (eastbound alignment) are high.
Dependencies	<ul style="list-style-type: none"> • Requires siting and construction of new streetcar maintenance facility. 	<ul style="list-style-type: none"> • Requires siting and construction of new streetcar maintenance facility. 	<ul style="list-style-type: none"> • Requires siting and construction of new streetcar maintenance facility.

Figure ES-5 Factors Influencing Ridership for Buses and Streetcar

Factor	How it Influences Ridership	Ridership Advantage – Bus vs. Streetcar
Intensity of Land Use	Density is the most direct influence on transit ridership – the greater the intensity of land use, the greater the ridership.	Slight advantage to streetcar, which tends to have higher carrying capacity than bus on a one for one basis.
Mix of land uses	Mixing land uses ensures steady ridership through the day, rather than directional peaking.	Streetcar has a proven track record of attracting some types of trips that generally do not use bus transit – especially visitor- and tourist-oriented travel and weekend trips.
Travel Time	Riders are attracted to transit services that more closely match auto travel times.	Both bus and streetcar can be designed for fast service. The flexibility of bus service may give it slight advantage as buses can swerve around obstacles.
Frequency and Span of Service	Frequent service reduces wait times and allows riders to make trips without planning. Services with a longer service span are attractive to more types of trips.	No advantage – both bus and streetcar can be designed to run frequently.
Fares	High fares discourage ridership. Lower fares encourage ridership.	No advantage – fares can be the same for both.
Connectivity to a Broader Network	Connecting to regional services provides greatly enhanced mobility and enhances the ridership of the overall system	Slight advantage to streetcar which provides a highly visible connection to other routes.
Legibility and Information	The easier it is to understand a transit system, the more likely it is that occasional riders will use it.	Both bus and streetcar can be designed for quality real time information. However, streetcar has a slight advantage in that the tracks provide instant legibility.
Comfort	Roomier seats, ample room for standees, and a less “rocky ride” contribute to rider comfort and to increase ridership.	Slight advantage to streetcar, which operates on rails and therefore has less lateral movement than a bus. Riders often report they can read on streetcars but not on buses.

Economic and Redevelopment Potential

This report does not place a quantifiable value on the economic development potential associated with the implementation of a Downtown Salem Streetcar; however, peer experience does show that streetcar provides Salem an opportunity to catalyze and organize mixed-use, transportation efficient development that achieves the community and City Council goal of creating a vibrant downtown and spurring economic development throughout the Salem area.

Since the decision to build the streetcar was made, over \$1.7 billion in new development has occurred around Portland's streetcar line including retail, office and housing. In Memphis, 4,000 residential units have been built within a block of the streetcar in a formerly underused industrial area. Although it is difficult to know whether development would have happened at the same pace without the streetcar investment, it appears that the streetcar line provided a "focus" which organized development and assured the transit focus of new development along and spreading out from the streetcar corridor. There is currently limited evidence of a strong building market in Downtown Salem; many developers and financiers appear to be waiting to gauge the impact of the new Salem Convention Center. There is, however, evidence that mid-sized communities like Salem are losing Baby Boomers to more vital urban centers where housing has developed in an enticing urban context. Developers see that as people are remaining active longer and retaining wealth, they are looking for exciting urban environments. A Portland based developer working in Salem said, *"Downtowns that are willing to make the investment in the contextual framework of transportation, housing and retail are going to compete favorably in the economy moving forward. You are going to see more of a consumer-oriented economy where people can take advantage of the facilities and amenities that are not available in the suburbs."*

Build-Out Capacity of Land Uses

This report estimates build out potential for commercial and residential activity along the various streetcar alignments. Based on current zoning codes and applicable special district overlays, the following table highlights the maximum level of development within easy walking distance of the streetcar system. While this evaluation is based purely on maximum allowable zoning and has no tie to actual development trends or proposals, it does show a significant gross potential for redevelopment.

As illustrated, all three alignments have the potential for over 3.5 million square feet of ground floor retail redevelopment within walking distance of the streetcar line. Alignment 2, which is preferred by the Streetcar Committee, provides the potential for over 2,000 new residential units along the line.

Figure ES-6 Development Build Out Capacities

	Alignment			
	1	2	3	3 (with extension)
1st Floor Retail Space (sq. ft.)	3,723,170	4,453,605	3,897,659	4,232,134
Other Commercial Space (sq. ft.)	22,076,076	24,347,097	18,387,454	21,827,687
Residential Dwelling Units	1,492	2,061	563	1,026
Other Commercial Space If All Lots Limited to 4 Stories (sq. ft)	15,146,182	17,186,582	13,447,100	16,132,863

Patronage on Alternative Alignments

There are a number of known factors that contribute to streetcar ridership. These include the intensity and mix of land uses served by the streetcar; frequency and span of service; and connectivity to a broader network. Figure ES-7 shows a conservative estimate of ridership projected for the three alternatives included in this analysis.

Build out ridership estimates assumes land use redevelopment in the downtown area to densities near the maximum allowable by current zoning regulations.

Figure ES-7 Streetcar Ridership Estimates

	Alignment 1	Alignment 2	Alignment 3
Initial Ridership/Hour	20	23	25
Initial Annual Ridership	205,300	236,100	256,700
Full Build Out Ridership/Hour	25	32	30
Full Build Out Annual Ridership	256,700	330,600	308,000

Operating and Capital Costs

The report offers a conceptual operating plan for the three identified streetcar alignments based on a number of assumptions including:

- Round Trip Distance;
- Estimate Speed of Travel;
- Frequency of Service; and
- Length of Service Day.

A capital cost estimate was also developed for each of the alternatives. These costs include trackwork, signalization, utility work, drainage, street repairs, stations and platforms, and the development of a maintenance facility. Each of the alignments would require two in-service vehicles and one spare to ensure reliable operations.

Figure ES-8 Estimate Annual Operating and One-Time Capital Costs

	Alignment 1	Alignment 2	Alignment 3
Annual Operating Costs @ 15-Minute Headways (7 Days per Week & Service to 10:00 PM)	\$1.0 Million	\$1.0 Million	\$1.0 Million
Annual Operating Costs @ 15-Minute Headways (No Sunday Service & Limited Hours)	\$0.7 Million	\$0.7 Million	\$0.7 Million
Miles of Single Track	3.8	4.1	3.2
Capital Cost Estimate (These include cost of 3 vehicles, 2004 dollars)	\$56.4 million (\$14.9 million per mile)	\$61.2 million (\$15.1 million per mile)	\$55.2 million (\$17.0 million per mile)

Funding and Financing

There are a variety of opportunities available for funding and financing a streetcar in Salem. Most cities have found a combination of public and private sources are necessary to implement and operate streetcar service. Unlike bus services, which seldom attract private funds, streetcars often benefit from local improvement districts or developer fees because they have proven to be a valuable asset to developers. Some level of local funding (at least 20 percent) will be needed to support capital construction costs. Local funding will also be needed for on-going operations, as state and federal operating support is more difficult to obtain.

Conclusions and Next Steps

All three alignments offer Salem a unique opportunity for improved circulation in a developing downtown. Of the three alignments considered, Alignment 2, operating between Broadway and Market and the Amtrak station appears to offer a slightly better combination of costs and benefits than the other options, providing good quality service to the largest existing attractions in downtown Salem while also serving areas with potential for new development.

At present, no single funding option has been developed to pay for streetcar implementation. As a next step, streetcar supporters, City and transit officials should work together to identify private and local public funding sources while preparing for federal reauthorizations that could support this project.