Performance Review

of Lane Transit District's Gateway EMX

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CSA Planning, Ltd. (CSA) takes this opportunity to acknowledge the financial support for this study from Local Chamber member businesses. Our firm has a professional interest in transportation systems that work for communities and we believe successful and sustainable transit service is often a key element for efficient and effective transportation systems. In many ways the Eugene-Springfield EMX system is a pioneering effort to bring a transit service format typically found in large metropolitan areas into a more mid-metro region. It was a great opportunity for our firm to study the successes and the challenges for this pioneering effort up close.

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1 INTRODUCTION AND BACKGROUND

This section provides our understanding of the background and context under which this performance assessment of the Gateway EMX was conducted. This document describes the methods and results of CSA Planning Ltd.'s assessment of the Gateway EMX Bus Rapid Transit service route. The purpose of the assessment is to evaluate the general performance of the route in relation to the expectations laid forth in the Environmental Assessment that served as the foundational document to justify the project.

1.1 Engagement

CSA Planning Ltd. was engaged by Eugene Area Chamber member businesses to provide the Chamber with independent analysis of the Gateway EMX performance.

At the outset of this engagement, CSA explained to the member Businesses that this assessment is limited by CSA's understanding that Eugene and Springfield adopted policies that seek to have a high-quality public transportation service for a community of this size. This limitation sets forth the standard of review to be the overall performance of the Gateway EMX transit service in relation to the expectations provided to the community during the project planning phase of the project.

This engagement is not intended to function as a comprehensive audit of the Gateway EMX in every detailed respect. There are many dimensions to consider for a construction project and on-going service of the scope and scale of the Gateway EMX project. Rather this assessment seeks to compare operating performance for key indicators of project when the project was in the planning stages in relation to the observed operational performance.

1.2 Lane Transit District Background

Lane Transit District (LTD) is a Mass Transit District organized pursuant to ORS 267.085-267.097. The Board of Directors are appointed by the Governor and confirmed by the Oregon Senate. LTD's service district boundary is interesting because a very large portion of the land area within the service district is rural and not urban. Lane Transit District operates fixed-routes throughout Eugene and Springfield and rural commuter routes that connect adjacent unincorporated areas and the nearby communities of Blue River, Coburg, Junction City, Veneta, Creswell, and Cottage Grove to the metro area.

LTD has completed two Bus Rapid Transit projects. The first was from Eugene Station to Springfield Station and is referred to as the Franklin EMX (which is an abbreviation for Emerald Express). The second project was the Gateway EMX. A third BRT is under construction and is referred to as the West Eugene EMX. The BRT projects have been constructed using funding from the Federal Transit Administration's Small Starts program. Small Starts grants fund construction of new *fixed guideway* transit services.

1.3 Gateway EMX Planning, Development and Operations

The Gateway EMX was LTD's second Bus Rapid Transit project within its service district. The first project was the Franklin EMX that connected the Springfield LTD station with the downtown Eugene LTD Station. Planning for the Gateway EMX was conducted from 2002 through 2006. The Environmental Assessment for the Gateway EMX was completed in September 2006. The physical construction of the project occurred from 2009 through 2010. The Gateway EMX began service operations in January 2011. The Gateway EMX is completing its fifth year of operations in 2015.

1.4 Route Description and Regional Transportation Context

The Gateway EMX operates as an extension of the Franklin EMX. The BRT busses run from the Eugene Station to the Springfield Station. The EMX busses dwell at the Springfield Station and then continue to the Gateway EMX Route. The route is approximately 7.6 miles long. Current operations run both directions around an outer loop that begins at the roundabout intersection of Harlow Road and MLK Jr. Boulevard/Pioneer Parkway. The Gateway EMX includes the following stations:

Station	Description
Springfield	This is the main station for the Gateway EMX and is where most of the transfers occur. It is the beginning and end of the route and is off-street.
E Street	Outbound station – Curbside Left Exit on one-way
F Street	Inbound Station – Curbside Left Exit on one-way
Centennial	Both Directions - Left Exit center island
Q Street	Both Directions - Right Exits with offset center island
Hayden	Both Directions - Left Exit center island
Pheasant	Both Directions – Offset curbside Right Exits
Guy Lee	Both Directions – Offset curbside Right Exits
Gateway	Both Directions – Unique off-street station design that serves as a transfer point between Route 12 and the Gateway EMX.
Postal Way	Both Directions – Offset curbside Right Exits
Kruse Way	Both Directions – Offset curbside Right Exits
International Way West	Both Directions - Left Exit center island
International Way Center	Both Directions - Left Exit center island
International Way East	Both Directions - Left Exit center island
Pavilion	Both Directions - Left Exit center island
Sacred Heart	Both Directions - Left Exit center island
Riverbend	Both Directions - Left Exit center island

The current operations run on ten minute headways for the non-loop portion in each direction. In the loop portion of the route, they run on approximately 20 minute headways each direction. The Gateway EMX stops at every station. The Gateway EMX has physically improved covered stops with digital schedule boards and the busses themselves are

articulated with a published capacity of 44 seated and 100 standing load (standing load includes seated and standing passengers).

The EMX system operated by Lane Transit District is an important part of the larger transit system and also the region's transportation system. The Regional Transportation Plan for the Central Lane MPO plans for the long-term expansion of the EMX system to serve regional transit needs as part of the region's overall transportation strategy.

2 ASSESSMENT METHODOLOGY

This section describes CSA's approach and methodology for the performance assessment.

2.1 Review of the Literature

To assess the performance of the Gateway EMX system it is necessary to review and understand the background documents and information that underpin the Gateway EMX operation. CSA reviewed many background documents as part of this assessment and key reviews are briefly described below.

2.1.1 NEPA Documentation

Major federal projects require review under the National Environmental Policy Act (NEPA). The purpose of a NEPA review is to identify potential impacts from the project on the Human Environment. In practice, the NEPA documentation for a project also functions as the planning document for the project. Guidance for NEPA documentation for transit projects is published by the Federal Transit Administration.

CSA obtained digital copies of the Environmental Assessment (EA) for the project from Lane Transit District. CSA reviewed the EA with particular focus on the original performance metrics that were projected in the EA for future operating conditions of the Gateway EMX. Future projections in the EA were generally for year 2025 or 2030.

2.1.2 Other Data and Information Sources

The project reviewed a wide variety of other data and information related to the Gateway EMX to increase the knowledge base for this assessment. Recent Board of Directors packets published on LTD's website were reviewed for information that has been provided to the Board on EMX performance. The project reviewed LTD's Consolidated Annual Financial Reports (CAFR) for the last several years to gain a general understanding of the financial position of the organization and basic financial operating characteristics.

2.2 Quantitative Assessment

The assessment evaluates the performance of the system from a quantitative perspective in terms of capacity and in comparison to the station utilization projections that were developed in the planning phase of the Gateway EMX project.

2.2.1 Typical Day High Demand Period Capacity Assessment

From a capacity assessment standpoint, the analysis took a straightforward approach. On April 14, 2015, CSA Planning Principal Jay Harland rode the EMX in the morning and early evening periods and counted ridership. These counts were taken on a typical Tuesday when University of Oregon was in session and the weather was a light rain in the morning that cleared off in the afternoon with temps in the mid 40's to the upper 50's during the day. The counts were taken on two busses from approximately 8:00 am to 9:30 am, an additional bus from approximately 10:45 am to 11:30 am, and two busses in the afternoon from approximately 4:00 pm to 5:30 pm. These counts were taken to capture demand levels during high demand periods on a typical weekday. Also, a bus was taken from Springfield Station to Eugene Station and back between 9:30 am and 10:45 am to gain some comparison of the Franklin EMX Route to the Gateway EMX Route. The counts captured boardings and alightings at each stop as well as the number of passengers on the bus as it exited the stop. These counts are provided in Appendix B.

For purposes of comparison to initial projections, the EA contains published data at Table 6-9 that projects a 20.5% utilization of average weekday place miles; the EA defines average weekday place miles as, "A place mile is calculated by taking the number of passenger spaces available (i.e., seated and standing places) for each vehicle type, multiplied by the 2030 average weekday vehicle miles traveled for each vehicle type." The utilization projections in the EA are somewhat confounded by the definition of the corridor in the EA analysis that included a significant length of the Franklin EMX (stops including McVay, Lexington and Glenwood) that has ridership patterns that are substantially independent of the Gateway EMX.

2.2.2 Ridership Counts at Selected Transit Stops

To compare planned ridership projections to actual ridership volumes, manual ridership counts were taken at selected EMX transit stops. The selected count locations were identified based upon the ridership forecasts published in the EA that served as the basis to justify the Gateway EMX project. Table 4-16

EA Table 4-16. Corrridor Originating Transit Trips and Initial Boardings at Select Locations -	Existing 2002	2025 No-Build	2025 LPA
Initial Boardings [and Alightings] at Selection Locations			
Springfield Station	246	421	453
PeaceHealth RiverBend	0	318	735
Gateway Station	333	125	164
Pioneer Parkway / Centennial Boulevard	n/a	57	468
Transfer Boardings [and Alightings] At Selected Locations			
Springfield Station	1,896	3,592	4,084
PeaceHealth RiverBend	0	0	122
Gateway Station	350	1	9
Pioneer Parkway / Centennial Boulevard	1	5	323
Total			***6,358***

The EA Table 4-16 is the projection in the EA that can be verified manually in the most straightforward fashion. However, even these seemingly simple projections have some idiosyncrasies.

The Springfield Station is a major transit stop with a lot of transfers and this was the case even in 2002 which was five years before the initial operation of the Franklin EMX. The projections do not separately report which trips are transfers to and from Eugene Station which are not properly counted as Gateway EMX trips because they would have been present with or without the Gateway EMX. For this assessment, the counts include only boardings bound for the Gateway EMX and alightings from the Gateway EMX to capture the usage at Springfield Station specific to the Gateway EMX project.

For PeaceHealth/Riverbend, the issue was location. It appears the EA projections are for the main hospital stop which is called "Sacred Heart" on the system but is referred to as "Riverbend" in the EA. The "Riverbend" station on the constructed system is actually a station that is not near much development and appears to have low utilization.

With respect to Centennial and Gateway there are some pretty big differences in system assumptions from current conditions in the ridership projections. Gateway is currently a major stop with transfers with Route 12. Centennial has no direct connecting routes in 2015 but it is possible to transfer from Route 13 with a short walk. The 2025 projections have a reduction in transfers (to almost zero) at Gateway and a large increase in projected transfers at the Centennial stop. This is difficult to reconcile.

The raw count data is provided in Appendix B. Overall, the count data appeared very accurate and CSA staff performed a significant amount of back-up counts that matched well with the primary counts. Gateway was the one stop where the counts had a few missing data points in the morning hours; average ridership before and after those data points was used to arrive at an estimate[1]. The final bus count for each stop was based upon averages from the

[1] The EMX arrives at Gateway at approximately the same time both directions and a possible explanation is that the counter counted both busses going both directions on a single line on the count data sheet. Adding the "averaged" data points was therefore "favorable" to LTD. The averages amounted to an additional 40 passengers or about 10% of the total daily count. This is within a range one might expect the ridership fluctuate on a daily basis anyway and has negligible effect on the overall results and conclusions.

last four prior busses because the cost of this one final count was not worth the late hours being worked by the counters.

2.3 Qualitative Assessment

The qualitative assessment is not intended to function as a comprehensive qualitative evaluation of the Gateway EMX. There are many qualitative dimensions to a project and system like the Gateway EMX each of which could be the subject of in-depth study. However, the process of reviewing the literature and collecting the quantitative data was an opportunity to also accrue qualitative observations about the system and informs the overall assessment. The qualitative assessment accrued observations about aesthetics and overall design of the system, rider experience, capital investment, overall operations and maintenance.

3 RESULTS

3.1 High Demand Period Capacity Assessment

When compared to the 2030 projections from the Environmental Assessment, the Gateway EMX has a long way to go to operate substantially at its projected utilization rate by 2030. The below table compares the current observed data translated into place miles for comparison purposes and is based upon full standing load capacity of the EMX busses of 100 passengers that was the standard applied in the EA:

	Total Place Miles Counted	Place Miles Utilized	Utilization Percentage	Utilization Projected	Utilization Difference	% Below Projection
EA Corridor	2504	205.32	***8.2%***	20.5%	-12.3%	60.0%
Gateway Only	2301	159.23	***6.9%***	<20.5%	-13.6%	66.2%

The first line in the table represents the EA defined corridor. As described in the methods section, the EA defined corridor essentially gives credit for ridership on the Franklin EMX to the Gateway EMX's projected utilization. This resulted in a somewhat misleading utilization rate projection for the Gateway EMX in isolation. The observed data bears this out with a utilization rate that is 1.3 percent lower for the Gateway EMX alone when compared to the EA corridor in the second line in the table[2].

The *n value* for this count data set is small. It represents only a handful of bus rides on a single day. However, these rides were during peak ridership portions of the day when the University of Oregon was in session. The 20.5% projection for 2030 is based upon an average of the entire day. The below time of day analysis of ridership usage at individual

[2] The limited data collected for this part of the assessment was limited to two trips on the Franklin EMX. Thus, the utilization rates on the Gateway EMX itself had an appropriate geographic distribution across the line in its entirety the Franklin EMX is "under represented. If an equivalent number of rides on the Franklin EMX were to occur the spread between the "Gateway Corridor Only" and the "EA Corridor" would be expected to increase.

stops indicates a relatively large drop in ridership the last three service hours and the daily utilization rate would need to be high enough in the peak period to offset the lower utilization rates that occur during the latter part of the service day. For this reason, adding additional counts throughout the entire day to increase the sample size or adding additional count days for the whole day would not be expected to increase the observed utilization rates to a significant degree.

3.2 Transit Stop Utilization Analysis

3.2.1 Utilization EA Projections vs. Ridership Counts

The below table compares the 2025 projected stop utilization at locations selected by the EA documentation and full-day counts of utilization at those stops. Manual counting makes it difficult to accurately classify riders as transfers versus initial boardings. For this reason, the comparison is reported with total boardings and alightings that includes both transfers and initial boardings.

	Alightings	Boardings	Total 2015 Ridership	EA Predicted 2025 Ridership	Percent
Springfield	329	294	623	4,537	13.7%
Centennial	133	167	300	791	37.9%
Gateway	196	188	384	173	222.0%
Sacred Heart	59	36	95	857	11.1%
Totals			***1,402***	***6,358***	***22.1%***

The results show relatively dramatic differences between projected rider utilization at these stops and the actual observed utilization. While the differences reported in the above table are very large, the "real world" differences are likely smaller due to data definition differences at the Springfield Station location. After counting the data, the difference between the projections and actual counts is so large that it appears likely that the Springfield Station rider utilization projections included boardings and alightings for the Gateway EMX ***and*** the Franklin EMX. The ridership data that was counted for this assessment was specific to the Gateway EMX. In other words, ridership only counted boardings leaving Springfield Station and headed onto the Gateway EMX route and alightings arriving at Springfield Station from the Gateway EMX Route. This is the logical way to count this station because an Environmental Assessment produced through a NEPA review should be directed at the impact of the project subject to the NEPA review. The data in the EA is not sufficiently defined to know exactly what the 4,537 projected riders were intended to represent in the real world. If the projections did in fact include both the Franklin EMX riders (an existing condition for purposes of the Gateway EMX EA review) and the new Gateway EMX these projections the EA would have benefitted from a distinction between the two rider projections to provide a meaningful description of the actual project reviewed in the EA.

With respect to the Gateway Station, the higher ridership count over the projection appears due to elimination of transfers in the EA projections versus the observed transfers that are occurring under existing conditions. The EA predicts transfers at Gateway Station will be

near zero in the future year. However, observations at the platform during the count indicate a significant number of transfers occurring at the Gateway Station. Simply put, the EA projections include very different assumptions about future system transfer connectivity than the existing conditions.

Ultimately, the Sacred Heart Station and Centennial Station present the best data sets to evaluate performance against the EA projections. Centennial is at the heart of the route and is reflective of the ridership on the inner "two-way" portion of the Gateway EMX. Sacred Heart is the main station at the center of the hospital which was a major destination of the Gateway EMX project. Even these two stations do, however, have their own complexities, as follows:

- Centennial Station also has the potential for transfers between Route 13 but they present a limited problem for comparison purposes because the long-term EMX planning described in the EA shows a similar route to Route 13. Thus, Centennial Station has existing transfer patterns that should be substantially consistent with future year assumptions that were in the EA (but were not well defined). Also, the structure of the EA projections for 2025 at Centennial Station has a clean basis to create an upper and lower bound on the projections by considering the 2025 EA projections with and without transfers. The actual observed conditions for transfers at Centennial will fall somewhere between zero and the amount projected in the EA for Centennial.

- Sacred Heart station is one of three Gateway EMX stations at Peace Health/Riverbend. The original EA only planned two stations at the hospital. As such, one might expect a portion of the rider utilization projected in the EA to be diluted due to the extra station in this area that was ultimately constructed. An approximate mathematical solution can be achieved by dividing the count by 3 and multiplying it by 2 to reflect an even distribution of the ridership amongst three rather than two planned stops.

Applying solutions to the above issues yields two alternative tables for which a true *apples to apples* comparison should be mathematically bounded, as follows:

	Alightings	Boardings	Total 2015	2025 EA Projections	Percent
Centennial	133	167	300	791	37.9%
Sacred Heart	59	36	95	857	11.1%
Totals			***395***	***1,648***	***24.0%***

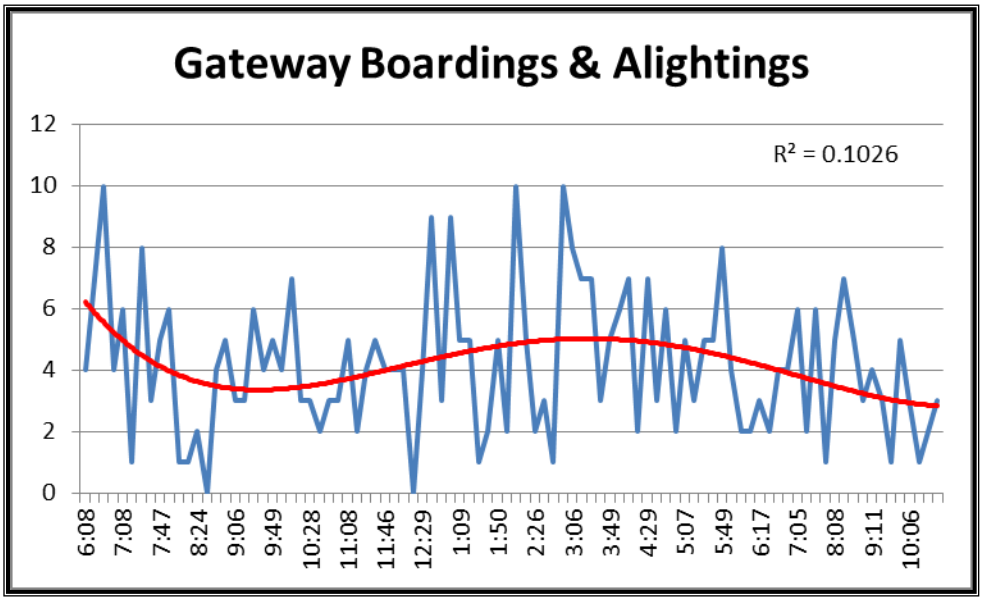
The above table reflects the straight comparison of the counted trips at the central hospital transit stop and assumes transfer patterns similar under current conditions to the planned conditions in 2025. The above table represents the lower bound of observed performance relative to projections in the EA. The below table has two adjustments from the above table. It adjusts proportionally the count for Sacred Heart to reflect the ultimate build-out of three stops as opposed to two and it assumes no transfers from Route 13 to the Gateway EMX are occurring at Centennial (even though it appear some are). The below table represents the upper bound of observed performance when compared to the EA projections.

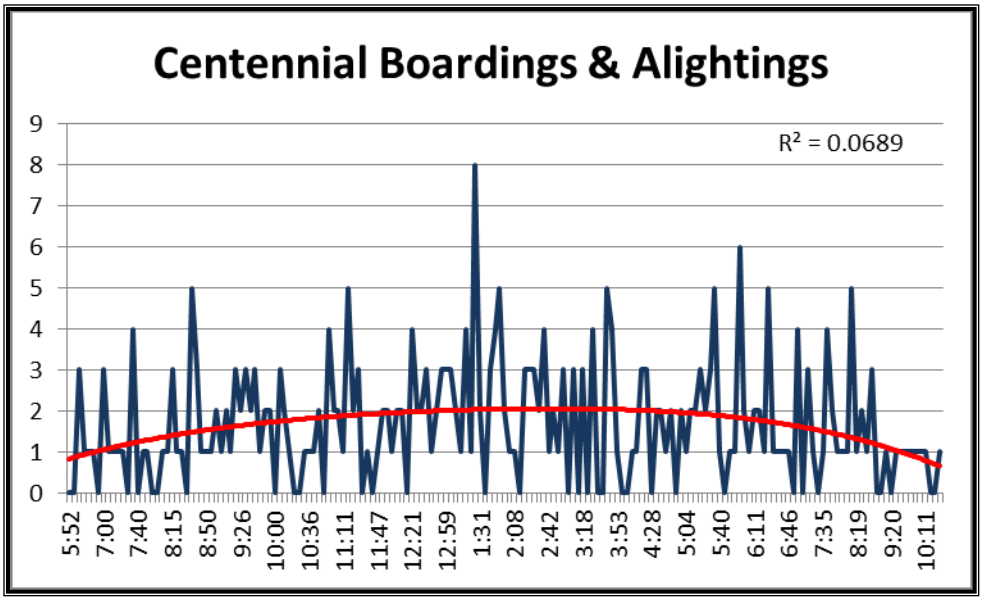
	Alightings	Boardings	Total 2015 with adjustment to Sacred Heart as if there were 2 stations	2025 EA Projections without Transfers at Centennial	Percent
Centennial	133	167	300	468	64.1%
Sacred Heart	59	36	143	857	16.6%
Totals			***443***	***1,325***	***33.4%***

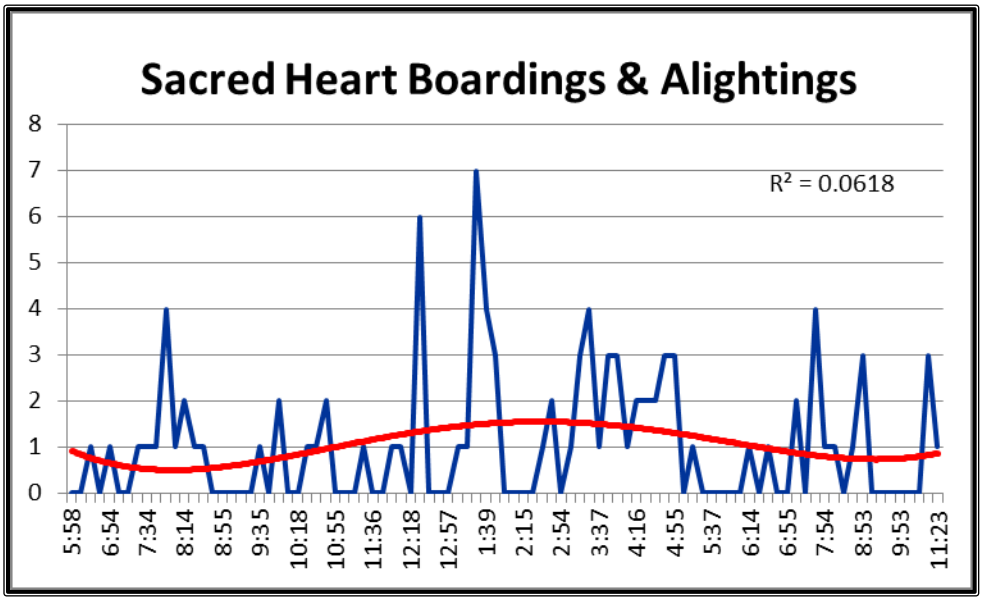
With operations beginning at the start of 2011, the Gateway EMX is one third of the way through the planning projection time period to 2025. The EMX is operating in the range of ***76 percent to 67 percent below*** the projections in the EA with only ten years of time for ridership growth to attain projections. It is not impossible that ridership projections will be attained over the next 10 years but it would appear to be unlikely.

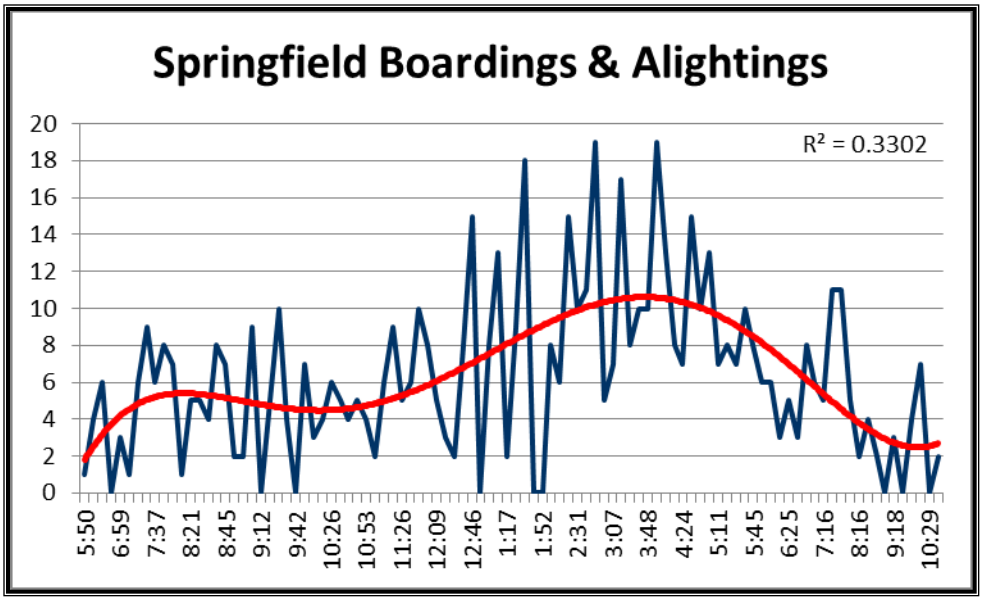
3.2.1 Time of Day Analysis

With boardings and alightings measured at four stops it is possible to describe the daily ridership patterns by time of day for each stop as depicted in the following graphs:




Centennial Boardings & Alightings
R² = 0.0689
9
8
7
6
5
4
3
2
1
0
5:52
7:00
7:40
8:15
8:50
9:26
10:00
10:36
11:11
11:47
12:21
12:59
1:31
2:08
2:42
3:18
3:53
4:28
5:04
5:40
6:11
6:46
7:35
8:19
9:20
10:11


Sacred Heart Boardings & Alightings
R² = 0.0618
8
7
6
5
4
3
2
1
0
5:58
6:54
7:34
8:14
8:55
9:35
10:18
10:55
11:36
12:18
12:57
1:39
2:15
2:54
3:37
4:16
4:55
5:37
6:14
6:55
7:54
8:53
9:53
11:23



The Springfield Station has enough ridership to depict the demand change over the course of the day. It is interesting that even the Springfield Station still has a high degree of volatility even during the peak demand periods as shown by the R^2 for the regression equation which is still relatively low. The Gateway Station boardings and alightings show a similar pattern. Sacred Heart has a small numbers problem where the ridership is so low that a discernable pattern over the day is not evident. Centennial Station presents an interesting pattern. There is a general rise in ridership in the morning hours and a decline in the evening hours but no discernable pattern. There are quite a few total boardings and alightings over the course of the day but the vast majority of stops have four or fewer boardings or alightings and there are many zeros. This may indicate that the short headways at this location result in passengers not planning trips around specific schedules but simply show up at the platform at the immediate time they seek to travel.

3.2.2 Seasonal Considerations

One might observe that the station counts were performed at a period when U of O was not in regular session. It is reasonable to expect that higher travel volumes would occur when U of O is in session. The below table compares boardings and alightings at the counted stations in August against the observations made April 14, 2015 when U of O was in session.

	Spring Observations	Spring Average	Summer Average	Difference	For a Day
Springfield	2	5	3.5	1.0	173.5
Centennial	6	1	1.7	-0.5	-92.3
Gateway	2	3	4.2	-1.7	-156.5
Sacred Heart	4	2	1.0	0.5	44.5
Total					***-30.8***

The observed ridership data did not support the expectation that ridership is higher when U of O is in session. The spring data has fourteen observations to compare at four stops so it may be a small numbers problem and additional observations might bear out a real difference due to U of O associated ridership.

However, the spring observations did occur during high demand periods versus an average over the entire day for the summer counts. One would have expected the comparison to show much higher ridership in the spring versus the summer counts for this reason alone.

If there is a meaningful difference that causes a "real increase" in ridership when U of O is in regular session then this difference is an area where further research would be beneficial[3]. This is especially true from a funding policy and service level perspective because it provides a baseline to discuss the degree to which the business community should be subsidizing university transportation needs through the payroll tax in the district.

3.2.3 Sources of Future Demand

Another important consideration in this review is the projection year versus the count year for purposes of review. In the case of capacity utilization, the EA included a projection to 2030 which is 15 years in the future. In the case of the boardings and alightings at selected stations, the forecast is for 2025 which is still 10 years in the future. Without count data available over several years that can be regressed upon, it is difficult to project the degree to which the ridership projections in the EA will ultimately be attained in the future projection years with a significant degree of precision.

It is, however, useful to consider the broad development patterns in the area to identify sources of future demand that might support ridership growth over time. There is considerable additional developable land near the PeaceHealth hospital at Riverbend and also in and around International Way. However, there is also a lot of development in this area that is already in place. It would appear there is sufficient developed area that existing ridership per built square foot could be compared to the assumptions in the EA projections. The current ridership rates could then be used to estimate future ridership at full build out of this area.

3.3 Qualitative Assessment

The Gateway EMX is an interesting BRT transit service to examine. BRT is defined by Levinson et al in 2003 as follows:

> A flexible, high performance rapid transit mode that combines a variety of physical, operating and system elements into a permanently integrated system with a quality image and unique identity.

BRT is a hybrid transit service type that provides services and facilities between a standard fixed-route on-street curbside bus service versus large-scale fixed-guideway mass transit like the Max Line in Portland, Oregon or the 'L' train routes in Chicago, Illinois that serve major metro areas. BRT combines the advantages of at-grade street operations and route design

[3] Additional counts were initially scheduled. However, the treatment by LTD security added risk and expense that the benefits of some additional data did not justify, see Appendix A

flexibility presented by busses with the advantages of more extensive stop infrastructure and a service design that is capable of handling high traveler volumes efficiently in dense urban areas.

The EMX BRT service at Lane Transit District is a very high quality public transportation service for a community of this size. When compared to the 30 other Metropolitan Statistical Areas (MSA) in the country that have Bus Rapid Transit, the Eugene-Springfield Metropolitan Statistical Area is one of the smallest and is in the bottom third in population density, *see below table*:

	2010 Weighted Density (US Census)	2014 Census MSA Population Estimate (via Wikipedia)
Eugene-Springfield MSA	2,787	358,337
Mean MSA's w/ BRT	5,272	3,589,256
Median MSA's w/ BRT	3,912	2,196,276
Difference from Median	-1,125	-1,837,939
Rank Order	22 of 30	29 of 30

The architecture and aesthetics of the Gateway EMX are attractive. Stations are clean. Pedestrian access to and from the stops is generally direct and convenient. The ITS system that provides bus arrival times appears valuable. The platform station payment system is also easy to use. With the exception of the confrontation with security of the "risk" posed by the counting activity, the security appeared excellent (see Appendix A for description of incident). The articulated busses are attractive and clean.

The relatively tight spacing of some of the stops in the loop portion of the route combined with very light usage of many of those stops does feel as if a significant portion of the "rapid" in bus rapid transit is not being achieved. The average station spacing on this portion of the route is 0.353 miles and the observed capacity utilization rate was under 6 percent. This was in sharp contrast to the Franklin EMX portion of the system where utilization appeared very high and the system felt urban and quite efficient.

4 CONCLUSIONS

Overall, the Gateway EMX was originally planned to utilize less than 20% of its functional operating capacity and it appears that actual utilization is less than 7%. Public services almost always have some unused capacity but this is considerable underutilization for an arterial route on a public service system. Imagine the size of the U of O campus if even one of the large colleges, like the College of Business for example, only utilized 7% of its available capacity on average and less than 20% even at peak demand periods? The EMX operations appear to be at around 60% less than the utilization projected in the original EA which raises issues of credence with respect to the planning document originally used to plan and justify the project.

Before this assessment can get to more detailed conclusions that can be reached from the analysis, it is important to state that the actual EA lacked the kind of detailed methodologies

and clear projections a major public project with on-going financial liabilities like this ought to have. Specifically, the EA does not contain the following:

- **Lack of day of opening or five year operations projections:** Spending over $30 million in construction plus the cost of operations liability based solely on ridership projections that are fifteen to twenty years after the date of initial operations is questionable public policy. Projections should have been provided for at least five years after the day of opening or the day of opening and probably both within the EA. Included in such projections should have been some projections that are verifiable with relatively straightforward counting methodologies. These projections should have been verified and performance made available to the public on the LTD website using Automatic Passenger Counter (APC) data as well as some hand counting to verify APC accuracy.

- **Lack of Level of Service (LOS) Benchmarks:** The EA generally treats the future year projections as the benchmarks for success. There is little in the way of policy targets that create a fulcrum for decision-making to construct and operate a BRT at a specific time. The EA presupposes that the long-range regional transportation plans to expand BRT in the region are all that is required and the ridership projections are the performance targets. This is a self-fulfilling policy approach that fails to recognize the obligation a service district has to operate efficiently throughout its operational life and relative to its total available service capacity.

Notwithstanding the limitations created by the EA structure itself, assessing the performance of the Gateway EMX should begin with the objectives set forth by Lane Transit District at the outset of the project in the EA. These are well framed in Section 1.3 of the EA, as follows:

> **1.3 Summary of Pioneer Parkway Goals for Selecting an Alternative**
> The LTD Board of Directors has adopted a goal and supporting objectives for the Pioneer Parkway Corridor.
>
> **Goal**
> *To provide a high quality, cost-effective transit improvement in the Pioneer Parkway Corridor that will support the community's land use and transportation goals, improve the efficiency and operation of the transportation system, provide environmental benefits, and reflect community values.*
>
> **Objectives**
>
> - Provide convenient, fast, reliable transit service in the corridor.
> - Maximize the efficiency of transit service operations along the corridor.
> - Support the desired land use patterns and development in the corridor.
> - Help accommodate future growth in travel demand in the corridor.
> - Seek opportunities to enhance the safety and operations for pedestrians, bicyclists, and motorists using the corridor.
> - Provide an environmentally sensitive design for the project.
>
> Transit improvements should meet a wide range of needs. Some objectives address LTD operational needs regarding service reliability, cost, and effectiveness. Others are designed to support community goals regarding land use and development. Finally, there

are objectives that address other users of the corridor and environmental concerns. Alternatives considered throughout this process, including within this EA, have been considered based on their ability to meet multiple objectives.

There are some goals that appear well supported by the Gateway EMX project. The service is reasonably convenient and appeared to be very reliable. Even when evening road construction near the Gateway Station began to affect bus travel the busses were still not delayed too significantly. The service is especially convenient on the non-loop portion of the route where headways are extremely low and travel times to the Springfield Station are short. Over time, it is reasonable to expect the EMX will support the continued build-out of the employment area in northwest Springfield. The assessment did not go into much depth with respect to safety, but initial impressions are that the system operates in a safe and conscientious manner.

With respect to other objectives the Gateway EMX appears to fall short in many respects, as follows:

- The speed of the service being considered "fast transit service" appears debatable. For comparative purposes using the published schedules, it appears that the Gateway EMX BRT is scheduled to operate at about 13mph on average. This is approximately the same speed at which LTD Route 12 is scheduled to operate. TCHRP 118 Table 4-19 indicates speeds of up to 30mph are achievable even BRT routes that are not "express routes" and provide all-stop services. A 13mph service in on the very low end of BRT service speeds.

- The Gateway EMX was not planned to be very efficient at the outset. The EA projected a capacity utilization rate on a typical weekday (expressed as a load factor in place miles) for the corridor of 20.5% twenty years after the service began. Twenty percent capacity utilization is not an especially high standard to set; Vancouver BC sets minimum efficiency guidelines for BRT from 30% on weekend daytime and in the evening to 50% during peak demand periods (TransLink Transit Service Guidelines (2004)). A portion of the forecast utilization rate was taking credit for three stations on the Franklin EMX that appears to have a higher utilization rate and to be a very appropriate BRT implementation project (see Final Report - April 2009 FTA-FL-26-7109.2009.2). The original Gateway EMX targets were debatable as being maximally efficient transit service.

- Current operations of the Gateway EMX are far below the relatively low level of efficiency planned to occur in the future. The actual observed capacity utilization rates and transit stop utilization rates were counted to be 2.5 to 3 times below the planned rates. The loop portion of the route appears to be the portion that is underperforming to the greatest extent. The current ridership does not appear to be maximally efficient bus rapid transit service by any standard measure, especially on the loop portion of the route.

- Efficiency is an important part of environmental sensitivity and cost-effectiveness. Until the system operates closer to its planned utilization, let alone its available capacity, the system will struggle to be considered environmentally sensitive or cost-effective. This assessment did not evaluate service on weekends. If ridership levels measured on the weekends on the loop portion of the route are significantly lower

than the weekdays then this would represent a wasteful use of resources from an environmental and cost-benefit standpoint.

The above conclusions lead to the question, “now what?”

The physical improvements have already been made and there is an important community psychological phenomenon to avoid dramatic reductions in service levels. These have to be respected if the Gateway EMX is to have a chance of ever achieving its planned utility in the future. This creates a tough position for LTD management and it Board of Directors. LTD performs an annual route review. One option may be for the 2016 route review to focus on efficiency changes to the Gateway EMX to try and maintain service levels as much as possible but cut costs and increase the per-bus utilization rates. It is beyond the scope of this review to explain what exactly the best alternatives are but only to recommend that action be taken to achieve levels of efficiency at least consistent with planned levels. If the Gateway EMX can be made more efficient then it will also be more cost-effective and this will benefit the entire system in the short and long-term.

5 APPENDIX A- SECURITY CONFRONTATION

During the course of counting station activity on Tuesday, August 18th 2015, we were confronted by LTD security staff and told that we were violating a district ordinance because we were not performing the count for LTD. Presumably this ordinance has something to do with loitering at the bus stops. This occurred at approximately 5:30PM after most of the day's counts had already been taken.

The aggressive behavior of LTD to avoid having their stops counted by a private entity was bizarre. Vehicular traffic counts are taken by private entities in public right-of-way all the time; in planning the EMX system LTD has almost assuredly hired private traffic consultants to take traffic counts in City rights-of-way and typically City's require no permits or authorizations for this work. CSA did not do the research, but it is doubtful that the lands where the stations are located were purchased in fee simple from the owners of the properties from which the rights-of-way were initially obtained. LTD probably controls these lands through some sort of right-of-way agreement or "jurisdictional transfer" of the right-of-way. Assuming this to be the case, the land is still public right-of-way (just managed by a different entity). Local governments adopt many regulations that serve to make sure public rights-of-way are not being used in a manner that disrupts travel. Such regulations are typically worded to provide the jurisdiction with broad authority to regulate the right-of-way. In practice, however, such regulations are generally only enforced when traffic is actually being disrupted or some real threat to the travelling public is present. None of these circumstances existed in the case of counting boardings and alightings at four selected stop locations. The security staffs at the actual stops were very friendly and did not seem to have any concern with the counting activity until after the head of planning contacted the head of security and alerted him that the counts were not being taken by LTD itself and ordered the counting activity off the bus stop platforms.

It was ironic that LTD would claim safety reasons as their basis to assert enforcement and demand the counting activity could not occur directly on the station platforms. This was not ideal from a safety standpoint for the counters themselves who were much better positioned and safer at the bus stations. Because the day was almost over, we used the street right-of-way to complete the counts for that day. CSA had planned a second day of counting to add some statistical robustness to the single day's counts but the additional safety risk caused by LTD's behavior did not appear worth the additional "n" value for the analysis.

Overall, my personal belief is that LTD's behavior was at least poor judgment in its exercise of police powers for no legitimate public purpose. Throughout the day we observed many LTD users loitering at the Springfield Station to which security paid little or no attention. Our counting activity was much less disruptive than many of the behaviors we observed that solicited no response from the security personnel whatsoever. At its worst, LTD's behavior represents some form of discrimination that could represent liability for LTD where one type of loitering is tolerated because it poses no threat to the organization and another type is not allowed because it could result in independent data collection not directly controlled by LTD.

6 APPENDIX B- RAW COUNT DATA

Attached in this Appendix are scans of the raw count fieldwork data.

SPRINGFIELD STATION Andre Marsh JR. DATE 8-18-15

Count Number		Bus Time	Circle One	Alightings (Passengers Unloading)	Boardings (Passengers Getting On)
1	1	5:50	AM / PM		1
1	2	6:06	AM / PM	1	
3	3	6:12	AM / PM		3
3	4	6:20	AM / PM	3	
3	5	6:45	AM / PM		3
0	6	6:48	AM / PM	0	
1	7	6:51	AM / PM	1	
2	8	6:59	AM / PM		2
1	9	7:04	AM / PM	1	
0	10	7:13	AM / PM	0	
6	11	7:14	AM / PM		6
7	12	7:17	AM / PM	7	
2	13	7:26	AM / PM		2
2	14	7:31	AM / PM	2	
4	15	7:37	AM / PM		4
4	16	7:79	AM / PM	4	
4	17	7:45	AM / PM		4
4	18	7:50	AM / PM	4	
3	19	7:58	AM / PM		3
1	20	8:01	AM / PM	1	
0	21	8:07	AM / PM		0
1	22	8:09	AM / PM	1	
2	23		AM / PM		
	24		AM / PM		
	25	(empty)	AM / PM		
	26		AM / PM		
	27		AM / PM		
2	28	8:39	AM / PM	2	
5	29	8:45	AM / PM		5
0	30	8:52	AM / PM	0	
2	31	8:56	AM / PM		2
5	32	9:00	AM / PM	5	
4	33	9:07	AM / PM		4
0	34	9:12	AM / PM	0	
2	35	9:14	AM / PM		2
3	36	9:19	AM / PM	3	
7	37	9:24	AM / PM		7
3	38	9:28	AM / PM	3	
2	39	9:36	AM / PM		2
2	40	9:40	AM / PM	2	
0	41	9:42	AM / PM		0
2	42	9:49	AM / PM	2	
5	43	9:55	AM / PM		5
2	44	10:00	AM / PM	2	
1	45	10:04	AM / PM		1
4	46	10:11	AM / PM	4	
	47	10:13	AM / PM		0

119 + 4 = 52

56 + 12 = 68

SPRINGFIELD STATION Andre Marsh Jr. DATE Tues 8-18

Count Number	Bus Time	Circle One	Alightings (Passengers Unloading)	Boardings (Passengers Getting On)
48	10:20	AM / PM	2	—
49	10:26	AM / PM	—	6
50	10:30	AM / PM	4	—
51	10:34	AM / PM	—	3
52	10:42	AM / PM	5	—
53	10:46	AM / PM	—	6
54	10:51	AM / PM	0	—
55	10:57	AM / PM	—	4
56	11:01	AM / PM	6	—
57	11:06	AM / PM	—	2
58	11:08	AM / PM	0	—
59	11:14	AM / PM	—	9
60	11:20	AM / PM	4	—
61	11:26	AM / PM	—	1
62	11:31	AM / PM	3	—
63	11:34	AM / PM	—	3
64	11:40	AM / PM	7	—
65	11:47	AM / PM	—	3
66	11:53	AM / PM	6	—
67	11:56	AM / PM	—	2
68	12:00	AM / PM	3	—
69	12:09	AM / PM	—	2
70	12:12	AM / PM	—	1
71	12:17	AM / PM	2	—
72	12:25	AM / PM	—	2
73	12:31	AM / PM	4	—
74	12:35	AM / PM	—	4
75	12:41	AM / PM	8	—
76	12:46	AM / PM	—	7
77	12:50	AM / PM	0	—
78	12:58	AM / PM	—	4
79	1:02	AM / PM	4	—
80	1:11	AM / PM	—	11
81	1:15	AM / PM	2	—
82		AM / PM	—	—
83		AM / PM	—	—
84	Break	AM / PM	—	—
85		AM / PM	—	—
86	1:37	AM / PM	12	—
87	1:45	AM / PM	—	6
88	1:49	AM / PM	—	0
89	1:52	AM / PM	0	—
90	1:57	AM / PM	—	4
91	2:02	AM / PM	4	—
92	2:06	AM / PM	—	2
93	2:14	AM / PM	4	—

SPRINGFIELD STATION Andre Marsh Jr DATE 8-18

Count Number	Bus Time	Circle One	Alightings (Passengers Unloading)	Boardings (Passengers Getting On)
94	2:18	AM / PM	—	9
95	2:22	AM / PM	6	—
96	2:31	AM / PM	—	8
97	2:32	AM / PM	2	—
98	2:37	AM / PM	—	5
99	2:39	AM / PM	6	—
100	2:44	AM / PM	—	11
101		AM / PM		
102		AM / PM		
103		AM / PM		
104		AM / PM		
105		AM / PM		
106		AM / PM		
107		AM / PM		
108		AM / PM		
109		AM / PM		
110		AM / PM		
111		AM / PM		
112		AM / PM		
113		AM / PM		
114		AM / PM		
115		AM / PM		
116		AM / PM		
117		AM / PM		
118		AM / PM		
119		AM / PM		
120		AM / PM		
121		AM / PM		
122		AM / PM		
123		AM / PM		
124		AM / PM		
125		AM / PM		
126		AM / PM		
127		AM / PM		
128		AM / PM		
129		AM / PM		
130		AM / PM		
131		AM / PM		
132		AM / PM		
133		AM / PM		
134		AM / PM		
135		AM / PM		
136		AM / PM		
137		AM / PM		
138		AM / PM		
139		AM / PM		
140		AM / PM		

SPRINGFIELD STATION Rebecca Oneal DATE 8-18

Count Number	Bus Time	Circle One	Alightings (Passengers Unloading) Eugene OFF	Boardings (Passengers Getting On) ON Gateway
94		AM / PM		
95		AM / PM		
96		AM / PM		
97		AM / PM		
98		AM / PM		
99		AM / PM		
100		AM / PM		
101	2:58	AM / PM	—	3
102	3:07	AM / PM	—	2
103	3:11	AM / PM	8	—
104	3:14	AM / PM	2	—
105	3:17	AM / PM	—	6
106	3:23	AM / PM	5	—
107	3:27	AM / PM		3
108	3:33	AM / PM	11	—
109	3:35	AM / PM	—	3
110	3:41	AM / PM	5	—
111	3:48	AM / PM	—	9
112	3:55	AM / PM	7	—
113	3:55	AM / PM	—	9
114	4:00	AM / PM	1	—
115	4:07	AM / PM	—	4
116	4:10	AM / PM	10	—
117	4:18	AM / PM		4
118	4:24	AM / PM	9	—
119	4:24	AM / PM	—	4
120	4:36	AM / PM	—	6
121	4:41	AM / PM	4	—
122	4:46	AM / PM	—	2
123	4:51	AM / PM	3	—
124	5:00	AM / PM	—	4
125	5:03	AM / PM	9	—
126	5:11	AM / PM	—	1
127	5:12	AM / PM	8	—
128	5:17	AM / PM	—	5
129	5:21	AM / PM	9	—
130	5:25	AM / PM	—	3
131	5:33	AM / PM	6	—
132	5:35	AM / PM	—	3
133	5:45	AM / PM	—	3
134	5:46	AM / PM	5	—
135	5:51	AM / PM	4	—
136	5:56	AM / PM	—	1
137	6:00	AM / PM	7	—
138	6:06	AM / PM	—	4
139	6:14	AM / PM	5	—
140	6:15	AM / PM	—	

SPRINGFIELD STATION DATE _____

Count Number	Bus Time	Circle One	Alightings (Passengers Unloading) Eugene off	Boardings (Passengers Getting On) Gateway on
141	6:25	AM / PM	—	3
142	6:31	AM / PM	5	—
143	6:34	AM / PM	—	2
144	6:42	AM / PM	—	2
145	6:50	AM / PM	2	—
146	7:03	AM / PM	2	—
147	7:04	AM / PM	—	1
148	7:07	AM / PM	2	—
149	7:16	AM / PM	—	2
150	7:17	AM / PM	1	—
151	7:31	AM / PM	—	3
152	7:41	AM / PM	6	—
153	7:45	AM / PM	—	5
154	7:49	AM / PM	5	—
155	8:04	AM / PM	—	2
156	8:05	AM / PM	3	—
157	8:11	AM / PM	—	2
158	8:19	AM / PM	8	—
159	8:31	AM / PM	—	1
160	8:34	AM / PM	6	—
161	8:45	AM / PM	—	1
162	8:55	AM / PM	3	—
163	8:59	AM / PM	—	0
164	9:04	AM / PM	3	—
165	9:18	AM / PM	—	2
166	9:24	AM / PM	1	—
167	9:31	AM / PM	—	6
168	9:44	AM / PM	1	—
169	9:50	AM / PM	—	2
170	10:05	AM / PM	4	—
171	10:05	AM / PM	—	2
172	10:17	AM / PM	5	—
173	10:29	AM / PM	—	0
174	10:40	AM / PM	1	—
175		AM / PM		
176		AM / PM		
177		AM / PM		
178		AM / PM		
179		AM / PM		
180		AM / PM		
181		AM / PM		
182		AM / PM		
183		AM / PM		
184		AM / PM		
185		AM / PM		
186		AM / PM		

SPRINGFIELD STATION

DATE Tuesday 8/18

Count Number	Bus Time	Circle One	Alightings (Passengers Unloading)	Boardings (Passengers Getting On)
1	5:50	AM / PM	—	1
2	6:06	AM / PM	1	1
3	6:17	AM / PM	1	3
4	6:25	AM / PM	3	1
5	6:45	AM / PM	—	3
6	6:49	AM / PM	0	1
7	6:51	AM / PM	1	1
8	7:09	AM / PM	—	2
9	7:04	AM / PM	1	1
10	7:13	AM / PM	0	1
11	7:41	AM / PM	—	0
12	7:17	AM / PM	7	1
13	7:25	AM / PM	—	1
14	7:29	AM / PM	2	—
15	7:35	AM / PM	—	4
16	7:36	AM / PM	4	—
17	7:45	AM / PM	—	4
18	7:49	AM / PM	4	—
19	7:57	AM / PM	—	3
20	8:04	AM / PM	1	—
21	8:01	AM / PM	—	0
22	8:08	AM / PM	1	—
23	8:19	AM / PM	1	—
24	8:21	AM / PM	—	5
25	8:33	AM / PM	—	4
26	8:31	AM / PM	3	—
27	8:34	AM / PM	—	3
28	8:39	AM / PM	2	—
29	8:44	AM / PM	—	5
30	8:57	AM / PM	2	—
31		AM / PM		
32		AM / PM		
33		AM / PM		
34		AM / PM		
35	9:05	AM / PM	—	2
36	9:19	AM / PM	3	—
37	9:25	AM / PM	—	1
38	9:29	AM / PM	3	—
39	9:36	AM / PM	—	2
40	9:40	AM / PM	2	—
41	9:45	AM / PM	—	0
42	9:49	AM / PM	2	—
43	9:56	AM / PM	—	5
44	10:02	AM / PM	2	—
45	10:04	AM / PM	—	1
46	10:10	AM / PM	4	—
47	10:13	AM / PM	—	0

SPRINGFIELD STATION

DATE _____

Count Number	Bus Time	Circle One	Alightings (Passengers Unloading) Front Passenger Door	Boardings (Passengers Getting On) Back Passenger Door
48	1:11	AM / PM	—	11
49	1:15	AM / PM	2	—
50	1:17	AM / PM	—	1
51	1:19	AM / PM	1	—
52	1:27	AM / PM	—	5
53	1:31	AM / PM	4	—
54		AM / PM		
55		AM / PM		
56		AM / PM		
57		AM / PM		
58		AM / PM		
59		AM / PM		
60		AM / PM		
61		AM / PM		
62		AM / PM		
63		AM / PM		
64		AM / PM		
65		AM / PM		
66		AM / PM		
67		AM / PM		
68		AM / PM		
69		AM / PM		
70		AM / PM		
71		AM / PM		
72		AM / PM		
73		AM / PM		
74		AM / PM		
75		AM / PM		
76		AM / PM		
77		AM / PM		
78		AM / PM		
79		AM / PM		
80		AM / PM		
81		AM / PM		
82		AM / PM		
83		AM / PM		
84		AM / PM		
85		AM / PM		
86		AM / PM		
87		AM / PM		
88		AM / PM		
89		AM / PM		
90		AM / PM		
91		AM / PM		
92		AM / PM		
93		AM / PM		

SPRINGFIELD STATION DATE _____

Count Number	Bus Time	Circle One	Alightings (Passengers Unloading) Front	Boardings (Passengers Getting On) Back
141	2:56	AM / PM	—	3
142	3:33	AM / PM	11	—
143	3:35	AM / PM	—	3
144	3:41	AM / PM	5	—
145	3:47	AM / PM	—	9
146	3:66	AM / PM	7	—
147	3:56	AM / PM	—	9
148	4:01	AM / PM	1	—
149	4:06	AM / PM	—	4
150	4:09	AM / PM	10	—
151	4:17	AM / PM	—	4
152	4:23	AM / PM	9	—
153	4:24	AM / PM	—	4
154	4:29	AM / PM	3	—
155		AM / PM		
156		AM / PM		
157		AM / PM		
158		AM / PM		
159		AM / PM		
160		AM / PM		
161		AM / PM		
162		AM / PM		
163		AM / PM		
164		AM / PM		
165		AM / PM		
166		AM / PM		
167		AM / PM		
168		AM / PM		
169		AM / PM		
170		AM / PM		
171		AM / PM		
172		AM / PM		
173		AM / PM		
174		AM / PM		
175		AM / PM		
176		AM / PM		
177		AM / PM		
178		AM / PM		
179		AM / PM		
180		AM / PM		
181		AM / PM		
182		AM / PM		
183		AM / PM		
184		AM / PM		
185		AM / PM		
186		AM / PM		

TATION NAME Centennial **DATE** 8-18-15

* Laurie Rhode

ount lumber	Bus Time	Circle One	Alightings (Passengers Unloading)	Boardings (Passengers Getting On)
1	5:52	AM / PM	0	0
2	6:03	AM / PM	0	0
3	6:15	AM / PM	0	3
4	6:18	AM / PM	0	1
5	6:44	AM / PM	0	1
6	6:47	AM / PM	1	0
7	6:49	AM / PM	0	0
8	7:00	AM / PM	2	1
9	7:04	AM / PM	0	1
10	7:14	AM / PM	0	1
11	7:18	AM / PM	0	1
12	7:25	AM / PM	0	1
13	7:29	AM / PM	0	2
14	7:34	AM / PM	1	3
15	7:40	AM / PM	3	0
16	7:45	AM / PM	0	1
17	7:48	AM / PM	0	1
18	7:55	AM / PM	0	2
19	8:01	AM / PM	0	0
20	8:04	AM / PM	1	0
21	8:09	AM / PM	0	1
22	8:15	AM / PM	3	0
23	8:25	AM / PM	3	1
24	8:26	AM / PM	1	0
25	8:28	AM / PM	0	0
26	8:35	AM / PM	4	1
27	8:38	AM / PM	0	3
28	8:49	AM / PM	0	1
29	8:50	AM / PM	0	1
30	8:55	AM / PM	1	0
31	9:01	AM / PM	1	1
32	9:04	AM / PM	1	0
33	9:10	AM / PM	1	1
34	9:15	AM / PM	0	1
35	9:20	AM / PM	3	0
36	9:26	AM / PM	0	2
37	9:30	AM / PM	0	3
38	9:36	AM / PM	1	1
39	9:39	AM / PM	1	2
40	9:45	AM / PM	0	1
41	9:51	AM / PM	1	1
42	9:56	AM / PM	1	1
43	10:00	AM / PM	2	0
44	10:07	AM / PM	2	1
45	10:11	AM / PM	1	1
46	10:16	AM / PM	1	0
47	10:21	AM / PM	0	0
			41	39

TATION NAME Centennial DATE 8-18-15

* Laurie Rhodes

ount umber	Bus Time	Circle One	Alightings (Passengers Unloading)	Boardings (Passengers Getting On)
48	10:25	AM / PM	0	0
49	10:30	AM / PM	1	0
50	10:36	AM / PM	0	1
51	10:40	AM / PM	1	0
52	10:45	AM / PM	0	2
53	10:50	AM / PM	0	0
54	10:57	AM / PM	2	2
55	11:00	AM / PM	1	1
56	11:04	AM / PM	1	1
57	11:11	AM / PM	0	1
58	11:16	AM / PM	4	1
59	11:20	AM / PM	0	2
60	11:27	AM / PM	0	3
61	11:30	AM / PM	0	0
62	11:36	AM / PM	1	0
63	11:39	AM / PM	0	0
64	11:42	AM / PM	0	1
65	11:52	AM / PM	1	1
66	11:56	AM / PM	0	2
67	12:01	AM / PM	0	1
68	12:07	AM / PM	0	2
69	12:12	AM / PM	0	2
70	12:21	AM / PM	0	0
71	12:21	AM / PM	3	1
72	12:28	AM / PM	1	1
73	12:33	AM / PM	0	2
74	12:38	AM / PM	2	1
75	12:40	AM / PM	0	1
76	12:46	AM / PM	0	2
77	12:51	AM / PM	3	0
78	12:59	AM / PM	1	2
79	12:59	AM / PM	1	2
80	1:08	AM / PM	1	1
81	1:16	AM / PM	0	1
82	1:16	AM / PM	1	3
83	1:21	AM / PM	0	1
84	1:27	AM / PM	7	1
85	1:31	AM / PM	2	0
N 86	1:44	AM / PM	0	2
S 87	1:45	AM / PM	0	3
S 88	1:46	AM / PM	4	0
N 89	1:51	AM / PM	2	2
S 90	1:57	AM / PM	1	1
N 91	1:59	AM / PM	8	1
92	2:08	AM / PM	0	1
93	2:09	AM / PM	0	0
			42	50

10

TATION NAME Centennial **DATE** 8-18-15

* Laurie Rhodes

* Dana Wood

ount lumber	Bus Time	Circle One	Alightings (Passengers Unloading)	Boardings (Passengers Getting On)
1	2:17	AM / (PM)	1	2
2	2:21	AM / (PM)	3	0
3	2:27	AM / (PM)	1	2
4	2:36	AM / (PM)	1	1
5	2:37	AM / (PM)	1	3
6	2:42	AM / (PM)	0	1
7	2:47	AM / (PM)	2	0
8	2:49	AM / (PM)	0	1
9	3:01	AM / (PM)	3	0
10	3:06	AM / (PM)	0	0
11	3:08	AM / (PM)	3	0
12	3:12	AM / (PM)	0	0
13	3:18	AM / (PM)	3	0
14	3:24	AM / (PM)	0	0
15	3:27	AM / (PM)	0	4
16	3:31	AM / (PM)	0	0
17	3:37	AM / (PM)	0	0
18	3:41	AM / (PM)	1	4
19	3:50	AM / (PM)	1	3
20	3:53	AM / (PM)	1	0
21	3:57	AM / (PM)	0	0
22	4:00	AM / (PM)	0	0
23	4:06	AM / (PM)	0	1
24	4:10	AM / (PM)	1	0
25	4:19	AM / (PM)	0	3
26	4:22	AM / (PM)	1	2
27	4:28	AM / (PM)	0	0
28	4:30	AM / (PM)	2	0
29	4:37	AM / (PM)	1	1
30	4:42	AM / (PM)	1	1
31	4:46	AM / (PM)	1	1
32	4:50	AM / (PM)	0	0
33	4:59	AM / (PM)	0	2
34	5:04	AM / (PM)	1	0
35	5:07	AM / (PM)	1	1
36	5:15	AM / (PM)	1	1
37	5:16	AM / (PM)	3	0
38	5:24	AM / (PM)	1	1
39	5:29	AM / (PM)	1	2
40	5:39	AM / (PM)	2	3
41	5:46	AM / (PM)	1	0
42	5:49	AM / (PM)	0	0
43	5:52	AM / (PM)	0	1
44	5:54	AM / (PM)	1	0
45	5:58	AM / (PM)	0	6
46	6:00	AM / (PM)	1	1
47	6:09	AM / (PM)	0	1
			40	49

TATION NAME Centennial **DATE** Tues, Aug 18th

ount umber	Bus Time	Circle One	Alightings (Passengers Unloading)	Boardings (Passengers Getting On)
48	6:11	AM / PM	2	0
49	6:16	AM / PM	2	
50	6:20	AM / PM	0	1
51	6:27	AM / PM	1	4
52	6:31	AM / PM	1	0
53	6:36	AM / PM	1	0
54	6:39	AM / PM	0	1
55	6:46	AM / PM	0	1
56	6:49	AM / PM	2	0
57	6:58	AM / PM	3	1
58	7:02	AM / PM	0	0
59	7:07	AM / PM	0	3
60	7:13	AM / PM	0	1
61	7:18	AM / PM	0	0
62	7:35	AM / PM	0	1
63	7:36	AM / PM	0	3 + baby
64	7:44	AM / PM	2	0
65	7:50	AM / PM	1	0
66	8:00	AM / PM	0	1
67	8:07	AM / PM	0	1
68	8:15	AM / PM	0	4 + baby
69	8:19	AM / PM	1	0
70	8:29	AM / PM	2	0
71	8:34	AM / PM	0	1
72	8:47	AM / PM	2	1
73	8:52	AM / PM	0	0
74	9:00	AM / PM	0	0
75	9:06	AM / PM	0	1
76	9:20	AM / PM	0	0
77	9:32	AM / PM	1	0
78	9:39	AM / PM	1	0
79	9:37	AM / PM	0	1
80	9:47	AM / PM	1	0
81	9:49	AM / PM	6 *	0
82	1000	AM / PM	0	1
83	10:11	AM / PM	1	> 5
84	1014	AM / PM	2	0
85	1034	AM / PM	0	0
86	1040	AM / PM	0	0
87		AM / PM		
88		AM / PM		
89		AM / PM		
90		AM / PM		
91		AM / PM		
92		AM / PM		
93		AM / PM		

* Five of which were together, hung out @ stop until next 1 north got back on. Appeared to get off here by mistake

NAME SACRED HEART STATION DATE 8/18/2015 START SURVEY 5:58 am pg. 1

LEGEND → *N = "NORTH STATION or (GATEWAY)" *S = SOUTH STATION or (SPRINGFIELD/EUGENE)

Count Number	Bus Time	Circle One		Alightings (Passengers Unloading)		Boardings (Passengers Getting On)	
1	5:58	(AM) / PM	*S	0		*S	0
2	5:59	AM / PM	*N	0		*N	0
3	6:23	AM / PM	N	1		N	0
4	6:38	AM / PM	S	0		S	0
5	6:54	AM / PM	N	1		N	0
6	6:54	AM / PM	S	0		S	0
7	7:08	AM / PM	N	0		N	0
8	7:19	AM / PM	S	0		S	1
9	7:34	AM / PM	N	1 (bike)		N	0
10	7:39	AM / PM	S	1		S	0
11	7:54	AM / PM	N	4		N	0
12	7:59	AM / PM	S	1 (bike)		S	0
13	8:14	AM / PM	N	2		N	0
14	8:19	AM / PM	S	0		S	1
15	8:35	AM / PM	N	1		N	0
16	8:42	AM / PM	S	0		S	0
17	8:55	AM / PM	N	0		N	0
18	8:58	AM / PM	S	0		S	0
19	9:16	AM / PM	N	0		N	0
20	9:18	AM / PM	S	0		S	0
21	9:35	AM / PM	N	1 (wheelchair)		N	0
22	9:39	AM / PM	S	0		S	0
23	9:57	AM / PM	N	2		N	0
24	10:00	AM / PM	S	0		S	0
25	10:18	AM / PM	N	0		N	0
26	10:19	AM / PM	S	1		S	0
27	10:37	AM / PM	N	1		N	0
28	10:39	AM / PM	S	0		S	2
29	10:55	AM / PM	N	0		N	0
30	11:00	AM / PM	S	0		S	0
31	11:16	AM / PM	N	0		N	0
32	11:20	AM / PM	S	1		S	0
33	11:36	AM / PM	N	0		N	0
34	11:41	AM / PM	S	0		S	0
35	11:56	AM / PM	N	1		N	0
36	12:01	AM / PM	S	0		S	1
37	12:18	AM / PM	N	0		N	0
38	12:20	AM / PM	S	0		S	6
39	12:39	AM / PM	N	0		N	0
40	12:39	AM / PM	S	0		S	0
41	12:57	AM / PM	N	0		N	0
42	1:01	AM / PM	S	0		S	1
43	1:20	AM / PM	S	0		S	1
44	1:24	AM / PM	N	7		N	0
45	1:39	AM / PM	N	4		N	0
46	1:40	AM / PM	S	3		S	0
47	1:57	AM / PM	N	0		N	0

TATION NAME SACRED HEART STATION **DATE** 8/18/2015 prompted at 1:57pm

LEGEND → * N = "North Station" or (Gateway) * S = South Station or (Springfield/Eugene)"

ount umber	Bus Time	Circle One	Alightings (Passengers Unloading)		Boardings (Passengers Getting On)	
48	2:02	AM / PM	*S	0	*S	0
49	2:15	AM / PM	*N	0	*N	0
50	2:22	AM / PM	S	0	S	8
51	2:38	AM / PM	S	0	S	1
52	2:42	AM / PM	N	2	N	0
53	2:54	AM / PM	N	0	N	0
54	3:00	AM / PM	S	1	S	0
55	3:19	AM / PM	N	3	N	0
56	3:21	AM / PM	S	0	S	4
57	3:37	AM / PM	N	1	N	0
58	3:42	AM / PM	S	3	S	0
59	3:58	AM / PM	N	3	N	0
60	4:00	AM / PM	S	0	S	1
61	4:16	AM / PM	N	1	N	1
62	4:19	AM / PM	S	1	S	1
63	4:37	AM / PM	N	2	N	0
64	4:41	AM / PM	S	0	S	3
65	4:55	AM / PM	N	3	N	0
66	4:59	AM / PM	S	0	S	0
67	5:22	AM / PM	N	1	N	0
68	5:22	AM / PM	S	0	S	0
69	5:37	AM / PM	N	0	N	0
70	5:40	AM / PM	S	0	S	0
71	5:55	AM / PM	N	0	N	0
72	6:04	AM / PM	S	0	S	0
73	6:14	AM / PM	N	0	N	1
74	6:21	AM / PM	S	0	S	0
75	6:36	AM / PM	N	1	N	0
76	6:41	AM / PM	S	0	S	0
77	6:55	AM / PM	N	0	N	0
78	6:58	AM / PM	S	0	S	2
79	7:25	AM / PM	N	0	N	0
80	7:29	AM / PM	S	0	S	4
81	7:54	AM / PM	N	1	N	0
82	7:54	AM / PM	S	0	S	1
83	8:23	AM / PM	S	0	S	0
84	8:25	AM / PM	N	0	N	1
85	8:53	AM / PM	S	0	S	3
86	8:58	AM / PM	N	0	N	0
87	9:23	AM / PM	S	0	S	0
88	9:25	AM / PM	N	0	N	0
89	9:53	AM / PM	S	0	S	0
90	9:55	AM / PM	N	0	N	0
91	10:35	AM / PM	S	0	S	0
92	10:40	AM / PM	N	3	N	0
93		AM / PM				

STATION NAME Gateway Station **DATE** Tues. 8/18

Count Number		Bus Time	Circle One	Alightings (Passengers Unloading)	Boardings (Passengers Getting On)
			17		
1	48	6:09	AM / PM	1,	3,
	49	6:35	AM / PM	1	6
3	50	6:43	AM / PM	5	5
	51	7:04	AM / PM	0	2+2 = 4
5	52	7:09	AM / PM	1	4,1 = 5
6	53	7:14	AM / PM	1	10
7	54	7:24	AM / PM	1	2, 2, 3 = 7
8	55	7:42	AM / PM	3	0
9	56	7:47	AM / PM	2	3
10	57	7:55	AM / PM	0	3, 1, 2 = 6
11	58	8:10	AM / PM	1	0
12	59	8:15	AM / PM	1	0
13	60	8:24	AM / PM	0	1, 1 = 2
14	61	8:31	AM / PM	0	0
15	62	8:43	AM / PM	3	1
16	63	8:45	AM / PM	1	4
17	64	9:06	AM / PM	1	1, 1 = 2
18	65	9:29	AM / PM	3, 2 = 5	1
19	66	9:49	AM / PM	2	1, 2 = 3
20	67	10:06	AM / PM	4, 2 = 6	1
21, 22	68	10:28 x2	AM / PM	1S, 1N	2S, 1N
23, 24	69	10:48 x2	AM / PM	0S, 3N	3S, 0N
25, 26	70	11:08 x2	AM / PM	2S, 2N	3S, 0N
27	71	11:27	AM / PM	1	3
28	72	11:46	AM / PM	1, 2 = 3	1
29	73	12:10	AM / PM	4	0
30	74	12:12	AM / PM	0	0
31	75	12:30	AM / PM	4, 1 = 5	4
32	76	12:50	AM / PM	7	2
33	77	1:09	AM / PM	5	0
34	78	1:30	AM / PM	1	0
35	79	1:36	AM / PM	1	1
36	80	1:50	AM / PM	3	2
37	81	1:53	AM / PM	2	0
38	82	2:07	AM / PM	5	5
39	83	2:26	AM / PM	1	1
40	84	2:29	AM / PM	2	1
41	85	2:50	AM / PM	0 SPED. STATION	18
42	86	2:56	AM / PM	3 RVR. BEND	7 R
43	87	3:06	AM / PM	8S	0S S
44	88	3:09	AM / PM	5R	2 R
45	89	3:28	AM / PM	4S	3 S
46	90	3:31	AM / PM	0R	3 R
47	91	3:49	AM / PM	2R	3 R
48, 49	92	3:50	AM / PM	6S	0 S
50	93	4:11	AM / PM	2S	5 S

Check for non-ons

R: TO RIVER BEND
S: TO SPED. STA

ATION NAME GATEWAY STATION **DATE** 10/09/2015

R = Riverbend (Westbound)
S = Springfield (Eastbound)

Count Number		Bus Time	Circle One	Alightings (Passengers Unloading)		Boardings (Passengers Getting On)	
51	1	4:12	AM / (PM)	2	R	Ø	R VR. BEND
52	2	4:29	AM / (PM)	2	S	5	S SPFLD. STATION
53	3	4:30	AM / (PM)	3	R	Ø	R
54	4	4:49	AM / (PM)	3	S	3	S
55	5	4:50	AM / (PM)	1	R	1	R
56	6	5:02	AM / (PM)	3	S	2	S
57	7	5:13	AM / (PM)	2	R	1	R
58	8	5:28	AM / (PM)	4	R	1	R
59	9	5:34	AM / (PM)	2	S	3	S
60	10	5:49	AM / (PM)	8	R	1	R
61	11	5:50	AM / (PM)	4	S	Ø	S
62	12	6:04	AM / (PM)	Ø	S	2	S
63	13	6:05	AM / (PM)	2	R	1	R
64	14	6:17	AM / (PM)	2	S	1	S
65	15	6:29	AM / (PM)	6	R	2	R ?
66	16	6:45	AM / (PM)	Ø	S	4	S
67	17	6:46	AM / (PM)	2	R	2	R
68	18	7:05	AM / (PM)	3	S	3	S
69	19	7:16	AM / (PM)	1	R	1	R
70	20	7:35	AM / (PM)	Ø	S	6	S
71	21	7:43	AM / (PM)	1	R	Ø	R
72	22	8:08	AM / (PM)	1	S	4	S
73	23	8:15	AM / (PM)	2	R	5	R
74	24	8:30	AM / (PM)	1	S	4	S
75	25	8:41	AM / (PM)	10	R	3	R
76	26	9:11	AM / (PM)	1	S	3	S
78	27	9:14	AM / (PM)	2	R	1	R
79	28	9:39	AM / (PM)	Ø	S	1	S
80	29	9:44	AM / PM	2	R	3	R
81	30	10:06	AM / PM	2	S	1	S
82	31	10:20	AM / (PM)	1	R	Ø	R
83	32	10:50	AM / PM	Ø	S	2	S
84	33		AM / PM				
85	34		AM / PM				
	35		AM / PM				
	36		AM / PM				
	37		AM / PM				
	38		AM / PM				
	39		AM / PM				
	40		AM / PM				
	41		AM / PM				
	42		AM / PM				
	43		AM / PM				
	44		AM / PM				
	45		AM / PM				
	46		AM / PM				
	47		AM / PM				