

**RESOLUTION NO. 20-280  
CITY OF LIBERTY LAKE  
SPOKANE COUNTY, WASHINGTON**

**A RESOLUTION OF THE CITY OF LIBERTY LAKE ADOPTING THE LIBERTY  
LAKE NETWORK ANALYSIS UPDATE**

WHEREAS, the City of Liberty Lake, Spokane County, Washington ("City") authorized Parametrix to complete a Transportation Network Analysis and Corridor Study in November of 2019 to assess traffic projections and operational needs as our City continues to grow; and

WHEREAS, the scope of that study included an early technical memorandum to specifically identify intersection and operational improvements on the Country Vista Corridor; and

WHEREAS, on May 19, 2020, City Council accepted the Country Vista Corridor Analysis Technical Memorandum by Resolution 20-272; and

WHEREAS, on July 21<sup>st</sup>, City Council held a workshop on the findings of the Liberty Lake Network Analysis Update; and

WHEREAS, on August 4, 2020, the full report of the Liberty Lake Network Analysis Update was posted on the City website; and

WHEREAS, on August 25, 2020, the City of Liberty Lake held a virtual open house on the Liberty Lake Network Analysis Update; and

WHEREAS, the City has invited public comments on the report on the City's web site and Facebook page starting August 4<sup>th</sup>, 2020 and continuing through September 4<sup>th</sup>, 2020; and

WHEREAS, the recommendations of this Network Analysis Update are needed to inform the City's 2021-2026 Capital Facilities Plan; and

NOW, THEREFORE, BE IT RESOLVED by the City Council of the City of Liberty Lake that it hereby adopts the Liberty Lake Network Analysis Update, and the recommendations contained therein.

Approved by the City Council this 15<sup>th</sup> day of September 2020.



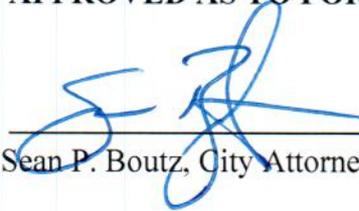
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Mayor Shane Brickner

**ATTEST:**

  
\_\_\_\_\_  
Ann Swenson, City Clerk

**APPROVED AS TO FORM:**

  
\_\_\_\_\_  
Sean P. Boutz, City Attorney

# Liberty Lake Network Analysis Update

*Prepared for*



**City of Liberty Lake**

*Prepared by*

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# CITATION

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# ACRONYMS

APA	American Planning Association
FAR	Floor-area ratio
HCM	Highway Capacity Manual
ITE	Institute of Transportation Engineers
LOS	Level of Service
RMSE	Root Mean Square Error
SRTC	Spokane Regional Transportation Council
STA	Spokane Transit Authority
TAZ	Traffic Analysis Zone



# 1. INTRODUCTION

In February 2017, the City of Liberty Lake (the City) conducted a network analysis of the transportation system to identify short-term and long-term needs. Since that time, development and roadway project plans have evolved in key areas of the city, particularly along the Country Vista Drive corridor. The purpose of this study is to update the 2017 network analysis with a specific focus on multi-mobility issues for the Country Vista Drive corridor.

This report documents and summarizes the results and recommendations of the network analysis update. A description of the study area is provided followed by a documentation of data collection methods and results. Next, the future land use and growth assumptions are discussed. The methods and results of the use of the Spokane Regional Transportation Council (SRTC) regional travel demand model are also provided. Traffic analysis methods are then presented including detailed traffic performance metrics for short-term and long-term conditions. Finally, the report identifies the network-wide recommendations. Though this report incorporates the roadway network conclusions for the Country Vista Drive corridor, more detailed documentation of the multi-modal analysis is contained within the *County Vista Drive Corridor Analysis Memo* (May 2020).

# 2. STUDY AREA

The study area for this analysis includes major roadways and intersections within the City boundaries. The boundaries of the City extend from the Spokane River on the north to Sprague Avenue on the south, and from Aladdin Road on the west to King James Lane on the east. Figure 1 shows the roadway network for the City.

## 2.1 Description of Major Roads

There are several key roads within the City.

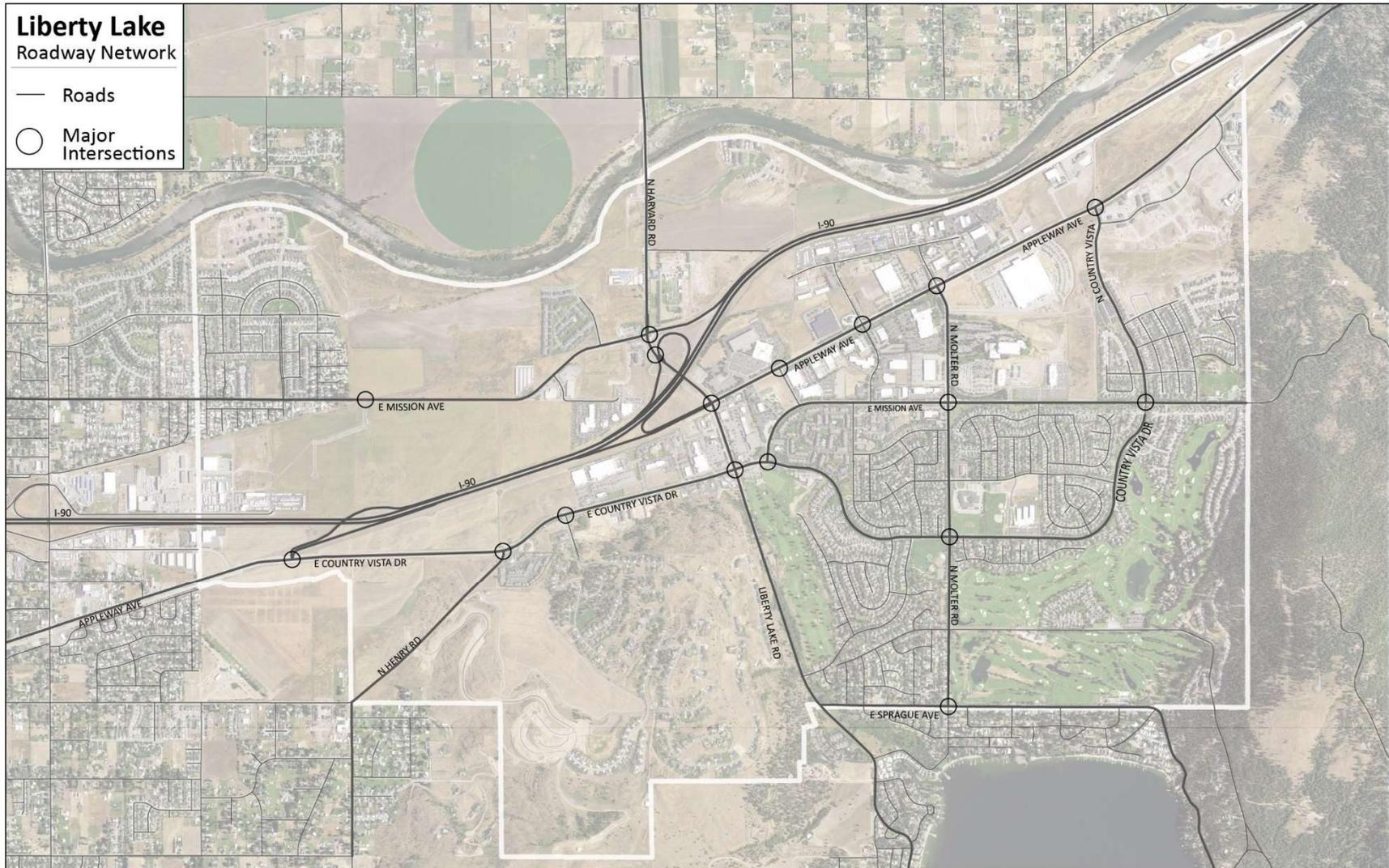
Country Vista Drive – is a major east-west roadway in the City. West of Liberty Lake Road, Country Vista Drive is a four-lane arterial with a two-way center turn lane that parallels I-90 to the south. East of Liberty Lake Road, Country Vista Drive becomes a two-lane roadway that circumnavigates the eastern residential areas of the City and eventually meets Appleway Avenue in the northeastern section of the city.

Liberty Lake Road – is a major north-south roadway that runs from the I-90 ramps on the north to the southern boundary of the City. Liberty Lake Road is four lanes with a center landscaped median between the I-90 ramps and Country Vista Drive. South of the Country Vista Drive intersection, Liberty Lake Road narrows to one lane in each direction.

Harvard Road – is a continuation of Liberty Lake Road north of the I-90 ramps and extends north to the northern city boundary. Harvard Road runs north-south as a two-lane roadway, before expanding out to four lanes with a landscaped median north of the roundabout at Mission Avenue.

Appleway Avenue – runs east to west from Liberty Lake Road to the eastern boundary of the City. It is a four-lane arterial with a landscaped center median and left-turn pockets. East of Molter Road, Appleway Avenue begins narrowing down to one lane in each direction as it continues east towards an interchange with I-90 outside of the city boundaries.

Figure 1: Roadway Network



Mission Avenue – is an east-west roadway that has two sections, the western section runs from the western city boundary to Harvard Road as a two-lane roadway, paralleling I-90 to the north. The eastern section of Mission Avenue is a two-lane roadway that runs south of I-90 from an intersection with Country Vista Drive near the center of the City to the eastern city boundary.

Molter Road – is a north-south roadway on the eastern side of the city that runs from Knox Avenue on the north to Sprague Avenue and the southern city boundary on the south. Molter Road is a four-lane roadway with a two-way center turn lane between Appleway Avenue and Mission Avenue. South of the Mission Avenue intersection, Molter Road narrows to one lane in each direction with a two-way center turn lane for most of its length.

## 2.2 Description of Major Intersections

There are 17 intersections within the City of Liberty Lake that were studied in this analysis. Additionally, three intersections that are anticipated to be added in the short term are also included: the intersection at the new Ridgeline High School Entrance on Country Vista Drive, the intersection at the East High School Access from Country Vista Drive, and the future intersection at Mission Avenue/Henry Road after the Henry Road bridge is built over I-90. Table 1 details the 20 total study intersections and existing intersection control. The existing 17 intersections were also depicted previously in Figure 1.

**Table 1: Liberty Lake Study Intersections**

Intersection	Existing Intersection Control
Mission Avenue/Harvest Parkway	Roundabout
Mission Avenue/Henry Road (Bridge)	---
Mission Avenue/Harvard Road	Roundabout
Harvard Road/I-90 Ramps	Free
I-90 EB Ramps/Country Vista Drive	Stop-Controlled SB
High School Entrance/Country Vista Drive	Signal
East HS Access-Henry/Country Vista Drive	---
Henry Road-Kramer/Country Vista Drive	Stop-Controlled NB
Legacy Ridge Drive/Country Vista Drive	Stop-Controlled NB
Liberty Lake Road/Country Vista Drive	Signal
Mission Avenue/Country Vista Drive (3-leg)	Stop-Controlled SB
Liberty Lake Road/Appleway Avenue	Signal
Signal Drive/Appleway Avenue	Signal
Madson Street/Appleway Avenue	Signal
Molter Road/Appleway Avenue	Signal
Country Vista Drive/Appleway Avenue	Stop-Controlled NB
Molter Road/Mission Avenue	Roundabout
Country Vista Drive/Mission Avenue (4-leg)	Stop-Controlled NB/SB
Country Vista Drive/Molter Road	Stop-Controlled EB/WB
Sprague Avenue/Molter Road	Four-Way Stop-Controlled

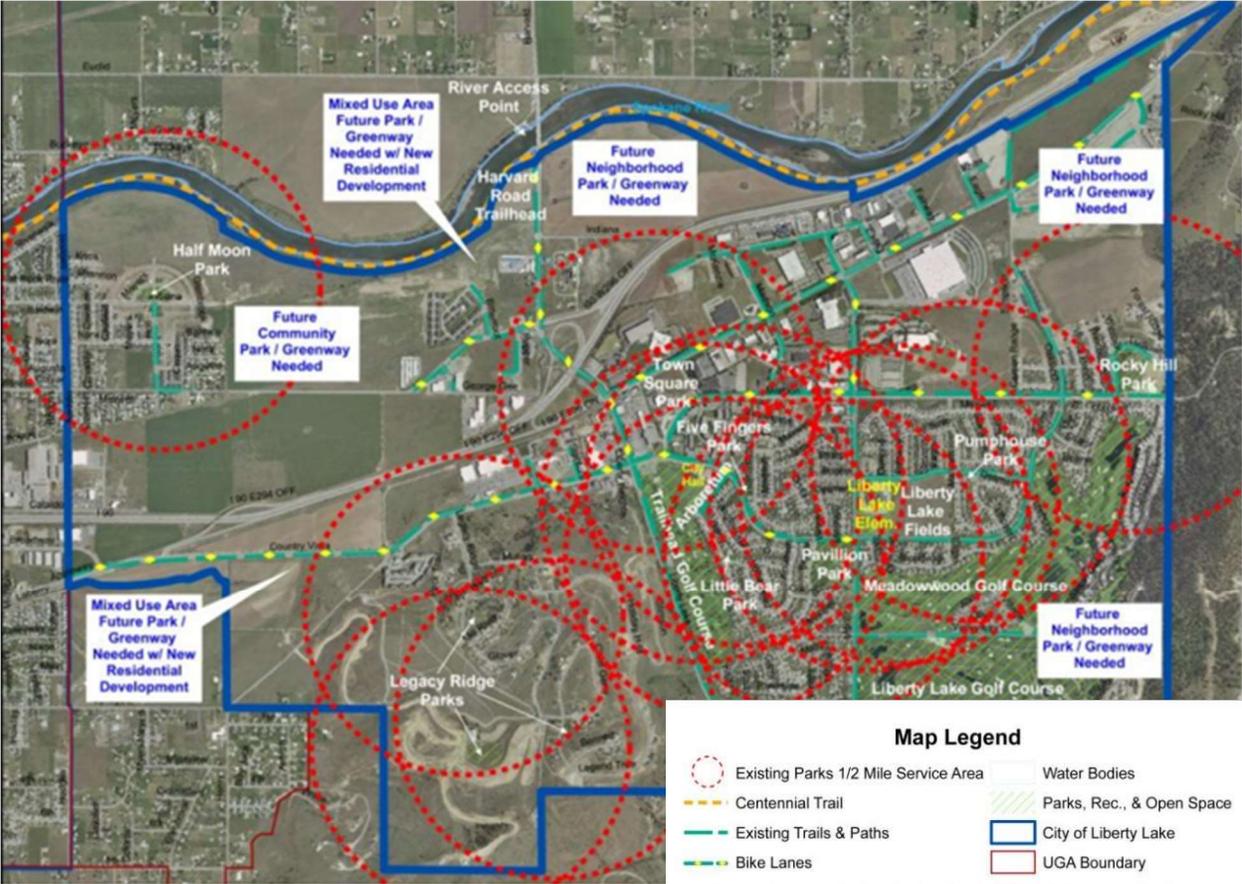


## 2.4 Active Transportation

The Centennial Trail is a regional bikeway that follows the Spokane River and cuts through Liberty Lake. Improving bike lane connections to this trail can greatly improve its accessibility to surrounding communities. There are several bike lanes found along primary roads in Liberty Lake. These roads include Mission Ave (north of I-90), Liberty Lake Road, Country Vista Drive, and Appleway Avenue. Most of these are painted bike lanes. There are a few local roads with bike lanes as well, but coverage can be extended.

In 2015, Liberty Lake also adopted the *Parks, Recreation, Open Space, and Trails Plan*. This plan highlights existing active transportation infrastructure, as well as needed improvements. Greenways were identified in several areas of the city as an active transportation need, especially with new residential development (see Figure 3). The Legacy Ridge subdivision is a notable gap in bike lane coverage.

Figure 3: Liberty Lake Parks and Greenways



Source: City of Liberty Lake, "Parks, Recreation, Open Space, and Trails Plan" (pg. 72)

## 2.5 Background Improvements

There are several background traffic improvements within the City that are also included in this analysis. Two intersections were recently converted to signalized intersections and these improvements are incorporated into the existing conditions analysis:

- New signal at Signal Drive/Appleway Avenue
- New signal at Madson Street/Appleway Avenue

Additionally, there are future improvements planned in the near-term that are included in the short-term and long-term analysis of this report. These near-term improvements are:

- New signal at the Ridgeline High School/Country Vista Drive intersection
- Harvard Road bridge widening to include an additional northbound lane
- Additional westbound right-turn lane at the Liberty Lake Road/Appleway Avenue intersection

## 3. DATA COLLECTION

To determine existing conditions, Parametrix conducted city-wide traffic counts the week of November 4, 2019 including AM and PM peak period turning movement counts at 17 intersections and 72-hour tube counts at 11 locations. Figure 4 summarizes the city-wide traffic count results. Full traffic count data is provided in the Appendix.

Traffic counts were compared to the counts collected for the 2017 network analysis (obtained in August 2016). Generally, the 2019 volumes were higher than the 2016 volumes. For the six common tube count locations between both data collection efforts, the average increase in traffic volumes was four percent. Peak period intersection counts were also generally higher in 2019 than 2016. The increases in volumes were much more pronounced in the AM peak hour than the PM peak hour. This is likely related to the presence of school traffic during the November 2019 AM counts whereas school was not in session during the August 2016 AM counts.

## 4. GROWTH ASSUMPTIONS

Growth assumptions set the stage for forecasting travel demand, and thus understanding transportation system deficiencies. Parametrix conducted an analysis of growth assumptions for both short-term (2025) and long-term (2040) conditions. The primary sources of information to determine the growth assumptions include, the *Liberty Lake Land Quality Analysis* (July 2015), its subsequent update entitled *City of Liberty Lake Updated Population Build-Out Analysis* (September 2018), city land use and zoning policies, information about pending development plans provided directly by City staff, and socioeconomic forecasts provided within the SRTC regional travel demand model (SRTC model).

### 4.1 Short-term Growth

Parametrix worked closely with City staff to develop assumptions about pending or likely development within the next five years. Development areas were identified city-wide and included known or ongoing development such as the new high school and adjacent multi-family residential units on the Country Vista corridor as well as the River District growth area north of I-90 off of Harvard Road and Mission Avenue, which includes a large residential component, neighborhood center and business park.

Parametrix and city staff also identified more generic land use growth assumptions for areas likely to develop but where specific plans are unclear or not available at this time.

With the assessment of short-term growth areas, Parametrix conducted a trip generation exercise to estimate the number of trips new development would incur on the roadway. The Institute of Transportation Engineers (ITE) compiles trip generation rates for various land uses in the *Trip Generation 10th Edition*. The trip generation rates are based on studies conducted nationwide. Parametrix selected and applied trip generation rates from ITE's *Trip Generation 10th Edition* for assumed development.

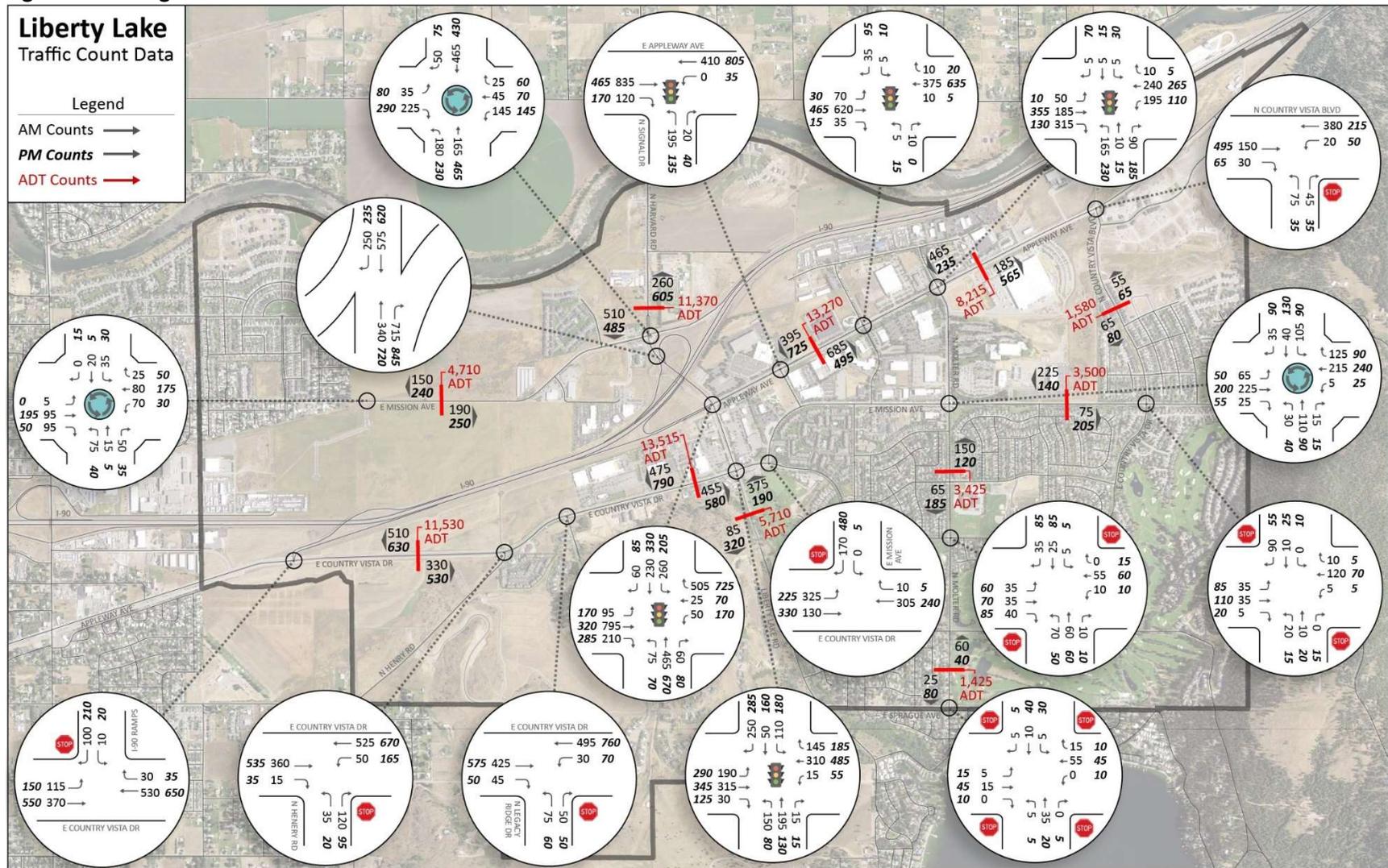
For each future land use development, trip generation was calculated using ITE trip generation rates for the AM peak hour, PM peak hour and daily trips. The trip generation calculation is derived from the square footage or number of dwelling units of a given development. For development areas where only the acreage was known, industry standard FAR (floor area ratios) from the American Planning Association (APA) were used to estimate the proposed square footage.

Once the trips were calculated for each land use, several further adjustments were made, including a build-out adjustment, pass-by adjustment, and a shared-trip adjustment. The build-out adjustment was based on the estimated build-out percentage of the future land use in the short-term (2025). The pass-by adjustment is a reduction based on the number of trips for a given land use that would be considered "pass-by" trips, which are trips that are already in the network that make a stop at the land use while "passing by" (such as a gas station), therefore they are not a new trip added to the network and are subtracted from the land use trip generation total. Pass-by rates for various land uses were derived from the ITE *Trip Generation Handbook*.

The shared-trip adjustment is a reduction to account for a certain percentage of new trips that will be shared between new land uses, such as a trip from a new residential development traveling to work at a new office. A reduction is made so that the trip is not counted twice. Full trip generation results are contained within the Appendix.

Parametrix then distributed the peak hour trips throughout the road network based on logical origin and destination pairs, land use patterns, and existing traffic volume directional splits. Finally, combining the distributed short-term growth trips with existing traffic counts, Parametrix developed the short-term traffic demand estimates. Figure 5 summarizes the short-term traffic volumes.

Figure 4: Existing Traffic Volumes





## 4.2 Long-term Growth

Long-term growth projections were guided by the city planning documents previously mentioned as well as the SRTC model. According to the *City of Liberty Lake Updated Population Build-Out Analysis*, the city has a population of 8,975 in 2015 is expected to reach build-out population of approximately 18,708 in about 2042. From these figures, Parametrix interpolated a 2040 population estimate of 18,595. Likewise, Parametrix used the household capacity analysis within the *City of Liberty Lake Updated Population Build-Out Analysis* to help apportion future growth to various sectors of the City.

**Table 2: Population Projections**

2015 <sup>1</sup>	2042 <sup>1</sup>	2040 (Interpolated)
8,975	18,708	18,595

1. City of Liberty Lake Updated Population Build-Out Analysis

Parametrix reviewed City zoning and land use policies and worked closely with City staff to understand the planned and desired growth patterns for the area. Parametrix also reviewed ongoing and future development proposals to understand the types of planned development and roadway network access patterns. Finally, Parametrix incorporated all this information to refine the SRTC model and generate long-term traffic forecasts as discussed in the following section.

### 4.2.1 Travel Demand Modeling

The SRTC model was used to develop traffic volume forecasts for 2040 conditions within the City. The SRTC model is a region-wide forecasting tool covering the greater Spokane area from the City of Airway Heights on the west to the City of Liberty Lake on the east. The model utilizes the four-step travel demand forecasting process to evaluate the relationship between land use and the transportation network and thus generate travel pattern predictions for future conditions.

Because of the regional setting of the SRTC model, refinements were made to target results for the smaller scale of this study. Refinements included updates and modifications to base year and horizon year roadway network representations and land use assumptions. For example, major street connections in the City generalized by the regional model were added to the network. Future road network assumptions were also adjusted to align with current plans, such as modifying a future I-90 interchange at Henry Road to be a grade-separated overpass only.

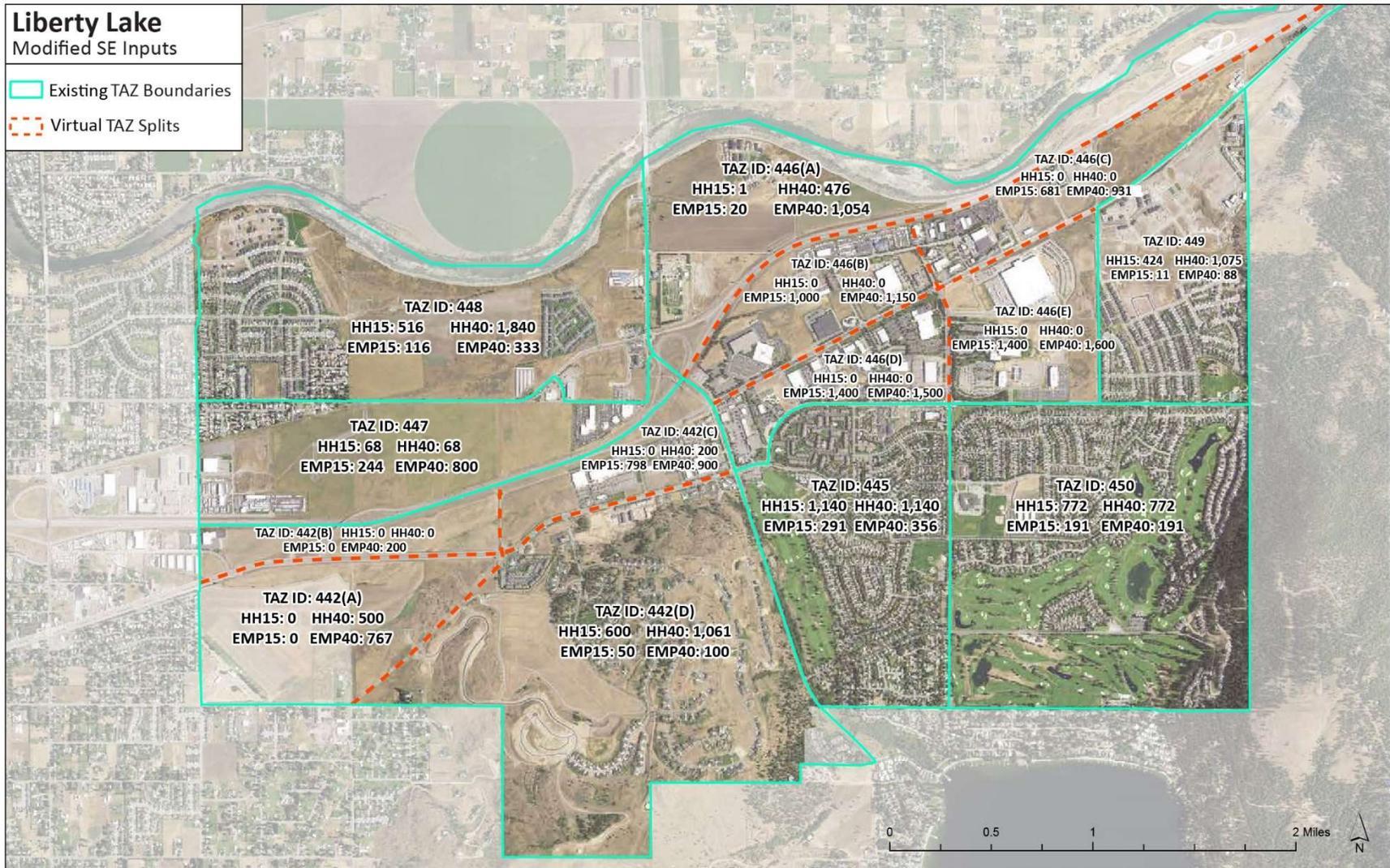
As mentioned previously, land use assumptions for the City in the SRTC model were reviewed with city staff to identify adjustments to better reflect current conditions and plans. The SRTC model divides the region into subareas called traffic analysis zones (TAZs) which contain population and employment estimates for their geography. Population and employment values were first modified to better match base year conditions. Then the horizon year population and employment values were adjusted to reflect city land use plans, zoning, and known development proposals. Finally, because the TAZ structure within the City is quite large, additional TAZ centroid connectors were added to represent the travel patterns of smaller TAZs, thus creating virtual TAZ splits. Figure 6 shows the virtual TAZ splits for the refined SRTC model.

The refined SRTC model was compared to traffic counts to determine whether model refinements resulted in reasonable traffic volume predictions. The percent root-mean-square-error (RMSE) and the R-squared value are two statistics commonly used to measure model accuracy. For the refined SRTC

model, the overall RMSE was 25 percent which is within the industry standard for calibration. Likewise, the overall R-squared value was 0.89 which is better than industry recommendations. Full documentation of the SRTC model refinement and forecast results are contained in the Appendix.

Finally, with long-term forecasts from the refined SRTC model, Parametrix developed long-term AM and PM intersection turning movement forecasts. This was an iterative process utilizing growth rates from the refined SRTC model, existing traffic counts, as well as the short-term traffic volumes derived from trip generation and trip distribution exercises. Figure 7 summarizes the long-term traffic volumes.

Figure 6: SRTC Model TAZ Revisions





## 5. ANALYSIS

Parametrix performed a city-wide traffic analysis on each of the study intersections within Liberty Lake. Intersections were analyzed for three time periods: existing, short-term (2025) and long-term (2040). The list of analysis intersections was shown in Table 1. As mentioned previously, 17 of the 20 intersections are existing, while three study intersections are only analyzed under future conditions: the intersection at the new Ridgeline High School Entrance on Country Vista Drive, the intersection at the East High School Access from Country Vista Drive, and the anticipated intersection at Mission Avenue/Henry Road after the Henry Road bridge is built over I-90.

### 5.1 Intersection Performance

Vehicular performance at intersections is often defined by the concept of intersection Level of Service (LOS). LOS is defined by average vehicle delay (sec/vehicle) and is associated with a letter grade on a scale from A (free flowing traffic), to F (intersection failure, major delays). Typically, LOS D service flow rates are used as minimally acceptable standards for traffic operations.

- A – free flow operation
- B – reasonably unimpeded operation
- C – stable operation
- D – small increases in flow may cause substantial delay
- E – operates with significant delays
- F – operates with extremely slow speeds and/or intersection failures

Parametrix calculates LOS for signalized and stop-controlled intersections using *Synchro*, a traffic engineering software program published by Trafficware. Synchro methods are comparable with the methods and procedures of the *Highway Capacity Manual (HCM) 6<sup>th</sup> Edition* to calculate vehicle delay on the roadway network. Table 3 illustrates the LOS definitions for unsignalized intersections (stop-controlled) and signalized intersections. It should be noted that Highway Capacity Manual definitions for LOS do not apply to uncontrolled movements.

**Table 3: Level of Service**

Level of Service	Unsignalized Intersection Average Delay (sec/veh) <sup>1</sup>	Signalized Intersection Average Delay (sec/veh)
A	0 - 10	0 - 10
B	10 - 15	10 - 20
C	15 - 25	20 - 35
D	25 - 35	35 - 55
E	35 - 50	55 - 80
F	> 50	> 80

1. Reported for the worst stop or yield-controlled approach  
 Source: HCM 6<sup>th</sup> Edition

Parametrix utilized the traffic analysis program SIDRA 8 to evaluate the roundabout intersections. SIDRA supports several methodologies for roundabout analysis including the SIDRA standard roundabout model as well as the roundabout methodologies contained in the 2000 and 2010 versions of the

Highway Capacity Manual (HCM). For this analysis, Parametrix reports results using the SIDRA methodology which is the methodology supported by the Washington Department of Transportation. SIDRA methodology reports LOS and average delay based on the signalized intersection thresholds.

## 5.2 Intersection Operations

For this intersection operations analysis, three alternatives were analyzed: existing conditions, short-term horizon (2025), and long-term horizon (2040). The existing conditions analysis is based on the traffic counts and turn movement data that was collected city-wide in November 2019. The short-term analysis utilizes traffic volumes forecasts that were developed in conjunction with city staff, adding trips from projected land use development to existing volumes. Finally, the long-term traffic analysis uses traffic volume forecasts that were developed using 2040 forecasts from the SRTC model.

## 5.3 Existing Conditions Analysis

Existing conditions analyzed 17 of the 20 study intersections in the city of Liberty Lake. Under existing conditions, each of the study intersections operate at LOS D or better with the majority of the intersections operating as LOS A or LOS B. The intersection at Liberty Lake Road/Appleway Avenue is the only intersection that operates at LOS D during the PM peak hour under existing conditions. For the AM peak hour under existing conditions, all study intersections operate at LOS C or better. Table 4 details LOS and vehicle delay for each of the study intersections under existing conditions. Figure 8 shows existing LOS for each of the intersections.

For existing conditions, 95<sup>th</sup> percentile queue lengths for approaches of each study intersection were also analyzed. During existing conditions, most intersections experienced queues of 100 feet or less during the AM and PM peak hours. Some exceptions include the Mission Avenue/Harvard Road roundabout, which experienced 200 feet queues on the northbound approach during the PM peak hour. The Liberty Lake Road/Appleway Avenue intersection experienced the longest queues, recording queues over 300 feet for several approaches during both the AM and PM peak hours. Table 5 details 95<sup>th</sup> percentile queue lengths by approach for each of the study intersections.

**Table 4: Existing Conditions LOS**

Intersection	Intersection Control	LOS (Avg Delay)	
		AM	PM
Mission Ave/Harvest Parkway	Roundabout	A (9)	A (8)
Mission Ave/Henry Rd (Bridge)	Roundabout	---	---
Mission Ave/Harvard Rd	Roundabout	B (10)	B (17)
Harvard Road/I-90 Ramps	Free	---	---
I-90 EB Ramps/Country Vista Dr	Stop-Controlled SB	B (12)	C (17)
High School Entrance/Country Vista Dr	Signal	---	---
East HS Access-Henry/Country Vista Dr	Stop-Controlled NB	---	---
Henry Rd (Bridge)/Country Vista Dr	Stop-Controlled NB	B (12)	C (17)
Legacy Ridge Dr/Country Vista Dr	Stop-Controlled NB	C (17)	C (21)
Liberty Lake Rd/Country Vista Dr	Signal	B (19)	C (26)
Mission Ave/Country Vista Dr (3-leg)	Stop-Controlled SB	B (11)	B (15)
Liberty Lake Road/Appleway Ave	Signal	C (29)	D (40)
Signal Dr/Appleway Ave	Signal	B (12)	B (10)
Madson St/Appleway Ave	Signal	A (5)	A (6)
Molter Rd/Appleway Ave	Signal	C (23)	C (21)
Country Vista Dr/Appleway Ave	Stop-Controlled NB	B (13)	C (16)
Molter Rd/Mission Ave	Roundabout	A (9)	A (7)
Country Vista Dr/Mission Ave (4-leg)	Stop-Controlled NB/SB	B (12)	B (12)
Country Vista Dr/Molter Rd	Stop-Controlled EB/WB	B (12)	B (14)
Sprague Ave/Molter Rd	Four-Way Stop-Controlled	A (7)	A (8)



**Table 5: Existing Conditions 95th Percentile Queue Lengths**

Intersection	Intersection Control	95 <sup>th</sup> Percentile Queues (feet)							
		AM				PM			
		NB	SB	EB	WB	NB	SB	EB	WB
Mission Ave/Harvest Parkway	Roundabout	25	25	25	25	25	25	25	25
Mission Ave/Henry Rd (Bridge)	Roundabout	---	---	---	---	---	---	---	---
Mission Ave/Harvard Rd	Roundabout	50	150	75	50	200	175	150	125
I-90 EB Ramps/Country Vista Dr	Stop-Control	---	25	25	0	---	50	25	0
High School Entrance/Country Vista Dr	Signal	---	---	---	---	---	---	---	---
East HS Access-Henry/Country Vista Dr	Stop-Control	---	---	---	---	---	---	---	---
Henry Rd (Bridge)/Country Vista Dr	Stop-Control	25	---	0	25	25	---	0	25
Legacy Ridge Dr/Country Vista Dr	Stop-Control	25	---	0	25	50	---	0	25
Liberty Lake Rd/Country Vista Dr	Signal	100	75	100	150	75	175	175	250
Mission Ave/Country Vista Dr (3-leg)	Stop-Control	---	25	25	0	---	100	25	0
Liberty Lake Road/Appleway Ave	Signal	200	325	300	100	300	325	275	250
Signal Dr/Appleway Ave	Signal	150	---	200	75	100	---	100	175
Madson St/Appleway Ave	Signal	25	25	25	25	25	25	50	50
Molter Rd/Appleway Ave	Signal	100	25	125	150	100	25	175	100
Country Vista Dr/Appleway Ave	Stop-Control	25	---	0	25	25	---	0	25
Molter Rd/Mission Ave	Roundabout	25	25	50	50	25	50	50	50
Country Vista Dr/Mission Ave (4-leg)	Stop-Control	25	25	25	0	25	25	25	0
Country Vista Dr/Molter Rd	Stop-Control	25	0	25	25	25	0	50	25
Sprague Ave/Molter Rd	Stop-Control	25	25	25	25	25	25	25	25

## 5.4 Short-term Analysis

The short-term analysis assumes a 2025 horizon year and utilizes traffic volumes forecasts that were developed in conjunction with the City of Liberty Lake, adding trips from projected land use development to existing volumes. Several new intersections and transportation improvements are assumed to be in place by 2025:

- A signalized intersection at the new Ridgeline High School entrance on Country Vista Drive.
- An unsignalized intersection on Country Vista Drive just east of the new high school to provide access to the high school and anticipated new residential development.
- A new intersection at Henry Road/Mission Avenue with the extension of the Henry Road bridge over I-90. In discussions with the City, this intersection is anticipated to be a roundabout design to maintain consistency along the Mission Avenue corridor.
- Intersection improvements at the Henry Road/Country Vista Drive to accommodate a new north leg of the intersection in conjunction with the new Henry Road bridge over I-90.
- Harvard Road bridge improvements, including an additional northbound lane across the bridge, and an additional westbound right-turn lane at the Liberty Lake Road/Appleway Avenue intersection.

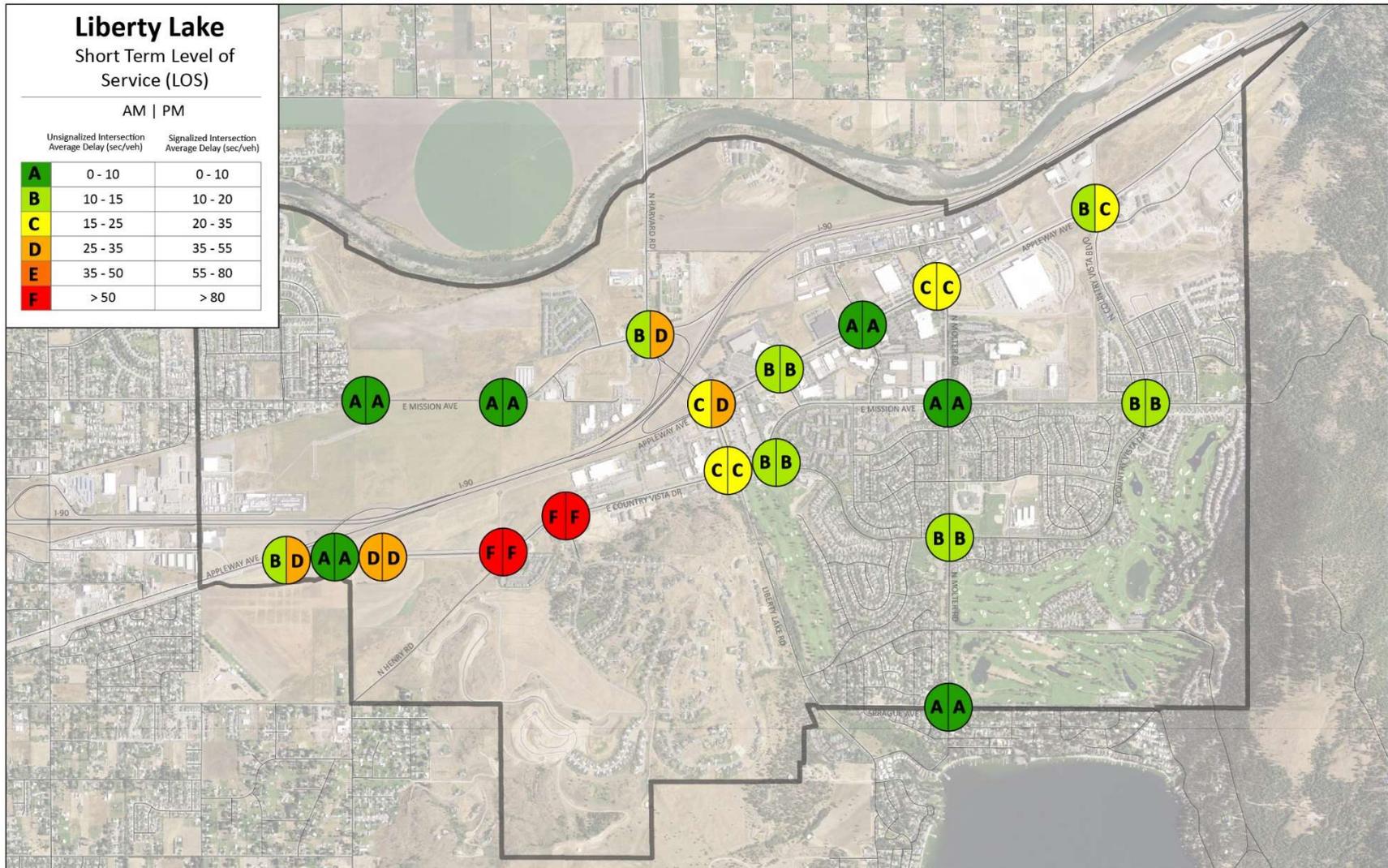
Under short-term conditions, the majority of the study intersections operate at LOS D or better, however there are two intersections that will operate at LOS F in 2025 with no improvements. The intersection at Henry Road/Country Vista Drive will operate at LOS F as an unsignalized intersection due to the anticipated new traffic at the intersection with the addition of the Henry Road bridge. The Legacy Ridge Drive/Country Vista Drive intersection will also fail under short-term conditions due to increased traffic growth on Country Vista Drive.

Under short-term conditions, the Liberty Lake Road/Appleway Avenue intersection will remain at LOS C in AM and LOS D in PM and improve slightly in average delay over existing conditions despite an increase in traffic volumes at the intersection. The intersection experiences less vehicle delay due to the intersection improvements associated with the Harvard bridge widening project, which include an additional westbound right-turn lane. Table 6 details short-term delay and LOS. Figure 9 shows short-term LOS for each of the intersections.

**Table 6: Short-term LOS**

Intersection	Intersection Control	LOS (Avg Delay)	
		AM	PM
Mission Ave/Harvest Parkway	Roundabout	A (9)	A (9)
Mission Ave/Henry Rd (Bridge)	Roundabout	A (8)	A (8)
Mission Ave/Harvard Rd	Roundabout	B (14)	D (50)
Harvard Road/I-90 Ramps	Free	---	---
I-90 EB Ramps/Country Vista Dr	Stop-Controlled SB	B (14)	D (30)
High School Entrance/Country Vista Dr	Signal	A (7)	A (6)
East HS Access-Henry/Country Vista Dr	Stop-Controlled NB	D (33)	D (35)
Henry Rd (Bridge)/Country Vista Dr	Stop-Controlled NB	F (>50)	F (>50)
Legacy Ridge Dr/Country Vista Dr	Stop-Controlled NB	F (>50)	F (>50)
Liberty Lake Rd/Country Vista Dr	Signal	C (22)	C (27)
Mission Ave/Country Vista Dr (3-leg)	Stop-Controlled SB	B (11)	B (15)
Liberty Lake Road/Appleway Ave	Signal	C (33)	D (36)
Signal Dr/Appleway Ave	Signal	B (12)	B (10)
Madson St/Appleway Ave	Signal	A (5)	A (6)
Molter Rd/Appleway Ave	Signal	C (24)	C (21)
Country Vista Dr/Appleway Ave	Stop-Controlled NB	B (15)	C (18)
Molter Rd/Mission Ave	Roundabout	A (9)	A (8)
Country Vista Dr/Mission Ave (4-leg)	Stop-Controlled NB/SB	B (12)	B (13)
Country Vista Dr/Molter Rd	Stop-Controlled EB/WB	B (12)	B (15)
Sprague Ave/Molter Rd	Four-Way Stop-Controlled	A (8)	A (8)

Figure 9: Short-term Intersection LOS



Under short-term conditions, 95<sup>th</sup> percentile queue lengths for approaches of each study intersection were analyzed. As with existing conditions, most intersections in short-term experienced only minor queuing during the AM and PM peak hours. However, The Mission Avenue/Harvard Road roundabout experienced 95<sup>th</sup> percentile queues of 500 feet northbound and 625 feet westbound during the PM peak hour. The Henry Road/Country Vista Drive intersection experienced queues of over 500 feet northbound and southbound as an unsignalized intersection. The Liberty Lake Road/Country Vista intersection had 400 feet queues on the westbound approach during the PM peak hour, and the Liberty Lake Road/Appleway Avenue intersection experienced 400 feet queues southbound during the AM peak hour. Table 7 details 95<sup>th</sup> percentile queue lengths by approach for each of the study intersections.

Given the LOS, vehicle delay and queue results for short-term conditions, there are two intersections that will need improvements to avoid LOS F: the intersection at Henry Road/Country Vista Drive, and the intersection at Legacy Ridge Drive/Country Vista Drive. Both of these intersections will fail by 2025 if they remain as stop-controlled intersections.

**Table 7: Short-term 95th Percentile Queue Lengths**

Intersection	Intersection Control	95 <sup>th</sup> Percentile Queues (feet)							
		AM				PM			
		NB	SB	EB	WB	NB	SB	EB	WB
Mission Ave/Harvest Parkway	Roundabout	25	25	25	25	25	25	50	50
Mission Ave/Henry Rd (Bridge)	Roundabout	25	---	0	25	25	---	0	25
Mission Ave/Harvard Rd	Roundabout	75	225	150	75	325	625	500	350
I-90 EB Ramps/Country Vista Dr	Stop-Control	---	25	25	0	---	75	25	0
High School Entrance/Country Vista Dr	Signal	100	---	75	100	25	---	75	100
East HS Access-Henry/Country Vista Dr	Stop-Control	75	---	0	25	50	---	0	25
Henry Rd (Bridge)/Country Vista Dr	Stop-Control	275	125	50	50	>500	>500	50	50
Legacy Ridge Dr/Country Vista Dr	Stop-Control	150	---	25	25	175	---	50	50
Liberty Lake Rd/Country Vista Dr	Signal	175	75	150	250	100	200	225	400
Mission Ave/Country Vista Dr (3-leg)	Stop-Control	---	25	50	0	---	125	25	0
Liberty Lake Road/Appleway Ave	Signal	200	400	325	125	300	300	275	300
Signal Dr/Appleway Ave	Signal	150	---	225	100	100	---	125	175
Madson St/Appleway Ave	Signal	25	25	50	25	25	25	50	50
Molter Rd/Appleway Ave	Signal	100	25	125	150	100	25	225	100
Country Vista Dr/Appleway Ave	Stop-Control	25	---	0	25	25	---	0	25
Molter Rd/Mission Ave	Roundabout	25	25	50	50	25	50	50	50
Country Vista Dr/Mission Ave (4-leg)	Stop-Control	25	25	25	0	25	25	25	0
Country Vista Dr/Molter Rd	Stop-Control	25	0	25	25	25	0	50	25
Sprague Ave/Molter Rd	Stop-Control	25	25	25	25	25	25	25	25

## 5.5 Long-term Analysis

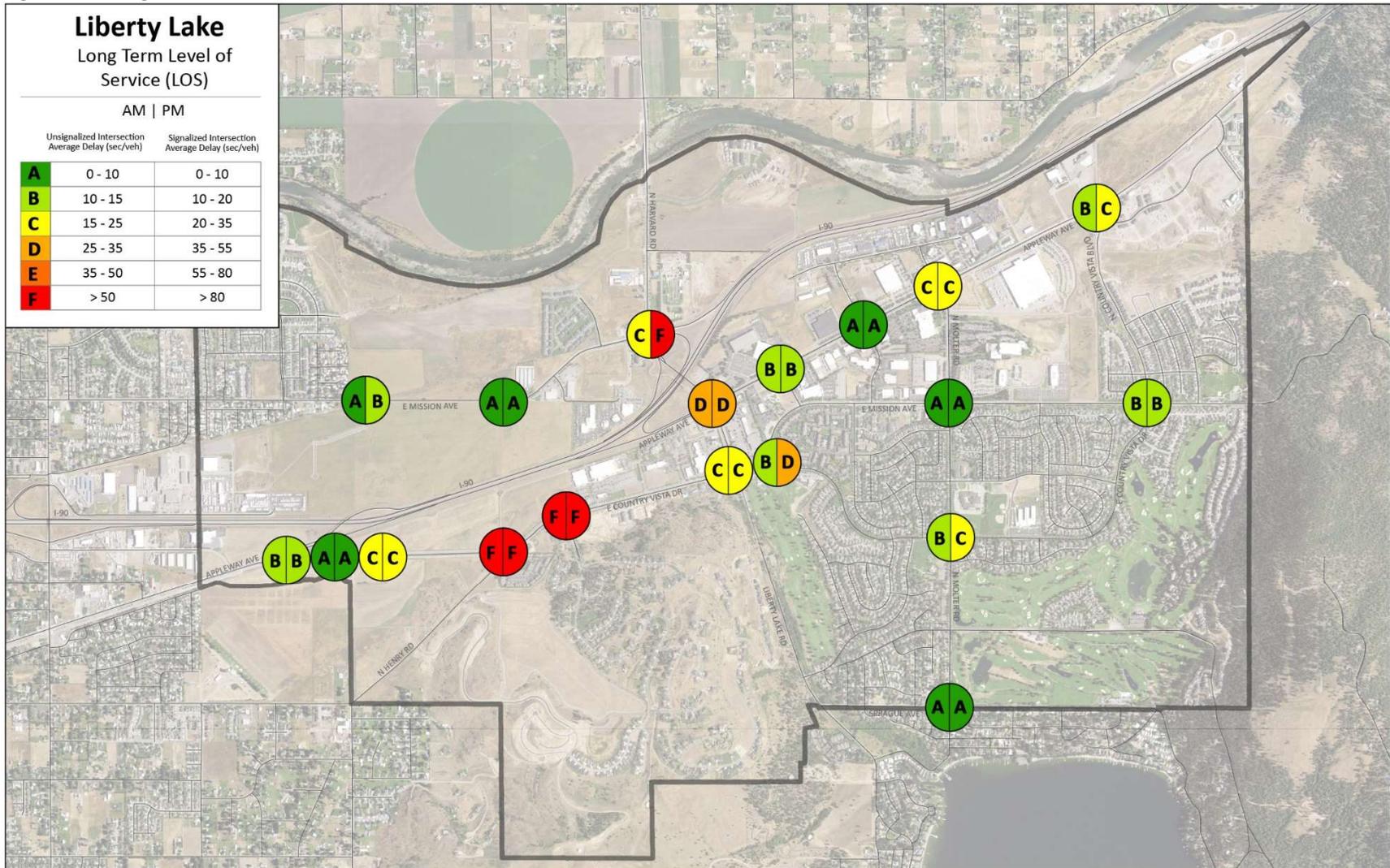
The long-term analysis assumes a 2040 horizon year and utilizes traffic volume forecasts that were developed using travel demand model forecasts for 2040, while also accounting for the added trips from projected land use development used to develop short-term volume forecasts. The new intersections and transportation improvements that are assumed to be in place under short-term conditions are also included in the long-term analysis.

Under long-term conditions, most of the study intersections continue to operate at LOS D or better, however, the Mission Avenue/Harvard Road roundabout will operate at LOS F during the PM peak hour under the existing lane configuration. Additionally, the intersections of Henry Road/Country Vista Drive and Legacy Drive/Country Vista Drive will also continue to operate at LOS F in 2040 with no improvements. Table 8 details long-term delay and LOS. Figure 10 displays long-term LOS for each of the intersections.

**Table 8: Long-term LOS**

Intersection	Intersection Control	LOS (Avg Delay)	
		AM	PM
Mission Ave/Harvest Parkway	Roundabout	A (9)	B (10)
Mission Ave/Henry Rd (Bridge)	Roundabout	A (8)	A (8)
Mission Ave/Harvard Rd	Roundabout	C (24)	F (>80)
Harvard Road/I-90 Ramps	Free	---	---
I-90 EB Ramps/Country Vista Dr	Stop-Controlled SB	B (12)	B (14)
High School Entrance/Country Vista Dr	Signal	A (7)	A (6)
East HS Access-Henry/Country Vista Dr	Stop-Controlled NB	C (16)	C (16)
Henry Rd (Bridge)/Country Vista Dr	Stop-Controlled NB	F (>50)	F (>50)
Legacy Ridge Dr/Country Vista Dr	Stop-Controlled NB	F (>50)	F (>50)
Liberty Lake Rd/Country Vista Dr	Signal	C (24)	C (31)
Mission Ave/Country Vista Dr (3-leg)	Stop-Controlled SB	B (13)	D (27)
Liberty Lake Road/Appleway Ave	Signal	D (44)	D (38)
Signal Dr/Appleway Ave	Signal	B (13)	B (11)
Madson St/Appleway Ave	Signal	A (5)	A (6)
Molter Rd/Appleway Ave	Signal	C (24)	C (26)
Country Vista Dr/Appleway Ave	Stop-Controlled NB	B (13)	C (16)
Molter Rd/Mission Ave	Roundabout	A (9)	A (8)
Country Vista Dr/Mission Ave (4-leg)	Stop-Controlled NB/SB	B (13)	B (14)
Country Vista Dr/Molter Rd	Stop-Controlled EB/WB	B (13)	C (18)
Sprague Ave/Molter Rd	Four-Way Stop-Controlled	A (8)	A (8)

Figure 10: Long-term Intersection LOS



95<sup>th</sup> percentile queue lengths for each approach of each study intersection were analyzed under long-term conditions. Table 9 details 95<sup>th</sup> percentile queue lengths by approach for each of the study intersections. Queue lengths of over 500 feet are experienced at several intersections under long-term conditions including the Mission Avenue/Harvard Road roundabout, Henry Road/Country Vista Drive, and Legacy Ridge Drive/Country Vista Drive.

Level of Service, vehicle delay and queue results for long-term conditions show that there are several needed intersection improvements. In addition to the intersection needs under short-term conditions at Henry Road/Country Vista Drive and Legacy Ridge Drive/Country Vista Drive, the intersections at Mission Avenue/Harvard Road and Liberty Lake Road/Appleway Avenue will need operations improvements by 2040 to maintain an acceptable LOS.

**Table 9: Long-term 95th Percentile Queue Lengths**

Intersection	Intersection Control	95 <sup>th</sup> Percentile Queues (feet)							
		AM				PM			
		NB	SB	EB	WB	NB	SB	EB	WB
Mission Ave/Harvest Parkway	Roundabout	25	25	50	50	25	25	75	75
Mission Ave/Henry Rd (Bridge)	Roundabout	50	---	50	50	100	---	75	75
Mission Ave/Harvard Rd	Roundabout	100	550	275	100	750	1000	1000	1000
I-90 EB Ramps/Country Vista Dr	Stop-Control	---	25	25	0	---	50	25	0
High School Entrance/Country Vista Dr	Signal	100	---	75	100	50	---	100	100
East HS Access-Henry/Country Vista Dr	Stop-Control	25	---	0	25	25	---	0	25
Henry Rd (Bridge)/Country Vista Dr	Stop-Control	>500	>500	50	50	>500	>500	50	50
Legacy Ridge Dr/Country Vista Dr	Stop-Control	225	---	50	50	>500	---	50	50
Liberty Lake Rd/Country Vista Dr	Signal	175	100	175	275	125	200	250	500
Mission Ave/Country Vista Dr (3-leg)	Stop-Control	---	50	75	0	---	250	25	0
Liberty Lake Road/Appleway Ave	Signal	225	450	350	175	300	375	350	300
Signal Dr/Appleway Ave	Signal	175	---	250	100	125	---	150	200
Madson St/Appleway Ave	Signal	25	25	75	50	25	25	50	75
Molter Rd/Appleway Ave	Signal	125	25	125	150	125	25	275	125
Country Vista Dr/Appleway Ave	Stop-Control	25	---	0	25	25	---	0	25
Molter Rd/Mission Ave	Roundabout	25	25	50	75	25	75	75	75
Country Vista Dr/Mission Ave (4-leg)	Stop-Control	25	25	25	25	25	25	25	25
Country Vista Dr/Molter Rd	Stop-Control	25	0	25	25	25	25	75	25
Sprague Ave/Molter Rd	Stop-Control	25	25	25	25	25	25	25	25

## 6. RECOMMENDATIONS

The following section details city-wide needs and recommendations over both the five-year short-term horizon (2025) and the long-term horizon (2040). Overall, traffic operations at most of the intersections within Liberty Lake remain at acceptable conditions through 2040. The City of Liberty Lake has been proactive in pushing forward projects to assess current traffic issues and provide a more complete transportation network within the city. These projects include the Henry Road bridge over I-90, the widening of the Harvard Road bridge over I-90, and the intersection improvements at the Liberty Lake Drive/Country Vista Drive intersection which include the addition of a westbound right-turn lane to accommodate heavy traffic volumes for the right-turn movement. For this reason, there is not an extensive list of recommendations. However, several needed improvements develop over both short-term and long-term that merit further discussion.

### 6.1 Short-term Recommendations

Under short-term conditions, Parametrix identified several locations for needed improvements. These areas are generally centered along the Country Vista Drive corridor, which is one of the high-growth areas of the City. The intersections that need improvements over the short-term are:

- Henry Road/Country Vista Drive
- Legacy Ridge Drive/Country Vista Drive
- Henry Road/Mission Avenue (new intersection)

#### 6.1.1 Country Vista Drive Intersections

The Henry Road/Country Vista Drive intersection and the Legacy Ridge Drive/Country Vista Drive intersection were identified as potential concerns for the near future at. Both intersections are currently unsignalized stop-controlled intersections. Under existing conditions, the Henry Road/Country Vista Drive intersection operates at LOS B during the AM peak hour and LOS C during the PM peak hour and the Legacy Ridge Drive intersection operate at LOS C during both the AM and PM peak hour. Under short-term (2025) conditions, both intersections reach LOS F during both AM and PM peak hours (see Table 10).

**Table 10: Intersection LOS Summary**

Intersection	LOS (Avg Delay)			
	Existing		With Short-term Growth	
	AM	PM	AM	PM
Henry Road / Country Vista Drive	B (12)	C (17)	F (>50)	F (>50)
Legacy Ridge Drive / Country Vista Drive	C (17)	C (21)	F (>50)	F (>50)

With the Henry Road/Country Vista Drive intersection and the Legacy Ridge Drive/Country Vista Drive intersection being projected to operate at LOS F under short-term growth conditions, Parametrix further analyzed potential mitigations to convert the intersections to roundabouts or signals.

Parametrix first analyzed the two intersections as a roundabout configuration using the traffic analysis program SIDRA. It was determined that both intersections would need two-lane approaches eastbound

and westbound on Country Vista Drive to operate at LOS D or better. The Henry Road intersection is expected to operate at LOS C as a two-lane roundabout configuration with two-lane approaches eastbound and westbound on Country Vista Drive, and one-lane approaches north and south on Henry Road. The Legacy Ridge intersection is expected to operate at LOS B as a two-lane roundabout with two-lane approaches eastbound and westbound on Country Vista Drive, and a one-lane approach northbound on Legacy Ridge Drive.

The Henry Road/Country Vista Drive and Legacy Ridge Drive/Country Vista Drive intersections were also evaluated as signalized intersections. A partial signal warrant analysis of the Legacy Ridge Drive intersection was completed and showed that Warrant 1B would be met under short-term conditions (12 of 8 hours met). Synchro analysis was performed for the Henry Road and Legacy Ridge Drive intersections as signalized intersections. Table 11 shows the LOS and vehicle delay for each of the intersections under the short-term volume scenario. As seen in Table 11, both the Henry Road and Legacy Ridge Drive intersections will perform at LOS B or LOS C during the AM and PM peak hours as signalized intersections under the short-term growth scenario. Full analysis of these intersections is documented in the *County Vista Drive Corridor Analysis Memo*.

**Table 11: Intersection LOS Summary with Signals**

Intersection	LOS (Avg Delay)					
	Existing		With Short-term Growth			
	Unsignalized		Unsignalized		Signalized	
	AM	PM	AM	PM	AM	PM
Henry Road / Country Vista Drive	B (12)	C (17)	F (>50)	F (>50)	C (22)	B (13)
Legacy Ridge Drive / Country Vista Drive	C (17)	C (21)	F (>50)	F (>50)	B (15)	B (17)

Parametrix recommends traffic signalization for both intersections over a roundabout configuration. Traffic signals will be more consistent with other treatments on the corridor, namely the signal at Liberty Lake Drive and the proposed signal at the new high school entrance. Additionally, the signals will offer a more controlled experience for pedestrians and bicyclists traveling along Country Vista Drive and crossing the roadway. Roundabouts can be intimidating to pedestrians and bicyclists who are unsure if vehicles will yield as required by law and a two-lane roundabout design increases the pedestrian crossing distance without additional traffic control. Also, left-turns for bicyclist in a two-lane roundabout can be difficult due to the need to change lanes inside the circle among faster-traveling vehicles. Furthermore, there have been past concerns about dual-lane roundabouts at other locations on the corridor with number of young drivers to travel to and from the planned high school. Finally, roundabouts require a larger footprint and there are concerns about environmentally sensitive land near the intersection.

Further analysis shows that as signalized intersections, the Henry Road/Country Vista Drive and Legacy Ridge Drive/Country Vista Drive intersections will continue to operate at LOS B or LOS C under long-term conditions through 2040 (see Table 12).

**Table 12: 2040 Intersection LOS Summary**

Intersection	LOS (Avg Delay)					
	Existing		Short-term		Long-term	
	Unsignalized		Signalized		Signalized	
	AM	PM	AM	PM	AM	PM
Henry Road / Country Vista Drive	B (12)	C (17)	C (22)	B (13)	C (22)	B (16)
Legacy Ridge Drive / Country Vista Drive	C (17)	C (21)	B (15)	B (17)	B (18)	B (17)

### 6.1.2 Henry Road/Mission Avenue

With the planned Henry Road bridge over I-90, a new intersection at Henry Road/Mission Avenue is anticipated. As part of the planning process for the future Henry Road bridge project, Parametrix assisted the project team by analyzing the intersection as both a roundabout intersection and signalized intersection. While the intersection is anticipated to be built under short-term conditions, Parametrix analyzed the intersection under both short-term and long-term conditions, to ensure that the intersection would work through 2040. Table 13 details 2040 LOS results.

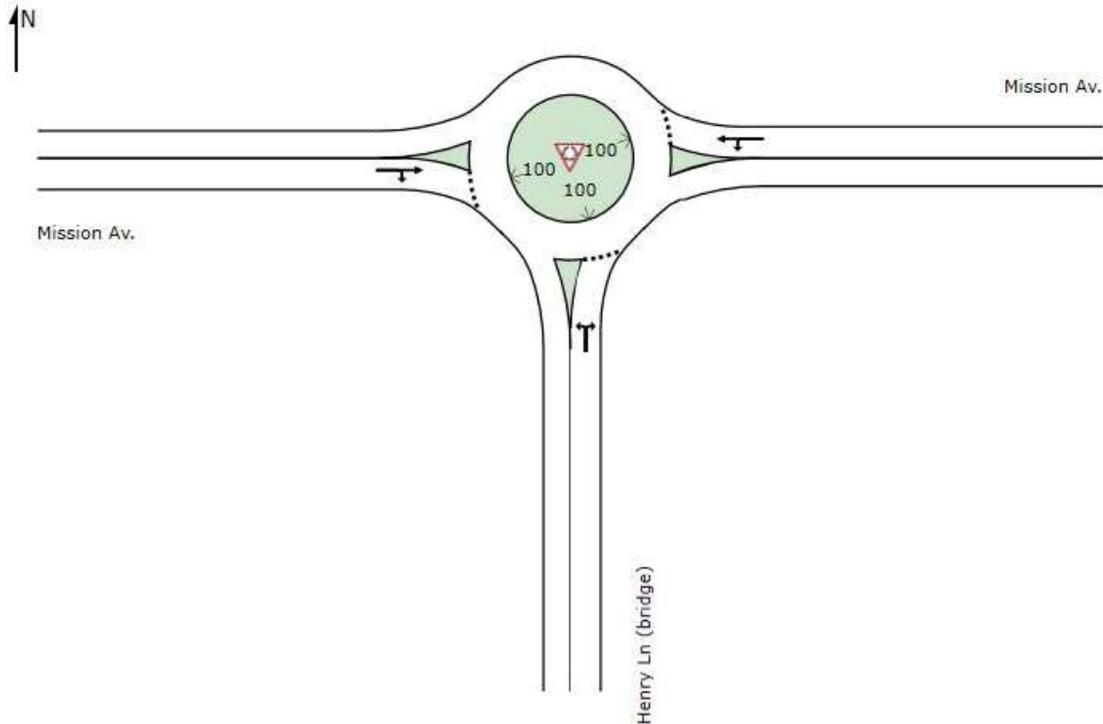
**Table 13: Intersection LOS Summary for Henry Road/Mission Avenue Intersection**

Horizon Year	LOS (Avg Delay)					
	Signalized		Roundabout			
			3-leg		4-leg	
	AM	PM	AM	PM	AM	PM
Short-term Conditions	A (6)	A (6)	A (8)	A (8)	A (8)	A (8)
Long-term Conditions	A (6)	A (8)	A (8)	A (8)	A (9)	B (12)

Parametrix recommends a one-lane roundabout at the Henry Road/Mission Avenue intersection. Traffic volumes are supportive of a one-lane roundabout and there are already two roundabouts on the corridor, therefore a roundabout design will maintain consistency along the Mission Avenue corridor with the other two roundabout intersections at Harvest Parkway and Harvard Road.

Parametrix also conducted a brief sensitivity test assuming a fourth leg on the north side of the roundabout providing a connection to unspecified future residential development. Results indicate the roundabout will be able to accommodate a future fourth leg. Figure 11 illustrates the conceptual recommended configuration.

Figure 11: Henry Road/Mission Avenue Roundabout



## 6.2 Long-term Recommendations

To meet acceptable traffic LOS through 2040, Parametrix identified locations for needed improvements under long-term conditions. The intersections that need improvements over the long-term are:

- Liberty Lake Road/Appleway Avenue
- Harvard Road/Mission Avenue

### 6.2.1 Harvard Road/Mission Avenue

The roundabout at Harvard Road/Mission Avenue shows a failing LOS during the PM peak hour under long-term conditions. The intersection is also projected to experience 95<sup>th</sup> percentile queue lengths of 1000 feet by 2040. Parametrix analyzed expanding the roundabout to accommodate traffic volumes through 2040 and considered several roundabout configurations. The analysis concluded that the roundabout would operate with an acceptable LOS by expanding the northbound and southbound approaches from one lane to two lanes in each direction, maintaining two through lanes through the roundabout northbound and southbound, and adding right turn lanes on the eastbound and westbound approaches. A single lane through the roundabout would be maintained eastbound and westbound. Figure 12 shows the proposed conceptual roundabout configuration. Table 14 details LOS at the intersection with and without the proposed improvements.

Under long-term conditions, the proposed configuration will improve LOS during the PM peak hour from LOS F to LOS D. Parametrix recommends improving the Harvard Road/Mission Avenue roundabout to the proposed configuration presented in Figure 12 between 2025 and 2040.

Figure 12: 2040 configuration - Harvard Road/Mission Avenue Roundabout

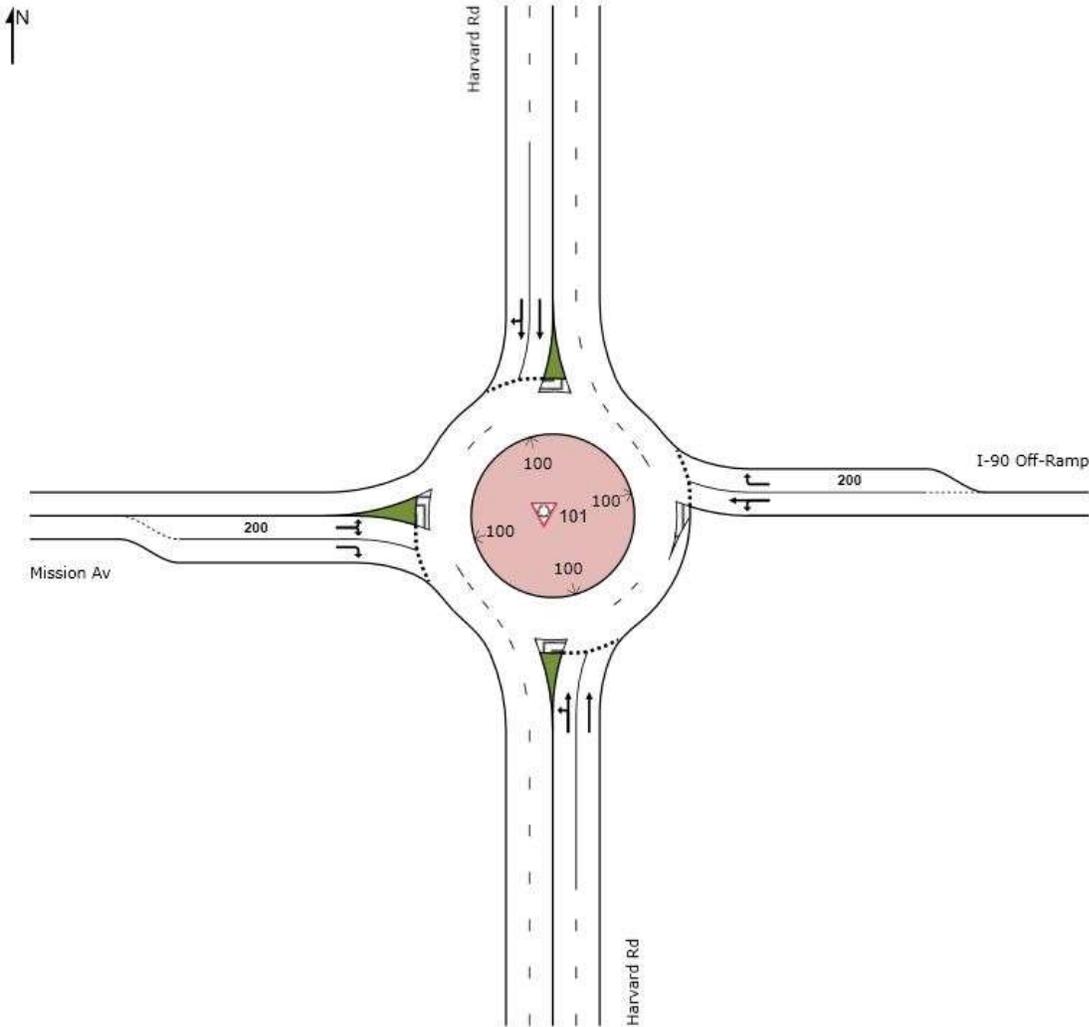


Table 14: Harvard Road/Mission Avenue LOS

Intersection	LOS (Avg Delay)					
	Existing		Long-term (2040)			
			Without Improvements		With Improvements	
	AM	PM	AM	PM	AM	PM
Harvard Road / Mission Avenue	B (10)	B (17)	C (24)	F (>80)	B (12)	D (48)

Widening the roundabout to two lanes northbound and southbound can directly tie in to the existing four lane cross-section on Harvard Road on the north side of the roundabout. South of the roundabout, it will need to be determined how the two-lanes in each direction will tie into Harvard Road, which is currently only one lane in each direction. The current Harvard Road bridge widening project will extend an additional northbound lane across the bridge. However, the two northbound lanes will split at the

I-90 on-ramp, with only one through lane continuing to the roundabout. A plausible option is to extend the outer northbound lane from the current lane split to the roundabout, which is about 350 feet.

Southbound, the two lanes from the roundabout could be extended south to feed directly into the existing lane split between the westbound I-90 on ramp lane and through lane across the bridge. However, the distance between the roundabout and the lane split southbound is about 175 feet which may present weaving difficulties, as the outside lane would become a right-only lane onto the ramp. Directional signing on roundabout approaches could possibly mitigate this issue. Other potential options would be to continue the second southbound lane past the ramp gore, narrowing down to one lane before the bridge. Another option would be to widen the bridge to carry a second southbound lane across the bridge to the intersection with Appleway Avenue. Further analysis will be required to determine the optimal configuration.

## 6.2.2 Liberty Lake Road/Appleway Avenue

The intersection of Liberty Lake Road/Appleway Avenue will receive an additional westbound right-turn lane as part of the upcoming Harvard Road bridge project. This will allow the intersection to maintain an acceptable LOS over the short-term. However, by 2040 several of the left-turn movements will operate at LOS E or LOS F during the AM and PM peak hours. Table 15 details LOS and 95<sup>th</sup> percentile queue lengths for each of the left-turn movements at the Liberty Lake Road/Appleway Avenue intersection under long-term conditions.

**Table 15: Liberty Lake Road/Appleway Avenue Long-term LOS**

Measure	Long-term (2040)							
	AM				PM			
	NBL	SBL	EBL	WBL	NBL	SBL	EBL	WBL
Movement LOS	F (>80)	F (>80)	D (40)	F (>80)	D (53)	F (80)	E (72)	E (73)
95 <sup>th</sup> Percentile Queue (feet)	175	450	200	150	125	375	350	275

As shown in Table 15, several of the left-turn movements operate at LOS F in long-term. Considering LOS and queue lengths over both the AM and PM peak hours, the southbound left-turn is in most need of improvement. Parametrix analyzed the possibility of expanding one or more of the left-turn pockets at the intersection from a single left-turn lane to dual left-turns.

Based on analysis, Parametrix recommends expanding the southbound left-turn lane to dual left-turns by 2040 at the Liberty Lake Road/Appleway Avenue intersection. One advantage of expanding the southbound left-turn movement is that the intersection can remain aligned north to south, as the additional left-turn lane would align with the existing median on the south leg. As shown in table 16, LOS and queue lengths improve for all left-turn movements with the recommended improvements.

**Table 16: Liberty Lake Road/Appleway Avenue Long-term LOS with Improvements**

Measure	Long-term (2040)							
	AM				PM			
	NBL	SBL	EBL	WBL	NBL	SBL	EBL	WBL
Movement LOS	D (49)	D (44)	C (34)	D (51)	D (46)	D (36)	D (45)	E (55)
95 <sup>th</sup> Percentile Queue (feet)	100	150	150	100	125	125	275	250

The westbound and eastbound left-turn pockets may also merit consideration for dual left-turns in the future, but with the above improvement to southbound, it is expected they can likely remain single lanes with additional signal timing optimization at the intersection. Additionally, the eastbound left-turn pocket has nearly 500 feet of storage space to accommodate vehicle queues, which likely would lessen the need to expand the movement to dual lefts.

### 6.3 Summary of Recommendations

The City of Liberty Lake has been proactive in developing projects to assess current traffic issues and provide a more complete transportation network within the city. Most of the intersections within Liberty Lake remain at acceptable conditions through 2040. Parametrix developed recommendations for several needed improvements over both the short-term and long-term horizon. Table 17 provides a summary of the short-term and long-term recommendations.

**Table 17: Summary of Recommendations**

Analysis Horizon	Intersection	Recommendation
Short-term	Henry Rd/Country Vista Dr	Construct traffic signal
	Legacy Ridge Dr/Country Vista Dr	Construct traffic signal
	Henry Rd/Mission Ave	Construct roundabout
Long-term	Harvard Rd/Mission Ave	Expand roundabout to two lanes NB/SB
	Liberty Lake Rd/Appleway Ave	Convert southbound left-turn lane to dual lefts