



Agenda
Linn-Benton Loop Technical Advisory Committee

Date: March 5, 2019
Time: 2:30 – 3:30 pm via Phone
Teleconference: 541-497-7311, pin #841
Contact: Phil Warnock, Community & Economic Development Director

1. **2:30** **Roll Call and Agenda Review** Phil Warnock
2. **2:35** **Discussion of Loop TAC Chair** Warnock
3. **2:45** **Public Comment** Chair
4. **2:48** **Approval of August 7, 2018 Meeting Minutes (Attachment A)** Chair
Action Requested: Approval of Minutes
5. **2:50** **Service Analysis Scope of Work Update (Attachment B)** Staff
Discuss schedule for completion and approval process. Also provide feedback from Loop Board review on 2/26
6. **3:20** **Next Meeting and Future Agenda Items** Chair
7. **3:30** **Adjourn** Chair

**LINN-BENTON LOOP TAC
DRAFT MINUTES**

**Tuesday, August 7, 2018
2:30 – 4:30 pm**

Oregon Cascades West Council of Governments
Downstairs Conference Room / 1400 Queen Ave. SE, Albany

Board Members: Nick Meltzer, Mark Bernard, Bruce Clemetson for M'Liss Runyon, Lee Lazaro, Mark Volmert (phone), Sarah Bronstein, Tarah Campi, Tim Bates, and Andrew Koll

Staff Members: Ted Frazier, Phil Warnock, and Emma Chavez

TOPIC	DISCUSSION	DECISION / CONCLUSION
1. Call to Order and Agenda Review		The Chair, Lee Lazaro called the meeting to order at 2:33 pm. Introductions were conducted.
2. Public Comment		There were no public comments.
3. Approval of the April 26, 2018 meeting minutes	Tim Bates moved to approve the minutes, Andrew Koll seconded.	Consensus by the Loop TAC to approve the meeting minutes as written.
4. Service Analysis Scope of Work Contract and Status	Chair, Lee Lazaro advised that on May 22, 2018 the Analysis Scope of Work was received from the consultant. Subsequently, it was reworked into the final contract. Therefore, there are some minor differences between the May 22 SOW and the contract. The final contract came out to \$719 hundred more than the Loop Board had allotted. However, the Chair indicated to ODOT that it would not be an issue. The contract does keep the survey work as a contingency item in order for the Loop staff to take on most of the work, to save funds,	

	<p>and to use the contingency funds on more detailed work in other areas, if needed.</p> <p>The contract consists of a fixed payment of \$51,573, with \$9,146 in contingency funds for the onboard survey and delivery. If the Board wants to use those funds for something else, an amendment to the contract would need to be done.</p> <p>Staff, Phil Warnock questioned if the contract had been fully executed by DKS. He also noted that last week, the COG received its contract with ODOT and it is being routed for signatures. Additionally, the COG has done the invoicing and IGA's to collect member contributions from LBCC, OSU, and Benton County. Those have been received and processed. AAMPO and CAMPO contributions have also been transferred internally.</p> <p>Mark Volmert advised that Page 3, Task 2.1 does not include the Linn Shuttle and that it is important that it be included in the analysis. He also cautioned in regards to the timeline, specifically that a work product needed to be ready for Linn and Benton Counties STIF application due dates. Additionally, Volmert wants consultants to be clear that the Loop is requesting a solid plan with routes and schedules. He noted that only approximately one-third of the contract is programmed toward strategic assessment of routes and schedules. He advised that the plan needs to be "shovel-ready" to translate into delivery of service.</p> <p>Staff, Tarah Campi noted that Task 1.2 states that the consultants will meet with the Loop TAC six times and several are work sessions to discuss routes and schedules. Those meetings will be the time that TAC can make sure that those are part of the deliverables.</p>	
<p>5. Set Project Kick-off Date with DKS/Nelson Nygaard</p>	<p>Lazaro advised that a kick-off with the consultants will need to be scheduled. After discussion, members agreed for Chair Lazaro to email out a Doodle Poll with early September dates and next Loop TAC meetings dates.</p>	<p>The Chair to email Doodle Poll for Kick-off Meeting and next Loop TAC meetings.</p>

<p>6. Public Involvement Plan</p>	<p>Staff, Tarah Campi advised that the Public Involvement Plan (PIP) was emailed out for edits to the TAC. She requested for edits to be emailed in within the next couple of weeks. She noted that the COG will be talking care of the public notices and website updates. She also advised that while the PIP was drafted for the purposes of the SOW, the document could be made evergreen and be made available for future use.</p> <p>Mark Bernard noted that he may need to be added along with James Feldmann as the ODOT contact person since James does not attend the Loop meetings and in the instance that ODOT may need to provide a report and or any other related information, Mark is the contact.</p> <p>Sarah Bronstein advised that she is interested in having the OSU Transportation Committee give feedback. She noted to ensure that the committee is not simply being informed, rather that they are involved early enough to provide feedback/input. Warnock advised that language could be added to include “other committees as appropriate” in order to cover any committees that may come to mind as the process moves forward. A new paragraph between Items 4 and 5 will be added for additional stakeholder input.</p> <p>Chair Lazaro noted that Ali Bonakdar’s name will need to be changed to Nick Meltzer.</p> <p>Andrew Koll noted that bus signage to seek input from Loop riders on the draft Plan would be ideal. Members agreed and gave examples of marketing to be placed.</p>	<p>Members to provide feedback on the Public Involvement Plan (PIP) to staff within two weeks.</p> <p>Staff to update the PIP with Loop TAC recommendations discussed.</p>
<p>7. Review of 2018-2019 Loop Budget</p>	<p>Ted Frazier provided a review of the 2018-2019 Loop Budget. He noted that most of the revenue listed will be charged back to last year’s budget.</p> <p>He advised that the Finance Accountant had noted that agreements between OSU and LBCC needed approvals. He wasn’t sure if they needed to come through the Loop, or if the City of Albany dealt directly</p>	

	<p>with the schools. The Chair advised that the City of Albany is able to work those agreements directly with the schools.</p> <p>Volmert questioned what the core amount of 5307 funds is. Bates advised that it is approximately \$144,000 plus the \$18,000 for preventative maintenance.</p> <p>Knoll noted that the last time, the TAC had questioned why the employee benefits budget amount were so high relative to the salary. He noted that actuals were coming in lower, but questioned why the new 2018-19 budget benefits amount are again staying high? Frazier advised that he would look into it and report back, and noted it may relate to PERS</p>	
8. Review of Loop Budget and Ridership Reports	<p>Ridership for this fiscal year, compared to last fiscal year, an anomaly was noted for the month of June. June 2017 ridership was extraordinarily high, but June 2018 ridership dropped low again. Members discussed that this could have been due to length of the month, the weather, or even increase in gas prices. Overall annual ridership was only down about 2%.</p>	
9. Next Meeting and Future Agenda Items	<p>Next meeting date is scheduled for November 13th. It was agreed this should be set as one of the Loop Service Development Project meeting dates, to be efficient.</p>	
10. Adjournment	<p>Meeting adjourned at 3:41pm</p>	



LINN-BENTON LOOP SERVICE DEVELOPMENT PLAN

Draft Plan

February 2019



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Oregon Cascades West Council of Governments

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Cover photo: Linn-Benton Loop at the Corvallis Transit Center.

Source: City of Corvallis

ACKNOWLEDGEMENTS

Linn-Benton Loop Governing Board

Hal Brauner, City of Corvallis

Bruce Clemetsen, LBCC

Roger Nyquist, Linn County

Technical Advisory Committee (TAC)

Chris Bailey, City of Albany

Tim Bates, City of Corvallis

Sarah Bronstein, Oregon State University

Barry Hoffman, City of Albany

Andrew Koll, Resident-at-large

Lisa Scherf, City of Corvallis

Mark Volmert, Linn County

Project Management Team

Lee Lazaro, OCWCOG

Phil Warnock, OCWCOG

Nick Meltzer, OCWCOG

Dana Nichols, OCWCOG

Tarah Campi, OCWCOG

Emma Chavez, OCWCOG

Other Stakeholders

Mark Bernard, ODOT

Ken Bronson, Linn Shuttle

James Feldmann, ODOT

Dave Henderson, LBCC

Deanna Merle Lloyd, OSU

M'Liss Runyon, LBCC

Ann Scheerer, OSU

OSU Fall 2018 SUS 304 Students

Consultant Team

Jamey Dempster, Nelson\Nygaard

Oren Eshel, Nelson\Nygaard

Paul Leitman, Nelson\Nygaard

Maggie Derk, Nelson\Nygaard

Reah Flisakowski, DKS

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EXECUTIVE SUMMARY

The Albany and Corvallis areas are important centers in the Mid-Willamette Valley and serve as significant economic, educational centers of the region. Many people travel daily between the two cities, including residents, employers, visitors, and students. The links between the two cities are strong and future growth will further reinforce the symbiotic relationship in the region.

Public transportation is a key part of the region's transportation system: it provides a necessary link for people who do not have access to a vehicle, supports regional efforts to reduce the need for travel with a personal vehicle and for parking, and supports reductions in greenhouse gas emissions.

The Linn-Benton Loop (Loop) is the region's transit system that connects Albany and Corvallis. It has been in service for almost four decades, providing connections for students and employees to travel between the two cities.



Corvallis Transit Center is one of the busiest stops on the Linn-Benton Loop.

Source: City of Corvallis

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In 2019 public transportation providers in Oregon will begin receiving funds from the Statewide Transportation Improvement Fund (STIF), a transit-specific fund developed after passage of Oregon House Bill 2017 (known as Keep Oregon Moving). Linn and Benton Counties have each agreed to contribute \$300,000 annually from STIF allocation to improve service on the Loop.

In preparation of receiving these funds, this Service Development Plan (SDP) was developed to identify and prioritize service changes to the Loop. Recommendations include:

- Additional frequency of service on the busiest corridors when demand is highest
- Bi-directional service to enhance access and reduce travel times
- Extended service into the evening
- Maintaining service to most locations that are currently served. Service on 9th Street will be eliminated.

The Service Development Plan was developed through a collaboration with the Linn-Benton Loop Technical Advisory Committee (TAC), analysis of the existing system and historical data, an on-board survey of Loop passengers in October 2018, and a workshop with regional stakeholders and representatives in December 2018.



Stakeholders at the December 2018 workshop discuss the tradeoffs of proposed Loop service options.

Source: Nelson\Nygaard

Upon implementation of the recommended service changes the Linn-Benton Loop will provide reliable service for commuters, university students, and people making intercity connections at Albany Station. The Linn-Benton Loop will be composed of three routes:

- **Regional:** weekday and Saturday service between Oregon State University (OSU)/Downtown Transit Center, Linn-Benton Community College (LBCC) and Albany Station via Highway 34 and 99E
- **Campus Connector:** weekday service between OSU/Downtown Transit Center and LBCC via Highway 34

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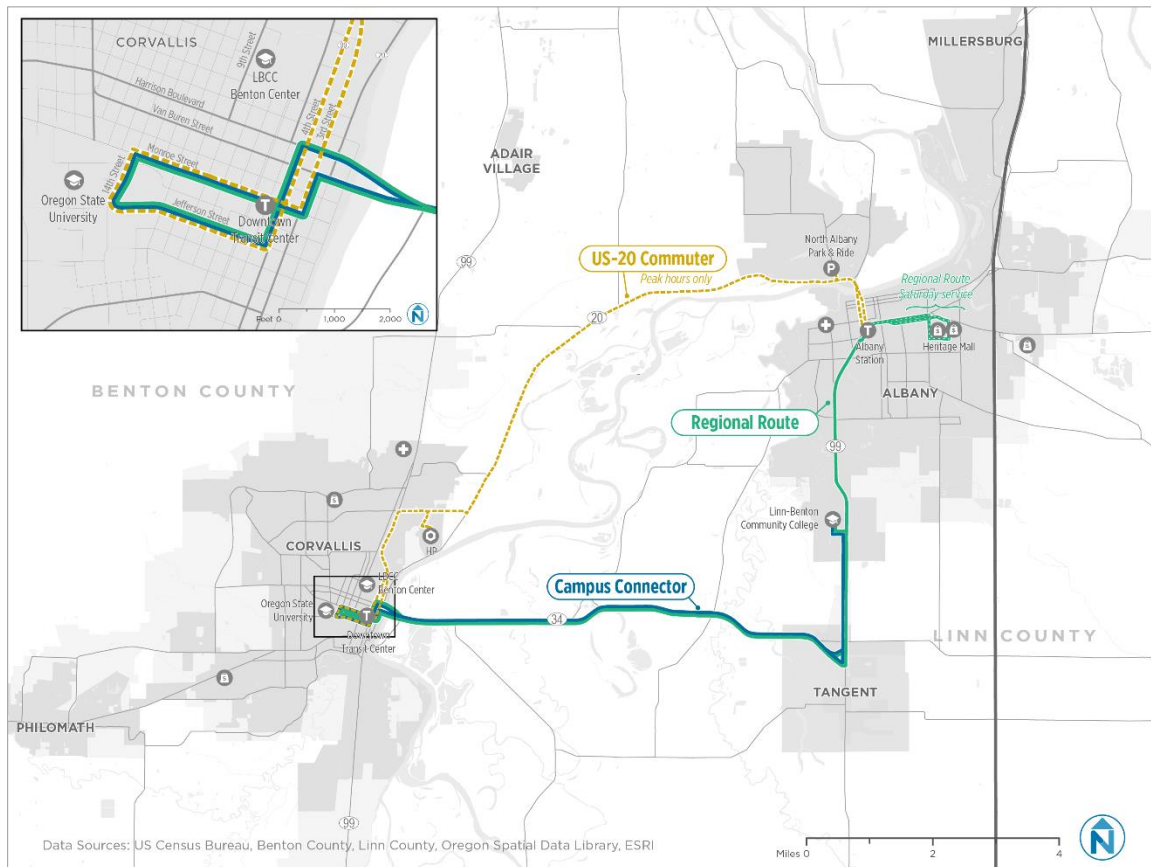
- **Highway 20 Commuter:** weekday peak-hour service between OSU/Downtown Transit Center and Albany Station via US-20

Routes and service characteristics and the regional transit network are shown in **Figure 1** and **Figure 2** respectively.

Figure 1 Regional Transit Vision Routes

Route	Service Days	Time of Year	Hours of Service	Frequency (min)	Vehicles
Regional Route ●	Monday-Friday	All year	6 am – 9 pm	75	1
	Saturday	All year	8 am – 6 pm	75	
US-20 Commuter ●	Monday-Friday	All year	6:30 – 9:30 am 4 – 7 pm	60	1
Campus Connector ●	Monday-Friday	OSU/LBCC academic term	7 – 10 am and 3:30 – 6 pm	60	2
			10 am – 3:30 pm	30	
		Semester breaks	7 am – 6 pm	60	

Figure 2 Regional Transit Vision Network



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1 INTRODUCTION

The Loop is a public transportation partnership that links two communities to critical educational, employment, and activity centers. The Loop began operating in 1980 to provide transit service between Albany and Corvallis. Over the decades the route has expanded capacity on its busiest segments and is an integral part of the transit system in the region.

The Loop has financial, political, and public support from such a broad base of partners, including Linn and Benton Counties, LBCC, OSU, Hewlett-Packard, and Good Samaritan Regional Medical Center. Many regional partners and the public recognize there are opportunities to improve service and provide improved connectivity and access for people traveling between the two cities.



Source: Nelson\Nygaard

In 2019 public transportation providers in Oregon will begin receiving funds from the STIF, a transit-specific fund developed after passage of Oregon House Bill 2017 (known as Keep Oregon

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Moving). Linn and Benton Counties have each agreed to contribute \$300,000 annually from STIF allocation to improve service on the Loop.

This SDP provides the specific steps and service adjustments for the Loop to achieve a 10-year transit vision using the additional funds from STIF. Recommendations from the plan include additional frequency of service on the busiest corridors when demand is highest, bi-directional service to enhance access and reduce travel times, extended service into the evening, and maintaining service to all major locations that are currently served.

PROCESS

The SDP was developed through a collaboration with the Linn-Benton Loop Technical Advisory Committee (TAC) based on an analysis of the existing system and historical data. Meeting with the TAC occurred monthly between September 2018 and February 2019.

Students at OSU SUS 304 Sustainability Assessment course conducted an on-board survey of Loop passengers in October 2018 over a week-long period. They collected 239 responses. The survey was used to understand the demographics of Loop passengers (including their affiliation with local colleges and income levels) and the type of service improvements they support the most.

In December 2018, regional stakeholders and representatives from regional transit providers attended a workshop to discuss the range of service changes that could be implemented on the Loop. The workshop was designed to understand participants' priorities and weigh the tradeoffs of different operating models. The result of the workshop was high-level service detail that included preferred frequency, alignment, and span.

Findings from technical analysis, input from TAC members, results from the on-board survey, and outcomes from the workshop were all used to develop the short-term Linn-Benton Loop transit vision.

STRUCTURE OF PLAN

- **Chapter 2 – Issues and Opportunities:** describes the current transportation issues in the Albany-Corvallis region, and identifies the needs and other factors that make Loop service relevant to the region.
- **Chapter 3 – Transit Enhancements:** provides a detailed operating plan with specific actions that will move the Loop toward its transit vision.

2 ISSUES AND OPPORTUNITIES

This chapter presents key issues, findings, and opportunities for transit in the Albany and Corvallis areas, and in particular specific issues relating to the Linn-Benton Loop. These issues were identified through analysis, the on-board survey, and feedback from regional stakeholders.

The key findings are listed below, and presented in more detail on the following pages.

1. Commute trends indicate a demand for region transportation services.
2. Low-income populations in Linn and Benton Counties are increasing.
3. Most passengers on the Linn-Benton Loop live in households within incomes less than \$50,000.
4. The Loop serves two limited markets: commuters and LBCC students.
5. There is limited service for people traveling across the region on weekends.
6. People who depend on transportation in the late evening have unmet transit needs.
7. The Linn-Benton Loop is scheduled at frequencies that do not coordinate well with other regional schedules, presenting barriers for operations and passengers.
8. Ridership on the Linn-Benton Loop has remained relatively flat over the past several years, with a slight downward trajectory.
9. Most ridership on the Linn-Benton Loop is at LBCC, Downtown Corvallis, and OSU.
10. The top priorities for Linn-Benton Loop service improvements are improved frequency and later service in the evening.
11. Many of the region's transit agencies have unique brands and provide information independently of each other.

1. Commute trends indicate a demand for regional transportation services.

Current commute travel patterns indicate that approximately 5,700 workers travel between Corvallis or Philomath and Albany, Millersburg, or Tangent on a daily basis (see **Figure 3**).^{1,2} The largest flow is from people who live in Albany, Millersburg, or Tangent and commute to jobs in Corvallis or Philomath. Between 2009 and 2015, the strongest growth in travel flows has been

¹ This data is based on the Longitudinal-Employer Household Dynamics (LEHD) data from 2015. It represents commute trips contained within the Corvallis, Albany, and Lebanon areas. Residents of communities outside the region who commute to jobs in the region, as well as employees that live in the region but commute to jobs outside the region (such as to Salem, Eugene, or Portland) are not included in these values.

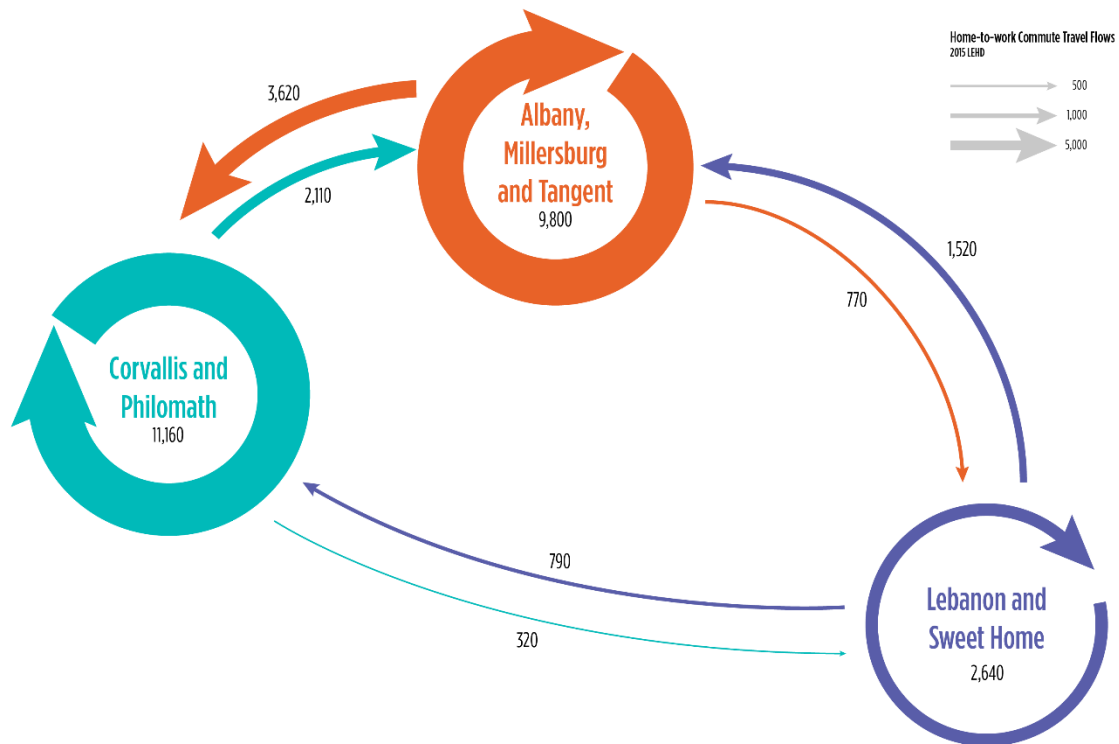
² LEHD data include information from IRS records that are based on addresses provided by employers. Some work location addresses may not be for actual location of employment, but for corporate or main offices. Therefore someone who lives in Corvallis may be shown as commuting out of the city, even though they work for a company within Corvallis city limits or telecommute.

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from people who commute between Lebanon/Sweet Home and the Albany area (29% increase) and between Lebanon/Sweet Home and the Corvallis areas (23%). Growth in commutes between Albany and Corvallis also grew notably (22%).

As population and employment grows in Linn and Benton Counties, travel demand between major cities within the region is likely to continue increasing. Transit service will be a key part of the transportation mix to provide people an option to avoid driving and for people who do not have access to a private vehicle a means to travel between the cities. To accommodate future demand, transit services will need to operate more frequently and for longer periods of time.

Figure 3 Regional Commute Flows (2015)



Source: LEHD (2015)

2. Low-income populations in Linn and Benton Counties are increasing.

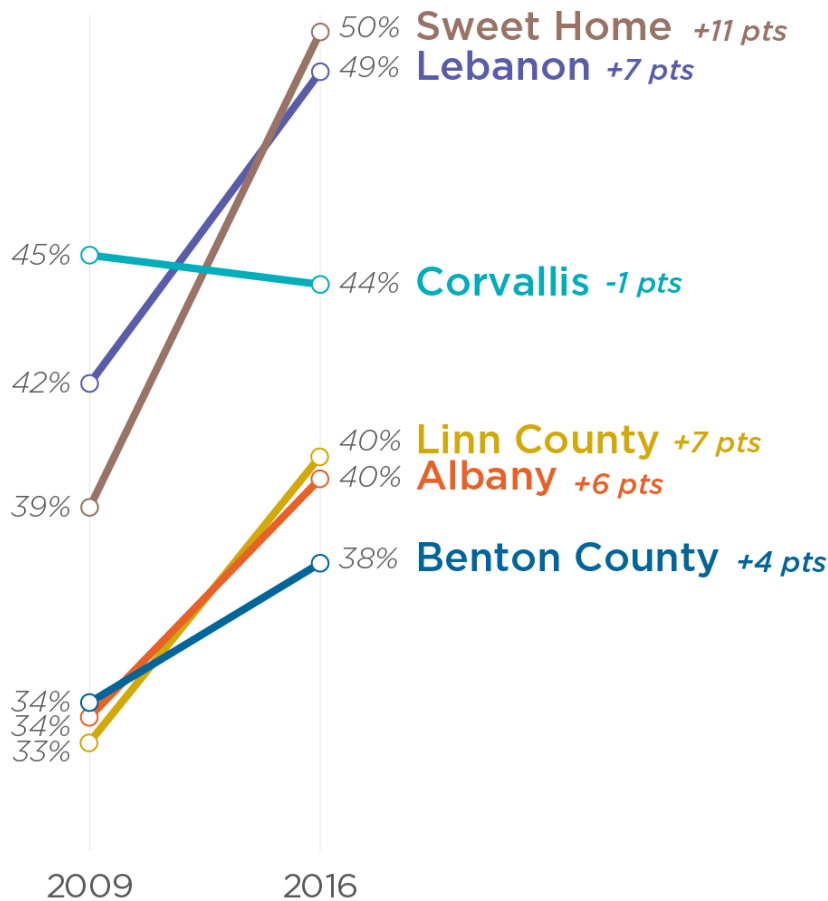
Low-income populations are defined by STIF as households below 200% of the federal poverty level.³ Lebanon and Corvallis have the region's highest share of low-income households. Between 2009 and 2016, most jurisdictions saw increases in the percent of people defined as low-income (see **Figure 4**) and all jurisdictions experienced increases in the total number of households defined as low-income (see **Figure 5**). Geographically within the region, the density of low-income households at the Block Group level is highly concentrated in the region's cities (see **Figure 6**).

³ STIF guidance on estimating low-income households recommends applying the percent of population classified as low-income to the number of households.

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Low-income households benefit most from affordable, accessible, and reliable transit options. Future transit demand will be influenced by where low-income individuals live and work. As low-income households increase in the region, demand for transit service is expected to grow.

Figure 4 Percent of Households Defined as Low-Income (2009 to 2016)



Note: Low-income defined as people with incomes below 200% of the Federal Poverty Level.
Source: US Census Bureau, American Community Survey, 5-Year Estimates, 2005-09 to 2012-16, Table C17002

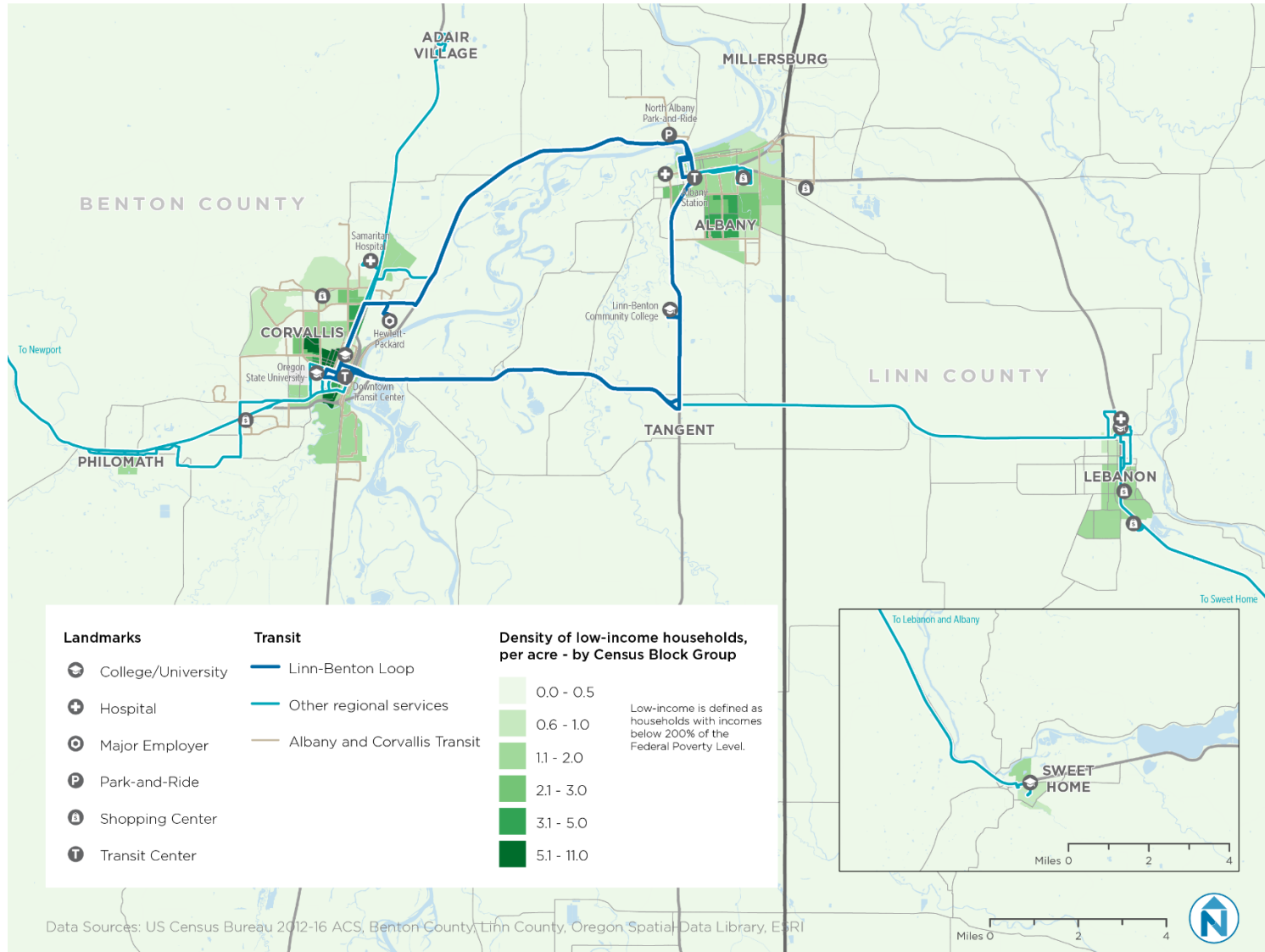
Figure 5 Number of Low-Income Households

City / County	2009	2016	Change	Percent Change
Benton County	11,321	12,933	1,612	14.2%
Linn County	14,421	18,238	3,817	26.5%
Albany	6,236	7,841	1,605	25.7%
Corvallis	9,466	9,766	300	3.2%
Lebanon	2,405	3,257	852	35.4%
Sweet Home	1,283	1,770	487	40.0%

Note: Low-income households calculated by dividing the total number of people with incomes below 200% of the Federal Poverty Level by the average household size of occupied housing units.
Note: American Community Survey data is an estimate and values from smaller communities have a higher margin of error.
Source: US Census Bureau, American Community Survey, 5-Year Estimates, 2005-09 to 2012-16, Table C17002 and Table B25010

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Figure 6 Density of Low-Income Households (by Census Block Group, 2016)



Note: American Community Survey data is an estimate and values from rural areas or Census Block Groups with few people have a high margin of error.

Sources: US Census Bureau, American Community Survey, 5-Year Estimates, 2012-16, Table C17002 and B25010

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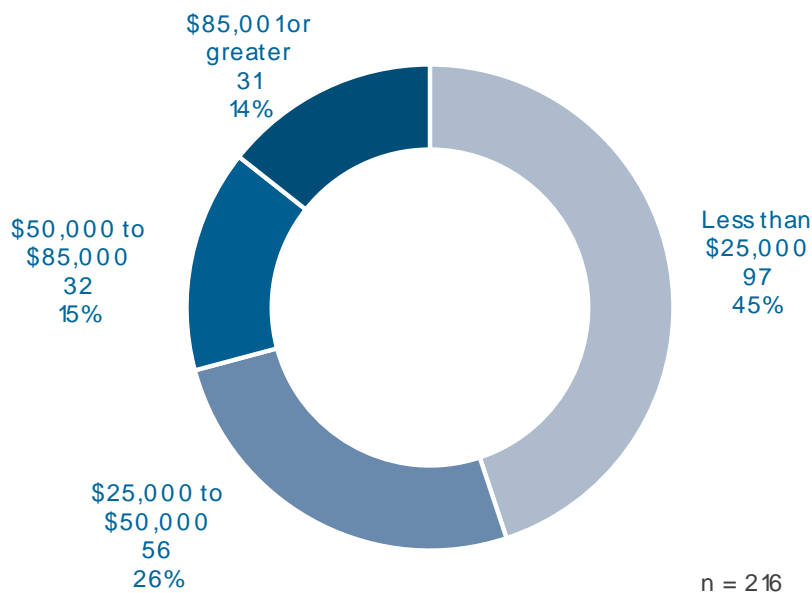
3. Most passengers on the Linn-Benton Loop live in households within incomes less than \$50,000.

The on-board survey of Linn-Benton Loop passengers in October 2018 asked respondents to indicate their household income. The most common response, representing 45% of surveyed passengers, was less than \$25,000. Another quarter of respondents live in households with incomes between \$25,000 and \$50,000 (see **Figure 7**).

The survey also asked respondents for the number of people who live in their household. If a respondent answered both of these questions⁴, their responses were compared to determine if they lived in a low-income household (i.e., incomes below 200% of the federal poverty level based on total household income and number of residents). Based on this evaluation, approximately 64% of respondents were classified as low-income.

Transit service provides an important option for people who lack the financial means to own or operate a vehicle. Approximately two-thirds of the Loop ridership is low-income, indicating the important role the Loop serves in connecting low-income individuals in the region.

Figure 7 Household income of respondents



4. The Loop serves two limited markets: commuters and LBCC students.

As a large region, travel needs in the Linn-Benton County area are diverse. The Loop, as currently designed, primarily serves commuters and students. However, travel between Corvallis and Albany includes more than just work week commuters, or students. People use the Loop to travel to and from work for non-traditional work shifts, to access healthcare facilities, and to go shopping and run errands.

⁴ 216 respondents provided their household income. 211 respondents provided their household size. 196 respondents provided responses to both questions.

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There are needs for additional transportation services to support regional mobility for all trip types. More frequent service throughout the day and longer spans of service on weekends are potential service adjustments that would expand the utility of the Linn-Benton Loop for more people.

5. There is limited service for people traveling across the region on weekends.

The Loop currently provides most service during the weekday, with a focus on serving commuters and college students. However, weekend travel needs are also present in the region, including needed connections to weekend jobs, shopping centers, and medical facilities. In addition to limited number of trips, the Linn-Benton Loop service on Saturday operates in the counter-clockwise direction only.

Weekend trips are not well served because the limited frequency reduces the usefulness of the service for spontaneous trips. Additionally, the one-way direction results in out-of-direction travel for all passengers; but is greatest for passengers who only travel a relatively short distance. For example, consider a passenger who needs to travel from Albany Station to LBCC (a distance of approximately three miles). To make the journey on the Loop on Saturday, they would need to travel all the way to Corvallis, a trip that would take approximately one hour.

6. People who depend on transportation in the late evening have unmet transit needs.

Classes start as early as 6:20 am at OSU and at 7 am at LBCC – both before the Loop begins. The first Loop trip arrives (via US-20) at OSU at 7:05 am, and the first Loop trip arrives at LBCC at 7:25 am. Most students start classes later (between 8 and 9:30 am) and enrollment peaks at more than 10,000 students around 11 am. Class enrollment remains relatively high until after 5 pm when it begins to drop. Classes are in session on both campuses until after 9 pm.

The last trip from LBCC to Corvallis departs at 5:50 pm, and the last trip from OSU to Albany departs at 6:20 pm⁵. There are still more than 1,000 students actively in classes after service ends for the day.

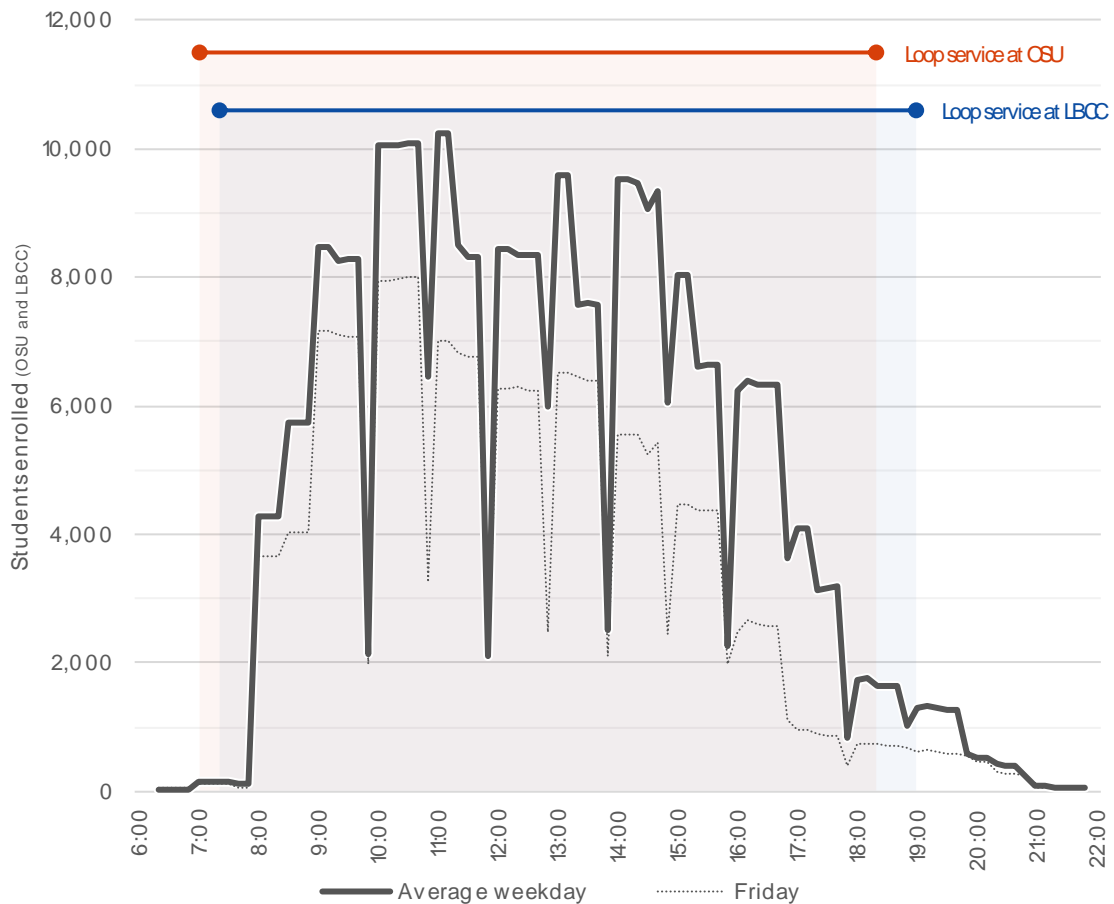
Figure 8 shows the total number of students enrolled in classes at both OSU and LBCC Main Campus by time of day. The span of Loop service at each campus is shown as the horizontal bars and faded backgrounds.

Service on the Linn-Benton Loop does not serve the needs of people who travel late in the evening, including students, faculty, staff, or other late evening non-university affiliated commuters. If these individuals lack access to a car, they may not have any dependable transportation from campus or work to return home. These limited hours may deter students and faculty at LBCC or OSU or regional employees from using the Loop.

⁵ The last direct trip from Corvallis to LBCC (via OR-34) departs the Downtown Transit Center at 4:35 pm. Passengers who catch the 6:20 pm trip can travel to LBCC via US-20 and Albany Station, with a 40-minute travel time.

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Figure 8 Student Class Enrollment at OSU and LBCC by Time of Day



Source: Oregon State University (Fall 2018); Linn-Benton Community College (Fall 2018)

7. The Linn-Benton Loop is scheduled at frequencies that do not coordinate well with other regional schedules, presenting barriers for operations and passengers.

Most Loop trips in the morning and afternoon, in addition to the express trips between LBCC and Downtown Corvallis, cycle in approximately 75 minutes. Service at this frequency makes it difficult for passengers to easily remember the schedule, connect with other services, and get to and from classes consistently.

Service every 75 minutes means individual stops are never served at the same minutes past the hour every hour. This requires passengers to consult a schedule to know when the next bus arrives and makes the service more difficult to remember or understand. Passengers typically find it easier to remember a single time every hour when the bus comes rather than individual arrival times throughout the day.

Both CTS and Albany Transit operate on a consistent schedule with pulses at their respective transit centers at the same times each hour. Because the Loop's schedule does not match the local services, riders cannot connect to CTS or Albany Transit consistently. The lack of consistent

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connections between the Loop and each city's system limits how easily riders can make transit connections to access local destinations not directly served the Loop. Passengers who need to make connections and want to minimize their wait time must therefore travel at specific times throughout the day when connections are easiest.

Similar to connections to CTS and ATS, the Linn-Benton Loop does not coordinate well with class schedules at OSU and LBCC. The majority of classes at OSU and LBCC start or end hourly.⁶ Loop service during the morning and evening does not coordinate well with the class schedules because of the mismatch in cycles. During the midday, Loop service is hourly and this provides greater consistency for students to use the Loop to travel to or from classes. At LBCC – which has classes that start or end approximately every 30 minutes – there is a slight mismatch between service and class schedules. For example, midday Loop buses arrive at LBCC 45 minutes after the hour, and depart at the top of the hour. Classes that begin at the top of the hour are well served on both ends of the class if students can get between the bus stop and the class in 10 minutes. Classes that start at 30 minutes past the hour and end at 20 minutes past the following hour require at least 40-45 minutes of wait time before and after the classes.

Hourly service would provide the greatest level of simplicity to passengers and allow the service to coordinate well with other transit providers and class schedules at the two colleges. However, if service were to operate hourly using existing cycle times, the Loop would require an additional bus and driver. Because the cycle time of the Loop trips are just over an hour, drivers would return to the starting point relatively soon after the previous trip had departed. Therefore, to maintain consistent hourly service, the drivers would need long layover times between runs. In short, the Loop's existing cycle time limits opportunities to increase frequency of service in ways that are financially and operationally efficient.

8. Ridership on the Linn-Benton Loop has remained relatively flat over the past several years, with a slight downward trajectory.

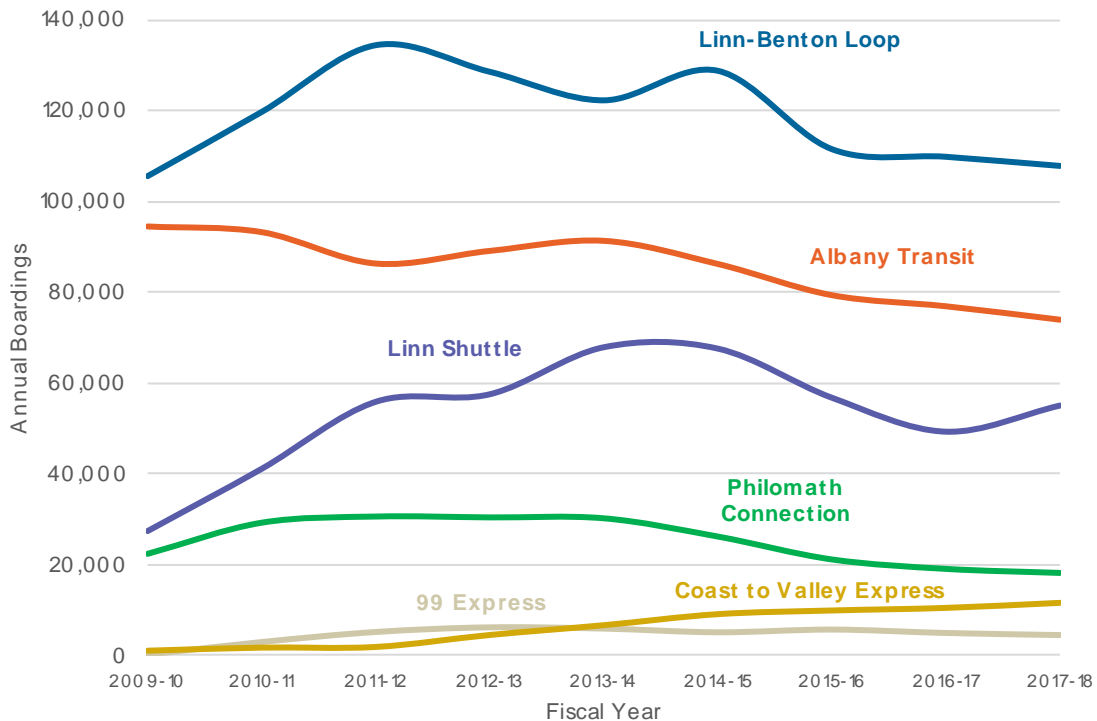
Ridership on the Linn-Benton Loop has remained relatively flat between 2009–10 and 2017–18. Although ridership grew more than 20% above 2009–10 levels between 2011 and 2014, ridership has returned to its 2009–10 level, at approximately 110,000 boardings per year (see **Figure 9**).

The Linn-Benton Loop has maintained strong ridership in the past decade, but has seen some small declines. These ridership trends are not consistent with the growth in the region's population, employment, and student enrollment. This suggests less transit use and reduced relevance of the Loop in the region's transportation system. However, as the Loop has not undergone significant changes in service for many years, this suggests service changes may be necessary to improve its usefulness for residents, employees, and students.

⁶ Most courses are scheduled from :00 to :50. Eighty-four percent (84%) of class enrollments at OSU, and 72% of class enrollments at LBCC are on this cycle. Three percent (3%) of class enrollments at OSU, and 12% of class enrollments at LBCC are in classes that start at a time other than the top of the hour.

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Figure 9 Ridership Trends (FY 2009–10 to FY 2016–17)



Sources: Benton County, Corvallis Transit System, Albany Transit System, Linn-Benton Loop

Note: Ridership on Corvallis Transit is not included because its ridership is almost ten times larger than the Linn-Benton Loop and does not compare well with the region's other transit services. Corvallis Transit served approximately 710,000 trips in 2009–10, 900,000 in 2010–11, and has ranged between 1,110,000 and 1,190,000 between 2011–12 and 2016–17.

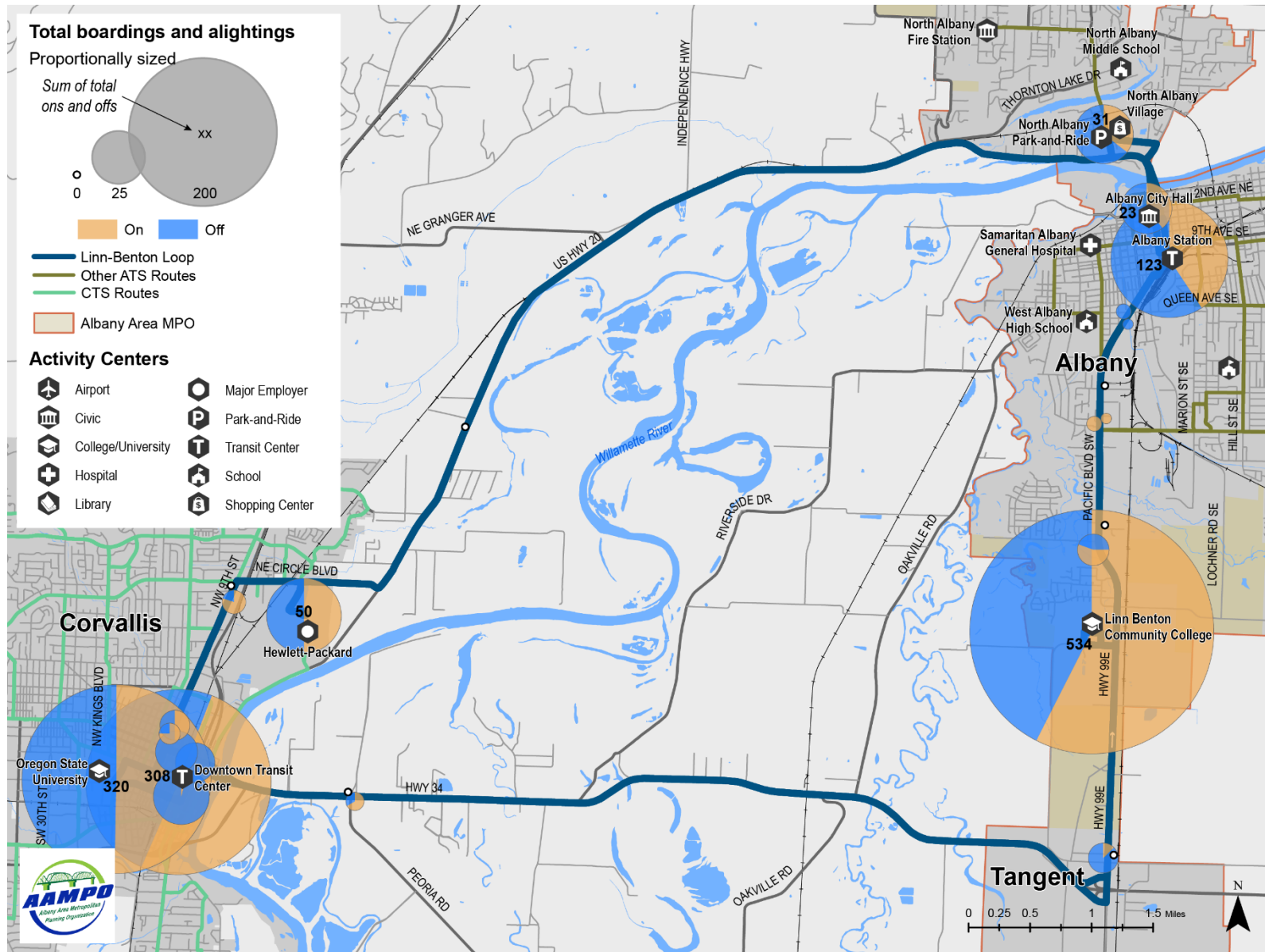
9. Most ridership on the Linn-Benton Loop is at LBCC, Downtown Corvallis, and OSU.

The Loop's busiest stops are at LBCC, Corvallis' Downtown Transit Center, and OSU (**Figure 10**). Other stops with relatively high ridership are Albany Station, Hewlett-Packard, and North Albany Park-and-Ride. Although these ridership patterns are a function of service (the Loop serves LBCC, Downtown Corvallis, and OSU all day, whereas the other stops are only served during peak hours), it demonstrates higher demand for transit service connecting LBCC and OSU.

With limited financial resources available, transit agencies typically provide service along corridors and in locations where the benefits of the service (i.e., providing access and/or generating ridership) are likely to be greatest based on a fixed amount of operational funds. In the case of the Linn-Benton Loop, service between LBCC and Downtown Corvallis via OR-34 has the highest demand and this corridor is more likely to generate ridership and provide access to regionally-significant destinations than US-20.

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Figure 10 Loop Weekday Ridership by Stop (Fall 2014)



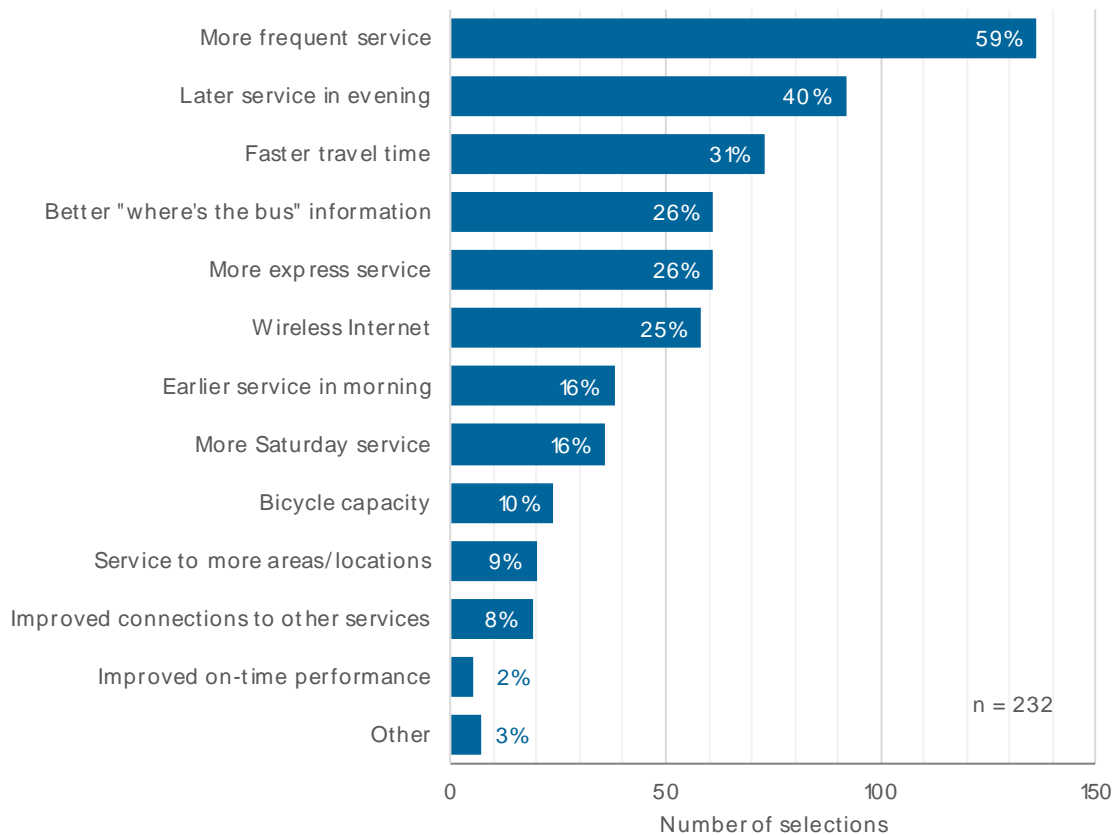
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10. The top priorities for Linn-Benton Loop service improvements are improved frequency and later service in the evening.

The on-board survey of Linn-Benton Loop passengers asked respondents to select their top three improvements that would encourage them to ride more often. Twelve options were provided and respondents were given the option to provide their own improvement if it was not listed. The results (**Figure 11**) indicate frequency, span of service, reduced travel time, and improved information were the most supported improvements. However, more frequent service was selected much more often – 19 percentage points higher than later evening service – indicating there is broad support for Loop buses to run more often throughout the day.

Earlier morning service, additional Saturday service, new service to more areas, and improved connections to other services were low on their list of priorities and suggests passengers prefer improvements to the existing services over adding service at times, on days and in places where none exist today (with the exception of later evening service). Faster travel time – selected by 31% of respondents – may be provided in coordination with more frequent service because reduced wait time at the start of a trip will reduce overall travel time, even without any increase in the speed of buses.

Figure 11 Top Service Improvement Requests



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11. Many of the region’s transit agencies have unique brands and provide information independently of each other.

Many agencies and transit services operate in the Linn-Benton region, including two urban transit systems and six regional or intercity routes – each with their own unique name and branding. Each agency provides their own maps, schedules, fare information, and contact information on their independent websites. Some agencies provide additional information that others do not, such as trip planners and service alerts. Additionally, each agency provides different fare types and has different costs for riders.

Inconsistent information and branding can make connections to and from the Linn-Benton Loop more confusing for transit riders, and particularly new or inexperienced ones. The transit rider experience could be improved with consistent information and branding across the region. This can be accomplished through a regional effort, which could range from small changes (e.g., each organization reorganizes their webpages so they are consistent), to larger changes (e.g., developing a unified brand for services across the region).

Figure 12 Transit Brochures in the Linn-Benton Region



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3 TRANSIT ENHANCEMENTS

OVERVIEW

This chapter describes the proposed 10-year vision for the Loop, including proposed route alignments, frequency, span, and days of service. This vision was established based on service requests from passengers, technical analysis, the workshop with regional stakeholders, and refinements based on feedback from the TAC.

The specific service improvements were grouped into four phases. Phases 1 through 3 are constrained within the expected operating budget determined through this planning project (\$1.3 million annually, or \$600,000 above today's estimated budget). Phase 4 includes additional service beyond this targeted annual budget, with the assumption that Linn Benton Loop partners could consider long-range service enhancements as conditions and funding allow.

Figure 13 provides the operational and financial assumptions used to build the Linn-Benton Loop phasing.

Figure 13 Assumptions

Assumption	Value	Details
Weekday service days	252	5 days per week, 52 weeks per year, excluding eight holidays
Saturday service days	53	52 Saturdays per year, plus service on day after Thanksgiving
OSU/LBCC Fall-Spring session days	165	Based on 2018–19 academic calendar
OSU/LBCC Summer semester days	53	Based on 2019 Summer academic calendar
Average operating speed	25 mph	Based on Loop data. Speeds 17–30 mph, average 25.7 mph.
Revenue hour cost	\$150	2018–18 annual budget divided by annual revenue hours
Annual budget (2017–18)	\$700,000	2017–18 Loop budget (rounded)
Annual revenue hours (2017–18)	4,700	2017–18 Loop data (rounded)
Additional revenue from Oregon STIF	\$600,000	Estimated Qualified Entity commitment
Total scenario planning budget	\$1,300,000	Existing annual budget + Additional STIF revenue
Vehicles available for service	3	2 existing + 1 new (TAC input)

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VISION

The Linn-Benton Loop in 2030 will continue to be a robust regional service connecting Albany and Corvallis, providing reliable service for commuters, university students, and people making intercity connections at Albany Station.

The Linn-Benton Loop will be composed of three routes:

- **Regional:** weekday and Saturday service between OSU/Downtown Transit Center, LBCC and Albany Station via Highway 34 and 99E
- **Campus Connector:** weekday service between OSU/Downtown Transit Center and LBCC via Highway 34
- **Highway 20 Commuter:** weekday peak-hour service between OSU/Downtown Transit Center and Albany Station via US-20

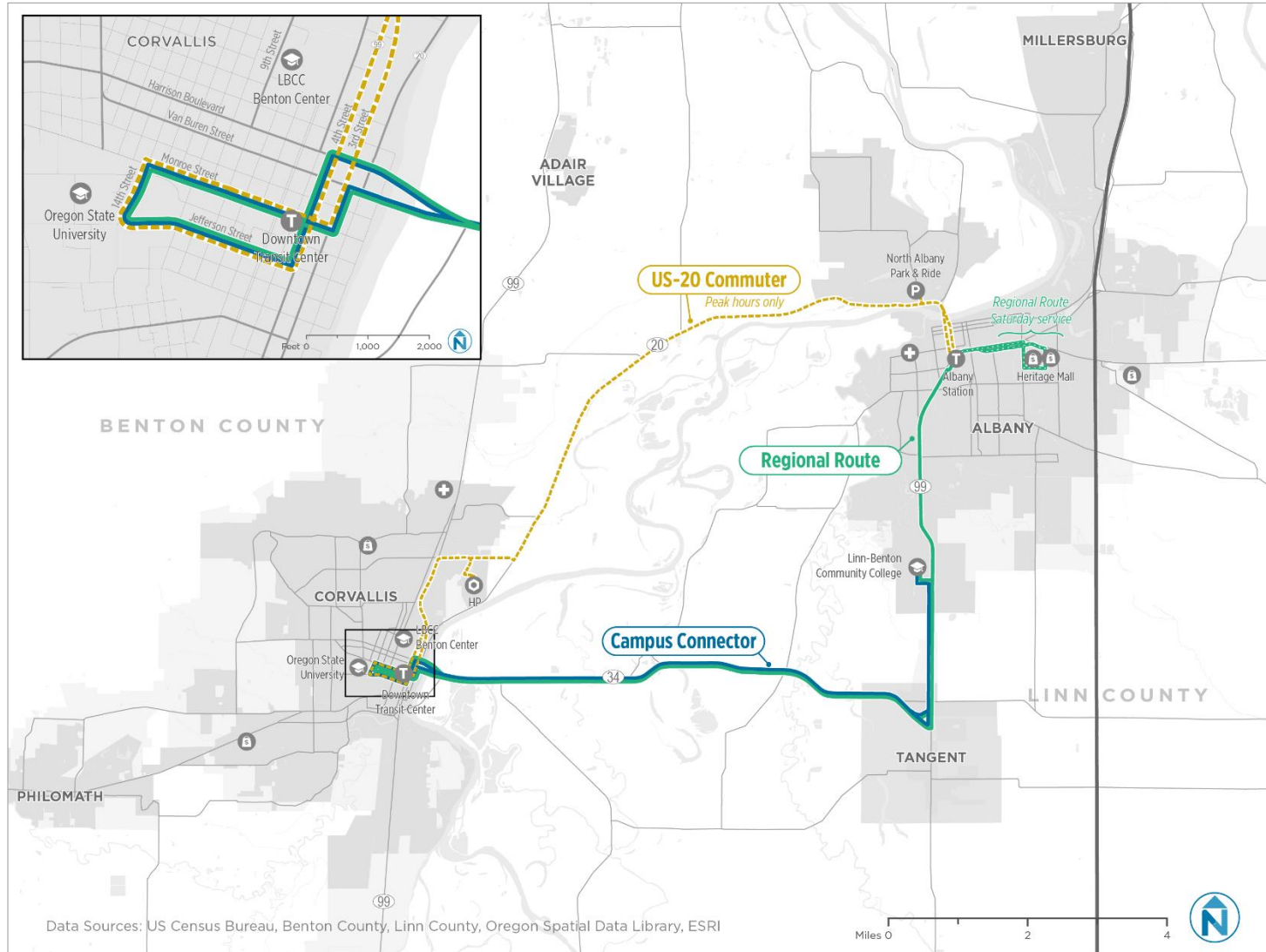
Figure 14 lists the routes, and identifies key operations characteristics. **Figure 15** presents a map of the future system.

Figure 14 Regional Transit Vision Routes

Route	Service Days	Time of Year	Hours of Service	Frequency (min)	Vehicles
Regional Route ●	Monday-Friday	All year	6 am – 9 pm	75	1
	Saturday	All year	8 am – 6 pm	75	
US-20 Commuter ●	Monday-Friday	All year	6:30 – 9:30 am 4 – 7 pm	60	1
Campus Connector ●	Monday-Friday	OSU/LBCC academic term	7 – 10 am and 3:30 – 6 pm	60	2
			10 am – 3:30 pm	30	
		Semester breaks	7 am – 6 pm	60	

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Figure 15 Regional Transit Vision Map



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PHASING

The vision will be implemented over 10 years in four phases. Service data are summarized in **Figure 16** and described in more detail below.

Figure 16 Phasing Summary

Service Data	Existing	Phase 1	Phase 2	Phase 3	Phase 4
Frequency (min)					
Loops	75	-	-	-	-
Express and Midday	60-75	-	-	-	-
Regional	-	-	75		
Campus Connector	-	-	60	30-60	
Academic Terms	-	-	60	30 peak / 60 off-peak	
Breaks and Summer	-	-	-	-	60
US-20 Commuter	-	-	60		
Days of Service					
Loops	Monday-Friday / Saturday		-	-	-
Express and Midday	Monday-Friday		-	-	-
Regional	-	-	Monday-Friday / Saturday		
Campus Connector	-	-	Monday-Friday		
Academic Terms	-	-	Monday-Friday		
Breaks and Summer	-	-	-	-	Monday-Friday
US-20 Commuter	-	-	Monday-Friday		
Span					
Loops	Weekdays: 6:30–10 am; 3–7 pm		-	-	-
Express and Midday	6:40 am – 5 pm	6:40 am – 9 pm	-	-	-
Regional	-	-	Weekdays: 6 am – 9 pm / Saturdays: 8 am – 6 pm		
Campus Connector	-	-	7 am – 6 pm		
Academic Terms	-	-	7 am – 6 pm	60-min service: 7-10 am; 3:30-6 pm 30-min service: 10 am – 3:30 pm	
Breaks and Summer	-	-	-	-	7 am – 6 pm
US-20 Commuter	-	-	6:30 – 9:30 am; 4 – 7 pm		
Vehicles					
Loops	Vehicle 1		-	-	-
Express and Midday	Vehicle 2		-	-	-
Regional	-	-	Vehicle 1		
Campus Connector	-	-	Vehicle 2	Vehicle 2 and 3	
Academic Terms	-	-	Vehicle 2	Vehicle 2 and 3	
Breaks and Summer	-	-	-	-	Vehicle 2
US-20 Commuter	-	-	Vehicle 3		

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Phase 1

The first phase of the Linn-Benton Loop service enhancement will continue the current operating pattern of service with loop routes. However, service will be extended later in the day on the Afternoon Express to provide service for LBCC students who attend evening and night classes. Additionally, this phase will allocate funds for bus stop amenities, marketing, and administrative costs to support the future expansions that are expected to be implemented in later phases. This phase will also include the purchase of one new vehicle, which is expected to enter service at the start of Phase 2 in July 2022.

The following are the specific tasks within this phase:

- Extend Afternoon Express by four hours to provide bi-directional service between LBCC and Downtown Corvallis every hour (i.e., extend end of service from 5 to 9 pm).
- Purchase one 40-foot bus to expand active fleet from two to three vehicles. The new vehicle is expected to take 12-18 months to build and be ready for service.
- In coordination with ATS and CTS, identify potential bus stop improvements, including new shelters, seating, lighting, and bus stop signage. Prioritize improvements at the busiest stops and where service will continue to operate following Phase 2 implementation.
- Develop outreach strategy to educate existing and potential riders on service changes in future phases and to market improved frequency and new route structure.
- Develop a brand refresh to be introduced with Phase 2, including new name and logo. This change is intended to highlight the service changes and to drop the “Loop” designation to avoid confusion with new bi-directional services.
- Consider allocating funds into a reserve to support later capital purchases or to cover unforeseen operational or vehicle maintenance expenses.

Phase 2

Following the acquisition of the third vehicle, Phase 2 will restructure the Linn-Benton Loop system into three routes that each operate independently. Service will be maintained at all locations where the Loop operates today, though frequency, span, and direction of service will change depending on location and time of day. This restructuring will allow service levels to be more easily adjusted in the future to respond to demand and service needs. The three routes are:

- **Regional:** service will operate bi-directionally between Albany Station and Downtown Corvallis/OSU via OR-99E, LBCC and OR-34. On weekdays it will operate for 15 hours per day from 6 am to 9 pm, with service every 75 minutes, using one vehicle. On Saturdays, it will operate for 10 hours, from 8 am to 6 pm with no service on US-20 or 9th Street
- **Campus Connector:** service will operate bi-directionally between LBCC and Downtown Corvallis/OSU via OR-34 on weekdays during OSU/LBCC academic term only (with no service during summer term or semester breaks). It will operate every 60 minutes for 11 hours between 7 am and 6 pm, with one vehicle.
- **US-20 Commuter:** service will operate bi-directionally between Albany Station and Downtown Corvallis/OSU via US-20, HP and OR-99. Service will operate on weekdays during peak hours only, with three bi-directional trips in the morning (6:30 to 9:30 am) and three in the evening (4 to 7 pm). This route will require one vehicle.

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Like in Phase 1, Phase 2 will allocate funds for marketing, bus stops, and administration costs. Additionally, Phase 2 will include the purchase of an expansion bus. This will create a full service and spare vehicle fleet independent of Albany Transit System, to increase reliability, safety, and state-of-good repair.

Phase 3

Phase 3 continues the service established in Phase 2, with the Regional Route and US-20 Commuter continuing to operate as in Phase 2. The Campus Connector will increase service frequency from every 60 to 30 minutes between 10 am and 3:30 pm. This is when passenger load and demand between LBCC and Corvallis are greatest.

The Campus Connector hourly service will remain unchanged between 7 and 10 am, and between 3:30 and 6 pm. The route will operate when OSU and LBCC classes are in session, but not during winter and summer breaks. The vehicle for this 30-minute service will be the same that serves the US-20 Commuter route.

Phase 3 includes funds for marketing and administration. The funds for these tasks are less than in Phase 2 to accommodate the increased operating costs.

Phase 4

Phase 4 is the last step to complete the 10-year transit vision. This phase's operational costs would exceed the additional \$600,000 STIF revenues planned, so additional revenue will be needed for implementation. In this phase, the Campus Connector will switch from academic term to year-round, including during OSU/LBCC semester breaks and summer term, with the 30-minute frequency of service only operating during the academic term.

FINANCIAL PLAN

Figure 17 provides the financial details of the Enhancement Plan, including the source of funds for operations, vehicles, and bus stops and the expected available budget.

Phase 4 is expected to be over budget by approximately \$144,000. To cover these cost overruns, potential funding sources to be considered are listed below. Each of these options will require analysis to determine consistency with local and state laws, effectiveness, and expected amount of revenues that could be generated:

- Employer payroll tax
- Gasoline tax
- Transit district property tax
- Local option sales tax
- Motor vehicle registration fee
- Utility fee
- Public-private partnerships

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Figure 17 Expenditure Details (Fiscal Year Ending)

Fund	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
	<i>Existing</i>	<i>Phase 1</i>	<i>Phase 2</i>	<i>Phase 2</i>	<i>Phase 3</i>	<i>Phase 3</i>	<i>Phase 4</i>	<i>Phase 4</i>	<i>Phase 4</i>	<i>Phase 4</i>	<i>Phase 4</i>
Task 1: Operations											
STIF Formula	-	\$151,450	\$450,550	\$450,550	\$586,675	\$586,675	\$586,675	\$586,675	\$586,675	\$586,675	\$586,675
Federal	\$335,000	\$335,000	\$335,000	\$335,000	\$335,000	\$335,000	\$335,000	\$335,000	\$335,000	\$335,000	\$335,000
Other State	\$35,000	\$35,000	\$35,000	\$35,000	\$35,000	\$35,000	\$35,000	\$35,000	\$35,000	\$35,000	\$35,000
Local	\$230,000	\$230,000	\$230,000	\$230,000	\$230,000	\$230,000	\$230,000	\$230,000	\$230,000	\$230,000	\$230,000
Other	\$95,000	\$95,000	\$95,000	\$95,000	\$95,000	\$95,000	\$238,550	\$238,550	\$238,550	\$238,550	\$238,550
Subtotal	\$695,000	\$846,450	\$1,145,550	\$1,145,550	\$1,281,675	\$1,281,675	\$1,425,225	\$1,425,225	\$1,425,225	\$1,425,225	\$1,425,225
Task 2: Vehicles											
STIF Formula	-	\$88,000	-	\$88,000	-	-	-	-	-	-	-
Federal	-	\$352,000	-	\$352,000	-	-	-	-	-	-	-
Replacement	-	-	-	\$440,000	-	-	-	\$440,000	-	-	\$440,000
Subtotal	\$0	\$440,000	\$0	\$880,000	\$0	\$0	\$0	\$440,000	\$0	\$0	\$440,000
Task 3: Bus Stops, Marketing, and Administration (or reserve)											
STIF Formula	-	\$60,550	\$149,450	\$61,450	\$13,325	\$13,325	\$13,325	\$13,325	\$13,325	\$13,325	\$13,325
Subtotal	\$0	\$60,550	\$149,450	\$61,450	\$13,325	\$13,325	\$13,325	\$13,325	\$13,325	\$13,325	\$13,325
TOTAL	\$695,000	\$1,347,000	\$1,295,000	\$2,087,000	\$1,295,000	\$1,295,000	\$1,438,550	\$1,878,550	\$1,438,550	\$1,438,550	\$1,878,550
TOTAL (excluding Federal Capital and Replacement)	\$695,000	\$995,000	\$1,295,000	\$1,295,000	\$1,295,000	\$1,295,000	\$1,438,550	\$1,438,550	\$1,438,550	\$1,438,550	\$1,438,550
Budget	\$695,000	\$995,000	\$1,295,000	\$1,295,000	\$1,295,000	\$1,295,000	\$1,295,000	\$1,295,000	\$1,295,000	\$1,295,000	\$1,295,000
Balance	\$0	\$0	\$0	\$0	\$0	\$0	-\$143,550	-\$143,550	-\$143,550	-\$143,550	-\$143,550

Note: All figures in constant 2018 dollars; Vehicle match is typically 20% in both federal and STIF Discretionary programs, but can be as low as 10% for projects serving low income communities.

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FUTURE CONSIDERATIONS

The funding amounts assumed in the phasing of the transit system is an estimate that could change in the future, based on increases or decreases in employment, wages, and taxpayer compliance rates in both Linn and Benton Counties. The lists below present an array of potential options for how to adjust service plans based on funding levels. The two counties and the Linn-Benton Loop Governing Board will need to work collaboratively to identify the service changes that make sense based on available funding, regional priorities, and how far along the region is to achieving the regional transit vision.

Additional funds available

If there are additional funds available, the following are potential options that could be considered to expand service:

- Invest in a bus tracker and real-time arrival information software. Purchase real-time displays for busiest stops.
- Extend the Campus Connector and/or Regional Route to the Benton Center on weekdays.
- Extend the Regional Route to Heritage Plaza on weekdays.
- Extend the Regional Route to WinCo on Saturdays (or all week – Monday through Saturday).
- Add extra trips on the US-20 Commuter.
- During academic terms, expand the hours of the day when the Campus Connector operates every 30-minutes, rather than only between 9 am and 4 pm.
- Provide 30-minute frequency on the Campus Connector between 9 am and 4 pm all year, rather than only during the academic terms.
- Use three buses on the Regional Route to provide 30-minute frequencies between Albany Station and OSU/DTC. Eliminate the Campus Connector.
- Add Sunday service.

Insufficient funds available

If there are insufficient funds to proceed with the next phase of the enhancement plan, the priority should always be to maintain service and defer additional enhancements until funding is available. However, if funding levels drop below operating costs, the following should be considered:

- Use local funds to provide stopgap funding (either public funds, or contributions from local/regional intuitions and businesses)
- Reduce frequency on the Campus Connector to every 60 minutes.
- Limit service on the Campus Connector to OSU/LBCC academic terms only.
- Terminate US-20 Commuter at HP or at 9th & Circle and ensure timed transfers to/from CTS.
- Eliminate or reduce frequency on the US-20 Commuter.
- Eliminate or reduce the Campus Connector and provide service on OR-34 and OR-99E with the Regional Route.

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- Eliminate or reduce service between LBCC and Albany Station and ensure timed transfers to/from ATS.
- Eliminate Saturday service to Heritage Plaza.

CAPITAL ELEMENTS

Successfully implementing the service improvements depends upon investments in capital elements, including vehicles, bus stops, and real-time bus arrival infrastructure. These elements serve an important function in the transit system and improve the comfort and convenience of passengers.

Vehicles

The vision requires the purchase of one additional vehicle for service (for a total of three buses for maximum service) and a second additional vehicle as a spare. The current fleet includes one 35-foot bus and one 40-foot bus. Due to high on-board loads, future vehicles should all be 40 feet in length to ensure sufficient capacity and reduce likelihood of pass-ups.

Bus stops

Transit trips require at least some time spent waiting at a bus stop. Bus stop amenities should be provided at stops with the highest number of passenger boardings, with consideration for stops likely to serve more people with disabilities or older adults. Amenities include new shelters, seating, lighting, and bus stop signage. Real-time arrival displays should be included at major stops as well.

Real-time arrival

Real-time arrival information helps passengers know when to expect the bus and studies have shown real-time arrival reduces perceived wait time by passengers.⁷ At a basic level, real-time arrivals can be provided by telephone, text or an app-based system. Some agencies have invested in real-time arrival displays at bus stops that update automatically to show the wait time to the next several buses. This technology needs to be closely coordinated and integrated with neighboring transit areas like Corvallis Transit System and Albany Transit System, to maximize service delivery efficiency and coordination.

MEASURING SUCCESS

The table in **Figure 18** presents the evaluation of the service enhancements through Phase 3, which is the last phase anticipated to have available funding to implement the vision. The metrics demonstrate an increase in span, increased frequency, more trips between most destination pairs, and improved connectivity.

The most notable result of the evaluation is the significant increase in trips available by market. Trips available by market is a number, which represents both access to people and jobs, as well as frequency. It multiplies the number of people or jobs within ¼ mile of stops on each route, by the number of trips. The numbers for each route were added together to represent the overall scenario totals.

⁷ Rabi Mishalani, Mark McCord and John Wirtz. "Passenger Wait Time Perceptions at Bus Stops: Empirical Results and Impact on Evaluating Real-Time Bus Arrival Information." *Journal of Public Transportation*, Vol. 9, No. 2, 2006. https://www.nctr.usf.edu/jpt/pdf/JPT_9-2_Mishalani.pdf

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The four metrics (population, jobs, low-income households, and students) all have significant changes, increasing between 121% and 182%. These values indicate that people, jobs, and households within ¼ mile of stops have much more frequent service than the existing service.

The number of people and jobs within ¼ mile of bus stops on weekdays in Phase 3 is expected to be slightly reduced from the existing service. This is a result of consolidating the routing in downtown Corvallis for consistency between routes and moving the Commuter service from 9th Street to Highway 20 to maintain consistent cycle times. Specific bus stop and route alignments should be further evaluated in detail before implementing expanded service; any adjustments to stop locations may impact these evaluation results. Access and coverage metrics on Saturday are reduced due to the elimination of service on US-20 and 9th Street.

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Figure 18 Service Evaluation

Category	Metric	Detail	Existing	Phase 3
Cost	Annual operating cost	-	\$ 695,250	\$ 1,281,700
Schedule and Frequency	Days of operation	-	Monday-Saturday	Monday-Saturday
	Service span (hours)	Monday-Friday	12.5	15
		Saturday	9	10
	Headway (minutes)	Monday-Friday	60-75	30-75
		Saturday	75	75
	Number of weekday vehicle trips connecting select destinations (trips in each direction)	North Albany Park-and-Ride to HP	3	6
		North Albany Park-and-Ride to LBCC	11 (including ATS)	8 (on ATS)
		LBCC to DTC	12	28
		LBCC to OSU	8	28
		Albany Station to DTC	6	18
Quality of Service	Travel times on weekdays between select destinations (in minutes)	North Albany Park-and-Ride to HP	15	15
		North Albany Park-and-Ride to LBCC	20 on Loop 30 on ATS	30 on ATS
		LBCC to DTC	25	25
		LBCC to OSU	25	25
		Albany Station to DTC	40	30
	Transit connectivity and integration (Percent of trips with connections to LB Loop within 20 minutes at LBCC, DTC or Albany Station based on conceptual schedules)	ATS	44%	50%
		CTS	24%	79%
		Linn Shuttle	37%	67%
Access and coverage	Population within ¼ mile of stops	Monday-Friday	9,600	6,300
		Saturday	7,700	7,400
	Low-income households within ¼ mile of stops	Monday-Friday	2,100	1,200
		Saturday	1,600	1,600
	Jobs within ¼ mile of stops	Monday-Friday	9,300	6,200
		Saturday	7,100	6,800
	Total weekday trips available by market (vehicle trips * market size)	Population	102,000	236,000
		Low-income households	15,000	36,000
Jobs		99,000	219,000	
Students		867,000	2,530,000	