CITY OF FERNDALE
TRANSPORTATION ELEMENT

Adopted: June 2016

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Introduction

A city is both defined and constrained by the network of highways, roads, trails, railroads and transit services that facilitate the movement of its residents and goods throughout the community. A comprehensive and well-planned transportation system is essential to Ferndale's long-term growth and vitality, and the ability to move goods and people is fundamental to maintaining a healthy community.

Over time, key City transportation facilities area are forecast to degrade with increased land use growth. Responsible transportation planning in Ferndale is increasingly important to maintain an efficient transportation network that is vital to all sustainable communities.

The Transportation Element provides the framework to guide the growth and development of the City's transportation infrastructure. It also integrates land use and the transportation system by ensuring that all existing and future developments are adequately served. While the automobile-related transportation system needs provide the core of the system, the Element also addresses the development of a balanced, multimodal transportation system for the City and adjacent Urban Growth Area (UGA). The Element also recognizes the regional nature of the transportation system and the need for continuing interagency coordination.

The Transportation Element establishes the City's goals and policies for developing the transportation system within the City and UGA. The Element is based on a 2015 study of Ferndale's existing transportation network, combined with projections of future growth and transportation needs. The Element includes five sections:

A. Inventory of Existing Transportation Facilities and Conditions

B. Forecasts, Alternatives, and Emerging Transportation Trends

C. Transportation Systems Plans

D. Financing Program

E. Goals and Policies

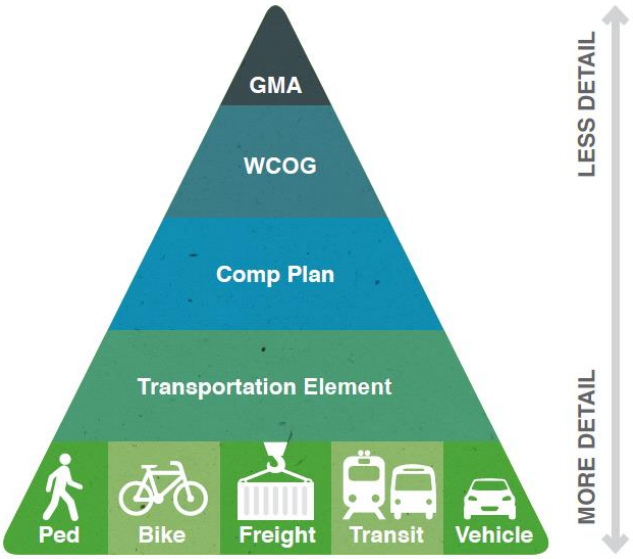
TRANSPORTATION ELEMENT AT A GLANCE: SUMMARY OF CONCLUSIONS

- **Passenger vehicles** will continue to be the primary mode of transportation in Ferndale over through 2036.
- **Sufficient capacity** is available on the majority of City streets for motorists at all hours of the day.
- **Peak hour traffic** (evening rush hour) leads to congestion at Main Street from Interstate Five through Downtown and at Second Avenue.
- **Irregular events** such as traffic accidents, train delays, inclement weather will generate longer and more substantial congestion in the future, even if overall delays are relatively minor.
- **Thornton Street Extension** will address some but not all congestion issues.
- **Thornton Extension costs** cannot be fully paid for without municipal bonds authorized by voters.
- **Main Street corridor** conversion to roundabouts, combined with calibrated signals in the Downtown core will reduce severe accidents and moderately improve congestion.
- **Downtown congestion** will not be relieved without adding capacity or reducing volume.
- **Alternative transportation** (bike, pedestrian, transit) have significant existing demand, but cannot be accommodated until coordinated alternative transportation facilities are established.

The Transportation Element is intended to serve as a guide for making transportation decisions to address both short and long term needs. To meet GMA requirements, the Transportation Element must identify existing transportation system characteristics, establish standards for levels of service, and identify existing and future deficiencies based on land use growth projections. The Transportation Element also discusses roadway mobility and accessibility needs, identifies improvements necessary to enhance safety, bicycle and pedestrian travel, and public transit. Along with the other elements of the Comprehensive Plan, the Transportation Element establishes a flexible policy framework for making decisions consistent with this vision, and describes a strategy for accomplishing the vision over the long-term planning horizon (20 to 25 years).

The Growth Management Act also requires that the Transportation Element contain a funding analysis of the capital transportation projects it recommends [RCW 36.70A.040(6)]. This analysis should cover funding needs and resources, and should include a multi-year financing plan. The purpose of the analysis is to ensure that the City's transportation systems plans are affordable and achievable. If it is not, the Element must discuss how additional funds will be raised or how assumptions used in the analysis will be reassessed.

The Transportation Element also builds from and incorporates subarea plans completed by the City, including the Main Street Master Plan, completed in 2011 as part of a Planned Action and following an Environmental Impact Statement which analyzed the impacts of development. The Main Street Master Plan is adopted into the Ferndale Comprehensive Plan, and population/employment growth assumptions, transportation mitigation, and other traffic-related information required by that plan are also incorporated into this element, replacing what was contained in previous versions of this element. The Master Plan generally focuses on anticipated growth with the City east of the Nooksack River and north of Smith Road, and these growth assumptions were also incorporated into this Element.



Varying levels of detail in transportation planning efforts

A. Inventory of Existing Transportation Facilities and Conditions

Travel needs within the City of Ferndale are met by a range of transportation facilities and services. These facilities and services provide for travel within the City and also connect Ferndale with the rest of the region. The City's existing transportation system is comprised of interstate freeways, state highways, arterials, collectors, local roads, pedestrian and bicycle facilities, and transit facilities. A major rail line also traverses the City and affects other travel modes. The following summarizes key elements of the existing transportation system serving the City. The inventory provides input for identifying and prioritizing the City's transportation improvement projects and programs presented later in the Transportation Element.

To provide background for identifying the transportation improvement projects and programs, a summary of existing conditions of the study area roadway system is presented. This includes the number of lanes and existing traffic controls, existing traffic volumes and operations, transportation safety conditions, and the freight system. Non-motorized facilities and transit services, which use the roadway system, are also described.

Street and Highway Network

The backbone of the City's transportation system is the street and highway system. The street and highway system provides mobility and access for a range of travel modes and users. Roadways are classified by their intended function and desired service. The City's roadway functional classification is defined in the Transportation System Plans section of the Transportation Element.

Figure 1 shows the existing state highway and arterial system serving Ferndale. The City is served by state routes, and several major north-south and east-west routes that are described in the following sections. In general, routes in the City are two lanes (one lane each direction) with posted speeds of 25 to 35 mph. In rural areas the speed may be 45 mph or 50 mph.

State Routes

The primary state route within the region is Interstate Five, which has two travel lanes in each direction in the Ferndale area. Interstate Five connects Ferndale south to Bellingham and Skagit County, and north to Blaine and Canada. Four interchanges serve the Ferndale community. The interchanges are located at Grandview Road (SR 548), Portal Way, Main Street, and Slater Road. Posted speeds are 60 to 70 mph.

Within the northern portion of the City limits, Grandview Road is a state route (SR 548) west of Interstate Five. East of Interstate Five, Grandview Road is a county road. Grandview Road connects the Birch Bay community and major employment centers to Interstate Five. Within

the Ferndale City limits, Grandview Road is two lanes with posted speeds of 35 mph. Speed limits increase to 45 mph outside of the Ferndale UGA.

North-South Routes

In the southeastern areas of the City, LaBounty Drive and Barrett Road provide key frontage roads parallel to Interstate Five. These roadways allow for non-freeway traffic circulation between Main Street, Smith Road, and Slater Road, as well as access to adjacent commercial land uses. Sections of LaBounty Drive have a center median lane.

In the southwestern part of the City and adjacent area, Imhoff Road and Ferndale Road provide key links between Main Street and Slater Road. Imhoff Road (via Douglas Road) provides a more direct connection with higher allowed speeds than Ferndale Road (via 1st Avenue).

In the northwestern areas of the City, Vista Drive, Malloy Avenue, and Church Road provide the primary north-south routes. Vista Drive is the longest of the three routes, connecting downtown Ferndale to Grandview Road (SR 548). Vista Drive provides a center two-way left-turn lane along some segments within the existing City limits. Malloy Avenue and Church Street are more narrow streets with lower speed limits.

In the northeastern areas of the City, Portal Way and Enterprise Road provide the only continuous route in an area bordered by Interstate Five and the Nooksack River. Portal Way runs parallel to Interstate Five and connects Ferndale to areas north of the City, including the communities of Blaine and Birch Bay. As Portal Way crosses to the west side of Interstate Five, Enterprise Road provides for continuity of the north-south route on the east side of Interstate Five. Within the Downtown area, Second Avenue and 3rd Avenue provide key connections between Main Street, Vista Drive, and Portal Way (via Washington Street.)

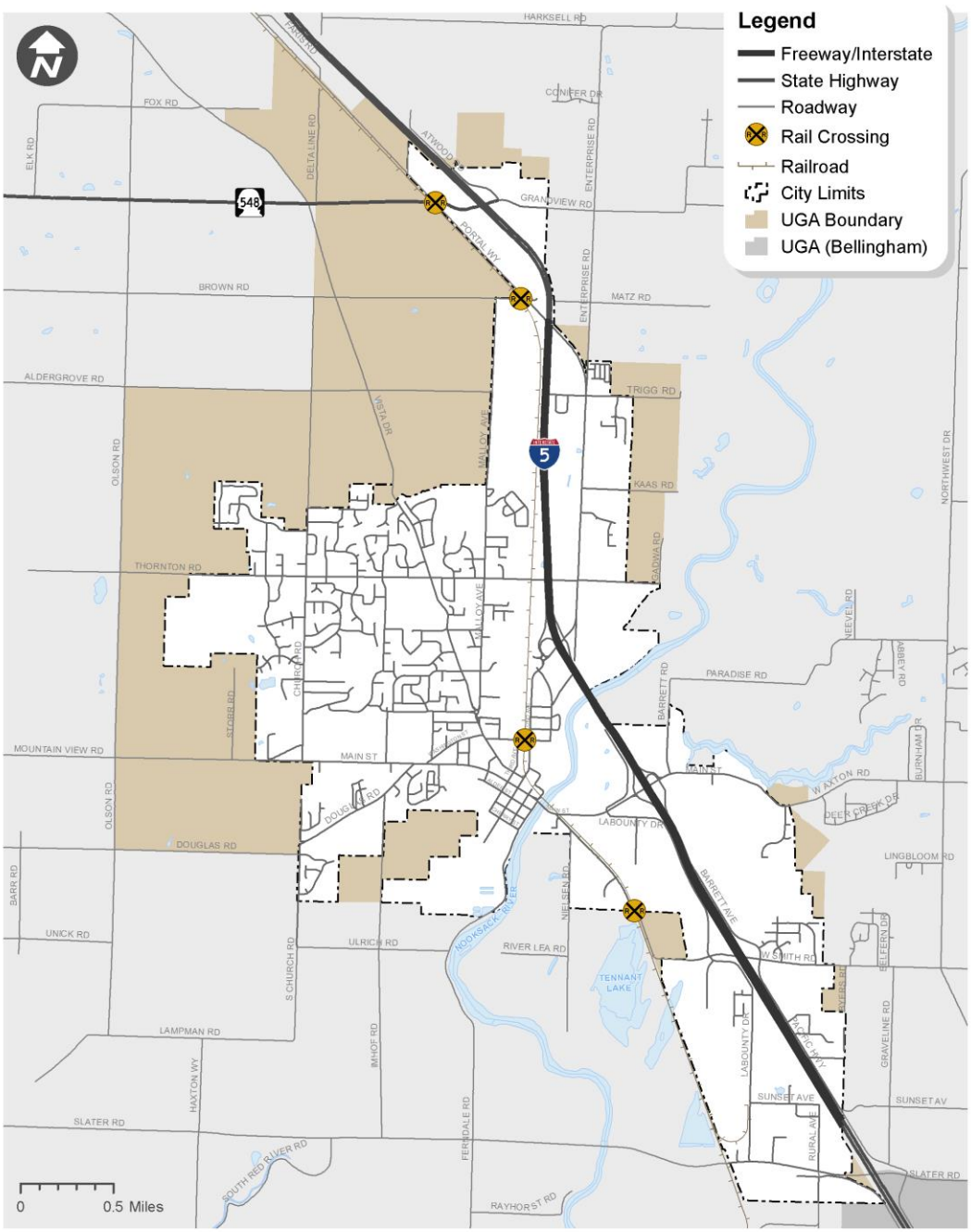
East-West Routes

Main Street provides direct access to the downtown area from Interstate Five, across the Nooksack River. Between the river and Interstate Five, the roadway is 3 to 5 lanes wide serving a variety of commercial properties. West of the river, Main Street is 2 to 3 lanes wide serving downtown Ferndale and points to the west, including access to/from the Cherry Point refineries and Intalco. East of Interstate Five, Main Street becomes Axton Road with connections to Northwest Drive and Guide Meridian Road (SR 539).

Slater Road provides another link across the Nooksack River and another interchange with Interstate Five. This road is two lanes and has posted speeds ranging from 35 to 50 mph. In the southeast section of the City, Slater Road is the primary route for traffic within the Lummi Nation, Lummi Island, Sandy Point, and the Conoco Phillips refinery. Smith Road provides an important City link across Interstate Five to Northwest Drive and Guide Meridian Road (SR 539).

Thornton Street and Washington Street also provide important east-west routes within the City. Washington Street provides key connections between Portal Way, Vista Drive, and Main Street. Thornton Road provides continuous connections between Church Road, Vista Drive, and Malloy Avenue. Both routes are generally two lanes with 25 mph posted speeds.

Figure 1 Existing Highway and Street System



Existing Highway and Street System

City of FerndaleTransportation Element Update

FIGURE 1

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Roadway Traffic Volumes

Traffic volumes in urban areas in the Puget Sound Region are typically highest during the weekday PM peak hour and are used for evaluating transportation system needs. This reflects the combination of commuter work trips, shopping trips, and other day-to-day activities. The City of Ferndale typical weekday peak hour is between 4 and 6 p.m. but can often start and end a bit earlier.

Existing traffic volumes were provided by the City of Ferndale and Washington State Department of Transportation (WSDOT). In some locations new traffic counts were collected. Existing (2015) weekday PM peak hour volumes are shown in Figure 2 for selected locations in the City and surrounding study area.

Interstate Five has the highest corridor volumes at about 4,900 trips during the weekday PM peak hour. Main Street and Slater Road have the next highest number of trips (between 1,000 and 1,800). Vista Drive has 500 to 1,200 trips. Grandview Road (SR 548) and Portal Way are typically 400 to 900 trips. Daily traffic volumes are approximately 8 to 12 times the PM peak hour traffic volumes.

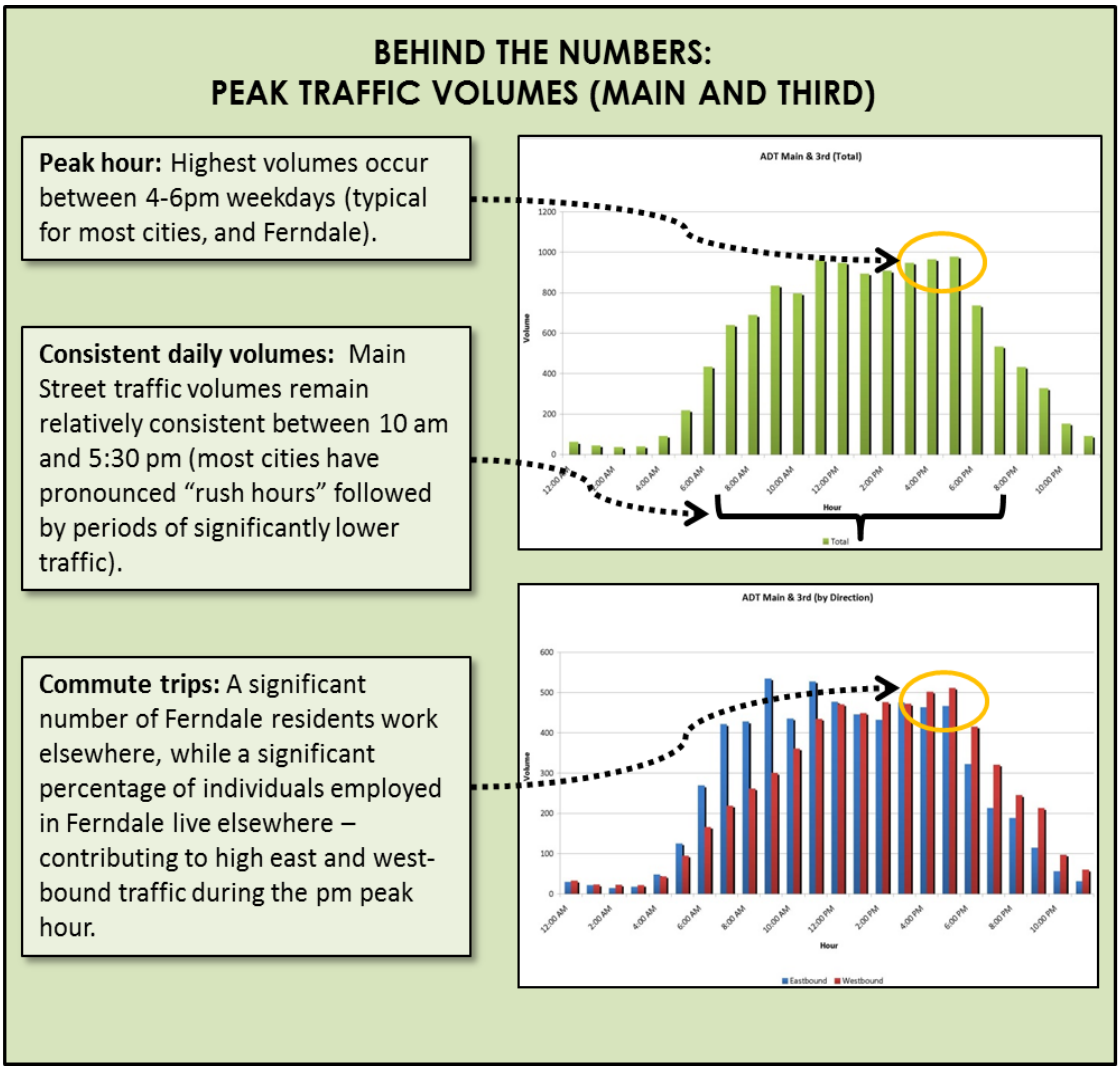
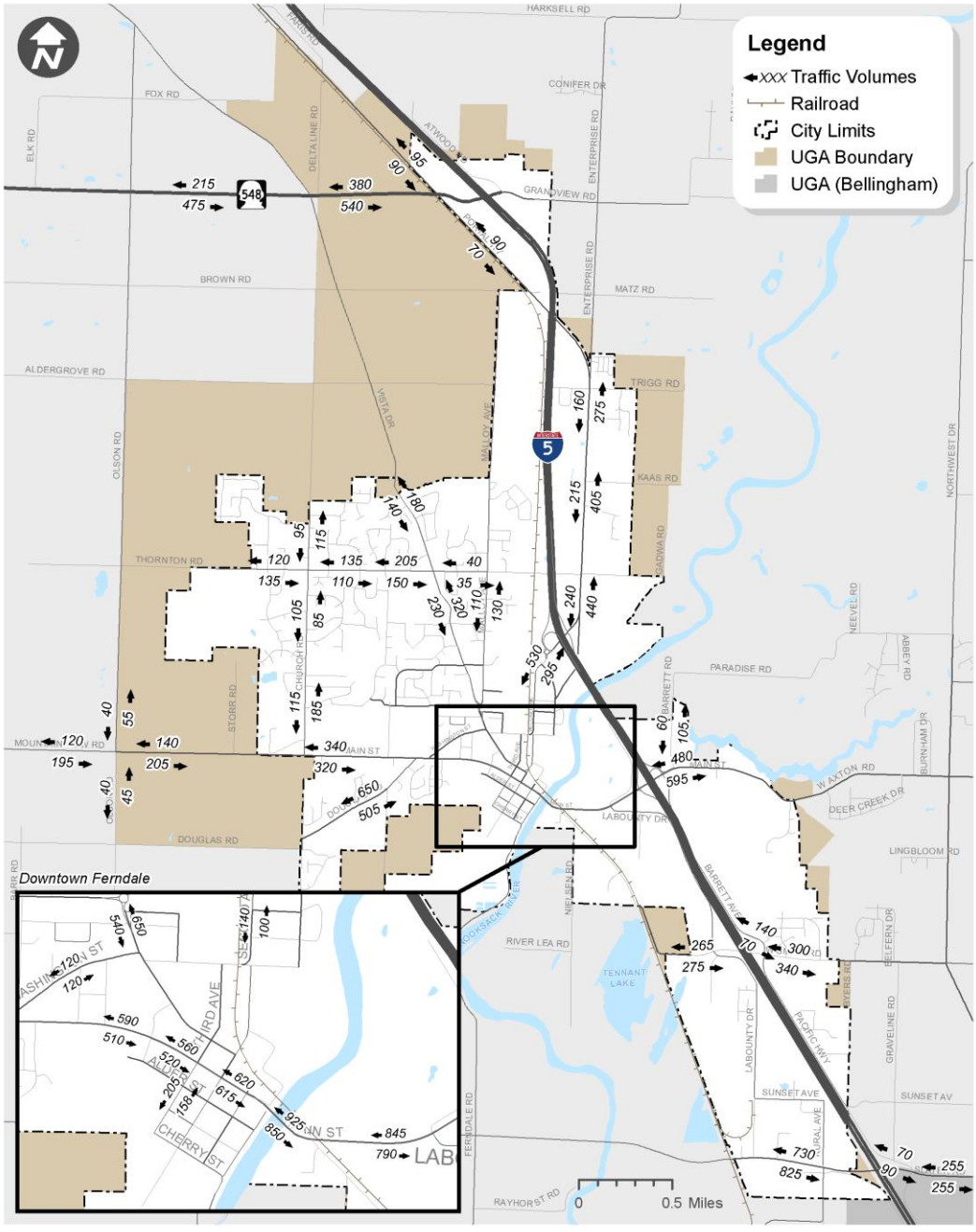


Figure 2 Existing (2015) PM Peak Hour Traffic Volumes



Existing (2015) PM Peak Hour Traffic Volumes

City of Ferndale Transportation Element Update

FIGURE 2

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Roadway Traffic Operations

Traffic operations analyses provide a quantitative method for evaluating how the transportation system is functioning. It is applied to existing and forecast conditions to assist in identifying issues and potential improvement options. The traffic operations are reported for weekday PM peak hour conditions.

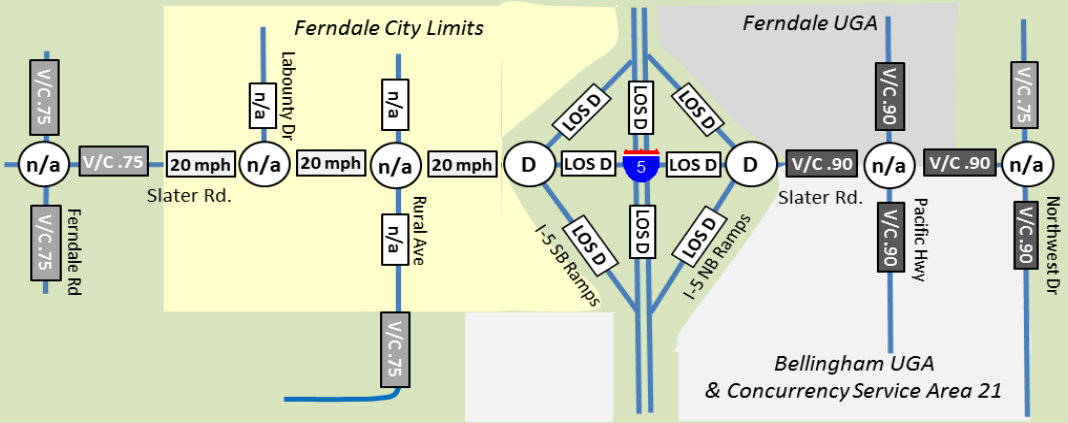
Level of Service Standards

Level of service is a measure of the quality of traffic flow and operations. It can be described in terms such as speeds, travel times, delays, convenience, interruptions and comfort. *The Highway Capacity Manual (HCM),* Transportation Research Board, 2010, provides methodologies for evaluating levels of service (LOS) for transportation facilities and services. The *HCM* criteria range from LOS A indicating free-flow conditions with minimal delays, to LOS F indicating extreme congestion and significant delays.

For purposes of the Transportation Element the City has adopted level of service standards for transportation facilities under its jurisdiction (as required under the Growth Management Act) and is summarized below. The City also coordinates with other agencies in the region on maintaining LOS standards in their respective jurisdictions. The LOS standards for these agencies are also summarized in the sections below for reference.

Many Ways to Measure Traffic

A transportation network typically involves many agencies. In and around Ferndale, transportation-related Level of Services is measured by four different agencies: Ferndale, Washington State Department of Transportation, Whatcom County, and City of Bellingham. The figure below illustrates the various LOS measurements along Slater Road.



Prepared by Washington State Department of Transportation

City of Ferndale LOS Standards

As part of the 2010 Transportation Element update, the City revised its LOS standards. The City determined that two components were important to defining the adequacy of its transportation system. The first was the ability to maintain a reasonable travel speed for access to/from Interstate Five and along major corridors serving traffic within the City. The second component is intended to ensure that intersections on arterials and collectors operate without extensive delays during the peak travel periods. To accommodate these two

objectives, the City has defined an LOS Standard for corridors and a second standard for intersections. The City's LOS Standards are summarized below, but more detailed information is located in the Transportation Systems Plan section.

Corridor Level of Service. The City of Ferndale has identified the weekday PM peak hour travel speeds along the following six roadway corridors (two sections of Main Street/Axton Road; Slater Road; Grandview Road; and, two sections of Vista Drive) as being critical to maintaining the adequacy of its transportation system. Figure 3 shows the corridor segments.

The LOS standard for each segment is based on travel speeds, which factor the total travel time and delays at the intersections within and the end of each segment. The LOS standard for Segments 2, 4, 5, and 6 are 20 mph. For Segments 1 and 3 the LOS standard is 15 mph. In addition, Segment 1 has an addition standard of 10 mph for each of three sub-segments.

Intersection Level of Service. The City has established the following LOS standards for intersections. The levels of service shall be measured using methodologies identified in the latest edition of the *Highway Capacity Manual (HCM)*.

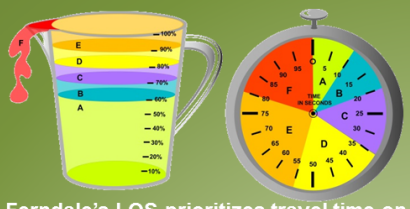
LOS C – For traffic signals, roundabouts, and all-way stop controlled (AWSC) intersections based on overall average delay per vehicle.

LOS D – For unsignalized two-way stop controlled (TWSC) intersections for worst traffic movement. On a case-by-case basis, the City may allow the level of service for traffic movements from the minor streets at two-way stop controlled intersections to operate below the adopted standard, if the City determines that no significant safety or operational issues will result.

WHAT IS LEVEL OF SERVICE (LOS)?

Level of Service is a qualitative measure used to relate the quality of traffic service. The measure is used to analyze roads, intersections, or entire transportation networks by categorizing traffic flow and assigning quality levels of traffic based on speed, capacity, travel time, etc.

LOS is typically measured on an A-F scale, with "A" representing free-flowing conditions, and F representing gridlock.



Ferndale's LOS prioritizes travel time on primary transportation routes for the purposes of ensuring that commuters can get to and from their homes as efficiently as possible. Secondary LOS measures at intersections are based on the "worst turning movement."

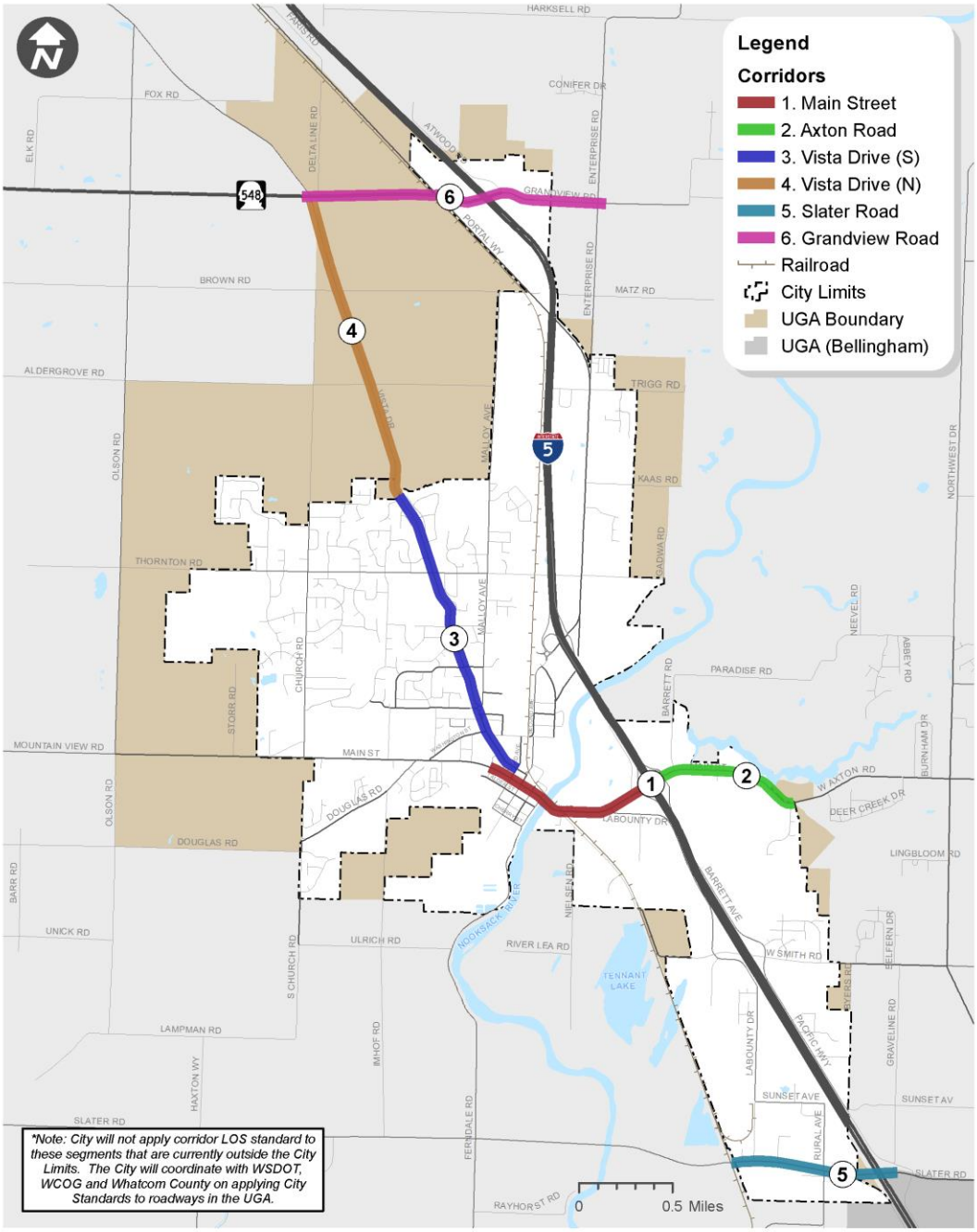
Urban Street Class	I	II	III	IV
Range of Free Flow Speed [1](mph)	55 - 45	45 - 35	35 - 30	35 - 25
Typical Free Flow Speed (mph)	50	40	35	30
LOS	Average Travel Speed			
A	> 42	> 35	> 30	> 25
B	> 34 - 42	> 28 - 35	> 24 - 30	> 19 - 25
C	> 27 - 34	> 22 - 28	> 18 - 24	> 13 - 19
D	> 21 - 27	> 17 - 22	> 14 - 18	> 9 - 13
E	> 16 - 21	> 13 - 17	> 10 - 14	> 7 - 9
F	<= 16	<= 13	<= 10	<= 7

Source: Highway Capacity Manual, Transportation Research Board, 2000 Exhibit 15-2

1. The free flow speed is the average speed of the traffic stream when traffic volumes are sufficiently low that drivers are not influenced by the presence of other vehicles and when intersection traffic controls are not present or is sufficiently distant as to have no effect on speed choice.

The City's concurrency corridors are:
Main Street
Vista Drive
Slater Road
Grandview Road

Figure 3 Corridor Level of Service Segments



Corridor Level of Service Segments

City of Ferndale Transportation Element Update

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FIGURE 3

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State Highway LOS Standards

Two state highways serve the City of Ferndale. Interstate Five is a designated Highway of Statewide Significance (HSS) and SR 548 (Grandview Road) is designated as a Regionally Significant State Highway (non-HSS). Washington State Department of Transportation (WSDOT) has adopted LOS D for HSS facilities within urban areas and LOS C for highways in rural areas. These level of service standards also apply to non-HSS highways in Whatcom County including Grandview Road (SR 548). WSDOT applies these standards to highway segments, intersections, and freeway interchange ramp intersections.

When a proposed development affects a segment or intersection where the level of service is already below the state's adopted standard, then the pre-development level of service is used as the standard. When a development has degraded the level of service on a state highway, WSDOT would work with the local jurisdiction through the SEPA process to identify reasonable and proportional mitigation to offset the impacts. Mitigation could include access constraints, constructing improvements, right-of-way dedication, or contribution of funding to needed improvements.

Whatcom County LOS Standards

Whatcom County has adopted level of service standards based on the volume-to-capacity (v/c) ratio of roadway segments during the PM peak hour. The County has adopted the following LOS standards:

- County arterials and collectors outside of urban growth areas – v/c less than or equal to 0.75, except corridors designated by Whatcom Council of Governments (WCOG) as a part of the regionally significant road system which have a LOS standard requiring a v/c less than or equal to 0.90.
- County arterials and collectors within urban growth areas – v/c less than or equal to 0.90.

Whatcom County LOS standard is adjusted within urban areas to increase the allowable v/c threshold by 0.05 where transit service or adequate non-motorized facilities are available or will be provided by a development.

As areas of the unincorporated UGA are annexed, City standards will be applied. The City intends to work with Whatcom County to potentially apply the City's LOS standards for developments within the UGA. This is consistent to Policy 6A-5 of the Whatcom County Comprehensive Plan's Transportation Element, which reads:

> *"Encourage extension of city concurrency review authority and LOS Standards into their respective UGA's to provide for greater consistency in concurrency review for urban areas."*

Whatcom Council of Governments LOS Standards

Whatcom Council of Governments does not set LOS standards for local agencies, but coordinates with agencies within the region to establish LOS standards. The *Whatcom Transportation Plan* (2013), which is WCOG's combined Metropolitan and Regional Transportation Plan, summarizes the LOS standards of local agencies such as Ferndale and will be updated if agencies make changes to LOS standards.

Existing Levels of Service

This section describes the specific LOS measurements for the City's transportation network, split between corridor and intersection measurements.

Corridor Level of Service

Corridor LOS is based on average travel speed through a corridor and the type of urban street. Four concurrency corridors are currently within City limits: Main Street west of I-5, Main Street east of I-5, Vista Drive, and Slater Road. Existing corridor travel speeds are summarized in Table 1**Error! Reference source not found.**, along with the corridor's adopted standard. Based on the City's LOS standards, these four corridor segments meet the LOS standard.

Table 1. Corridor Level of Service Standards

Corridor Segment	Urban Street Class	Minimum Average Travel Speed (mph)[1]	2016 Travel Speeds – mph (NB/SB) or (EB/WB)
1. Main Street (West of Fourth Avenue to west of I-5/Northbound Ramps)	IV.	15 mph (10 mph for sub-segments)	16.8 / 21.6
2. Main Street (West of I-5 Northbound Ramps to east city limits)	III.	20 mph	30.4 / 29.4
3. Vista Drive (South of Third Avenue to north of Parkland Way)	IV.	15 mph	24.2 / 23.8
5. Slater Road (East of Railroad tracks to east of I-5 Northbound interchange ramps)	III.	20 mph	22.9 / 25.2

1. Urban Street Class based on parameters from Highway Capacity Manual (page 15-3) which takes into account the typical free flow speed on the facility (for example travel speeds during the middle of the night). Urban Street classifications range from I-IV, with Class I streets having the highest average travel speeds and Class IV streets having the lowest. The majority of Ferndale streets are Class III (35 mph) or Class IV (20-25 mph).
2. Minimal travel speed for corridor based on field measurements and adjusted for planned and funded improvements.
3. Corridor not subject to City concurrency review without annexation or agreement with Whatcom County.

Intersection Levels of Service

Figure 4 shows the 2015 PM peak hour intersection LOS and existing intersection control for each of the selected study intersections. The study intersections are consistent with those in the 2012 Transportation Element. Table 1summarizes the intersections that have LOS D or worse during the 2008 or 2015 time periods.

Table 2. Existing PM Peak Hour Intersection Levels of Service

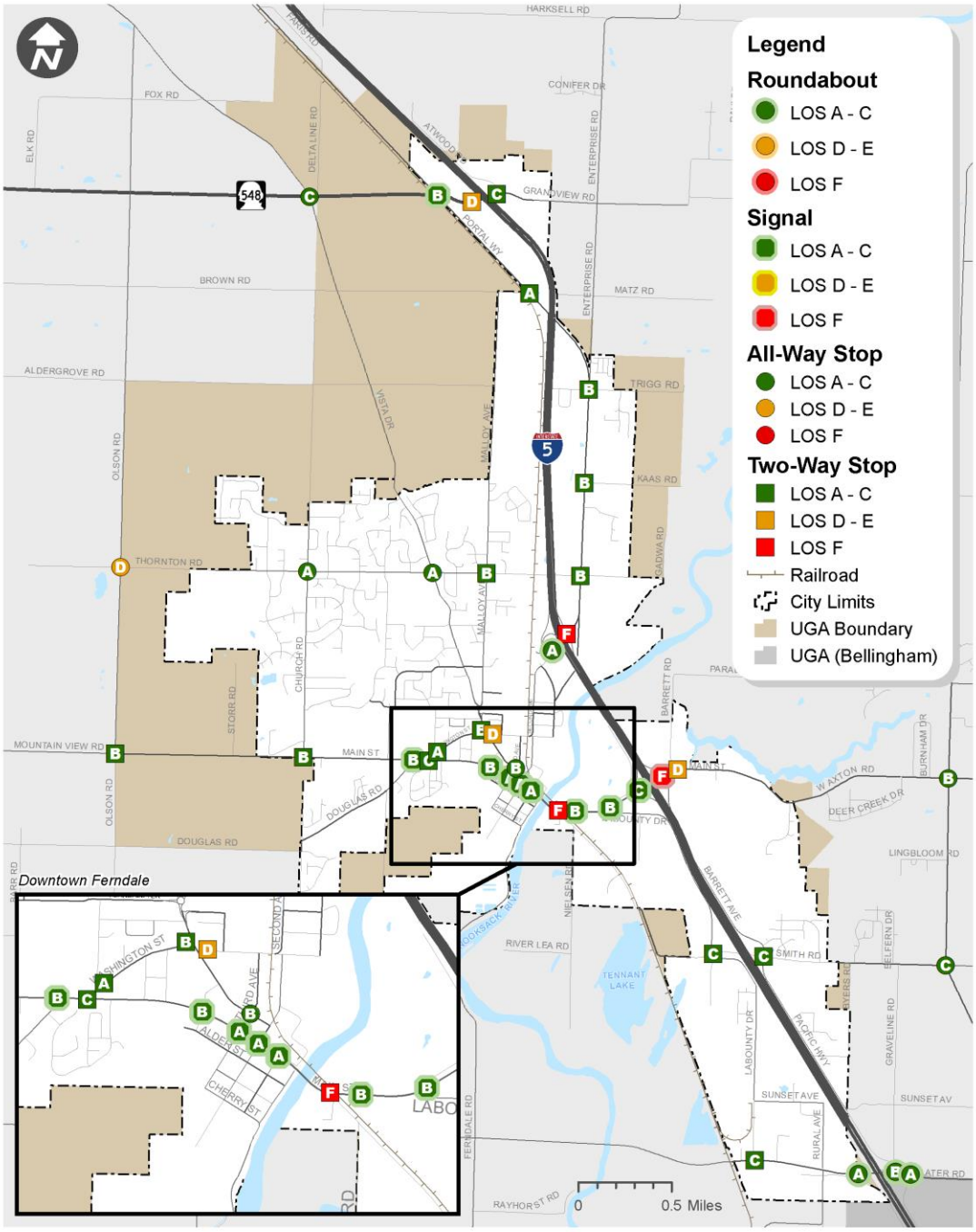
Intersection	Jurisdiction	Control Type[1]	LOS Standard	2015 PM Peak Hour LOS[2]	2008 PM Peak Hour LOS[3]
Grandview Road / I-5 NB Ramps	WSDOT	Unsignalized	D	C	F
Portal Way / I-5 NB Ramps	WSDOT	Unsignalized	D	F	C
Main Street / Hovander Road	City of Ferndale	Unsignalized	D	F	E
Main Street / Barrett Road	City of Ferndale	Unsignalized	D	D	C
Main Street / I-5 NB Ramps	WSDOT	Signal	D	F	B
Washington Street / Vista Drive (east leg)	City of Ferndale	Unsignalized	D	D	D
Slater Road / I-5 SB Ramps[4]	WSDOT	Roundabout	D	A	D
Slater Road / I-5 NB Ramps[4]	WSDOT	Roundabout	D	B	D
Slater Road / Pacific Highway[4]	Whatcom County	Roundabout	n/a[5]	A	F

1. "Signal" = Typical traffic signal; "AWSC" = All-way stop control; "Unsignalized" = all other types of stop control, such as two-way stop or partial stop control.
2. Level of Service (A to F) as defined by the *Highway Capacity Manual* (TRB, 2010)
3. 2008 level of service from 2012 Transportation Element.
4. Roundabouts were installed in 2015. Previously TWSC intersections.
5. Whatcom County does not have an intersection LOS standard.

Three unsignalized intersections have levels of service that exceed jurisdictional standards. The Portal Way / Interstate Five NB Ramps and Main Street / Hovander Road intersections are operating at LOS F, and the Main Street / Barrett Road intersection is operating at LOS E. All other intersections operate within acceptable standards at LOS D or better.

The major differences in LOS between 2008 and 2015 can be attributed to several factors. New development near Portal Way as well as 2nd Avenue improvements may have increased volumes in the area. Three roundabouts were completed in 2015 on Slater Road in the vicinity of the Interstate Five ramps to improve levels of service. Higher volumes along Main Street (Axton Road) contributed to the Main Street/Barrett Road LOS changes.

Figure 4 Existing (2015) PM Peak Hour Intersection Level of Service



Existing (2015) PM Peak Hour Intersection LOS

City of Ferndale Transportation Element Update

FIGURE 4

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Roadway Traffic Safety

Traffic safety was reviewed for intersections within the City of Ferndale. Historical collision records maintained by the City were analyzed for major roadways over the five-year period from January 1, 2010 to December 31, 2014. During the five-year analysis period, 770 collisions were reported. Approximately 58 percent of collisions occurred on City streets, and the remaining 32 percent occurred on Interstate Five ramps. Table 3 summarizes intersections within the City of Ferndale that had the highest average number of collisions per year.

Table 3. Highest Collision Intersections in Ferndale (2010 - 2014)

Intersection	Control Type	Average Accidents per Year[3]	Daily Total Entering Vehicles[1]	Collisions per MEV[2, 3]	Most Common Collision Type
Main Street / I-5 NB Ramps	Signal	6	22,150	0.79	Turning
Main Street / Hovander Road	Unsignalized	5	19,050	0.66	Rear End
Main Street / 2nd Avenue	Signal	5	17,850	0.71	Rear End
Slater Road / I-5 SB Ramps	Unsignalized	4	15,600	0.67	Rear End
Main Street / 1st Avenue	Signal	4	19,050	0.52	Rear End
Vista Drive / Washington Street (N)	Unsignalized	2	8,200	0.79	Angle
Grandview Road / I-5 NB Ramps	Unsignalized	2	8,300	0.47	Angle
Portal Way / I-5 NB Ramps	Unsignalized	2	11,800	0.46	Rear End
Vista Drive / 3rd Street	Unsignalized	2	8,600	0.64	Angle
Main Street / 4th Avenue	Unsignalized	2	11,650	0.47	Rear End

Source: Ferndale historical accident records (January 2010 to December 2014), WSDOT
1. Estimated based on Existing (2015) PM peak hour traffic volumes
2. Collisions per million entering vehicles
3. Gray shading = high collision location

Of the collisions reported on City streets, approximately 20 percent occurred along Main Street. The majority of these were multi-vehicle/rear-end collisions. Typically, the main cause for rear-end type collisions is traffic congestion (vehicles following too closely). Approximately three percent of all collisions reported on City streets involved pedestrians or bicycles. Based on the collision historical rates, no specific areas were identified as problematic safety areas.

Four fatal collisions occurred within the study area during the study period. Two involved the driver hitting a guardrail, one involved the vehicle driving over an embankment, and one involved a collision with a pedestrian.

Freight System

Freight movement in the study area involves both trucks and rail transportation. The City works to provide adequate routes and facilities for movement of goods by truck. Rail tracks also traverse the city, and can impact other transportation modes in the City.

Truck Routes

The movement of freight is a major priority for the City of Ferndale. The Washington State Freight and Goods Transportation System (FGTS) is used to classify state highways, county roads, and city streets according to average annual gross truck tonnage they carry as directed by RCW 47.05.021. The FGTS is primarily used to establish funding eligibility for the Freight Mobility Strategic Investment Board (FMSIB) grants. In addition, it also supports designations of HSS corridors, pavement upgrades, traffic congestion management, and other state investment decisions.

The FGTS classifies roadways using five freight tonnage classifications, T-1 through T-5. Routes classified as T-1 or T-2 are considered strategic freight corridors and are given priority for receiving FMSIB funding. The classifications are as follows:

- **T-1:** Over 10 million annual gross tonnage (about 800 trucks per day or more).
- **T-2:** 4 to 10 million annual gross tonnage (about 320 to 800 trucks per day).
- **T-3:** 300,000 to 4 million annual gross tonnage (about 24 to 320 trucks per day).
- **T-4:** 100,000 to 300,000 annual gross tonnage (about 8 to 24 trucks per day).
- **T-5*:*** Over 20,000 gross tonnage in a 60 day period.

Within the City of Ferndale and its UGA, Interstate Five is classified as a T-1 route.

Within the City of Ferndale and its UGA, the following roadways are classified as T-2 or T-3 freight routes:

- T-2 Freight Routes
  - Main Street (Interstate Five to 3rd Avenue)
- T-3 Freight Routes
  - Enterprise Road (north City Limits to Portal Way)
  - Main Street (Interstate Five to east City Limits)
  - Main Street (3rd Ave to west City Limits)
  - Smith Road (Barrett Road to east City Limits)
  - 3rd Avenue (Main Street to Washington Street)
  - Barrett Road (Main Street to W Smith Road)
  - Labounty Drive (Main Street to W Smith Road)
  - Malloy Avenue (Vista Drive roundabout to north City Limits)
  - Portal Way (2nd Avenue roundabout to north City Limits)
  - 2nd Avenue (Washington Street to Portal Way)
  - Vista Drive (Washington Street to north City Limits)
  - Washington Street (2nd Avenue to Vista Drive)
  - Slater Road
  - SR 548 (Grandview)

Truck and rail freight movement often come to conflict points in Ferndale. Since both systems are of vital importance to economic development within Ferndale as well as international commerce, the City has promoted improvements that support both rail and truck movement as having a high priority. Grade-separation projects improve safety for rail, truck, and vehicle traffic and allow train speeds to increase.

Rail Crossings

The Burlington Northern railway seeks to reduce the number of at-grade crossings throughout its system, for the purpose of reducing potential collisions as well as improving the efficiency and speed of its trains.

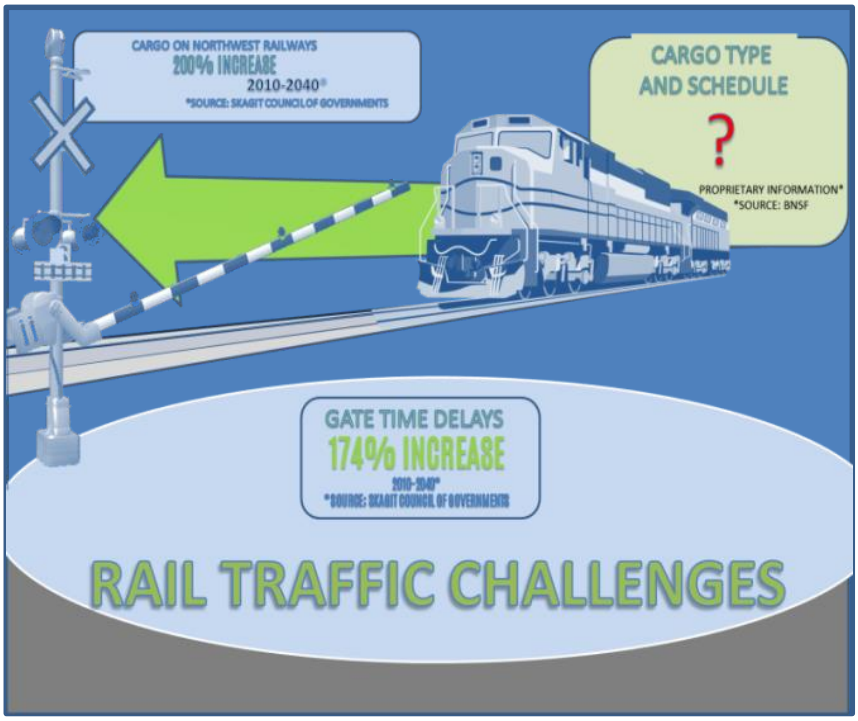


Figure 1 identifies the City's five at-grade railroad crossings: Slater Road, Hovander Road, Washington Street, Brown Road, and Grandview Road (SR 548). The railroad crossing at Slater Road is near the southern boundary of the City limits, and has a moderate impact on east/west traffic. Washington Street also crosses the railroad tracks at-grade. Brown Road is the most lightly travelled roadway of the five at-grade crossings. Crossings at Second Avenue and Thornton Street crossings have been closed as a result of the Second Avenue extension/Portal Way roundabout project completed in 2010.

Rail traffic in the Pacific Northwest is expected to increase during the planning period, reflected in both an increase in the number and the length of trains. Precise estimates of future rail traffic are proprietary and are not publicly available.

Ferndale's transportation network will likely be impacted by increased rail traffic, particularly at at-grade rail crossings, but also extending to nearby intersections and in extreme cases to the Interstate Five mainline. In addition, drivers seeking alternative routes may contribute to temporary congestion on Main Street and other surface streets.

While the majority of these impacts may be temporary in nature, they will be exacerbated during emergency conditions and for emergency vehicles due to the limited nature of alternative routes in Ferndale. Grade-separated rail crossings outside of the floodplain with convenient access to the interstate system may be necessary to properly mitigate these rail impacts.

Pedestrian and Bicycle Facilities

Pedestrian and bicycle facilities play a vital role in the City's transportation environment. The non-motorized transportation system is comprised of facilities that promote mobility without the aid of motorized vehicles. A well-established system encourages healthy recreational activities, reduces travel demand on City roadways, and enhances safety within a livable community. Pedestrian and bicycle facilities also provide access to/from transit stops. Good transit access can increase the use of non-auto travel modes.

Pedestrian Facilities

Ferndale residents depend on sidewalks and trails for recreation, as safe routes to and from school, and for local, non-motorized transportation. There are over 50 miles of sidewalk located within the City of Ferndale, particularly in the downtown and northwestern portions of the City. Sidewalks or pathways also are located along some arterials and local streets throughout other areas of the City. However, gaps in the system reduce the connectivity between various subareas of the City. Figure 5 shows locations of existing sidewalks. The City's street standards identify the standards for pedestrian facilities to be constructed as part of transportation projects or as part of new developments.

Within certain parts of the City and its UGA, pedestrians must walk on roadway shoulders, where available. This can pose safety issues and reduces the likelihood for pedestrian travel in the City or its UGA. Pedestrian routes within close proximity to school zones are vitally important to the pedestrian network for a variety of reasons: school children are often unsupervised and are unfamiliar with driving regulations and stopping speeds, peak hours of school traffic (especially the am peak) often coincide with typical peak hour drive times for non-school related activities, neighborhoods surrounding school zones were often established prior to school construction and are not designed to accommodate pedestrians, and many schools lack a coordinated plan to separate walking trips from driving trips.

In some parts of the City, pedestrian trails serve a similar purpose as adjacent sidewalks. The City's Parks, Recreation and Trails Master Plan anticipates that sidewalks may be incorporated into the trail network and vice versa, in order to avoid unnecessary redundancies and increased maintenance costs – provided that life-safety and ADA accessibility requirements are also met.

The City also has a multi-use trail in the downtown area. The Centennial Riverwalk is located along the west side of the Nooksack River south of Main Street leading down to Pioneer Park. Other trails or pathways are planned for areas in the City limits and in the Ferndale UGA, including extensions to the Riverwalk on both the east and west sides of the river. Regional trails connecting the City to other jurisdictions and unincorporated Whatcom County are also planned.

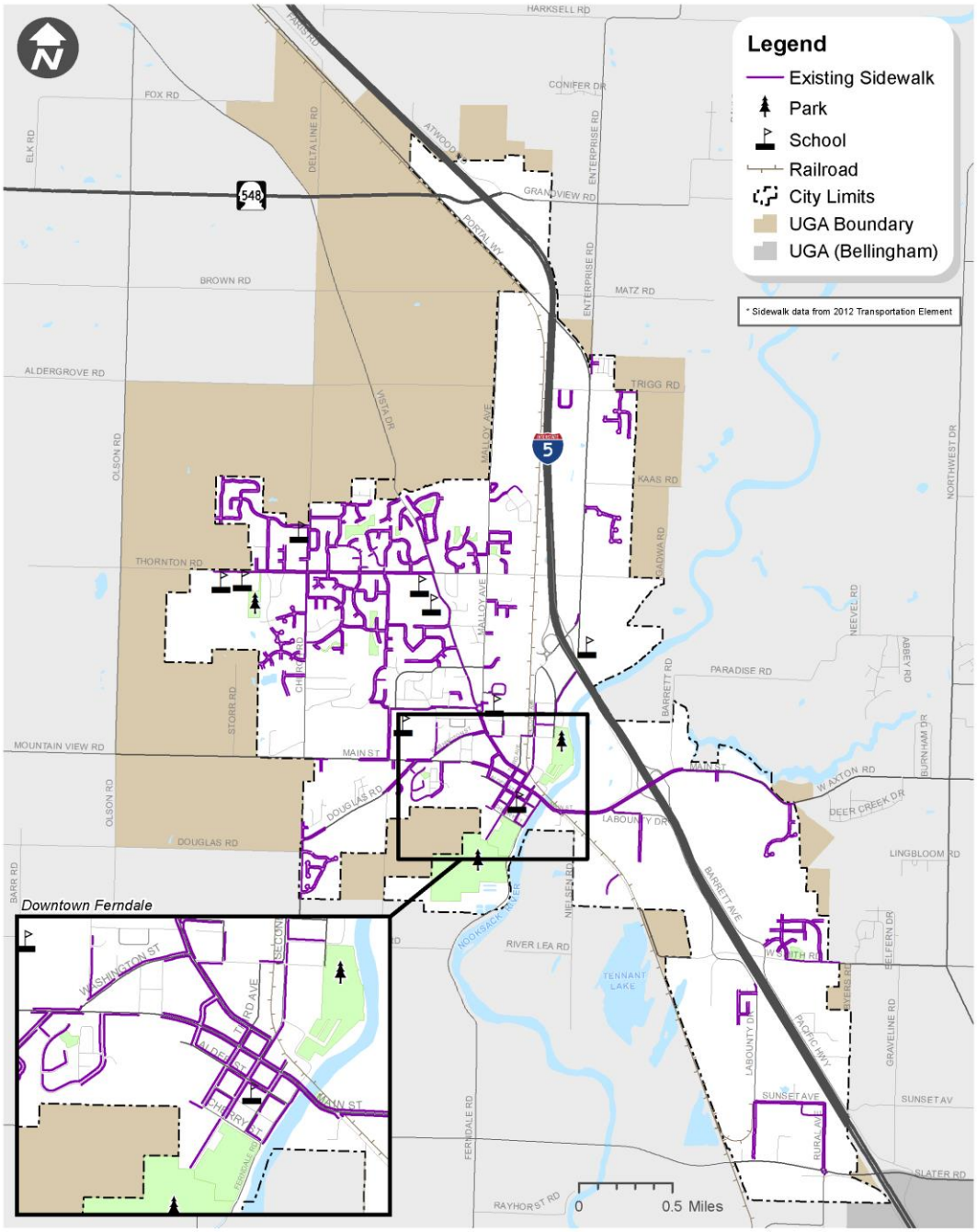
Bicycle Facilities

The existing bicycle facilities within the City of Ferndale consist of bicycle lanes in the downtown area. These lanes exist along Main Street between Front Avenue and 4th Avenue, in both directions of travel. As part of its street standards, the City has identified standards for bicycle facilities to be constructed as part of transportation projects or as part of new developments.

Whereas pedestrian facilities are intended primarily for shorter trips and their use may be significantly impacted by weather, season, and time of day, a robust bicycle network may provide a reasonable alternative to driving for intra-city transportation. As such, the City seeks to reduce barriers that would preclude the use of bicycles while at the same time avoiding instances where bicycle use impedes motorized transportation on primary roadways.

As with sidewalks and trails, bicycle facilities are not independent of other transportation facilities. Where practical, bicycle lanes can be incorporated into the design of certain streets, allowed on pedestrian trails, and in some situations may utilize sidewalks when no bike lanes are present on the adjacent roadway.

Figure 5 Existing Sidewalks



Existing Sidewalks
City of Ferndale Transportation Element Update
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FIGURE 5

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Transit and Transportation Demand Management

Transit and transportation demand management services and programs are another important component of the City's transportation system. Transit services and programs are discussed below.

Transit Service

Transit service is a vital component of a balanced transportation system. Whatcom Transportation Authority (WTA) operates three routes in and through the City of Ferndale including two fixed local routes and one FLEX route. WTA also provides paratransit services. All of the routes serve origins and destinations within Whatcom County. Figure 6 shows the fixed routes throughout the City along with the existing park and ride facilities.

Route 27 serves the residential neighborhoods west of Malloy Drive. Service is provided hourly. Route 55 provides service along Portal Way, Somerset Street, and Third Avenue from I-5 into the downtown area. Service is provided three times daily. Route 70X provides express service along I-5, and runs twice in the morning and twice in the afternoon. The transit service is focused on Ferndale Station, the main park and ride lot within the City. In addition, WTA coordinates ridesharing services. This lot is served by all three routes. Park and Ride lots facilitate the use of public transit and also serve as a meeting place for vanpool and carpool commuters. In areas where much of the development is low density, Park and Ride lots allow transit to operate more efficiently by serving as consolidation points.

WTA also operates transit services, such as vanpool, rideshare and specialized transit services. Specialized transit services serve citizens who are unable to use the fixed route transit system because of a disability. The success of the public transportation system is dependent on integrating key elements that comprise the overall plan. Integration of the transit system with street improvements, bicycle facilities, and pedestrian facilities is critical to transit's success.

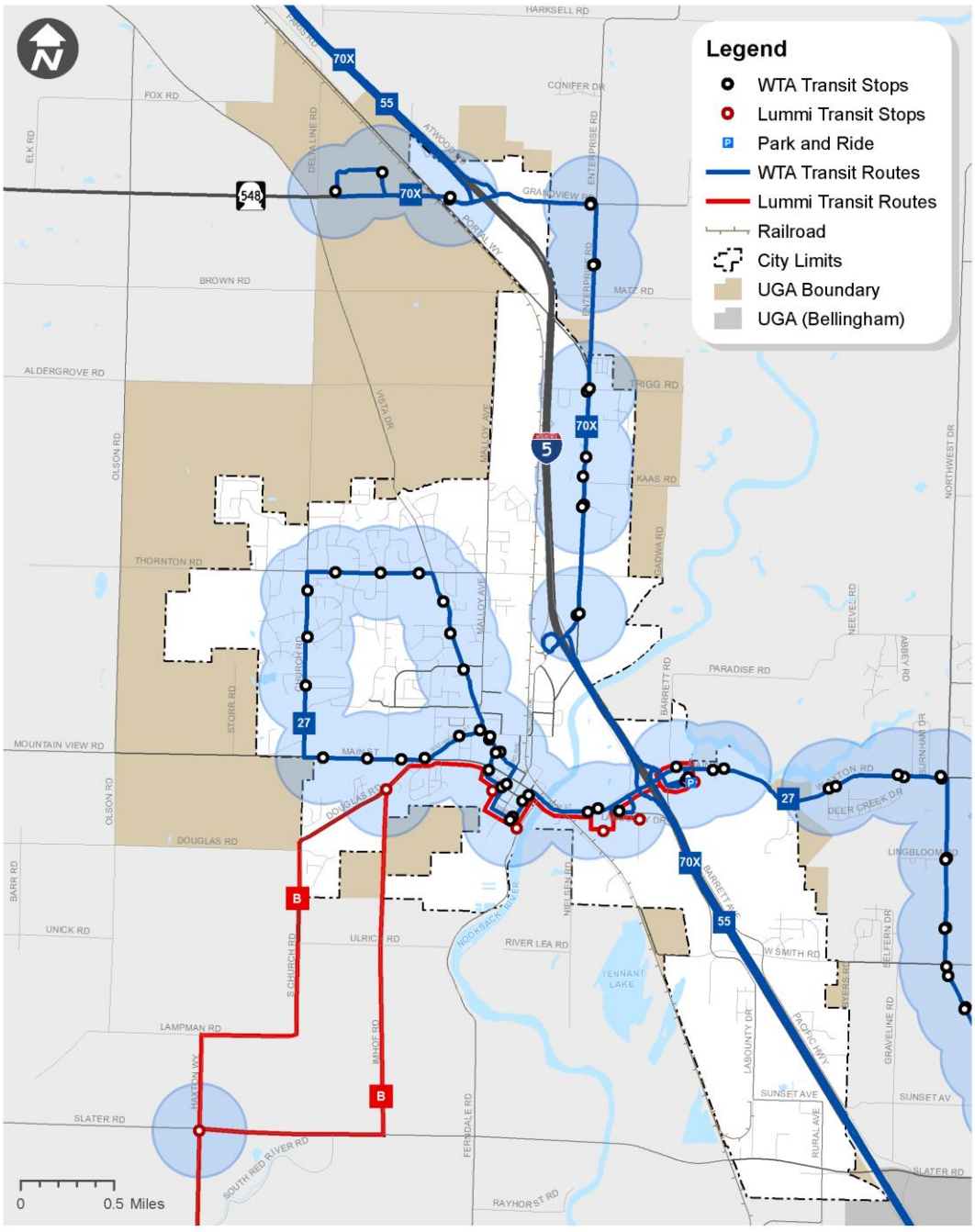
FLEX Program

The FLEX program serves the general transit-riding public by allowing buses on specified routes to travel off-route for pre-arranged pick-ups. Riders must be located in a FLEX area and need to call at least two hours ahead of time to schedule a pickup. The only flex route which operates in the City of Ferndale is Route 55; service is available Monday through Saturday on that route.

Safety Net Program

Safety Net service provides transit connections to the main transit centers in Bellingham for individuals who are in less populated areas of Whatcom County. On specified days, riders can call the service number and request a pick up; this can be done up to a week in advance, but no later than two hours before the pickup time.

Figure 6 Existing Transit Routes and Facilities



Existing Transit Routes and Facilities

City of Ferndale Transportation Element Update

FIGURE 6

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Lummi Transit

The Lummi Nation has provided bus service within the City of Ferndale via Lummi Transit since July 2011. Currently Lummi Transit provides a "Fixed-Route Service" Monday through Friday from 11:00am to 6:30pm. Lummi Transit has 6 (six) official bus stops within the City of Ferndale (Douglas& Imhoff, Rite Aid, Boys & Girls club, Dollar Tree, Grocery Outlet, and WTA Ferndale Station) with a proposed new stop at the new Ferndale Library. Lummi Transit connects with the following WTA routes at the Ferndale Station: Route 27, Route 55, & Route 70X; and Route 50 on the Lummi Reservation. Lummi Transit provides this service "fare free" for all community members tribal and non-tribal. All of the buses in the Lummi Transit fleet are equipped with ADA lifts. In 2014 Lummi Transit had a total of 9,566 riders who used this service between the Lummi Reservation and the City of Ferndale.

The Lummi Transit route through Ferndale (also shown in Figure 6) is designed to provide the community with easy access to a variety of health, financial, shopping and public services.

Park & Ride Lots

As shown on Figure 6, the City currently is served by one park-and-ride lot located off Axton Road east of Interstate Five, known as Ferndale Station. This lot serves all three transit routes operating in the City and has approximately 100 parking stalls. The lot was designed and built with the expectation that building pads within the development would be developed, creating an anchor for bus riders and the general public.

The lot is under-utilized and is a significant distance from residential properties. Congestion at the interchange, the lack of shopping options and the infrequency of bus service has diminished the convenience that a successful Park & Ride facility might otherwise offer. The City expects to work with WTA to identify ways in which the original development concept might yet be realized to increase ridership. Additional park and ride options might be explored to increase ride share opportunities.

Vanpool Program

WTA operates a vanpool program serving commuter groups with an origin or destination in Whatcom County. The program offers support to forming and operating vanpool groups. The support includes providing vehicles, driver orientation, vehicle maintenance, and assistance in forming vanpool groups for daily commuters.

B. Forecasts, Alternatives, and Emerging Transportation Trends

In addition to addressing existing transportation system issues, the City is planning a transportation system to accommodate forecast growth. The GMA requires that the transportation planning horizon be at least ten years in the future. For the 2016 update, the City chose a longer-range horizon year of 2036 as the forecast year for the Transportation Element and is consistent with the horizon year used by WCOG for its long-term planning. The longer-range horizon year allows the City to better plan for and size transportation facilities that will be needed as the City grows. The transportation improvement projects are grouped into short (current year to 2020) and long-range (2020 to 2036) time frames to help guide implementation and funding of the plan improvements and programs.

The City's travel forecasting model was used to support the City's transportation planning efforts. The travel demand model provides a tool for forecasting long-range traffic volumes based on the projected growth in housing and employment. The model is also useful in evaluating transportation system alternatives. However, it must be noted that the ratios and specific land use forecasts included in the model are intended for planning purposes only and are not intended to restrict or require specific land use actions. The land use assumptions are based on a county-wide, parcel-by-parcel evaluation (the Land Capacity Analysis, or LCA) of current (2013) zoning, existing and permitted development, and remaining assumed capacity for development over the course of the planning period.

Land Use Forecasts

Travel forecasts are largely derived based on changes in households and employment within the study area. The expected countywide population and employment growth anticipated to occur in Ferndale was allocated to Traffic Analysis Zones (TAZs) in WCOG's regional transportation demand model based on where capacity was identified in the LCA. Using WCOG's model as a starting point, Ferndale made adjustments to TAZs within the city based on known planned developments within the area. Figure 7 summarizes 2013 and 2036 total number of households and employees for the City of Ferndale and its UGA areas.

The City has evaluated future growth based on the allocations provided by Whatcom County and is consistent with the Land Use Element of this plan. In addition, the City modeled a number of scenarios in which slightly higher (or more rapid) growth takes place in order to determine whether additional or modified transportation projects would be necessary. This approach provides the City with the ability to better-evaluate and anticipate future transportation needs through ongoing monitoring via the City's concurrency program, future amendments to this element, the City's 6-Year Transportation Improvement Program (TIP), and more.

Household Growth

Figure 7 shows the projected household growth in Ferndale used in modeling scenarios. The City of Ferndale's traffic model is based on forecasts that the City and its Urban Growth Area (UGA) could grow by nearly 3,000 households. This is about 70 percent higher than existing households. The bulk of housing growth (over 90 percent, or up to 2,728 units) will be northwest of the Nooksack River with nearly half of those housing units in the core of the City's existing residential area (District 5). The downtown area (District 6) and the Portal Way corridor (District 4) also include a major portion of household growth north of the river. District 5 has historically been the major residential section of the City, so housing growth is consistent with historical development patterns. Residential growth in the downtown area (District 6) reflects the City's plans for a mix of land uses and redevelopment of the downtown

area. In Districts 7 and 8 (Interstate Five corridor south of the Nooksack River), it is anticipated that residential growth will be limited to a few mixed-use development areas because these areas would be more suitable for employment-based land uses.

Employment Growth

Figure 7 also summarizes the forecast growth in employment used in developing the 2036 travel forecasts. The City tested model scenarios with employment growth at 4,000 employees, with scenario testing in certain areas reaching 6,700 employees, in order to determine maximum buildout beyond the twenty-year period. Most of the growth was added along the Interstate Five corridor between Grandview Road and Slater Road (Districts 1, 4, 7, and 8), reflecting the City's Main Street Master Plan. Approximately 60 percent of the employment growth is anticipated to be south of the Nooksack River in Districts 7 and 8. The City anticipates new employers being attracted to these areas due to the relatively easy access to Interstate Five. As retail and general commercial growth may develop rapidly once primary anchor stores are established, or as part of one or more coordinated "shopping centers," the City has sought to evaluate more-intensive long-range growth in order to protect against higher-than-expected growth that overwhelms the City's systems or planning mechanisms.

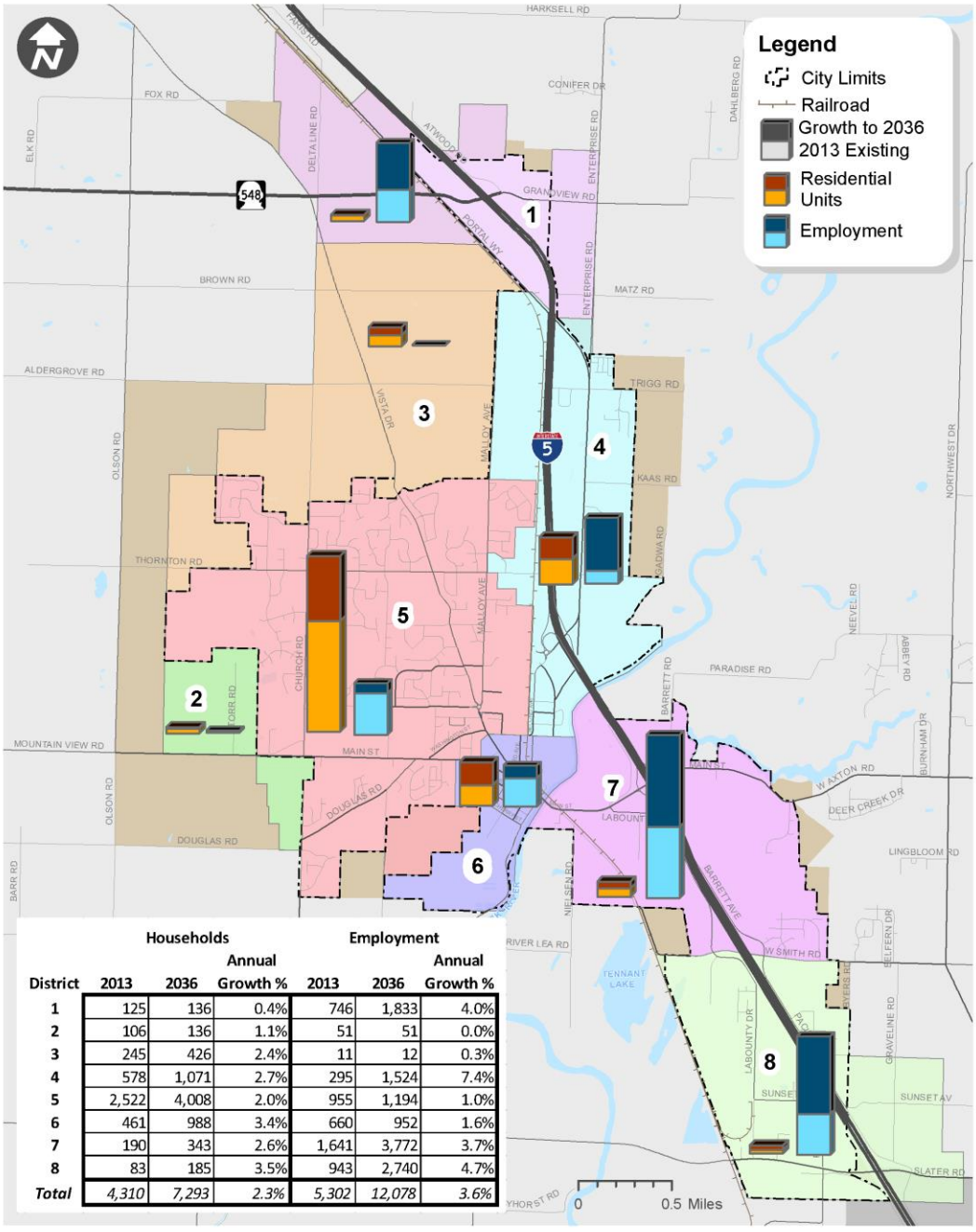
WHAT IF? : SCENARIO TESTING

The City is required by the Growth Management Act to plan for growth based on allocations provided by Whatcom County. As discussed in the Land Use Element, these allocation numbers are distributed throughout the City based on "most likely" growth scenarios as adopted by the elected councils of Whatcom County and the City of Ferndale.

Recognizing that the retail growth anticipated by the Main Street Master Plan and the Lummi Nation's Salish Village project may result in a rapid concentration of growth in those areas, the City also evaluated maximum build out of those areas to determine projects necessary to support that growth. While the Main Street Master Plan analysis is complete, the Salish Village analysis is still ongoing.

These scenario tests are not intended to suggest that Ferndale will grow beyond what was projected in the County's allocation – but rather to explore the the implications of additional (or more concentrated) growth in different subareas would mean for the City's infrastructure plans.

Figure 7 Existing & Future Land Use by District



District	Households 2013	Households 2036	Households Annual Growth %	Employment 2013	Employment 2036	Employment Annual Growth %
1	125	136	0.4%	746	1,833	4.0%
2	106	136	1.1%	51	51	0.0%
3	245	426	2.4%	11	12	0.3%
4	578	1,071	2.7%	295	1,524	7.4%
5	2,522	4,008	2.0%	955	1,194	1.0%
6	461	988	3.4%	660	952	1.6%
7	190	343	2.6%	1,641	3,772	3.7%
8	83	185	3.5%	943	2,740	4.7%
Total	*4,310*	*7,293*	*2.3%*	*5,302*	*12,078*	*3.6%*

Existing & Future Land Use by District

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FIGURE 7

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2036 Baseline and Alternatives Evaluation

The travel forecasting model was used to convert the existing (2013) and forecast (2036) land use data into travel demands. The 2036 model was used to forecast traffic volumes and travel patterns. A comparison of 2013 and 2036 traffic volumes is shown in Figure 8.

The 2036 forecast model was initially set up with the assumption that only currently committed transportation improvement projects would be constructed by 2036. This scenario provides a baseline for identifying future deficiencies. The resulting 2036 baseline PM peak hour intersection levels of service are shown in Figure 9. Potential alternative transportation improvement system scenarios were developed and evaluated to determine how the City could best resolve those deficiencies. The results of the alternatives evaluation were used to establish a framework for the Transportation Systems Plan.

BEHIND THE NUMBERS: SUMMARY OF 2036 NETWORK WITHOUT PLANNED IMPROVEMENTS

- Increased traffic places substantial demand on Interstate Five interchanges and Main Street/ Washington Street corridors.
- Development at the Grandview interchange and at Cherry Point increases congestion beyond the ability for stop-controlled intersections to handle; increased rail traffic reduces opportunities to "flush" the interchange on a regular basis.
- Northbound ramps at Portal Way interchange reach capacity and back up into the mainline of Interstate Five. Left-hand turning movements from the ramp to Portal Way lead to increased congestion. Lack of sufficient length at southbound onramp impacts freeway mainline as an increased number of vehicles attempt to merge at a lower speed.
- Compact roundabouts at Slater Road interchange are unable to support planned development in this area.
- Opportunities result from the compact nature of planned development in certain areas to facilitiate mode-shift from automobile to other forms of transportation.

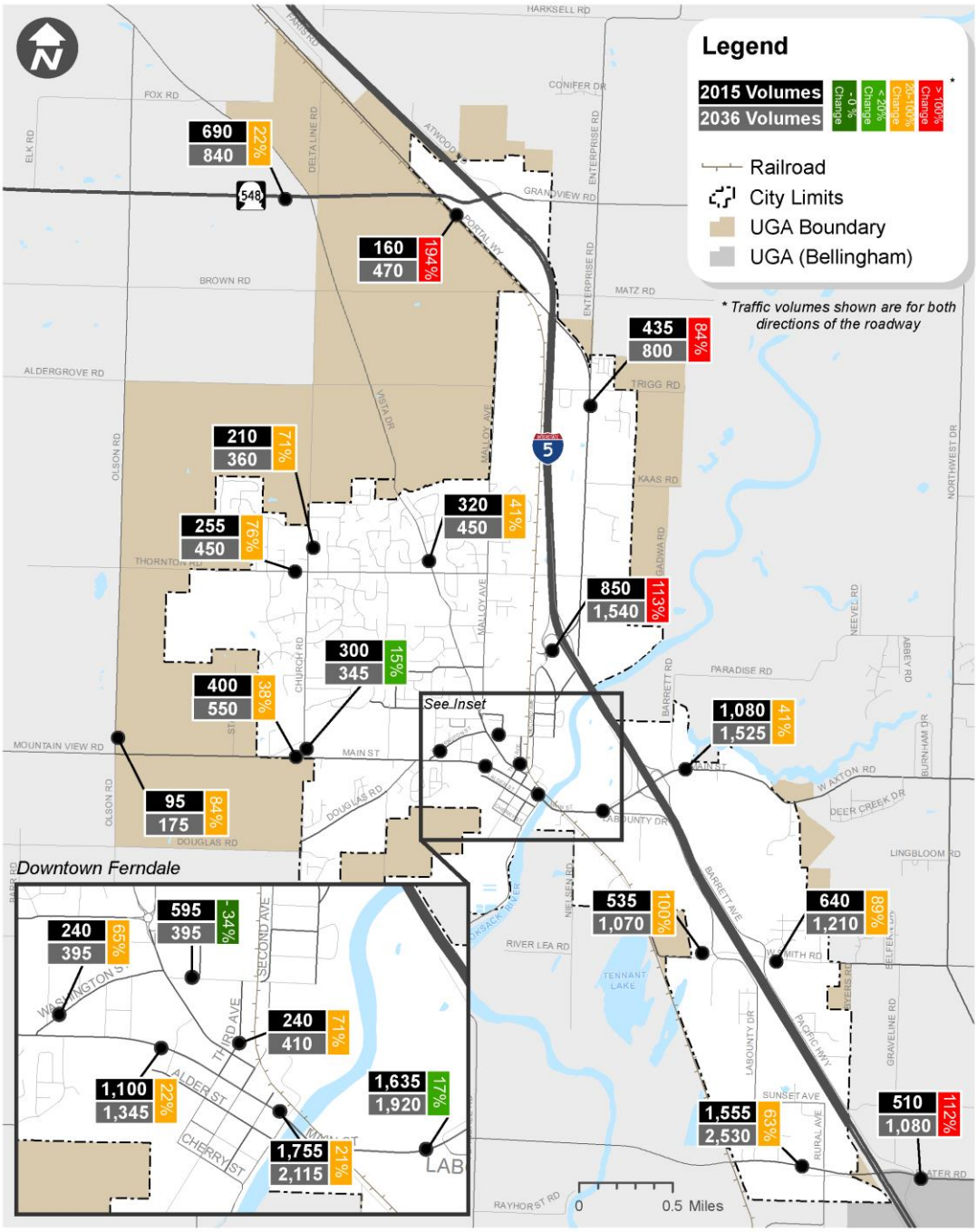
2036 Baseline Evaluation

The 2036 baseline model was developed based on capacity improvement projects identified in prior plans and project lists prepared by WSDOT, Whatcom County, and the City of Ferndale. For the 2036 baseline model, the baseline scenario included several projects including improvements to Washington Street (Vista Drive to 2nd Avenue) and intersection improvements to:

- Labounty Drive/Nordic Way
- Slater Road/Rural Avenue
- Slater Road/Interstate Five Southbound Ramps
- Slater Road/Interstate Five Northbound Ramps

The results of the 2036 baseline model and related intersection operations analysis showed that increased traffic volumes put substantial demand on Interstate Five interchanges and the corridors of Main Street and Washington Street. These forecasts show the reliance of Ferndale's growth on Interstate Five. As discussed above, substantial employment growth is focused near the interchanges or along the Interstate Five corridor. In addition, growth in the core of the City (District 5 and 6) will use Main Street and Washington Street (via Second Avenue and Portal Way) as the primary access routes from residential growth areas to Interstate Five.

Figure 8 Existing & 2036 PM Peak Hour Traffic Volumes



Existing & 2036 PM Peak Hour Traffic Volumes

City of Ferndale Transportation Element Update

FIGURE 8

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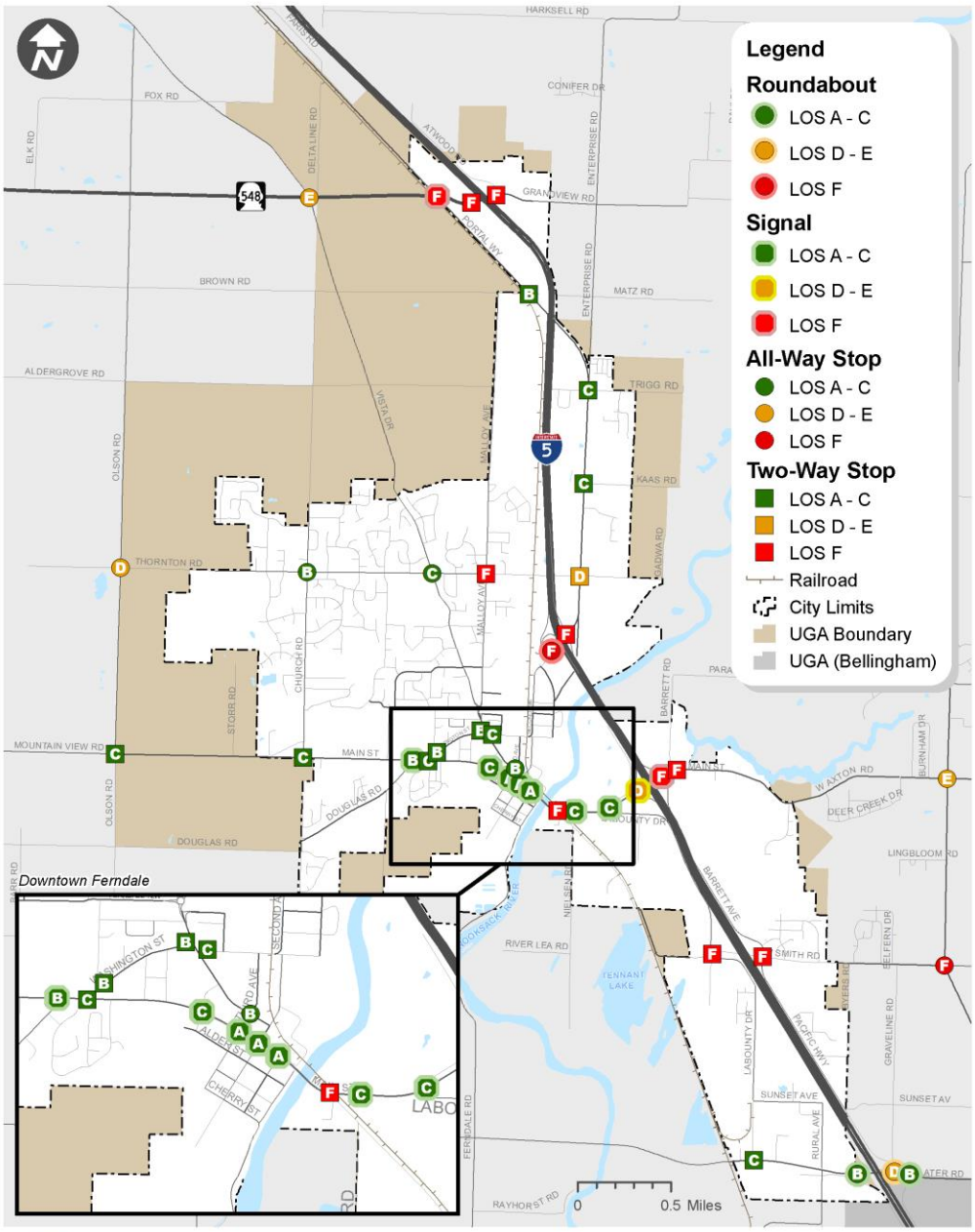
Figure 9 2036 Baseline PM Peak Hour Intersection LOS



The following list highlights areas within the City and UGA with roadway capacity concerns.

- **Main Street corridor, from Interstate Five to downtown** - The Main Street interchange includes signalized ramp intersections and a two lane bridge. The 2036 baseline PM peak hour traffic volumes will be approaching the capacity of the two-lane overcrossing which will result in additional congestion and potential safety issues. The Main Street two-lane bridge over the Nooksack River is also inadequate to meet the forecast PM peak hour demands from residential areas west of the river to Interstate Five and commercial areas east of the river. However, a wider bridge over the Nooksack River would not be easy to transition to the existing two to three-lane Main Street in Downtown.

  The Main Street corridor has been identified as an area of major growth, particularly in the four quadrants surrounding the Main Street interchange (Exit 262). The City initiated a Planned Action process in late 2010. This Planned Action resulted in the adoption of the Main Street Master Plan as well as additional transportation improvements that were incorporated into the Transportation Element as part of 2011 Comprehensive Plan amendments.

- **Washington Street corridor, from Second Avenue to Vista Avenue** - This corridor becomes more heavily travelled as a result of recent improvements to Second Avenue and delays along Main Street. The additional delays on Main Street will likely result in residential traffic to/from Interstate Five diverting from the Main Street interchange to use the Portal Way interchange (Exit 263). This puts added traffic on Washington Street and at the stop-controlled intersection of Washington Street and Vista Drive.

- **Grandview Road Interstate Five interchange** - Grandview Road's role as a state highway and northern access to Ferndale will result in significant traffic demands. The interchange is limited by stop-controlled ramp intersections and a two-lane bridge. The Grandview Road interchange has been identified as an area of significant commercial (retail) growth on all four quadrants surrounding the interchange.

- **Portal Way Interstate Five interchange** - This interchange serves both residential areas east of Interstate Five and commercial/residential areas north along Portal Way. The southbound ramp intersection was recently improved with a roundabout. Under 2036 weekday PM peak hour conditions the roundabout will be approaching capacity. Portal Way under Interstate Five will also be congested.

- **Slater Road Interstate Five interchange** - This interchange provides access to Interstate Five for areas south of Ferndale and north of Bellingham. It also serves the nearby employment based land uses. The interchange stop-controlled intersections have been converted to temporary roundabouts in anticipation of more permanent intersection design project. The Slater interchange has been identified as an area of significant growth, with a combination of industrial and commercial traffic, as well as development of the Lummi Nation and potential Whatcom County facilities.

Alternatives Evaluation

Based on the results of the extensive evaluation conducted for the 2011 Transportation Element update and the evaluation of the 2036 baseline forecasts, only two additional alternatives were studied. The primary alternative was called the 2036 Plan scenario and is the focus of this section. A smaller secondary alternative called "2036 Plan with Overpass" scenario is briefly discussed in a following section.

2036 Plan Scenario

The 2036 Plan scenario includes all the projects listed in Section C, which are nearly all the same projects listed as planned improvements the 2011 Transportation Element update. The project list changes reflect updates related to the latest available information on WSDOT corridor plans for the Interstate Five corridor, recent development plans within the City, and other transportation studies conducted since 2011. The follow provides an overview of the planned improvements:

- **Grandview Road Corridor** – Transportation improvements are planned at the intersections of Vista Drive, Portal Way, and Interstate Five ramps. This northern area of the City is anticipated to see growth in commercial and industrial employment and the intersection improvements will alleviate forecasted traffic congestion.
- **Thornton Street Corridor** – Transportation improvements are planned along this corridor between Church Road to the Portal Way intersection to facilitate east-west mobility and safety in the northern areas of the City. At Malloy Avenue, a new roundabout is anticipated. West of Malloy Avenue, the street projects will not increase roadway capacity, but improve the street to current City design standards. East of Malloy Avenue, a new connection to the 2nd Avenue roundabout is planned that includes a bridge over the railroad corridor. The 2036 Plan scenario does not include a new Thornton Street bridge over Interstate Five. The street connection provides a new grade-separated railroad crossing north of the Nooksack River that will be critical for City mobility as increased rail traffic causes traffic delays at Washington Street, Brown Road, and Grandview Road.
- **Portal Way Corridor** – Between Interstate Five ramp intersections and Trigg Road, the corridor will be improved to three lanes with sidewalks. Intersection improvements are planned at the ramp intersections and at Trigg Road to accommodate traffic flows. This area is anticipated to develop as a mixed use area of the City and the improvements are needed to address both vehicle and non-motorized mobility along the corridor as well as provide appropriate left-turn capacity for commercial developments.
- **Church Road Connection** – A new connection between Main Street and Douglas Road will facilitate greater mobility in this section of the City. This connection is not expected to shift a large amount of vehicle traffic, but will provide vehicle and non-motorized connectivity in the area.
- **Washington Street Vicinity** – Projects are anticipated along Washington Street, Ferndale Terrace, and Legoe Avenue to bring the streets to urban City standards. In addition, intersection improvements are anticipated at the Vista Drive and Legoe Avenue to improve safety at these awkward intersections.
- **Main Street Corridor** – Main Street provides a direct connection between downtown and Interstate Five, a bridge connection across the Nooksack River, and the only grade-separated connections across the rail corridor in the City. While some other planned improvements may shift trips away from the Main Street corridor, this street will always be the first choice for most travelers in the area. Intersection projects are anticipated at Hovander Road, Walgreens Access, Labounty Drive, and the Interstate Five ramps. To meet 2036 traffic needs, it anticipated that the Interstate Five bridge will be widened to 4 or 5 lanes. East of Interstate Five, Main Street will be reconstructed and widen to meet city standards.
- **Labounty Drive Corridor** – To serve the anticipated growth along the western frontage of Interstate Five, the Labounty Drive corridor will be improved to city standards. Intersection improvements are anticipated at Nordic Way and Smith Road to accommodate new commercial retail growth.

- **New SE Connector Road** – The area southeast of the Main Street and Interstate Five corridors is planned for major growth, requiring the construction of a major collector roadway. This road is also needed to reduce traffic volumes at the Main Street/Barrett Avenue intersection. The intersections at the end of these new connection will be roundabouts.
- **Slater Road Corridor** – The Slater Road Corridor is anticipated to see increases in regional traffic as well as local traffic as the interchange area becomes more developed. Intersection improvements are anticipated at Labounty Drive, Rural Avenue, the Interstate Five ramps, Pacific Highway, and Northwest Drive. The bridge over the Nooksack River is also planned to be improved. The long-term land use in this interchange area has been under much discussion in the region, which makes transportation investment planning difficult. It is recommended that an Interchange Area Management Plan be developed for Slater Road to provide more clarity for local stakeholders.

2036 Plan with Overpass Scenario

As mentioned previously, a smaller secondary alternative called “2036 Plan with Overpass” scenario was also developed. This scenario is the same as 2036 Plan except that the Thornton Street Interstate Five overpass is built to the Portal Way/Newkirk Road intersection. This project would be in addition to the connection south to the 2nd Avenue roundabout.

Having a new connection between Portal Way and Malloy Avenue over the railroad corridor diverts a substantial amount of Northwest Ferndale residential traffic away from Washington Street corridor and the at-grade rail crossing. Much of these benefits can be achieved with or without the new Interstate Five overpass, assuming the grade-separated project west of the interstate is in place. The new Interstate Five overpass would shift traffic away from the Portal Way/2nd Avenue roundabout, reliving congestion at that intersection as well as under the interstate at Portal Way.

Forecast 2036 Traffic Operations with Plan Framework

As documented previously, a number of alternatives were tested as part of the process used to identify the improvements needed to provide acceptable traffic operations in 2036 during the weekday PM peak hour. Based on the analysis of each of these alternatives, a preferred package of improvements, including use of roundabouts, was identified and forecast traffic volumes were generated to account for each of the preferred improvements. The analysis was then updated to confirm that the identified improvements remained appropriate, and that projects did not duplicate the benefits of improvements in other areas of the City. These forecast traffic volumes with the recommended improvements were evaluated to assess the 2036 traffic operations.

As noted in the existing conditions section, the City has established the following intersection level of service standards for intersections within the City limits:

- LOS C for intersections with roundabouts, traffic signals, or all-way stop control.
- LOS D for two-way stop controlled intersections. On a case-by-case basis, the City may allow the level of service for traffic movements from the minor streets at two-way stop controlled intersections to operate below the adopted standard, if the City determines that no significant safety or operational issues will result.

The identified improvements would result in acceptable intersection operations at each study intersection.

At a number of study intersections either a roundabout or traffic signal would be able to provide acceptable traffic operations. The City has identified installation of roundabouts as a preferred improvement strategy. However, the City may consider modifications of existing traffic signals, or installation of new signals, based on the availability of funding, timing of the need for improvements, and costs for acquiring right of way, provided the improvements meet the City's level of service standards. Another consideration in the identification of improvements is the existing traffic control at adjacent intersections and/or the proximity of adjacent intersections. As an example, the proximity of the Barrett Road/Main Street intersection to the existing signalized intersection at the Main Street/Interstate Five northbound ramps will require construction of a roundabout that consolidates the two intersections.

The identified improvements resolve the existing 2013 level of service deficiencies identified in Figure 4. In combination with the implementation of the other identified improvements, the City's level of service standards can be met at all study intersections in 2036.

Emerging Transportation Trends

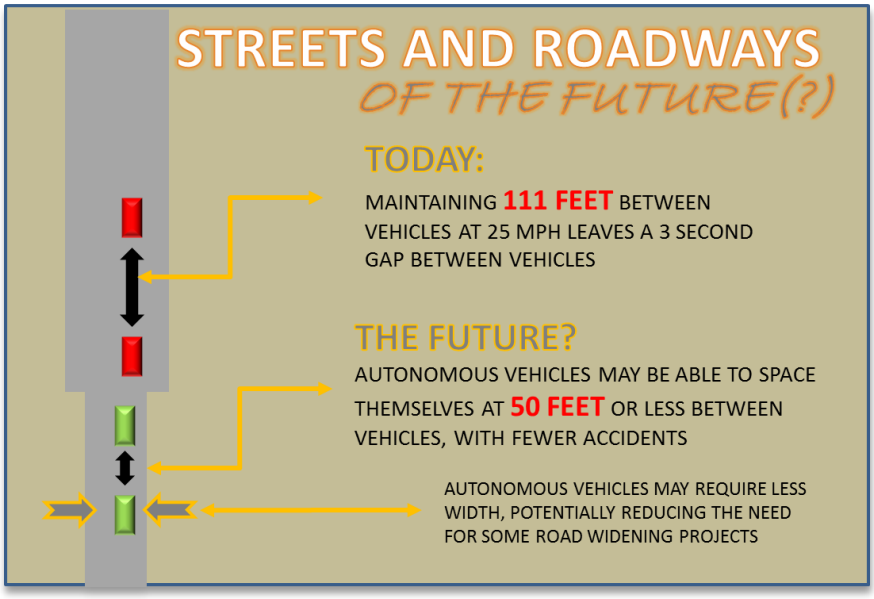
In addition to formal transportation analysis and forecasting, long-range planning also includes anticipating emerging transportation trends that may change basic assumptions concerning transportation systems. Within the last two decades, technology has come closer to past futuristic visions, and it is likely that by the end of the planning period, some or all of these technologies will be deployed to realize some of these long-imagined ideas. This section describes some of these possible technologies and the impacts they may have on Ferndale's transportation network.

Autonomous Vehicles (AVs)

A great deal of uncertainty faces us in planning for autonomous vehicles. Potential outcomes carry a wide range of possibilities. The next five years may see the first fully driverless vehicles in operation. The next 15 years stand a chance to witness a significant portion of fleet of vehicles on our streets and highways operating without drivers. It is possible that 30 to 40 years from now all or nearly all vehicles will be driverless or will have driverless capabilities in certain situations. The implementation of some of these technologies may be within current long-range planning horizons, and thus the City should consider the ramifications of these technologies on its transportation network. A few key issues rise to the top of what local governments should contemplate while preparing long-range plans.

Street and Roadway Planning

Since AVs will be able to space themselves closer together, the capacity of streets and highways will likely increase significantly, as much as double. This implies that roadway capacity improvements to accommodate more vehicles may not be necessary in the long term as these technologies are implemented. This is especially true if AVs travel in narrower lanes with smaller vehicles.



Transit Planning

Over half of the cost of operating buses is related to the driver. In the future, replacing the driver with AV technology may enable transit operators to offer more service for the same cost. Technology that clears lanes when buses approach may allow them to avoid the same congestion they now face. This will also increase service as buses will be able to run their routes faster. Such technology may reduce the need for expenditures in rail transit infrastructure as buses may operate with close to the same freedom that trains do on dedicated rights-of-way.

Shared Ride Regulations

The demand for shared ride services such as Lyft and Uber may likely increase as the economics improve without drivers. Public agencies will need to develop policies to regulate the environment for these types of services, especially those that offer pooling options for two, three or more people to ride together.

Human Services Transportation

AV will reduce the cost for serving the needs of the disabled, of military families, and caregivers. With dramatic safety improvements walking and bicycling will likely become much more attractive. The need for wider sidewalks and more bike lanes may increase.

Parking Demand Shifts

It is likely that the economics of transportation will dramatically change with widespread use of AVs and other technologies. Car ownership in urban areas may further decrease if on-

demand travel with or without driverless vehicles becomes a legitimate alternative. At present, most vehicles are parked 95 percent of the time, while AVs may operate much of the day picking up one passenger after another, potentially reducing the need for parking. With widespread adoption this could have a transformative effect on the need for parking stalls.

Land Use Planning

Reducing the need for parking could greatly change land use planning. Often today one-quarter to one-half of the cost of constructing new buildings is for parking. Architectural considerations will change and open new possibilities for more economical and more interesting and efficient buildings. Perhaps most important, the cost of building housing could drop dramatically. Further, land that is now taken up by parking facilities could be repurposed for more pressing needs, such as affordable housing.

Connected Vehicles

Although it is not yet clear what the demand for vehicle-to-infrastructure may ultimately look like, cities might look ahead to providing reference points for lidar and radar to function more efficiently. Perhaps lampposts will become smart poles. Further, it will be possible as more vehicles are fully self-driving to optimize traffic flow with computer systems that talk to and moderate flow. Cities might want to watch to see what systems will be needed and prepare to offer such systems.

Teleworking

Advances in technology and communication infrastructure will facilitate the exponential growth of teleworking in the next decade and beyond. According to current Census data, “not traveling at all” accounts for more than two percent of the overall national mode split and is increasing at a greater rate than all other modes. Factors that are fueling this change include; improving communications and collaboration technologies, increased high-speed broadband availability, and the proliferation of web-based applications. The land use and transportation implications of this trend are wide ranging including; reduced VMT and roadway congestion, reduced greenhouse gas emissions, and greater number of employees choosing to live further from job sites.

Emerging Trends Takeaways

It is difficult to summarize the potential for future technologies, as by definition many of the technologies (and their adoption) remain theoretical. But some trends are emerging: the costs of commuting (both financial and in time lost) in some cases are overwhelming the benefits of being physically present in an office – and technology now exists that allows nearly identical productivity from a remote location.

Similarly, technology now exists to remove many of the responsibilities for driving from the driver themselves. Perhaps the most significant obstacle to increased automation will be the individual driver’s desire to drive.

It remains unclear whether or not these new technologies (or others) will gradually be implemented by municipalities and vehicle manufacturers, if there will be a sudden shift

towards these technologies, or some combination of the two. Regardless, the City of Ferndale should keep abreast of capital improvement alternatives that could be implemented to serve these existing technologies.

C. Transportation Systems Plans

The Transportation System Plans and associated transportation system improvement recommendations provide a long-range strategy for the City of Ferndale to address current and forecast transportation issues and needs. Transportation system improvements are required to safely and more efficiently accommodate the projected growth in population and employment within the City and its UGA. The recommended improvements are based upon analyses of the existing transportation system, forecasts of future travel demands, anticipated availability of funding resources, and the desire of the community to create an efficient transportation system that puts a priority on community livability and providing modal options.

Streets and Highways

Streets and state highways are the core of the transportation system serving the City of Ferndale and surrounding communities. These facilities provide for the overall movement of people and goods, for a wide range of travel modes. Streets and highways serve automobile trips, trucks, transit, vanpools, carpools, bicycle and pedestrian travel. Therefore, the streets and highways establish the framework for the overall transportation system for the City.

The core of the street and highway system includes arterials and collectors. The City also has designated specific corridors as truck routes, which can affect the design features of specific improvement projects. The arterial system is supported by future connector roads to provide circulation and connectivity of the overall system.

Arterial and Collector Classifications

Functional classification is a way to group highways, roads, and streets that comprise the transportation system. The functional classification of a roadway depends on types of trips that occur on it, the basic purpose for which it was designed, and the relative level of traffic it carries. Higher classifications (e.g., freeways, principal arterials) provide a high degree of mobility with higher traffic volumes, generally at higher speeds, and should have limited access to adjacent land uses. Lower classifications (e.g., local access streets) provide access to adjacent land and are not intended to serve through traffic, carrying lower volumes at lower speeds. Collectors balance the function between mobility and access.

City of Ferndale Functional Classification

In Ferndale, the current roadway functional classification system has five categories, as presented in Table 4. The general hierarchy of functional classification is based on the relationship between the function of the roadway and the surrounding land uses and the relationship between mobility and access. For example, commercial developments will generally desire to locate along arterials or collectors due to higher traffic volumes and visibility. Likewise, it is desirable to have parks, schools, and residential homes located along collector or local streets due to lower traffic volumes and a high degree of access. Figure 10 shows the functional classification for streets within the City's designated UGA. The figure shows how the City's arterial classifications connect with and support the regional transportation system. The functional classification also reflects the analysis of the longer-range needs to serve growth through 2036.

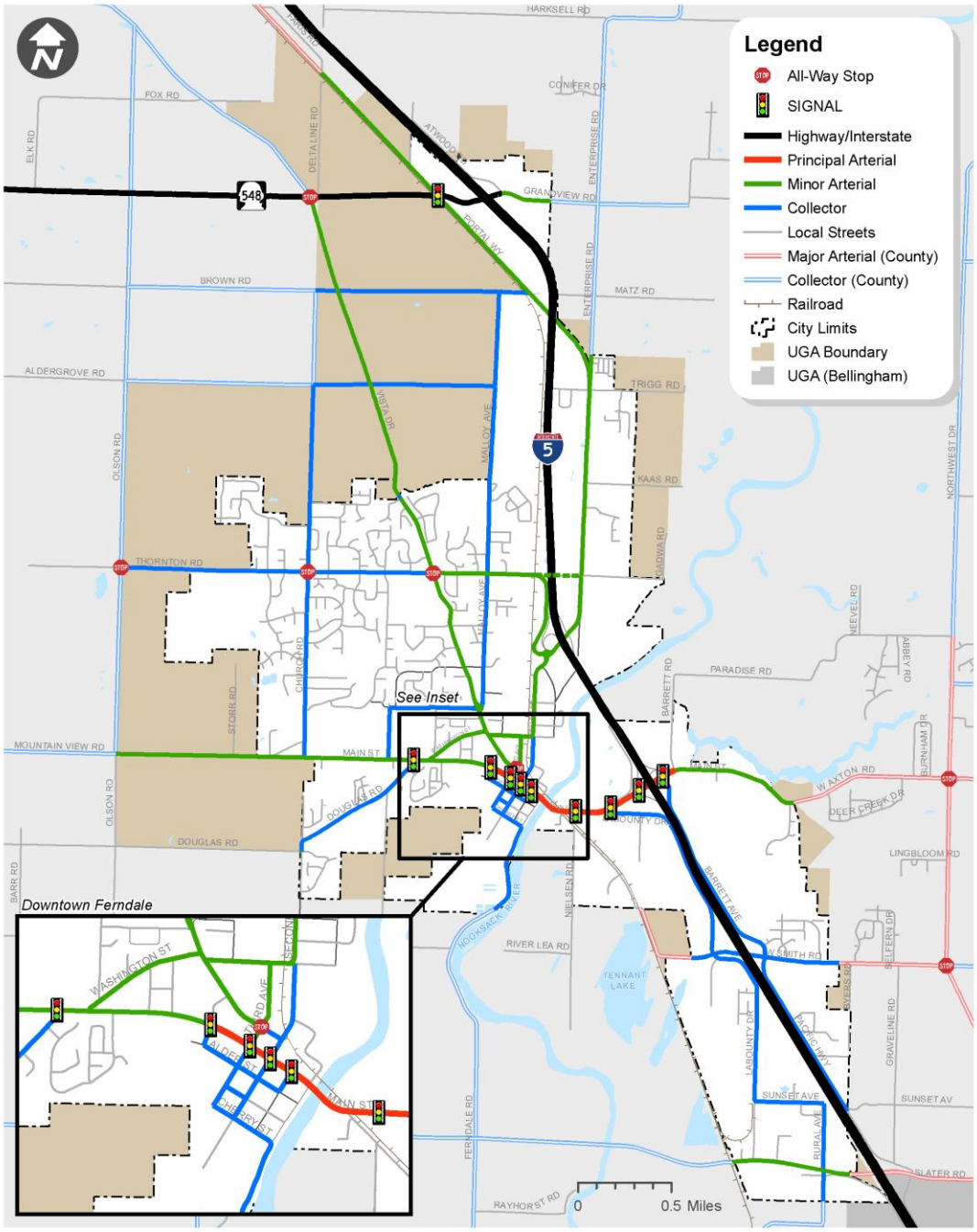
Table 4. City of Ferndale Roadway Functional Classifications

Classification	Description
Freeway/Interstate	Freeways and interstate highways are multi-lane, high-speed, high-capacity roadways intended exclusively for motorized traffic. All access is controlled by interchanges and bridges separate roadway crossings. Freeways and interstate highways are designed to move freight efficiently. Interstate Five freeway bisects the Ferndale urban area.
Principal Arterial	Principal arterials are roadways that connect major community centers and facilities, and are often constructed with limited direct access to abutting land uses. Principal arterials carry the highest traffic volumes and provide the greatest mobility in the roadway network by limiting access, providing traffic control devices, and posting higher speed limits. Transit routes are generally located on principal arterials, as are transfer centers and park-and-ride lots. Principal arterials may service any level of traffic volume, up to full utilization of the road capacity.
Minor Arterial	Minor arterials are roadways that connect with and augment principal arterials. Minor arterials provide densely populated areas easy access to principal arterials and provide a greater level of access to abutting properties. Minor arterials connect with other arterial and collector roads extending into the urban area, and serve less concentrated traffic-generating areas, such as neighborhood shopping centers and schools. Minor arterials serve as boundaries to neighborhoods and collect traffic from collector streets. Minor arterials also carry transit traffic. Minor arterials may serve any level of traffic volume, but should not utilize quite the total capacity of the roadway.
Collectors	Collectors are roadways that provide easy movement within neighborhoods, and they connect two or more neighborhoods or commercial areas while also providing a high degree of property access within a localized area. These roadways “collect” traffic from local neighborhoods and distribute it to higher classification roadways. Additionally, collectors provide direct services to residential areas, local parks, churches and areas with similar land uses. Collectors provide the link between local access streets and larger arterials.
Local Streets	Local access streets are intended for use within commercial, single-family, and multi-family subdivisions to provide direct access to abutting lots, and to collect traffic from cul-de-sacs. Restrictions may be placed on entry and exit locations for traffic safety relative to intersections. Traffic volumes are typically very low for compatibility with abutting land uses, to accommodate turning movements and significant amounts of pedestrian activity, while providing minimal disturbance to the tranquility of the residential environment. Local streets are not designed to accommodate transit service. All roadways that have not been designated as an arterial or collector roadway are considered to be local access streets. Local access streets comprise the largest portion of roadway miles in the city.

Federal Functional Classifications

The federal functional classification is based on a state-wide view of the transportation system and is used in some funding programs. Figure 11 shows the federal functional classification within the City of Ferndale. As shown in the figure, most major city roadways are considered minor arterials including Main Street.

Figure 10 Roadway Functional Classification



Roadway Functional Classification

City of Ferndale Transportation Element Update

transpogroup

FIGURE 10

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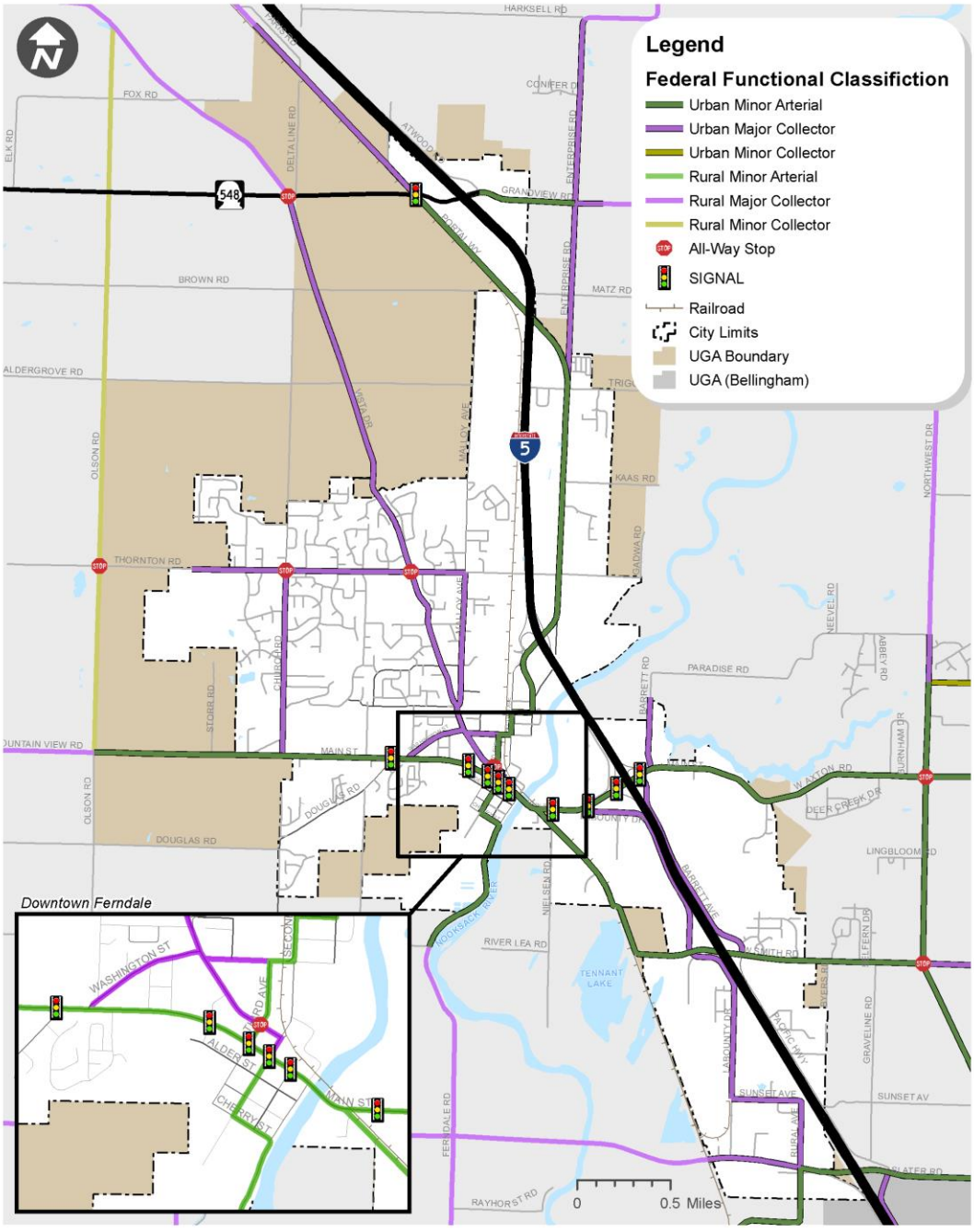
Figure 11 Roadway Federal Functional Classification



Roadway Federal Functional Classification

City of Ferndale Transportation Element Update

FIGURE 11

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Transit Street Classifications

The City has determined that the Main Street and Portal Way corridors represent areas that represent existing and emerging destination points for transit service in Ferndale. The use of these areas as a hub for transit service will facilitate the continued growth of these areas and may limit increases to congestion. Figure 12 reflects these Transit Streets.

Connector Roads

Building on the roadway functional classification system, the City recognizes the need for additional connector roadways. The connector roads are needed to facilitate property access, circulation, and connectivity of the roadway system. Connector roads are needed to fill gaps in the existing system as well as serve the growth projected for the City. A complete system of connection roads will help disperse traffic which will minimize impacts within individual neighborhoods. This will reduce the number of access roads and driveways intersecting with arterials, which will help maintain capacity and safety of the system.

Figure 13 shows the general locations of planned connector roads, including future arterial routes. Specific alignments have not been identified for the planned connector roads. In general, the connector roadways would be constructed to urban standards including sidewalks and illumination. The alignments will be defined as part of future subarea studies or required as a condition of development for projects on adjacent properties. The Main Street Master Plan identified the need for three connector roadways to enhance access and circulation in the developing commercial area. The identified connector roadways in the Main Street Master Plan area are expected to be implemented as part of and as conditions of approval for adjacent developments. Some of the planned connector roads also may be classified as arterials in the future, depending on specific design and access requirements at the time of development.

Figure 12 Transit Oriented Areas

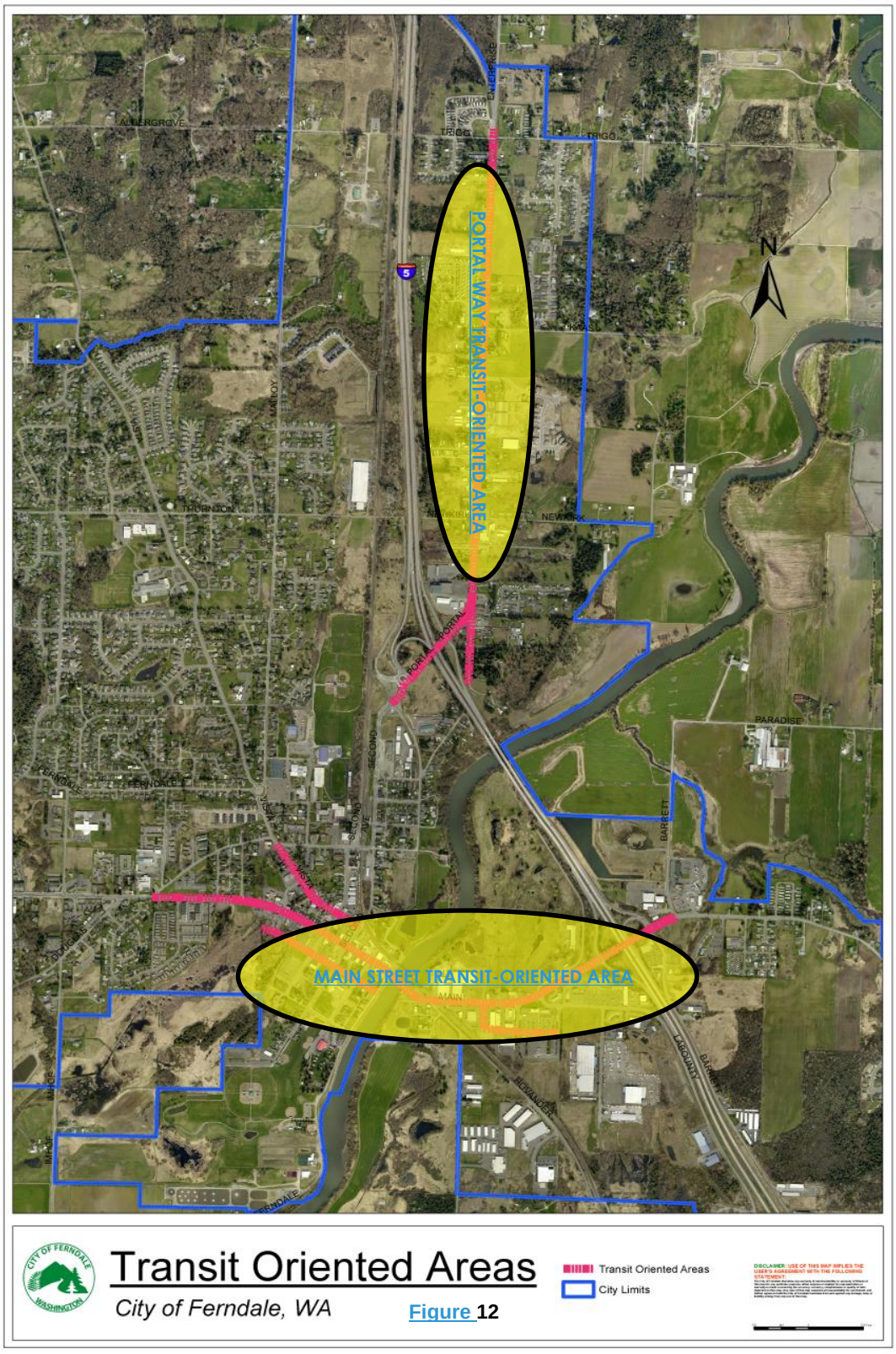
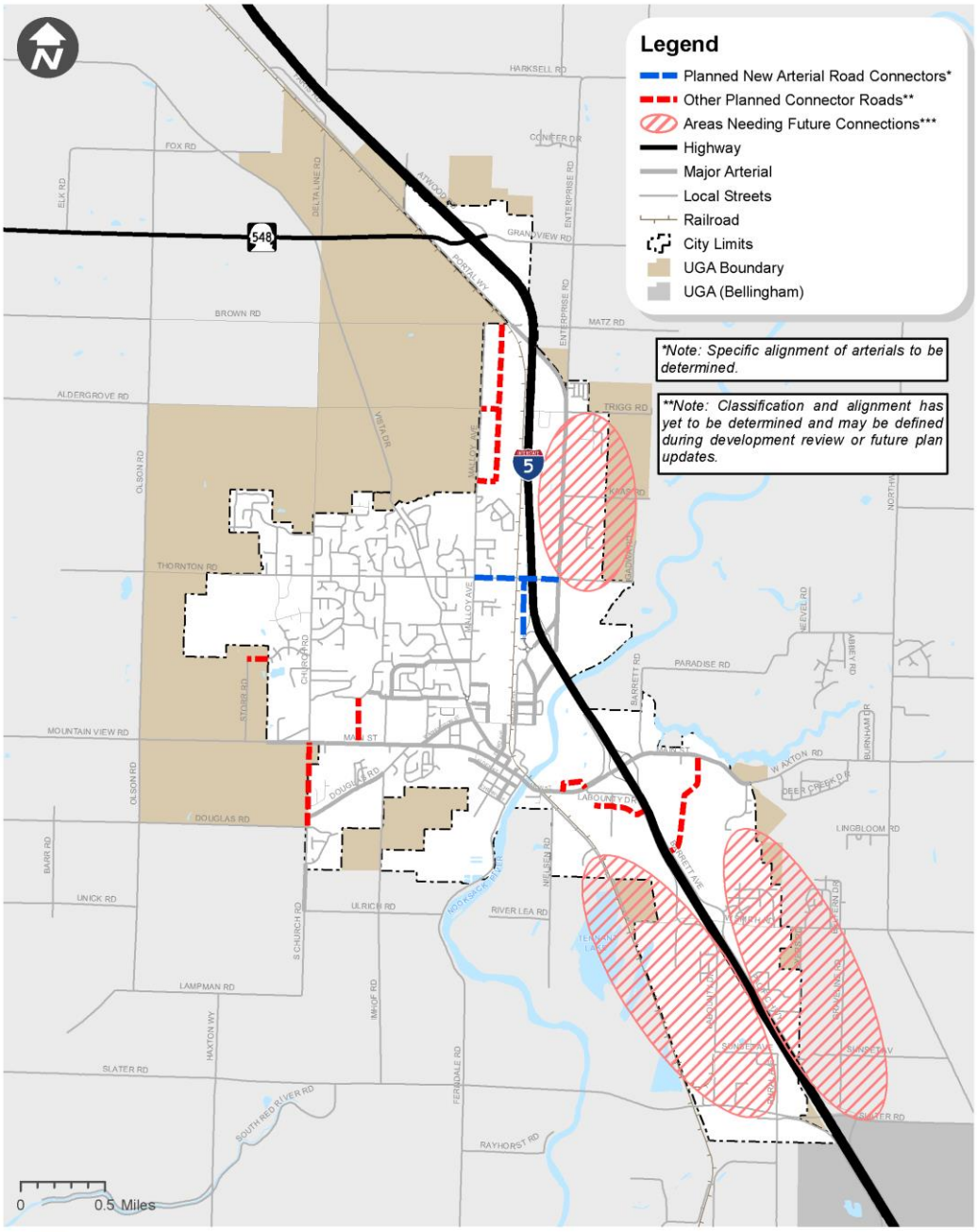


Figure 13 Planned Connector Roads



Planned Connector Roads

City of Ferndale Transportation Element Update

FIGURE 13

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Rail Crossings

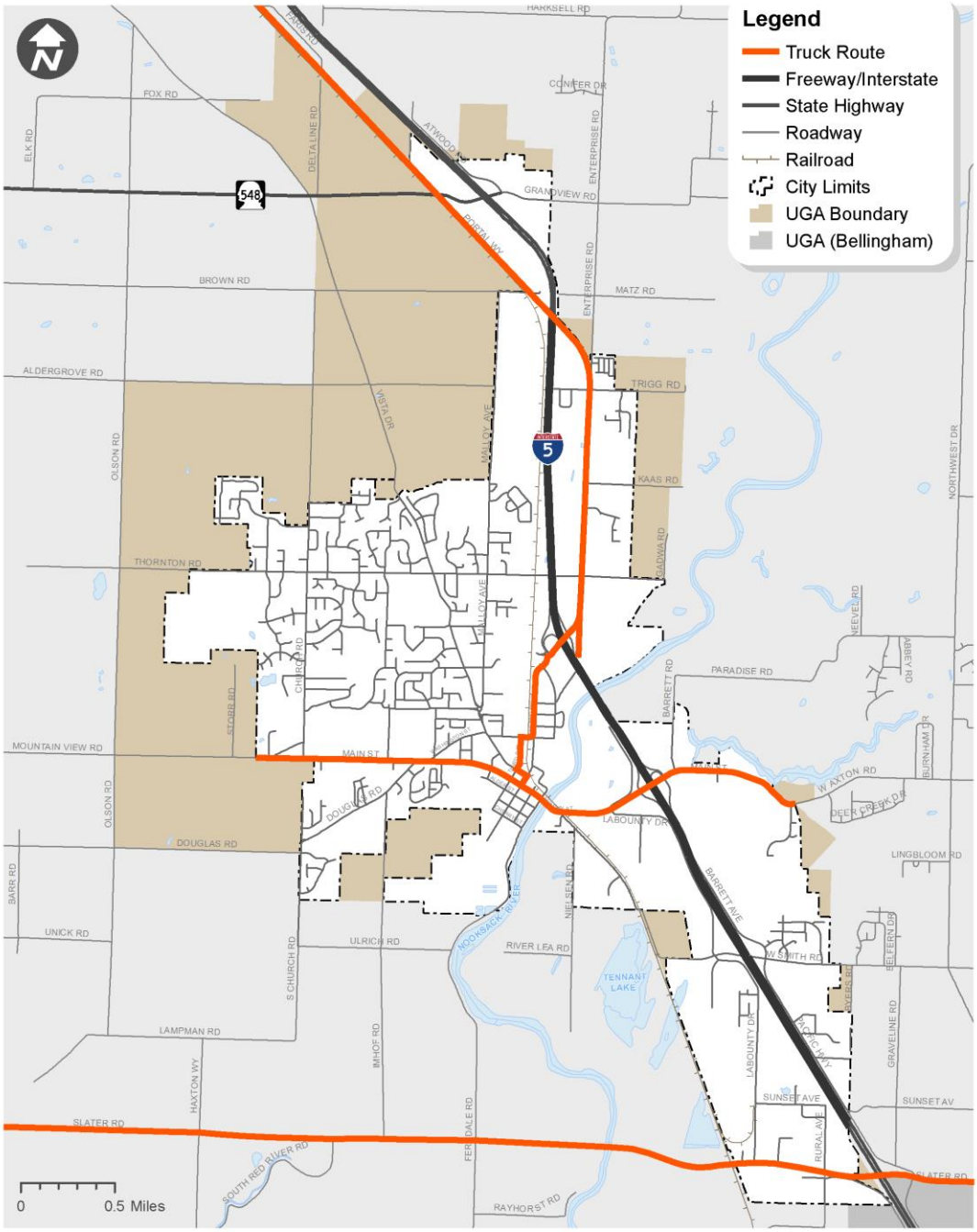
The City has identified a grade separated crossing at Thornton Road as a priority, this crossing would allow residents to access the interchange located at Exit-263 potentially addressing some of the congestion issues seen in the Main Street corridor. Concepts for this project also extend the crossing over Interstate Five to connect to Newkirk (Project N-1).

Recent improvements to the Washington Street at-grade crossing should be sufficient for the planning period but will continue to be impacted by increased rail traffic. There are no current projects anticipated for the at-grade crossings at Brown Road, Slater Road, and Grandview Road. Although not currently planned improvements to the Smith Road / Interstate Five interchange would most likely necessitate upgrades to the current at-grade crossing located at Hovander Road. Existing rail crossings are shown in Figure 1.

Truck Routes

The City's truck routes are show in in Figure 14. Generally, trucks of heavy tonnage must use these routes or be subject to Haul Route Agreements as provided for in the Ferndale Municipal Code.

Figure 14 Truck Routes



Truck Routes

City of Ferndale Transportation Element Update

FIGURE 14

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Level of Service Standards

Level of service is a measure of the quality of traffic flow and operations. It can be described in terms such as speeds, travel times, delays, convenience, interruptions and comfort. *The Highway Capacity Manual (HCM),* Transportation Research Board, 2010, provides methodologies for evaluating levels of service (LOS) for transportation facilities and services. The *HCM* criteria range from LOS A indicating free-flow conditions with minimal delays, to LOS F indicating extreme congestion and significant delays.

For purposes of the Transportation Element the City has adopted level of service standards for transportation facilities under its jurisdiction as required under the Growth Management Act (GMA).

City of Ferndale LOS Standards

As part of the 2010 Transportation Element update, the City revised its LOS standards. The City determined that two components were important to defining the adequacy of its transportation system. The first was the ability to maintain a reasonable travel speed for access to/from Interstate Five and along major corridors serving traffic within the City. The second component is intended to ensure that intersections on arterials and collectors operate without extensive delays during the peak travel periods. To accommodate these two objectives, the City has defined an LOS Standard for corridors and a second standard for intersections.

The City will apply the standards to roadways only within the City of Ferndale. As areas of the unincorporated UGA are annexed, City standards will be applied. The City intends to work with Whatcom County to potentially apply the City's LOS standards for developments within the UGA. This is consistent to Policy 6A-5 of the Whatcom County Comprehensive Plan's Transportation Element, which reads:

> *"Encourage extension of city concurrency review authority and LOS Standards into their respective UGA's to provide for greater consistency in concurrency review for urban areas."*

Corridor Level of Service. The City of Ferndale has identified the weekday PM peak hour travel speeds along the following four roadway corridors as being critical to maintaining the adequacy of its transportation system.

- Main Street/Axton Road
- Slater Road
- Grandview Road (SR 548)
- Vista Drive

The Main Street/Axton Road corridor is divided into a segment west of Interstate Five (including the interchange ramps) and east of Interstate Five. Vista Drive would also be divided into two segments – between Third Avenue and the existing city limits and between the existing city limits and Grandview Road. The six corridor travel speed segments are shown on Figure 3. The City will only apply the corridor LOS standards for segments that are primarily within the City limits unless agreements are reached with Whatcom County for applying City level of service standards to developments within the UGA.

BEHIND THE NUMBERS: DIFFERENT DAY, DIFFERENT TRAFFIC?

Ferndale's Level of Service is based on average traffic volumes and congestion. This means that actual daily traffic volumes may fluctuate – sometimes dramatically – from day to day.

These fluctuations may be caused by inclement weather, traffic accidents, delays caused by rail traffic, construction, higher volumes of traffic – or simply random chance. In some cases, the cause of traffic congestion may not be visible or may exist on an adjacent road or exit.

While Ferndale's traffic volumes will continue to grow and congestion will increase without the projects described in this element, this element generally reflects the traffic on most days of the year.

For each of the corridor segments, the City has established minimum travel speeds that equate to (LOS) C or better based on methodologies presented in the *(Highway Capacity Manual)* TRB, 2000. Table 5 summarizes the City's corridor level of service standards which will be applied to concurrency review. The standards are applied during the weekday PM peak hour time period. The weekday PM peak hour time period typically has the highest traffic volumes and therefore will typically represent the slowest travel speeds throughout the City. The travel speeds account for the total travel time, including delays at the intersections for the limits of each segment.

Table 5. Corridor Level of Service Standards

Corridor Segment	Urban Street Class	Minimum Average Travel Speed (mph)[1]	Additional Requirements
1. Main Street (West of Fourth Avenue to west of I-5/Northbound Ramps)	IV.	15 mph	Minimum sub-segment travel speed of 10 mph
2. Main Street (West of I-5 Northbound Ramps to east city limits)	III.	20 mph	
3. Vista Drive (South of Third Avenue to north of Parkland Way)	IV.	15 mph	
4. Vista Drive[2] (North of Parkland Way to south of Grandview Road)	III.	20 mph	
5. Slater Road (East of Railroad tracks to east of I-5 Northbound interchange ramps)	III.	20 mph	
6. Grandview Road (SR 548)[3] (West of Vista Drive to east of Enterprise Road)	III.	20 mph	

1. Urban Street Class based on parameters from Highway Capacity Manual (page 15-3) which takes into account the typical free flow speed on the facility (for example travel speeds during the middle of the night). Urban Street classifications range from I-IV, with Class I streets having the highest average travel speeds and Class IV streets having the lowest. The majority of Ferndale streets are Class III (35 mph) or Class IV (20-25 mph).
2. Minimal travel speed for corridor based on field measurements and adjusted for planned and funded improvements.
3. Corridor not subject to City concurrency review without annexation or agreement with Whatcom County.

Main Street and Vista Drive within the existing City limits have speed limits of 25 mph, which equates to a Class IV facility for the Highway Capacity Manual methodologies. The other four segments have higher typical travel speeds and equate to Class III facilities.

The minimum average travel speeds established for the LOS standard are two miles per hour faster than the low range of LOS C for that class of urban street. For example, LOS C for Class IV facilities ranges from 13 to 19 mph. The City has established a 15 mph minimum acceptable speed based on field measurements to account for potential decreases in travel speeds associated with traffic that will be generated by already approved but not yet built developments.

The City will need to coordinate use of a LOS C standard for Grandview Road with WSDOT and WCOG because it is also a state highway. While portions of Grandview Road were annexed into the City in 2010, the majority of the roadway is within the unincorporated UGA, and the City will not be applying its corridor LOS standard to Grandview Road until the area is annexed or an interlocal agreement is established with Whatcom County.

In addition to the minimum travel speed for the overall corridor, a second standard must be met along Main Street. The Main Street concurrency corridor has been further divided into three sub-segments in each direction. These sub-segments are generally defined as:

- Fourth Avenue to First Avenue
- First Avenue to LaBounty Drive
- LaBounty Drive to west of Interstate Five northbound ramps

Travel speeds along each sub-segment of Main Street must operate a measured travel speed of 10 mph or higher. This second requirement was established to support a more consistent travel speed along Main Street between Downtown and Interstate Five.

Intersection LOS. The City has established the following LOS standards for intersections. The levels of service shall be measured using methodologies identified in the latest edition of the *Highway Capacity Manual (HCM)*.

> **Traffic Signals, Roundabouts, and All-Way Stop Controlled Intersections** – LOS C or better based on overall average delay per vehicle.
>
> **Unsignalized Two-Way Stop Controlled Intersections** – LOS D or better for worst traffic movement. On a case-by-case basis, the City may allow the level of service for traffic movements from the minor streets at two-way stop controlled intersections to operate below the adopted standard, if the City determines that no significant safety or operational issues will result.

The lower LOS standard for unsignalized, two-way stop controlled intersections reflects the desire to minimize delays on the major street and through street traffic, while supporting safe and efficient operations from the minor streets.

The City typically will apply the intersection LOS standard to the weekday PM peak hour. The City may, however, define additional evaluation periods for intersection review in order to identify if potential impacts would occur. These could include weekday AM peak hour, weekends, or other time periods depending on the type and location of a proposed development.

Non-Motorized Transportation Systems Plans

The City of Ferndale will continue to develop pedestrian and bicycle facilities as part of its transportation system improvements. The City has adopted street standards that provide for a range of facilities including sidewalks, bike lanes, wider travel lanes, and multi-use trails. The Parks, Recreation, and Trails Master Plan (2016) identifies the overall desired major pedestrian and bicycle systems plans. The Transportation Element was coordinated with the updated Parks Plan and focuses on improvements that provide a transportation system connectivity benefit to guide investment priorities. This approach is intended to consolidate both motorized and non-motorized transportation options in one conversation, in order to avoid unnecessary redundancies, efficiently utilize funds, and develop an overall transportation system that is logical and well-utilized. As noted above, the roadway improvement projects incorporate pedestrian and bicycle facilities to facilitate implementation of the overall non-motorized transportation system, and provide choices that support growth and reduce congestion.

Non-Motorized Transportation System Objectives

The planning and development of a well-connected non-motorized system supports several state and national acts, including Washington's Growth Management Act (GMA), Clean Air Act, and Commute Trip Reduction Act, the federal Clean Air Act, the Americans with Disabilities Act (ADA), and the Fixing America's Surface Transportation Act (FAST Act). Supporting the non-motorized system helps ensure compliance with these initiatives and the healthy community principles espoused by Whatcom Council of Governments (WCOG) through the *Whatcom Transportation Plan* (2013). It also increases funding opportunities for City projects. It also increases funding opportunities for city projects and provides modal choices that reduce demand on congested roadways.

Healthy Communities

The City's Transportation Element promotes Healthy Communities and supports aspects related to pedestrian and bicycle connectivity. Recognizing the growing need for physical activity among citizens, the Washington State Legislature amended the Growth Management Act (GMA) in 2005 with ESSB 5186. The amendments require that communities:

1. Consider urban planning approaches that promote physical activity in the Land Use Element of a comprehensive plan; and
2. Include a bicycle and pedestrian component in the Transportation Element of a comprehensive plan.

The key policy areas are:

- Plan for all users.
- Plan Complete Streets for all users.
- Require connectivity.
- Create a safe pedestrian network.
- Consider multimodal concurrency.
- Identify and develop safe routes to school.
- Use parking management strategies to enhance bicycling and walking.
- Provide facilities to support bicyclists and pedestrians.
- Provide encouragement, education, and law enforcement to support bicyclists and pedestrians.

The Transportation Element, in coordination with the City's Parks Plan, plans for bicycles, pedestrians, public transit, and private automobiles in order to support a physically active population.

A well-designed multi-modal street system will not only allow options to the automobile; it will encourage those options in a manner where all users are comfortable. To accomplish this goal, street system design including connectivity, traffic calming, and a grid system will provide multiple choices for bicycles, pedestrians, and automobiles. These multiple modes of transportation may not be featured in the same location, or even along the same route – as the co-location of multiple modes of transportation at all locations may not serve the needs of *any* mode.

These factors are considered by this element and the Ferndale Municipal Code and street standards. The amount of parking available affects the decision to walk, bicycle, or drive and is considered for both private development and development of public right-of-way. The width of City streets may intentionally or unintentionally encourage travel speeds that are not safe for other modes of transportation in close proximity. Other facilities such as bicycle racks, public art, interpretive and educational signage, and resting or plaza stops with benches or other amenities also support Healthy Communities. Education regarding pedestrian and bicycle safety and enforcement of traffic laws for bicycles, pedestrians, and drivers is also stressed within this element to support Healthy Communities.

The City of Ferndale values walking and bicycling as an integral part of a complete transportation system. Ferndale is interconnected by multi-use trials, bicycle lanes, pedestrian walkways, and sidewalks. The City desires to protect, enhance and expand this existing infrastructure to meet pedestrian and bicyclist's needs without unnecessarily encumbering automobile traffic along major transportation routes. The City's planning policies and goals encourage safe, barrier-free mobility for all members of the community.

System Connectivity

Transportation system connectivity is drawing increased focus within local, state and federal planning circles as smart growth, active living, growth management, sustainability and climate change policies and programs stress smarter decision-making and place greater importance on multi-modal connectivity. The quality of connectivity is inversely related to the number and severity of environmental and infrastructure barriers to walking and bicycling. The physical barriers that affect travel behavior are felt at the neighborhood level. These barriers take many forms, from a lack of convenient routes to common destinations to physical barriers such as steep terrain, rivers, freeways or major arterials which prevent safe or comfortable travel. Land use and neighborhood street design patterns can also form barriers to pedestrian and bicycle travel. For example, overly large blocks and the lack of mid-block connections cause pedestrians and cyclists to travel further to reach local destinations, often resulting in a decision to utilize a vehicle for short trips that would otherwise be completed on foot or bike.

A viable non-motorized transportation system consists of the connection of traffic generators, such as major employers, the downtown, schools, residential areas, parks, and transit stops through a system of bike and pedestrian facilities. With this in mind, an analysis was conducted to evaluate non-motorized transportation system connectivity within Ferndale and its UGA. Connectivity to schools and downtown were assessed to evaluate a select group of non-motorized routes identified in the Park Plan. Based on this analysis, the following corridors were identified as providing the most benefit for serving these non-motorized destinations.

- Main Street/Washington Street Corridor – Church Road to Vista Drive
- Thornton Street Corridor – Malloy Avenue to west City limits

- Shannon Avenue Corridor
- Vista Drive Corridor – 2nd Avenue to north City limits

Non-motorized transportation enhancement investments in and around these corridors will facilitate increased pedestrian and bicycling trips. Specific improvements in these corridors have not been defined as part of this effort. Adjacent roadway improvements identified in these corridors will include non-motorized facilities as part of the City's adopted street standards. The implementation of the planned connector roads discussed earlier and shown on Figure 13 will provide connectivity for non-motorized travel. In addition, the development of new connector streets and upgrades to arterials and collectors, as identified in the Transportation Element and Main Street Master Plan are needed to enhance the use of non-motorized travel within the City. Such streets and upgrades may be utilized as alternatives to primary corridors where multi-modal connectivity could be constrained.

Pedestrian Systems Plan

Every trip begins and ends with a walk. People walk to their cars and drive somewhere where they will walk into a building or facility. Or they need to walk to the bus stop. The City hopes to connect more destinations with walking paths so as to encourage walking between trip destinations. The City encourages retail and commercial developers to design new facilities in a pedestrian friendly way.

Much of the residential development in the City pre-dates the Growth Management Act (GMA) and may discourage walking as a form of transportation. In fact, some residential areas do not have enough continuous sidewalks to provide for a good evening stroll or a brisk walk for exercise. Most of these areas are costly to retrofit with sidewalks. The City requires sidewalks for all new development and on arterial streets. The Transportation Element includes a program to identify and retrofit older residential developments with sidewalks and other pedestrian-oriented facilities.

Future plans call for the downtown area to include residential, commercial and retail facilities in a walkable community centered around the historic downtown and along the Nooksack River. The City recognizes that such a program will provide economic incentives for continued investment and re-investment in the downtown community.

The Main Street Master Plan also encourages increased pedestrian travel. The Master Plan identifies new connector streets and upgrades to arterials and collector streets to enhance the pedestrian connectivity between developments within the Master Plan area. Designs of intersection improvements (roundabout or signals) will also need to take into account pedestrian safety.

The City has integrated its pedestrian systems plan with the Parks, Recreation and Trails Master Plan (2016), establishing a system of trails and sidewalks that provide connectivity to major destinations, to parks and even proposed regional trail systems that extend beyond the City limits. This system will facilitate travel within and between neighborhoods, and to and from schools. These connections will take time to construct, and not every street will be feature the same variety of pedestrian amenities. However once built, this system will provide safe, all-weather walking and jogging opportunities in every Ferndale neighborhood. Over time pedestrian trips will supplement the system through alternative means, thus reducing automobile congestion. The increased density of development will also place users in close proximity to services and alternative means of transportation, especially bicycle and pedestrian. In addition to additional bike and pedestrian mobility, Main Street and Portal Way are anticipated to provide increased transit mobility as well.

Bicycle Systems Plan

Bicycling is an important and growing mode of travel for people in Ferndale. When appropriately planned, bicycle routes have a role in reducing congestion, improving air quality, providing travel choices, encouraging exercise and recreation, and providing greater mobility for those without access to a vehicle. In Whatcom County, 2.9 percent of trips are made by bicycle[1]. The City encourages the use of bicycles; endeavors to coordinate linkages between off-road and on-road bicycle facilities; considers impacts on bicycles when designing and engineering roadways; and emphasizes continuous bicycle linkages to existing facilities.

The City has included a Bicycle Systems Plan (Figure 15), which shows existing bicycle facilities and proposed future facilities. Proposed facilities are informed by the City's roadway functional classification as well as facilities identified in the Whatcom Transportation Plan (2012). It is important to note that while bikes may be allowed on all streets, not all streets can or should include bicycle lanes. In some situations, particularly along major transportation corridors or steep hills, the close co-location of bicycles and motorists benefits neither traveler.

Recognizing the health benefits of bicycling as a form of exercise and hoping to promote non-motorized alternatives for many of the trips people take within their neighborhoods and in the community, the City wishes to encourage people to take advantage of this transportation mode. By conducting a complete inventory of the existing facilities, consulting with the school district and the Whatcom Council of Governments, the City will attempt to create a prioritized list of those bicycle improvements that will provide the most benefit to the widest array of Ferndale citizens.

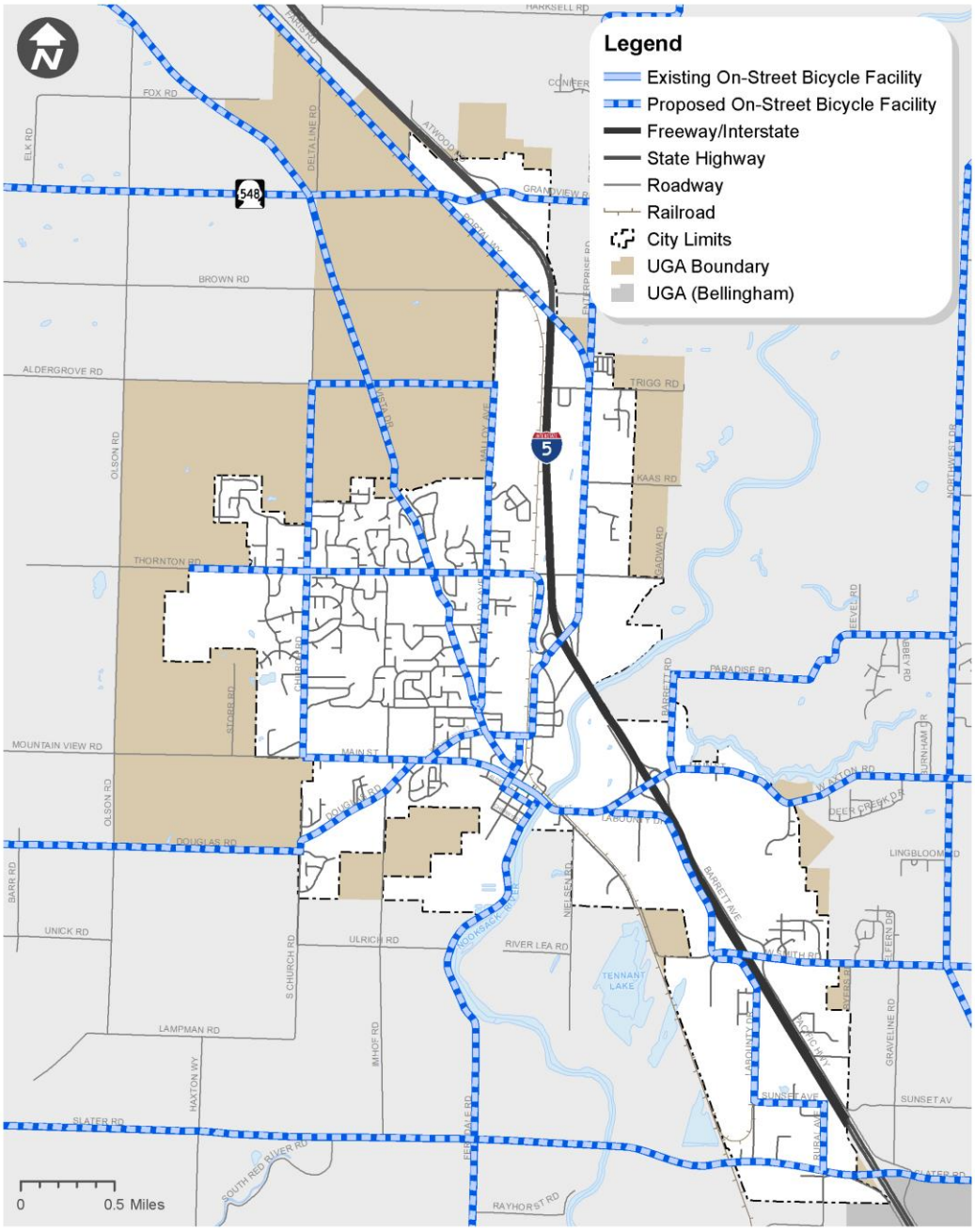
In the meantime, the City continues to incorporate adjacent bicycle lanes or other design treatments, as appropriate, into roadway construction projects whenever the right-of-way is sufficient, funding can be secured, and life-safety is preserved or enhanced. Bicycle travel through roundabouts will need to be addressed as individual projects are designed and implemented. The City's current Six Year Transportation Improvement Plan (TIP) identifies a number of projects which will include bicycle lanes.

In addition to specific bicycle-related projects described in this or other plans, the City seeks to establish routes that will allow bicyclists to travel from residential areas to the Downtown core, to facilitate bicycle traffic along Main Street, and to provide bicycle-friendly, safe routes to and from Ferndale schools. The City also expects to work with Whatcom County and the City of Bellingham to establish regional bicycle trail connections.

This Plan was updated and incorporated into the Whatcom Transportation Plan, which was adopted in October 2001 and updated in June 2007, 2012, and 2013. This Plan identifies a regional trail project (the Nooksack River Trail) that will impact future trails planning in Ferndale. Identified in the 1994 Bicycle Plan, the Nooksack River Trail is proposed to follow the dikes and banks of the river from Bellingham to Maple Falls. Intersecting other proposed regional trails, the result will be an approximately 70-mile long loop providing visitors or commuters from all over western Whatcom County opportunities to utilize a non-motorized off-road corridor. The Whatcom County comprehensive trail transportation network plan could be developed in coordination with the extensive existing British Columbia trail network and the Trans-Canada Trail to provide further non-motorized and recreational travel opportunities.

[1] Whatcom Transportation Plan, 2012

Figure 15 Bicycle Systems Plan



Bicycle Systems Plan

City of Ferndale Transportation Element Update

FIGURE 15

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Transit and Transportation Demand Management

In order to provide a comprehensive transportation system, the City of Ferndale recognizes the importance of transit and transportation demand management (TDM) programs. To date, the City of Ferndale has been a relatively inactive participant in applying transportation demand management programs. However, as the City's population grows, especially in employer based land uses, the City will continue to explore alternate methods of increasing efficiencies without costly infrastructure projects to add additional capacity.

To help reduce the need for costly new road facilities, the City of Ferndale will support and encourage efforts by Whatcom Transportation Authority and the Whatcom Council of Governments to reduce peak hour travel by automobiles and encourage the use of public transportation, carpooling, vanpooling, and walking and bicycle modes of travel. The Whatcom Smart Trips program is one example of these efforts. The City will encourage employers and major residential areas within the city to consider ways to reduce automobile travel by their employees and/or residents. The City will also act as a lead agency in encouraging private businesses and citizens to utilize alternate modes of transportation.

The City's Transportation Impact Fee policies are built in a manner to encourage businesses to adjust hours of operation, practice ride-sharing, or utilize alternative transportation options in order to reduce or avoid impact fees and the need for road expansion to meet peak hour demands. These efforts have been successful from the establishment of the fee structure in 2011 through the adoption of this plan. However, professional offices and manufacturing facilities are generally more flexible in their hours of operation than retail or service businesses – which depend on drop-in customer traffic and generate a disproportionately higher share of overall traffic.

Transit

The City should continue to work with WTA to improve transit services and develop a convenient, integrated, and efficient transit system that supports future growth, reduces peak hour congestion and promotes modal options. Design and construction of roundabouts at intersections in the City needs to also take into account the location of bus stops, access, and pedestrian safety to facilitate access and use.

Additional improvements to transit services should focus on the following elements:

- Provide service within the City of Ferndale through the re-establishment of a circulator route
- General increase in frequency to existing routes serving City of Ferndale
- Provide service to Interstate Five/Slater Road area
- Provide service to LaBounty Drive corridor
- Provide service to Portal Way corridor
- Provide direct or near-direct service between residential areas, Downtown, and the Main Street Planned Action area

Transportation Demand Management (TDM) Program

TDM consists of strategies that seek to maximize the efficiency of the transportation system by reducing the number, length and need of private automobile trips. Typically, TDM measures include provision of park and ride lots, improvements to pedestrian and bicycle facilities, and promotion of ridesharing activities.

The Washington State Legislature passed the Commute Trip Reduction (CTR) Law in 1991, with goals to improve air quality, reduce traffic congestion, and reduce fuel consumption. In 2006, the Legislature adopted changes to the CTR law to make the program more effective, efficient, and targeted. The modified program focuses on UGAs and congested highway corridors. The City's UGA is classified as an "affected" UGA by WSDOT but currently does not have any employers with 100 or more employees working a shift beginning between 6 am and 9 am, and therefore is not required to implement CTR. When such an employer does exist, the City should develop a CTR ordinance consistent with the State CTR Act. The ordinance should include TDM actions for employers, such as carpool matching, transit pass subsidies, and bicycle parking to discourage employees from commuting alone.

TDM strategies are typically most effective in denser and larger urban areas. However, strategies coordinated with Whatcom County, WSDOT, and WCOG can provide alternatives for residents and employees in Ferndale. Potential TDM strategies the City could promote through policy or investment include but are not limited to the following.

- **Transit Incentives** – Employers can provide free or reduced-rate transit passes to all employees.
- **Ridesharing** - Employers can develop and maintain a database of home addresses to facilitate carpool and vanpool matching between employees working on the same site. Employers can also provide financial incentives or reserved parking spaces for carpool and vanpool vehicles.
- **Flexible Work Schedules** – Flexible work hour schedules allow employees to adjust start/end times to accommodate carpools, vanpools, or transit options. Alternative work schedules can also be used to reduce the number of days an employee commutes during peak travel periods. These programs help reduce the need for adding capacity to highways and arterials, and reduce the levels of peak hour congestion.
- **Telecommuting** – The use of telecommunications technology can allow some employees to work from home, reducing the need for travel to and from a work site for some work days.
- **Secured Bicycle Parking and Showers** – Secured bicycle parking could be provided in the vicinity of major employment centers, preferably in a covered, weather-protected area. Shower facilities at work sites are also desirable to encourage commuting by bicycle. Several City of Ferndale programs, including the EAGLE program, provide the opportunity for points for the establishment of these facilities.

Intelligent Transportation Systems

The Intelligent Transportation Systems (ITS) is a broad array of applications to improve the efficiency of the transportation system through enhanced information and use of technology. The focus of the ITS program for the City of Ferndale relates to the operations of traffic signals along key arterial corridors. Implementation of an advanced traffic management system (ATMS) would allow the City to improve the coordination and specific issues such as back-ups and traffic diversions relating to an event or a collision, while providing capabilities to make timely adjustments to signal timing remotely.

An ITS program also could include Closed Circuit Television (CCTV) cameras to enhance situational awareness of the traffic conditions and variable message signs to direct traffic to alternate routes. ITS also has the capability to provide the City with additional data about its

transportation system which will assist it in design of capital projects or refinement of other operational processes. Especially with the mainstream use of mobile communication technology and software applications, the available traffic data sources and data analytics provided by ITS offers a wide variety of benefits towards understanding traffic characteristics that will help the City of Ferndale plan for future needs.

A first step in implementing ITS would be the preparation of the ITS architecture plan and systems engineering document. In addition to ensuring conformance with the National ITS Architecture for ITS implementation, the architecture plan and systems engineering document will establish the objectives, priorities and implementation phases for the system. It will include an evaluation of options to connect with the WSDOT, City of Bellingham, and other agency ITS systems.

Transportation Improvement Projects and Programs

Based on an evaluation of existing and forecast traffic volumes, traffic operations, safety, and circulation needs, a recommended list of transportation improvement projects and programs were defined. The project list is organized into the following categories:

- **Intersection / Operations –** upgrading intersections through the addition of roundabouts, added turn lanes, or modifications to traffic controls. Where applicable, improvements may also include upgrading of traffic signals and implementation of Intelligent Transportation Systems (ITS).
- **Widening / Reconstruction** – widening existing corridors to add travel lanes and turn lanes to add capacity. Includes reconstruction and upgrading roadways to serve higher traffic volumes and non-motorized travel.
- **New Roadways** – constructing new arterials or collector roads, including non-motorized facilities.
- **Other Agency Improvements –** improvements along state highways and /or outside the City's UGA.
- **Citywide Programs –** includes annual citywide programs.

Figure 16 and ***Table 6*** identify each of the projects and their locations. **Table 7** also provides a brief description of each project including the project limits. The table identifies projects that are currently part of the City's Transportation Improvement Program (TIP). This highlights the projects that are currently identified for planning, design, or construction. A project identification number is provided for each project that is referenced in **Figure 13**.

Planning level cost estimates are also included for each project. The cost estimates were prepared based on typical per unit costs, functional classification, and level of improvement. The cost estimates include allowances for right-of-way acquisition based on generalized needs to meet the City's adopted roadway standards. Estimated costs for several improvements on state routes were developed jointly with Washington State Department of Transportation (WSDOT).

A relative priority (high, medium, and low) was established for each project. The priority reflects the relative need for the projects to enhance the City of Ferndale and its UGA transportation system and provides guidance in implementing the respective improvements. The priority list will be amended throughout the planning period, based on achieved growth, funding, and project cost.

BEHIND THE NUMBERS: NEW ROADWAYS
The majority of the City's planned transportation improvements consist of modifications to and maintenance of existing roadways and intersections, in addition to new roadways built by private development to serve new development. There are several exceptions, as described below and shown in Figure 12:

Thornton Extension: (Project N-1): Construction of a bridge over BNSF tracks, linking to an existing roundabout at Second Avenue. This project is intended to provide all-weather access to Interstate Five for new and existing residents and businesses, as well as an alternative to Main Street.

The City's transportation modeling projects that the Thornton Extension would result in significant changes (reductions) to commute trips at Vista Drive and Washington Avenue, but would not result in a significant measureable decrease along Main Street.

Church Street Connector: Extension of Church Street south to Douglas Road through properties currently in the Urban Growth Area Reserve. This project is intended to improve local circulation while providing more-direct access between residential neighborhoods, Slater Road, and Interstate Five. Existing property owners have expressed opposition to such an extension. The City has not determined whether such an extension would represent a public project or a requirement of the redevelopment of subject properties.

The Church Street Connector would utilize existing roadways south of the project and would not result in a direct connection to Slater Road. As a consequence, such a connector would unlikely to be utilized as a major commuter route for Ferndale residents.

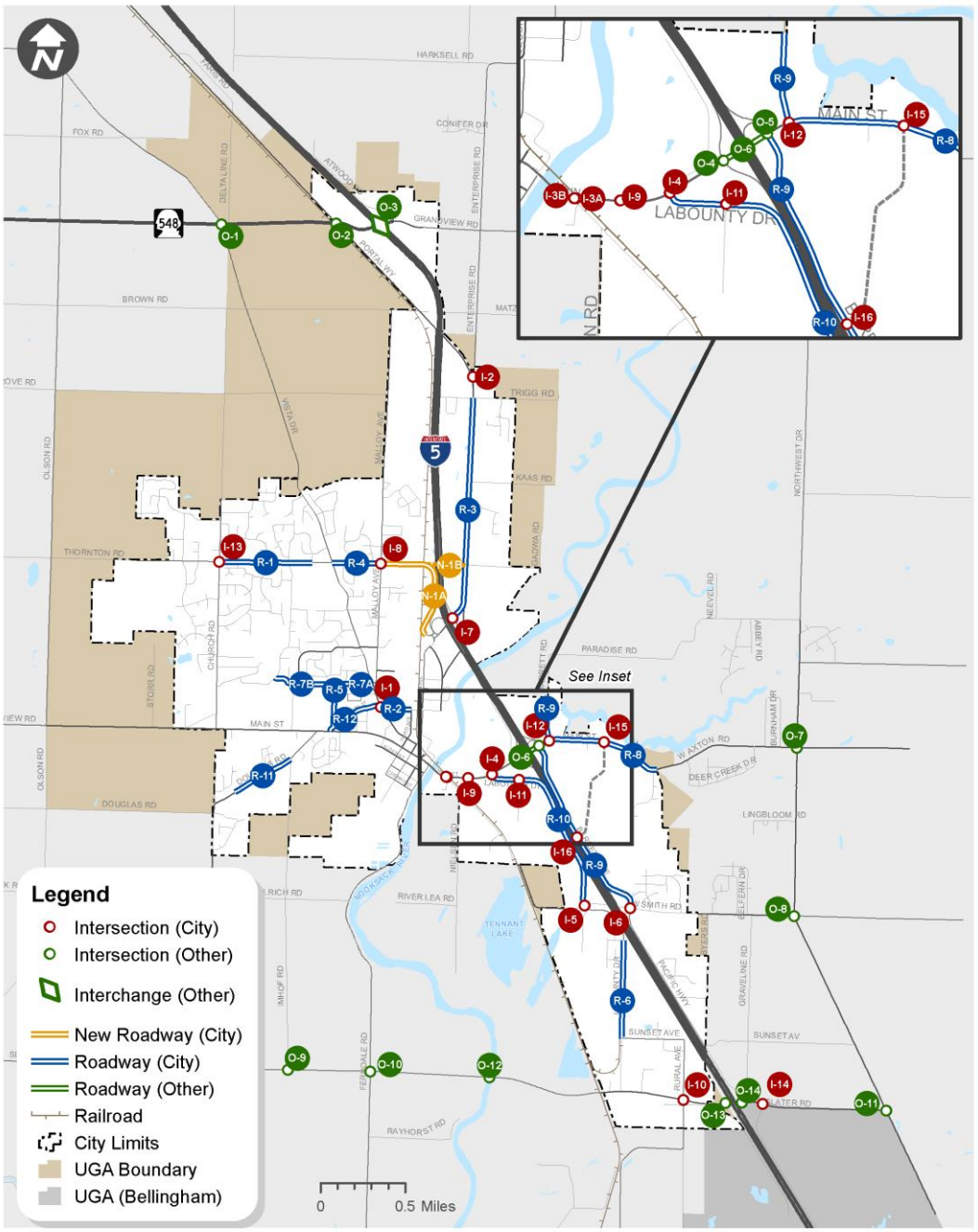
Shannon Avenue Extension: An extension of Shannon Avenue south to Main Street along right of way currently owned by the City of Ferndale. Church Street, Vista Drive, and Malloy Drive are the primary north-south roadways in the western portion of the City, and the majority of residential development exists between Vista and Church. As new multifamily development occurs in the vicinity of Shannon north of Main Street, the extension would be established as a condition of approval. The extension would then be maintained as a public roadway.

Master Plan Linkage Roads: Two new east-west roadways are planned to the north and south of Main Street west of the freeway interchange. To the south, the existing private roadway would be extended to LaBounty Drive as development occurs, providing an alternative to Main Street for Ferndale shoppers. The roadway would be built by private development as a condition of approval and maintained as a private right of way. To the north, a private roadway linking LaBounty Drive to Joe Mosier Way would be established when and if development occurs in that area.

Barrett Drive Reconfiguration: The City anticipates that Barrett Drive south of Main Street will be reconfigured by re-orienting Barrett to the east, creating a four-way stop (or roundabout) east of the northbound freeway terminals. This reconfiguration is anticipated as a capital project, to be built and maintained by the City.

North Ferndale Industrial Connector: As services are extended to the area in the vicinity of Malloy Drive and Brown Road, industrial and commercial development will trigger the need for all-weather roads that are not constrained by the significant hills along Malloy. A road parallel to Malloy Drive is planned, to be developed as a condition of private development and maintained by the City.

Figure 16 Transportation Improvements Projects



Transportation Improvement Projects

City of Ferndale Transportation Element Update

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FIGURE 16

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Table 6. Transportation Improvement Projects and Programs

Table 6. Transportation Improvement Projects and Programs

Project Group	Project ID	Project Name	Project Limits	Project Description	2016 Cost Estimate	Relative Priority	Time Frame	Project Justification			
								Capacity	Safety	Road Standards & Preservation	Area Circulation
INTERSECTION / OPERATIONS	I-1	Washington Street / Vista Drive	Intersection	One larger roundabout or two compact roundabouts at Washington Street and Vista Drive	$3,470,000	High	Mid	X	X		
	I-2	Portal Way / N Enterprise Street / Destiny Street	Intersection	Remove south leg of Portal Way and improve alignment into Destiny Street / N Enterprise Street intersection	$1,370,000	Low	Long	X	X		
	I-3A	Main Street / Hovander Drive	Intersection	Restrict northbound left-turns	$20,000	Medium	Mid		X		
	I-3B	Main Street / Hovander Drive	Intersection	Install partial signal to provide phase for westbound left-turns	$480,000	Medium	Mid		X		
	I-4	Main Street / Labounty Drive	Intersection	Construct 2 lane roundabout, including NB and EB slip lanes and two southbound approach lanes.	$1,690,000	High	Mid	X	X		
	I-5	Smith Road / Labounty Drive	Intersection	Construct single lane roundabout	$630,000	High	Mid	X	X		
	I-6	Smith Road / Barrett Road	Intersection	Construct 2 lane roundabout	$1,060,000	Low	Long	X	X		
	I-7	Portal Way / I-5 NB Ramps	Intersection	Construct single lane roundabout	$630,000	High	Short	X	X		
	I-8	Thornton Road / Malloy Avenue	Intersection	Construct single lane roundabout	$4,500,000	High	Long	X	X		
	I-9	Walgreens Driveway / Main Street	Intersection	Construct 2 lane roundabout	$2,100,000	High	Mid	X	X		
	I-10	Slater Road / Rural Avenue	Intersection	Maintain as signalized intersection. Extend westbound left-turn and northbound right-turn lanes.	$270,000	High	Mid	X	X		
	I-11	Labounty Drive / Nordic Way	Intersection	Signalize intersection	$660,000	High	Mid	X	X		
	I-12	Main Street / Barrett Road	Intersection	Signalize intersection or construct roundabout	$660,000	Low	Long	X	X		
	I-13	Church Road / Thornton Road	Intersection	Dig out and repave to repair failing driving surface and install ADA ramps on all corners of intersection	$330,000	High	Short	X	X	X	
	I-14	Slater Road / Pacific Highway	Intersection	Construct 1 lane roundabout	$840,000	High	Mid	X	X		
	I-15	Main Street / SE Connector Road	Intersection	Construct 1 to 2 lane roundabout with EB and NB right turn lanes	$1,300,000	High	Mid	X	X		
	I-16	Barrett Road / SE Connector Road	Intersection	Construct 1 lane roundabout	$690,000	High	Mid	X	X		

Table 6. Transportation Improvement Projects and Programs (continued)

Table 6. Transportation Improvement Projects and Programs

Project Group	Project ID	Project Name	Project Limits	Project Description	2016 Cost Estimate	Relative Priority	Time Frame	Project Justification			
								Capacity	Safety	Road Standards & Preservation	Area Circulation
WIDENING / RECONSTRUCTION	R-1	Thornton Road	Church Road to Maureen Drive	North side of road, 8-ft wide road widening and curb, gutter, sidewalk and storm. Existing road and south side curb, gutter and sidewalk remains.	$1,880,000	High	Long		X	X	
	R-2	Washington Street	Vista Drive to 2nd Ave	Reconstruct and widen to meet City standards, including utilities	$3,220,000	Medium	Mid	X		X	X
	R-3	Portal Way	I-5 NB to Trigg Rd	Reconstruct and widen to meet City standards, including utilities	$14,370,000	High	Long	X		X	X
	R-4	Thornton Street	Vista Drive to Malloy Ave	Reconstruct and widen to meet City standards, including utilities	$1,480,000	High	Long		X	X	
	R-5	Legoe Avenue Improvement	Washington to Ferndale Terrace	Reconstruct and widen to meet City standards, including utilities. Realign southern end of roadway.	$3,070,000	Medium	Mid		X	X	
	R-6	LaBounty Drive	Seahawk to Sunset	Reconstruct and widen to meet City standards, including utilities	$7,020,000	Low	Mid		X	X	
	R-7A	Ferndale Terrace	Vista Drive to Birch Drive	Reconstruct and widen to meet City standards, including utilities	$2,830,000	Low	Mid		X	X	
	R-7B	Ferndale Terrace	Birch Drive to Shannon Ave	Reconstruct and widen to meet City standards, including utilities	$3,740,000	Low	Mid		X	X	
	R-8	Main Street	Barrett Road to east City limits	Reconstruct and widen to meet City standards, including utilities	$8,010,000	High	Mid	X	X		
	R-9	Barrett Road	Smith Road to north City limits	Reconstruct and widen to meet City standards, including utilities and sidewalk on one side of the street	$13,010,000	High	Mid	X	X	X	
	R-10	LaBounty Drive	Main Street to Smith Road	Reconstruct and widen to meet City standards, including utilities and sidewalk on one side of the street	$13,320,000	High	Mid	X	X	X	
	R-11	Douglas Road	750-ft east of S Church Rd to Imhoff Rd	Reconstruct and widen to meet City standards, including utilities and culvert	$4,520,000	High	Short		X	X	
	R-12	Washington Street	Legoe Ave to Vista Drive	Dig out and repave to repair failing driving surface	$2,270,000	High	Short		X	X	
	R-13A	Main Street Signal Improvements - Short Term	Labounty Dr to Douglas Rd	Separate left-turn loop detectors, implement traffic signal cabinet and controller upgrades, and expand/upgrade interconnect system	$110,000	High	Short	X			
	R-13B	Main Street Signal Improvements - Long Term	Labounty Dr to Douglas Rd	Implement an Adaptive Signal Control system	$400,000	High	Long	X			
NEW ROADWAYS	N-1A	Thornton Street / Newkirk Road Grade Separation	Malloy Ave to Portal Way	Construct bridge over BNSF RR tracks	$22,400,000	High	Long	X			X
	N-1B	Thornton Street / Newkirk Road Grade Separation	Malloy Ave to Portal Way	Extend bridge over I-5 with connector to 2nd Avenue roundabout	$18,400,000	Low	Long	X			X

Table 6. Transportation Improvement Projects and Programs

Project Group	Project ID	Project Name	Project Limits	Project Description	2016 Cost Estimate	Relative Priority	Time Frame	Project Justification			
								Capacity	Safety	Road Standards & Preservation	Area Circulation
OTHER AGENCY IMPROVEMENTS	O-1	Grandview Road (SR 548) / Vista Drive Intersection	Intersection	Signalization of intersection with construction of eastbound and westbound left-turn lanes on Grandview Road or construct a single lane roundabout	$1,150,000	Medium	Mid		X		X
	O-2	Grandview Road (SR 548) / Portal Way Intersection	Intersection	Widen all intersection approaches to provide dedicated left-turn lanes. Revise traffic signal operations to operate left-turn movements with protected/permitted phasing	$790,000	Low	Long		X		X
	O-3	Grandview Road (SR 548) / I-5 NB & SB Ramp Intersections	Intersection	Signalization of intersection with construction of turn lanes on Grandview Road	$1,450,000	High	Short	X	X		X
	O-4	Main Street / I-5 SB Ramps	Intersection	Construct 2 to 3 lane roundabout. Widen SB on and off ramps. Provide SB turn slip lane.	$1,310,000	High	Mid	X	X		
	O-5	Main Street / I-5 NB Ramps	Intersection	Realign and widen Barrett Road to develop 2 to 3 lane roundabout intersection with Main Street and I-5 NB ramps, with 2 NB from Barrett Road, 2 SB from I-5 off ramp, 2 NB, 3 EB and 3 WB approach lanes.	$4,320,000	High	Mid	X	X		
	O-6	Main Street / I-5 Overpass Widening	Interchange	Widen to five lane section	$18,820,000	High	Mid	X	X		
	O-7	Northwest Drive / Axton Road	Intersection	Signalize intersection or construct roundabout	$570,000	Low	Long	X	X		
	O-8	Northwest Drive / Smith Road	Intersection	Signalize intersection or construct roundabout	$570,000	Low	Long	X	X		
	O-9	Slater Road / Imhoff Road	Intersection	Upgrade with turn lanes and install traffic signal when warranted	$830,000	Low	Long	X	X		
	O-10	Slater Road / Ferndale Road	Intersection	Upgrade with turn lanes and install traffic signal when warranted	$950,000	Low	Long	X	X		
	O-11	Slater Road / Northwest Road	Intersection	Upgrade with turn lanes and install traffic signal when warranted	$1,060,000	Low	Long	X	X		
	O-12	Slater Road / Nooksack River Bridge	Nooksack River	Rehabilitation or replacement	$7,720,000	Low	Mid		X	X	
	O-13	Slater Road / I-5 SB Ramps	Intersection	Construct 1 lane roundabout with EB right turn slip lane (or alternative improvement identified by WSDOT)	$1,480,000	High	Mid	X	X		
	O-14	Slater Road / I-5 NB Ramps	Intersection	Construct 1 to 2 lane roundabout (or alternative improvement identified by WSDOT)	$960,000	High	Mid	X	X		
CITYWIDE PROGRAMS	C-1	Sidewalk Program	City-wide	Repair, replace, and construct new sidewalks. Construct a concrete path between B&G Club and sports complex	$2,750,000	High	Ongoing		X	X	X
	C-2	Pavement Rehabilitation Program	City-wide	City-wide program	$5,500,000	High	Ongoing			X	

Interstate Five Access Improvements

Interstate Five provides the primary connection between Ferndale and the Western Washington region. To the north Interstate Five connects the Ferndale area to the United States/Canadian border. To the south, Interstate Five connects to Bellingham and the central Puget Sound region. The Ferndale area is served by four existing interchanges:

- Grandview Road (SR 548)
- Portal Way
- Main Street
- Slater Road

The Transportation Element includes specific projects to improve operations at all four of interchanges. Improvements are needed to fix operational issues in the near term and to serve forecast growth in the long term. Improvements to the Interstate Five/Grandview Road (SR 548) (project O-2) are identified for a long term need. Improvements will improve traffic operations at the ramps by adding turn lanes and installing a traffic signal when future traffic volumes warrant.

Project O-12 would result in the widening of the Main Street overpass to 5-lanes to provide additional capacity and queue storage. As identified in the Main Street Master Plan, the City will work with WSDOT to develop and finalize improvement concepts for the Main Street / Interstate Five interchange. This would likely include preparation of an Interstate Five Master Plan covering all of the interchanges serving Ferndale. WSDOT also has noted the potential need for preparation of an Interchange Justification Report (IJR) to establish the final improvement plans for the interchanges serving Ferndale. The Main Street Master Plan identifies replacing the existing traffic signals at the southbound and northbound ramp intersections with roundabouts (projects O-10 and O-11). Due to the close proximity of the intersections, the concept shows a combined roundabout at the intersection of Main Street/Interstate Five Northbound Ramps/Barrett Road. This concept requires realignment of Barrett Road (north and south of Main Street) and modification of the Interstate Five northbound ramps. Additional discussion of the interchange improvement concept is available in the Main Street Master Plan document. Interim improvements such as turn lanes and channelization at the existing signalized intersections could provide additional capacity prior to implementing the full improvement.

Roundabouts also are identified as the preferred improvement strategy for the Slater Road / Interstate Five interchange ramps (projects O-8 and O-9). Installation of roundabouts at the Slater Road interchange ramps needs to be coordinated with improvements at the intersections of Slater Road with Pacific Highway and Rural Avenue (projects I-11 and I-17).

Intersection / Operations Improvements

Improvements to intersections along City arterials and collectors are needed to resolve future deficiencies, primarily routes that provide access to Interstate Five. Along the Main Street corridor, within the Master Plan area, the City has identified roundabouts as the preferred approach to provide for improved traffic flow, progression, and safety. The City also has established roundabouts as the preferred improvement strategy for intersections outside the Main Street corridor. The City also may consider modifications of existing traffic signals or installation of new traffic signals based on the availability of funding, timing of the need for improvements, and costs of right of way acquisition

Intersection and operations improvements at City intersections account for the largest number of improvement projects in the Plan. However, costs of the intersection/operational improvements account for approximately one-quarter of the estimated capital costs for City projects.

The January 2011 Transportation Element included improvements to upgrade the traffic signals and install Intelligent Transportation Systems (ITS) infrastructure along Main Street. This project was intended to provide improved traffic operations, capacity, and efficiency in the Main Street corridor. As noted above, The City has selected roundabouts as the preferred strategy for intersections along the Main Street corridor; therefore, the Main Street ITS project is no longer included in the Transportation Element.

Widening / Reconstruction Improvements

This category of projects includes upgrading and widening of roadways to City standards to provide turn lanes at major access locations as well as improvements to non-motorized facilities. Widening/ reconstruction improvements account for approximately one-third of the of the total City-related capital improvement costs in the Transportation Element. These projects are generally intended to add capacity to existing road segments rather than establishing new roadways to serve the same purpose. Improvements to Thornton Road/Street (projects R-1/R-4) and Portal Way (project R-3) are identified as high priorities. While previously identified Main Street (project R-6) and Church Road (project R-7) were completed since the last plan update. The Main Street Master Plan identified the need to upgrade Main Street (east of Interstate Five), Barrett Road, and LaBounty Drive (projects R-11, R-12, and R-13, respectively) to urban standards to support the increased levels of commercial development in a safe and efficient manner. These improvements are also identified as high priorities.

The City will also consider opportunities to explore the concept of road “diets,” in which the width of streets is reduced in order to reduce maintenance costs, reduce speeds, combine multi-modal opportunities, and reduce stormwater run-off. The width of streets has a significant influence on safety, and when wide streets are combined with sparse traffic the average speed will increase – sometimes to levels that are dangerous to pedestrians, bicyclists – and ultimately the driver themselves.

New Roadways

The City has identified one new arterial roadway in the transportation element to support future growth. The Thornton Street/2nd Avenue Grade Separation (project N-1) would provide a grade separated connection across the BNSF rail line from Malloy Avenue to Portal Way. The new roadway would not connect directly into Interstate Five but would allow access to the Portal Way interchange. Improvements along Thornton Street (projects R-1, R-4, I-13) and Portal Way (projects I-5, 1-12) would also support the increase in traffic volumes.

The travel forecast results suggests that the Thornton extension would have a citywide impact, and would serve to relieve pressure on Main Street (including the Downtown core), would provide an all-weather emergency route that is immune to seasonal flooding, would support rapid emergency response, and would bolster economic development along both Thornton Street and Portal Way.

Extension of South Church Street to Douglas Road has been identified as a potential project. This extension would most likely be of local benefit but would provide an alternative route to access Slater Road.

Other Agency Improvements

Improvements to the Main Street, Slater Road and Grandview Road (SR 548) interchanges serving Ferndale are identified in the Transportation Element under the other agency category. These facilities are critical in providing access to Interstate Five from the City and its UGA and are discussed above. Improvements under the jurisdiction of Whatcom County are also identified in the Transportation Element. West of Interstate Five, improvements to

Slater Road (projects O-4, O-5, O-7) include modifying intersections and rehabilitation/replacement of the existing bridge at the Nooksack River. Improvements along Grandview Road (SR 548) include upgrading intersections to improve safety and operations at the intersections of Vista Drive and Portal Way (projects O-1 and O-2). These could include the addition of turn lanes, constructing roundabouts, or installing traffic signals when future traffic volumes warrant.

Citywide Programs

A systematic program for maintaining the existing and future transportation infrastructure is critical to a safe and efficient transportation system. Failure to maintain existing roadways by providing dedicated funding to maintenance and operations programs could result in more substantial capital projects and road rehabilitation projects in the future.

The Pavement Rehabilitation Program (project C-1) includes a systematic evaluation of pavement conditions on arterial and local roadways. In addition, a Citywide Sidewalk Program (project C-2) is needed to repair, replace, and construct new sidewalks citywide.

D. Financing Program

The list of transportation improvement projects must be funded and implemented to meet existing and future travel demands in and around the City of Ferndale. Estimated project costs and future revenues are presented and options to fund the projects are described. Implementation strategies are discussed and include items such as coordination with WSDOT, Whatcom County, and Whatcom Council of Governments to prioritize and fund regional improvements. Other strategies include refining the transportation concurrency and impact fee programs to ensure development helps fund transportation improvements necessary to support new growth. The implementation plan sets up the framework for the City to prioritize and fund the improvements identified in the transportation systems plan.

The Growth Management Act (GMA) requires the Transportation Element of the Comprehensive Plan to include a multi-year financing plan based on the identified improvement needs in the transportation systems plan. The financing plan is to be the basis in developing the required 6-year Transportation Improvement Program (TIP). If probable funding is less than the identified needs, then the transportation financing program must also include a discussion of how additional funding will be raised or how land use assumptions will be reassessed to assure that level of service standards will be met. Alternatively, the City can adjust its level of service standards.

A summary of the cost of capital improvement projects and citywide maintenance and operation programs are presented. The capital project and maintenance and operations program costs are compared to estimate revenues from existing sources used by the City to fund transportation improvements. Other potential funding sources to help reduce the projected shortfall are described. A summary of a reassessment strategy for the City to use for reviewing transportation funding in the context of the overall Comprehensive Plan is also included.

Project and Program Costs

Table 7 summarizes the costs of the recommended transportation improvement projects and programs. These cover City of Ferndale capital improvements, maintenance and operations. The costs are summarized for the life of the Plan. Improvements under the responsibility of WSDOT or Whatcom County are not included in the summary table. However, the City may choose to include a share of the costs of WSDOT improvements in its transportation impact fee or other funding options when they serve the growth needs of this plan.

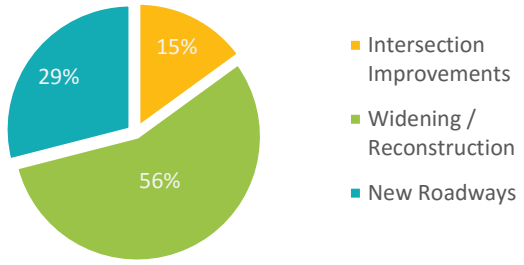
Table 7. Transportation Project and Program Costs (2017 – 2036)

Improvement Type	(2017-2036) Total Costs[1]	Percent of Total Costs
Transportation Capital Projects[2]		
Intersection Improvements	$20,700,000	15%
Widening / Reconstruction	$79,250,000	56%
New Roadways	$40,800,000	29%
Subtotal Capital Projects	**$140,750,000**	**100%**
Transportation M & O Programs		
Maintenance & Operations	$32,835,000	80%
Pavement Rehabilitation Program	$5,500,000	13%
Sidewalk Program	$2,750,000	7%
Subtotal M & O Programs	**$41,085,000**	**100%**
Total Costs	**$181,835,000**	

1. All costs in 2016 dollars
2. Does not include other agency improvements

Planning level cost estimates were developed for the capital improvements presented in the Transportation Systems Plan section of the Transportation Element. The planning estimates were prepared based upon average unit costs for recent transportation projects within the City. Planning level costs were developed with the assumption that such costs would include associated storm water development requirements, property acquisition, wetland mitigation, and utility extensions and/or upgrades, based upon historic costs for those items. The cost projections are not specific to individual projects or locations. More detailed cost estimates will need to be prepared as the projects are closer to design and construction. Future design studies will identify specific property impacts and options to reduce costs and impacts on properties.

The estimated capital cost of the City portion of the Transportation Plan is $140.8 million (in 2016 dollars). Approximately 56 percent of the capital costs are associated with widening and reconstruction of existing streets in the City. These costs cover upgrading roadways to City standards to accommodate higher volumes of traffic and construction of urban features such as underground drainage, sidewalks, and street lights. Approximately 29 percent of the capital project costs focus on the construction of Thornton Street / Newkirk Road grade separation (projects N1A and N1B).



Maintenance and operations costs were projected based on figures from the 2012 transportation element with 10 percent added to account for cost increases. Maintenance and operations costs cover general administration, roadway and storm drainage maintenance, street lighting, traffic signal and street signs, street sweeping, and other miscellaneous safety improvement programs. In addition, the City developed estimates of annual expenditures to repair, replace and construct sidewalks to improve connectivity and safety, beyond facilities that would be constructed as part of other capital improvements. An estimated need for overlays to preserve the existing street system is also included in order to reduce the need for extensive capital reconstruction projects. Just over 22 percent, or $41 million, of the total $181.8 million Transportation Element cost is associated with maintenance and operations. Of that cost, approximately 20 percent is for citywide sidewalk and pavement overlay programs.

The Transportation Element also includes other agency projects in the vicinity of the City. The costs of these improvements are estimated at almost $42 million (in 2016 dollars). These projects include improvements to the Main Street Interstate 5 overpass (project O-6), Grandview Road (SR 548) Interstate 5 interchange (project O-3) and Slater Road interchange (projects O-13 and O-14). Improvements at the intersections of Grandview Road (SR 548) with Vista Drive (project O-1) and Portal Way (project O-2) are also included in the Other Agency funding total. Whatcom County has also identified intersection and bridge improvements along Slater Road (projects O-7, O-8, O-9, O-10, O-11, and O-12) which are included in the plan. The other agency projects will serve development in Whatcom County, Bellingham, and other communities and therefore were not included in the City of Ferndale totals. These projects are not currently funded by the other agencies.

Combining the cost of City capital projects and maintenance and operations programs with the cost of the other agency improvements results in a total cost of approximately $191 million (in 2016 dollars).

Funding Analyses with Existing Revenue Sources

The City has historically used tax revenues, developer fees, and grants to construct and maintain their transportation facilities. The description of available funding sources and projected revenue is listed in Table 8.

Table 8. Transportation Funding Revenue Projections (2017 – 2036)

Revenue Source[1]	Total Revenues	Percent of Total Revenues
Transportation Capital Revenues		
REET 2	$4,165,000	4%
Transportation Benefit District	$10,021,000	10%
TIF Transfers	$6,683,000	7%
Transportation Impact Fees & Developer Commitments[2]	$40,152,000	40%
Miscellaneous	$20,000	< 1%
Grant Funds	$20,000,000	20%
Other State Funds	$19,000,000	19%
Subtotal Capital Revenues	**$100,041,000**	**100%**
Transportation M & O Revenues		
Motor Vehicle Fuel Tax - Non-Capital Only	$7,067,000	39%
Solid Waste Tax - Committed	$15,954,000	67%
Other Private Assessments/Contributions/Transfers	$391,000	2%
Miscellaneous (Permits, Other)	$522,000	2%
Subtotal M & O Revenues	**$23,934,000**	**100%**
Total Revenues	**$123,975,000**	

1. All revenues in 2016 Dollars
2. Includes only transportation impact fee revenues for City projects; additional revenues could be generated as a City contribution toward WSDOT improvements to the I-5 interchanges serving Ferndale.

The revenue projections were estimated based upon the City's 2015 budget, historical revenues, and input from the City's finance department. Based on recent historical data, it is estimated that revenues would be approximately $124 million during the 20-year period, of which nearly eighty percent would be dedicated for capital improvements and 20 percent for maintenance and operations programs.

Of the approximately $100 million in revenues dedicated for capital improvements, approximately 40 percent, $40.2 million, are expected to come from developer contributions through impact fees, frontage improvements, and SEPA or concurrency mitigation. Grants are assumed to generate a minimum of approximately $19 million, or approximately 20 percent of all capital revenues. Transportation Benefit District taxes and fees will generate approximately $10 million, or 10 percent of all capital revenues during the life of the plan. Other State Funds, such as those allocated by the State legislature for the Thornton Overpass project (N-1), represent 19% of overall capital costs.

Almost $24 million in revenues dedicated for maintenance and operations programs are anticipated over 20 years. Over two-thirds is expected to come from the City's Solid Waste Tax. The motor vehicle fuel tax is anticipated to generate approximately 39 percent of all

maintenance and operations revenues, $7.1 million. Other contributions and miscellaneous revenue sources make up approximately 4 percent of the total over the 20-year period.

Tax Revenues

The existing tax revenues used by the City will need to be maintained as one source of revenue to fund transportation projects and programs. These revenue sources include motor vehicle fuel tax, property taxes, and other tax revenues that support the City's general fund. These sources of revenue are projected to contribute approximately $26 million during the 20-year period. The majority of the existing tax revenue sources will be used for maintenance, and to provide the matching funds for grants or to complete a portion of the improvement projects not covered by other agencies.

The City may elect to utilize greater amounts of sales tax revenue for capital improvements if development within the Master Plan area occurs as projected. The use of these additional resources shall be carefully evaluated in order to ensure that other City funding priorities are met.

Developer Transportation Funding

The City uses several programs to help offset the increased traffic impacts of new development or redevelopment. These include construction of frontage improvements such as curb, gutter, and sidewalks and internal roadways needed to serve the development. The City is also required to review the potential transportation impacts of development and define appropriate mitigation under the State Environmental Policy Act (SEPA) and GMA concurrency requirements. In addition, the City previously adopted a Transportation Impact Fee (TIF) program as allowed for by the GMA to help fund growth-related transportation system improvements. As shown in Table 8, the funding program identifies $40.2 million (2016 dollars) in development generated funding for City growth related improvement projects. Furthermore, the City can generate additional impact fee revenues to help fund WSDOT improvements at the Main Street and Grandview Road (SR 548) Interstate 5 interchanges. The City will be coordinating with WSDOT regarding a potential Memorandum of Understanding (MOU) or Interlocal Agreement (IA) to possibly help fund the interchange improvements.

Transportation Impact Fees

The GMA allows agencies to develop and implement a Transportation Impact Fee (TIF) program to help fund part of the costs of transportation facilities needed to accommodate growth. State law (RCW 82.02) requires that TIF programs are:

- Related to improvements to serve new growth and not existing deficiencies;
- Assessed proportional to the impact of new developments;
- Allocated for improvements that reasonably benefit new development, and;
- Spent on facilities identified in the adopted Capital Facilities Plan.

TIFs can only be used to help fund improvements that are needed to serve new growth. The projects can include recently completed projects to the extent that they serve future growth and did not solely resolve existing deficiencies. The cost of projects needed to resolve existing deficiencies cannot be included.

The TIF program must allow developers to receive credits if they are required to construct all or a portion of system improvements to the extent that the required improvements were included in the TIF calculation. Cost associated with dedication of right-of-way for improvements included in the TIF also would be eligible for credits. The City is in the process of updating its existing program based on the updated Transportation Element.

Each of the capital improvement projects was evaluated for potential inclusion in an updated TIF program based on the 2036 horizon year. This resulted in up to $68.4 million (2016 dollars) eligible for inclusion in the transportation impact fee program. The analysis did not assume improvement projects under the jurisdiction of WSDOT or Whatcom County would be included since the City does not have interlocal agreements or MOU's with these agencies. The travel forecasting model was applied to determine the proportionate share of the costs of these improvements due to growth in the City, its UGA, and other areas. The analysis shows that approximately $47.8 million (2016 dollars) of the City's project costs would be attributable to growth within the Main Street corridor, as identified in the Main Street Master Plan (MSMP). The remaining $20.6 million in cost is related to City (non-MSMP), UGA, and other areas.

The revenue analysis assumes that approximately $40.2 million in TIF funding toward City growth-related capital transportation projects would result by 2036 if all of the growth (Main Street, City, and UGA) assumed in the plan occurs. This is lower than the City maximum of $68.4 million, based on preliminary mitigation concepts being considered for the Main Street Master Plan mitigation requirements and other funding program options. If the growth assumptions are not realized then revenues from the TIF would be lower, but improvement needs also would be reduced within the 20-year horizon.

Other Developer Mitigation and Requirements

The City has adopted specific development related requirements which will help fund the identified improvements. These include frontage improvements and mitigation under the State Environmental Policy Act (SEPA) and concurrency requirements. The City requires developments to fund and construct certain roadway improvements as part of their projects. These typically include reconstructing abutting streets to meet the City's current design standards. These improvements can include widening of pavement, drainage improvements, and construction of curb, gutter, and sidewalks.

Several of the projects identified in the Transportation Element could be partially funded and constructed as part of new developments. As noted above, to the extent that costs of a transportation improvement are included in the TIF then credits would be required. If improvements to an abutting local street are not included in the TIF, then credits against the TIF would not be required or allowed.

The City also evaluates impacts of development projects under SEPA. The SEPA review may identify adverse transportation impacts that require mitigation beyond payment of the TIF. These could include impacts related to safety, traffic operations, non-motorized travel, or other transportation issues. The needed improvements may or may not be identified as specific projects in the Plan. As with frontage improvements, if the required improvements are included in the TIF program, then the City must provide credits to the extent that the costs are included in the impact fee.

The City also requires an evaluation of transportation concurrency for development projects. The concurrency evaluation may identify impacts to facilities that operate below the City's level of service standard. To resolve that deficiency, the applicant can propose to fund and/or construct improvements to provide an adequate level of service. Alternatively, the applicant can wait for the City, or another agency or developer to fund improvements to resolve the deficiency.

Grants

Over the past several years the City has secured grants for transportation improvements. Based on recent grant awards, this source would provide over $20 million in revenues during the 20-year period, which anticipates a slightly less successful grant approach than has been experienced in recent history. Grant funding is typically tied to specific improvement projects and distributed on a competitive basis. Due to reduced federal and state revenues the pool of

grant funding will likely decrease in the future. In addition, more local agencies are pursuing grants resulting in a more competitive environment. The funding analysis assumes the City will receive $20 million in grants over the 20-year life of the Plan, or 50 percent of the historical average annual level of grants received between 2013 - 2015. This plan includes a policy statement that the City will seek grant funding that will average a minimum of thirty percent of total aggregate capital project costs.

Forecasted Revenue Shortfall

Table 9 summarizes the City's proposed transportation financing strategy for the $140.8 million City portion of the capital improvement costs as well as the over $41.1 million in maintenance, operations, and program expenditures. All values are presented in 2016 dollars. The plan results in a shortfall of nearly $58 million dollars. This assumes that the level of grants and developer commitments will be generated as estimated in the Transportation Element. The deficit could be greater if the level of development or the level of grant funding is less than forecast. This would be offset by a reduced need for transportation improvements necessitated by growth. If the City is more successful in obtaining grants or other outside funding for projects then potential deficit could be reduced, as discussed in the next section.

The shortfall identified in the Transportation Element is not unusual, particularly as many of the improvements identified in the plan will require partnership with other agencies. However, in an era of diminished public resources and increased competition for grant funding the City must take a realistic view of potential revenue sources. The City and its consultants have also sought to be conservative in revenues (anticipating generally lower revenues), and conservative in project costs (anticipating generally higher costs). As such, a theoretical deficit is expected. Moreover, several projects identified within the plan are owned by the Washington State Department of Transportation, and may be eligible for full or partial funding from Washington State or the Federal Highways Administration.

In order to be consistently successful in receiving grant funding, the City cannot become a part-time participant in grant requests. Preparation of grant applications must begin early, and must be supported by the Comprehensive Plan and the 6-Year Transportation Improvement Project list.

Analysis conducted as part of the Main Street Master Plan has concluded that the capital costs of transportation improvements anticipated by that plan could be fully funded through a combination of TIF, increased sales tax revenue, and developer contributions. Depending upon the actual build out of the area, as well as the nature of that build out, the forecasted revenues may vary substantially, and will be re-addressed in successive revisions to this element.

The City shall also consider funding options which more equitably distribute the costs of the transportation system among the users of the system. While the "growth pays for growth" principle has been applied throughout the Transportation Element, the costs of maintaining the existing transportation system over time are the shared responsibility of all of the Ferndale community. This could include adoption of other citywide transportation funding programs such as a Transportation Benefit District (TBD) or increased use of general revenues from sales taxes or other sources.

The City of Ferndale has historically experienced growth trends somewhat later than other cities, particularly cities within the Puget Sound corridor in Snohomish, King, Pierce, and Kitsap counties. The Puget Sound Regional Council (PRSC), which comprises these four counties, noted in 2010 through its Transportation 2040 planning process that revenue shortfalls in the planning region are projected to be so substantial that the introduction of user fees such as toll roads were included in each planning alternative. The City of Ferndale's

projected shortfall is not as dramatic, and the capital projects described in the plan are much more modest. However, it may be naïve to expect that traditional revenue sources can be depended on to fund necessary projects.

Table 9. Forecasted Revenues and Costs

Revenue Source[1]	Total (2017–2036)
Transportation Capital Revenues	**$100,041,000**
Total Capital Project Costs	$140,750,000
Capital Estimated Shortfall	**($40,709,000)**
Transportation M&O Revenues	$23,934,000
Transportation M&O Costs	$41,085,000
M & O Estimated Shortfall	**($17,151,000)**
Total Estimated Shortfall	**($57,860,000)**

1. All revenues in 2016 dollars
2. Does not include other agency improvements

Capital Revenue Shortfall

The shortfall in funding would primarily affect the ability of the City to fund capital improvements. The City is committed to funding the existing maintenance and operations programs needed to preserve the integrity, safety, and efficiency of its existing transportation system. The maintenance and operations cost will expand with the future annexation of its UGA.

Several reconstruction/widening projects and new roadways result in a large share of the capital expenses. Without the Portal Way, Barrett Road, and LaBounty Drive reconstruction projects (projects R-3, R-9, and R-10), and Thornton Street / Newkirk Road grade separation project (project N-1A and N1-B) the forecasted capital revenues would exceed the anticipated capital improvement costs over the life of the plan, although TIF revenues would decrease without inclusion of the Thornton Road extension project. Potential additional revenues could come from additional grant funding and/or voter approved bond/sales tax package, or allocation of additional general revenues.

Maintenance and Operations Revenue Shortfall

A shortfall of approximately $17.2 million is forecasted for completely funding the 20-year maintenance and operations programs. General citywide maintenance and operations programs will balance with forecasted revenues over the life of the plan. The $17.2 million is associated with the general maintenance and operations costs assumed in the previous transportation element.

Potential Options to Balance the Plan

As noted above, projected existing revenue sources would allow the City to fund only 70 percent of the identified transportation improvement projects and program costs. The City could address this shortfall through delaying lower priority projects or increasing revenues. Increases in revenues can be segmented into capital project needs and citywide preservation or sidewalk programs.

Options for Reducing the Funding Shortfall for Capital Improvement Projects

The City can increase funding for capital street projects using a range of revenue options. These include partnering with other agencies or additional grants and use of tax increment financing. Alternatively, the City could delay implementation of projects, especially lower priority improvements. Possible applications of these funding strategies are discussed below.

Combining Improvement Projects

The City may be able to reduce the overall costs of capital improvements (Transportation and utilities) by consolidating planned projects. The City's Capital Facilities Element Consolidated Project Map depicts all of the forecast improvements necessary within the planning period. In many cases, there are a number of separate projects located in one general area, and there is the potential to combine those various projects (and their funding sources) into one or two larger improvements.

Consolidation allows the City to save costs by avoiding redundant designs, by avoiding multiple site mobilizations, utilizing committed funding as "match" funds for grants, and more. While the cost savings will vary substantially from project to project (and may not be feasible in all cases), the City has adopted policies in several of the elements of the Comprehensive Plan to consider these approaches.

Delaying Improvement Projects

Table 6 includes a relative priority list of the improvement projects. The priority list reflects the relative need for the project to meet the City of Ferndale's transportation system needs, including safety, circulation, operations/congestion, pedestrian and bicycle system connectivity, and transit service. The City will focus its funding on the higher priority improvements by making conservative adjustments to the Six-Year Improvement plan.

Approximately $6.5 million of the capital improvement projects cost are listed as being of lower priority. Approximately $5.9 million are medium priority projects, with over $90.5 million in high priority capital projects. The City will not likely be able to, or may choose not to, fund the low and possibly some of the medium priority projects within the 25-year horizon without additional funding sources. Removing the costs of the low to medium priority projects would reduce the estimated funding shortfall. The projects are, however, still included in the Transportation Element to illustrate the City's desired transportation system. Several of the capital improvements, particularly those projects within or affected by the Master Plan area (exclusive of widening of the Main Street overpass), will become necessary when and if development occurs. These projects are somewhat unique in that the cause and effect of capital projects is directly linked to the individual development projects themselves, as compared to capital projects that become necessary due to aggregate growth within the City as a whole. Funding for these projects can be tied to impact fees and/or other City revenues generated through increased sales taxes.

As developments occur in these areas the City may require frontage improvements or SEPA mitigation, as appropriate. The City also may identify other programs or opportunities to partially or fully fund some of these improvements.

Additional Grants and Other Agency Funding

As discussed above, the transportation financing analyses assumes that the City will receive $10 million in grant funding over the life of the plan. This is approximately 25 percent lower than the average annual transportation grant funding received between 2013 and 2015.

The Transportation Element has a range of improvement projects that should be competitive for grant funding. These include the Thornton Street/Newkirk Grade Separation (project N-1A and N1-B), the WSDOT I-5/Main Street/Barrett Road interchange area improvements (projects O-4, O-5, and O-6), non-motorized improvements, and others. As noted above, approximately 40 percent of the growth traffic using the potential projects identified for the impact fee program includes an origin and/or destination, outside the City or its UGA. This shows the required nature of these improvements which supports a use of grants or other regional funding programs for at least a portion of the costs of those projects.

In addition, the City will need to coordinate with and partner with WSDOT, Whatcom County, and others to help fund and implement the required improvements in the Transportation Element. Funding of improvements at the I-5 interchanges at Slater Road (projects O-13 and O-14) and Grandview Road (SR 548) (project O-3) as well as along Grandview Road (projects O-1 and O-2) will likely need to be led by WSDOT. GMA requires the Transportation Element to identify these needs to facilitate coordination between the local and state transportation planning efforts. At this time WSDOT indicates funding for these improvements is not available. The City will continue to work with WSDOT and other local, regional, and state agencies to develop strategies for funding and implementing these improvements.

The Transportation Element also includes improvement projects that are outside the City and its UGA. Most of these improvements are in Whatcom County along Slater Road (projects O-9, O-10, O-11, and O-12) and Northwest Drive (O7 and O-8). These improvements are part of the greater Ferndale area transportation system but are not the focus of the City funding programs. The City will continue to partner with Whatcom County, Bellingham, Lummi Nation, and Whatcom Council of Governments (WCOG) on funding these types of improvements. One strategy would include developing Interlocal Agreements related to transportation impact fees, developer mitigation, as well as joint pursuit of grants for improvements.

Tax Increment Financing

Washington State allows cities to create “increment areas” that allows for the financing of public improvements, including transportation projects within the area by using increased revenues from local property taxes generated within the area. The specific rules and requirements are noted in the Community Revitalization Financing (CRF) Act.

The Local Infrastructure Financing Tool (LIFT) program is a potential tool for the City to pursue. Under this concept the annual increases in local sales/use taxes and property taxes can be used to fund various public improvements.

The City may choose to further consider these types of funding programs in the future as part of its annual budget and six-year Transportation Improvement Program (TIP) processes.

Voter Approved Bond/Tax Package

Bonds do not result in additional revenue unless coupled with a revenue generating mechanism, such as a voter approved tax. The debt service on the bonds results in increased costs which can be paid with the additional tax revenues. Although the City does not anticipate issuing bonds in the near future, it remains an option for generating additional transportation revenues to fund some of the higher cost improvement projects included in the Transportation Element, such as the Thornton Street/Newkirk Grade Separation improvement (projects N-1A and N-1B).

Options for Reducing the Funding Shortfall for Maintenance and Operations Programs

The Transportation Element includes annual street overlay and sidewalk improvement programs. These programs are intended to preserve the City's prior transportation investments in a systematic manner. It may be appropriate to develop a more dedicated funding source for these programs to help assure that the streets do not fall into disrepair which would ultimately require a capital reconstruction project. In addition, the City may work with its citizens and businesses to help fund specific neighborhood improvements, such as completing missing sections of sidewalks.

Some of the potential revenue options for these types of improvements are discussed below. These options also might be suitable for some capital street projects discussed above, but these programs generally generate lower levels of revenues compared to those discussed above. The City and its residents and businesses would need to decide which, if any, of these revenues they wish to pursue to help fund the projected shortfall in funding.

Additional Sales Tax Revenue

The Transportation Element assumes significant growth in the City between now and 2034. The forecast growth includes significant additional retail development which would generate more sales taxes than estimated under the analysis of existing revenues (which was based on historical data).

The City finance department notes that the additional sales taxes would be used for a wide range of programs. Although exact revenues for transportation improvements are difficult to estimate, the additional sales source could generate a significant level of funding for transportation. As an example, directing 5 percent of an additional $1,000,000 per year in sales taxes would result in $50,000 per year that could be used for the local match of grants or other transportation funding needs. Given the status of the local and state economies, this revenue would not start to be realized for several years.

If new sales tax revenues increased by $5 million per year and the City directed 20 percent of the increase to transportation, the City would generate $1 million per year. Over a 10 to 15 year period, these could generate $10 to $15 million, which would greatly reduce the projected funding shortfall. Future City Council's would need to make these decisions if and when new sales tax revenues become available.

Transportation Benefit Districts

In 2012, Ferndale voters voted to assess themselves a .2 percent increase in sales and use tax in order to form a Transportation Benefit District (TBD) for the construction, maintenance, preservation, and operation of the transportation system. In 2015, the TBD generated nearly $423,000 in revenue – and could more than triple if projected growth in the Planned Action area occurs. This funding was necessary to provide funding identified for shortfalls. The Ferndale community sought to address these potential shortfalls proactively in order to prevent more-costly projects in the future that could have resulted from lack of funding in the short-term.

Property Tax

The City also could ask voters to increase the local property tax levy. The City estimates that a voter approved property tax levy could generate $100,000 per year. Over a 20-year period this source could generate up to $2 million (2016 dollars). The City estimates that this would increase the tax on a $300,000 property by $25 to $30 per year.

Local Gas Tax

Ferndale voters rejected a 1-penny-per-gallon fuel tax in 2014 that could have provided $50,000 per year in funding, or over $1,000,000 if enacted over a 20-year period. Opponents of the measure felt that the gas tax, which can be established due to the City's proximity to the Canadian border, could harm local fuel stations and would tax Ferndale residents disproportionately than it would Canadian customers, whose impacts the tax was intended to mitigate.

Street Maintenance Utility

Under current state law, the City cannot enact a street utility fee to fund transportation system maintenance. In 2011, the Association of Washington Cities (AWC) is planning to propose legislation to allow creation of a street maintenance utility to help fund pavement management and maintenance; signs and markings; on-street bicycle and pedestrian facilities; and traffic controls and signalization. The proposed legislation would require voter approval. The fees would likely be assessed based on the number of trips generated by different types of land uses. The 2011 bill was not passed by the legislature. However, the City should monitor that option if it is passed in the future. If passed by the state legislature in the future, the City of Ferndale could consider this as an additional funding option for funding the street overlay and sidewalk programs or other allowable uses.

Local Improvement Districts

A local improvement district (LID) is a special assessment area established by a jurisdiction to help fund specific improvements that would benefit properties within the district. LIDs could be formed to construct sidewalks, upgrade streets, improve drainage or other similar types of projects. A LID may be in residential, commercial, or industrial areas or combinations depending on the needs and benefits. LIDs can be proposed either by the City or by residents or business/property owners. LIDs must be formed by a specific process which establishes the improvements, their costs, and assessments. The assessments are added to the property tax which helps to spread the costs over time.

Reassessment Strategy

Although the financing summary identifies the potential for a total revenue shortfall of approximately $88 million (in 2016 dollars) over the life of the plan, the City is committed to reassessing their transportation needs and funding sources each year as part of its 6-year Transportation Improvement Program (TIP). This allows the City to match the financing program with the short term improvement projects and funding. In order to implement the Transportation Element, the City will consider the following principals in its transportation funding program:

- Balance improvement costs with available revenues as part of the annual 6-year Transportation Improvement Program (TIP);
- Review project design standards to determine whether costs could be reduced through reasonable changes in scope or deviations from design standards;
- Fund improvements or require developer improvements as they become necessary to maintain LOS standards to meet concurrency;
- Explore ways to obtain more developer contributions to fund improvements;
- The City could consider options to fund transportation improvements based on the use of the existing transportation network, through transportation benefit districts, increased fuel taxes, and vehicle tab surcharges, or other funding mechanisms. Many of these options will require voter approval.

- Coordinate and partner with WSDOT, Whatcom County, and others to implement improvements to the Interstate Five interchanges, Grandview Road (SR 548), and Slater Road;
- Vigorously pursue grant funds from state and federal sources;
- Work with Whatcom County to develop multiagency grant applications for projects that serve growth in the City and its UGA;
- Review and update the TIF program regularly to account for the updated capital improvement project list, revised project cost estimates, and annexations;
- The City could consider changes in its level of service standards and/or limit the rate of growth in the City and its UGA as part of future updates to its Comprehensive Plan;

Some lower priority improvements may be slid or removed from the Transportation Element. The City will use the annual update of the 6-year Transportation Improvement Program (TIP) to re-evaluate priorities and timing of projects and need for alternative funding programs. Throughout the planning period, projects will be completed and priorities revised. This will be accomplished by annually reviewing traffic growth and the location and intensity of land use growth in the City and its UGA. The City will then be able to direct funding to areas that are most impacted by growth or to roadways that may be falling below the City's level of service standards. The development of the TIP will be an ongoing process over the life of the plan and will be reviewed and amended annually.

E. Goal and Policies

The Transportation Element was developed around one central goal.

Overall Goal*: The City will provide a safe, dependable, properly maintained, multimodal transportation system that promotes economic development and environmental vitality, and will explore innovative methods of resolving transportation-related issues."*

Goals and policies for implementation of the Transportation Element of the Comprehensive Plan support the City of Ferndale's vision statement.

1 The City will provide an efficient and safe transportation network to serve existing needs and to accommodate new growth and development.

Policies:

A. The City will coordinate planning and operation of transportation facilities with programs to optimize multimodal transportation programs.

B. The City will coordinate the location of major utility and transportation corridors wherever practical.

C. The City will strongly encourage the preservation of rail rights-of-way for future rail uses, and will work with appropriate agencies to ensure the availability of rail services to its industrial lands.

D. The City will maintain the existing and expanded transportation network.

E. The City will identify and prioritize transportation system needs citywide to meet current and future demand.

F. The City will establish a program to upgrade its existing signal system to improve traffic flow, progression, and safety.

G. The City will seek to integrate appropriate facility design with compatible land use types to reduce environmental and livability impacts.

H. The City will balance the equitable distribution of transportation projects with needs, based on 1) safety issues 2) growth-related improvements and 3) available funding.

I. The City of Ferndale will seek to maintain a coordinated and consistent strategy of development of land use, together with Whatcom County, for those unincorporated areas surrounding Ferndale which are within the boundaries of the City's Urban Growth Area, or which generate substantial traffic volumes to and through Ferndale.

J. The City of Ferndale will seek to maintain a coordinated and consistent strategy of development of land use, together with the Lummi Nation, for those tribal lands south of Ferndale which are outside of the boundaries of the City's Urban Growth Area, but which generate substantial traffic volumes to and through Ferndale.

K. The Main Street Corridor within the Planned Action area acts as the primary route of travel for both Ferndale residents and the shopping public. Along the Main Street Corridor within the Planned Action area, roundabouts are the preferred approach to provide for improved traffic flow, progression and safety. As development occurs, roundabouts will be installed as described in the Main Street Corridor Master Plan, following acceptance by the Washington State Department of Transportation (where

applicable). Roundabouts will also be considered as the preferred intersection improvement at intersections outside of the Main Street corridor, as identified in the Transportation Element. However the City may consider modification of existing signalized intersections or the installation of new traffic signals based on availability of funding, timing of the identified improvements, and costs associated with right of way acquisition at these locations, provided Level of Service standards are met.

2 The City will maximize the operating efficiency of its transportation system.

Policies:

A. The City will develop its roadway functional classification system in accordance with the regional functional classification system developed by the Whatcom Council of Governments and the City's road standards.

B. The City will maximize the operating efficiency of its transportation system through the use of Transportation Demand Management strategies.

C. The City will actively coordinate the planning, construction, and operation of transportation facilities and programs that may impact the City with local, tribal, regional and state jurisdictions and their associated comprehensive plans. These agencies and plans include, but are not limited to, Whatcom County (Comprehensive Plan and related updates), the Whatcom County Council of Governments, and the Washington State Department of Transportation (State Highway Systems Plan 2007-2026).

D. When considering proposals to revise the land use and zoning plans, the City will seek to minimize future increases in vehicular travel or, where possible, to increase the efficiency of the transportation infrastructure.

E. The City shall coordinate transportation planning and land use planning to reduce the distance between work, home, shopping, and recreation opportunities, and to provide facilities and services to support alternative methods of transportation to travel between each.

F. The City shall identify land use requirements which result in densities capable of supporting transit opportunities, particularly within the Downtown Core, High Density Residential land use classifications, and within the primary shopping and employment districts of the City.

G. The City shall coordinate with the Washington State Department of Transportation for the purpose of developing a Memorandum of Understanding that will lead to a comprehensive review of potential transportation improvements along the I-5 corridor, including the Main Street Master Plan area, and also including potential improvements at other interchanges within the City limits as well as at Smith Road. This Memorandum may also include an agreement to jointly monitor the Level of Service in and around Exit 262 at defined points within the planning period of the Master Plan.

3 The City will encourage public/private partnerships for financing transportation projects that foster economic growth and address the transportation needs to support planned growth and development.

Policies:

A. The City will reserve property for needed rights-of-way, including trail rights of way, as quickly as possible by requiring dedication of right-of-way as a condition for development.

B. The City will only approve land use changes (such as planned unit developments, master planned projects, rezones and plats) when existing and proposed transportation system needs meet concurrency requirements.

C. The City will route major and secondary arterials around, rather than through, neighborhoods and communities so as to minimize traffic impacts on residential neighborhoods.

i. New residential collector street corridors should be designed and constructed through areas that are not already substantially developed with single family housing.

ii. Existing local residential streets should not be converted into collector street routes. In instances where existing streets must be converted to collector roads, these streets shall be brought up to the minimum design standards for collector roads.

iii. In those cases where collector street corridors must be built in close proximity to existing residential neighborhoods, the collector street must be designed in such a way as to minimize the impact to adjoining residents through the use of landscape buffers, sound barriers or similar measures.

iv. In order for arterial collector streets to function effectively, access restrictions shall be imposed on new arterial collector streets. Such access restrictions may permit commercial businesses from accessing directly onto an arterial collector street, only if no reasonable alternative is available. Further, residential access may be allowed in specific instances where such access can be demonstrated to have no negative impacts on traffic safety, road function and/or circulation.

v. The City will work with property owners and developers to establish collector road systems in developing areas to minimize the number of access locations on arterials and collectors and to promote connectivity for motorized and non-motorized travel within residential neighborhoods, as well as commercial and industrial area.

D. The City will consider sharing costs with other jurisdictions for needed improvements that solve regional transportation problems.

E. The City will encourage the development community to site and construct transportation facilities that are compatible with adjacent land uses to minimize potential conflicts.

F. The City will utilize all general taxation and user-fee options available to it under state law.

G. The City will seek to maximize support from county, state, and federal sources for those improvements needed to provide facilities and services necessary for safe and efficient operations and the economic health of the region.

H. The City will only approve developments that adequately mitigate their impacts on the transportation system as required under Transportation Concurrency Management, the State Environmental Policy Act, the Ferndale Development Standards, Ferndale Concurrency regulations, Commute Trip Reduction, and other applicable development regulations.

I. The City will encourage state lawmakers to recognize the financial pressure upon the City of Ferndale that is imposed by growth and request legislative action to provide greater relief to the City than is afforded by existing revenue sources.

J. The City will explore the feasibility of partnering with individual property owners and neighborhood associations to share the cost of sidewalk installation in established neighborhoods.

4 The City will work to secure adequate funding sources for transportation.

Policies:

A. The City will update its Transportation Impact Mitigation Policy ordinance on a regular basis.

B. The City will encourage public/private partnerships and grants for financing transportation projects.

C. The City will work to establish local improvement districts and transportation improvement districts in designated areas for economic development.

D. The City will work to establish on and off-site storm sewer systems which combine storm detention for road projects and private developments.

E. The City will consider asking voters to enact new taxes or fees to help fund transportation improvements.

F. The City will seek to fund a minimum average of thirty percent of capital project costs through grants.

G. The City will continue to fund transportation system maintenance using property and/or sales tax.

H. The City will continue the historical practice of generally not using property and/or sales tax to fund transportation capital projects.

I. The City will work with WSDOT to secure funds for regionally significant infrastructure that supports the City's economic plans and growth.

5. The City will encourage the use of transportation modes that maximize energy conservation, circulation efficiency, and economy.

Policies:

A. The City will support increased use of multimodal transportation. This includes, but is not limited to, high occupancy vehicle lanes, bicycle trails, park-and-ride facilities, carpools, vanpools, buses and mass transit. Together, the implementation of these policies is expected to result in a reduction of automobile trips, the promotion of healthy activities, and increased connectivity.

B. The City will coordinate planning efforts for non-motorized modes of travel with other jurisdictions and develop an integrated area-wide plan for non-motorized travel modes that ensures continuity of routes.

C. The City will encourage sidewalks, improved shoulders, and/or off-street trails within new developments concurrent with the project in order to accommodate internal and external circulation.

D. The City will encourage new development to be pedestrian friendly and compatible with the public transportation system by ensuring that such development reflects all related infrastructure master plans such as trails or utility plans.

E. The City will seek to receive formal recognition as a “Bicycle Friendly Community.”

F. The City will coordinate site development guidelines to encourage and enable use of alternative transportation modes.

G. The City will seek to ensure that new road construction shall, wherever possible, include sidewalks or other pedestrian service amenities, and special provisions for bicycle and/or transit connectivity as may be economically and/or environmentally justifiable, based on existing and potential connection opportunities, including establishing new connector roads, collector roads, and arterial roads.

H. Improvements to existing roads shall be prioritized to remove deficient conditions for pedestrian, bicycle, and transit circulation as well as improve vehicular mobility.

I. The City will seek to cooperate with Whatcom County, the Washington State Department of Transportation, the Whatcom Transportation Authority, and any private entity for implementation of regionally significant transportation projects and programs for Ferndale and its environs.

J. The City of Ferndale recognizes and supports the continued operation of the Burlington Northern Railroad as an important part of the region’s transportation system for the movement of freight and passengers, and shall seek to increase the availability of those services within the City, and reduce conflict with the City’s road network and emergency services.

K. The City of Ferndale shall seek to conduct a thorough inventory of city sidewalks, in order to identify deficiencies in the system and opportunities for expansion, based on existing and potential connection opportunities. The City will systematically implement the improvements through its Sidewalk Program.

L. The City of Ferndale recognizes and supports the continued operation of the Bellingham International Airport as an important part of the region’s transportation system as an alternative to major regional airports such as the Vancouver International Airport and Seattle-Tacoma International Airport. The City shall seek to increase transportation connections between the City and the airport.

M. The City of Ferndale will seek to provide incentives to developments which incorporate multi-modal transportation options into their projects, and will continue to re-evaluate such incentives as multi-modal opportunities increase over time.

N. The City shall provide written justification for including capital projects which are designated as “low” priority within this plan prior to placing such projects on the Six-Year Transportation Improvement Plan.

6. The City will work to ensure efficient and effective freight transportation needed to support local and regional economic expansion and diversification.

Policies:

A. The City will collaborate with federal, state and neighboring local governments and private business to ensure the provision of transportation infrastructure investments and services deemed necessary by the City to meet current and future demand for industrial and commercial freight movement by way of roadway and truck, rail, air and marine transport.

B. The City will work with the Whatcom Council of Governments, Port of Bellingham, Whatcom County, and other agencies to develop intermodal connectivity facilities deemed by the City to be needed to facilitate seamless freight transfer between all transport modes.

C. The City will ensure that Transportation Element goals and policies are implemented in a manner that reinforces the goals and policies of adopted economic development strategies.

D. The City will work with the Port of Bellingham to identify connectivity opportunities between the City of Ferndale and the Bellingham International Airport.

7. The City will establish level of service standards and implement concurrency management programs to assure the adequacy of its transportation system.

Policies:

A. For concurrency review, the City has adopted roadway minimum travel speed standards for the weekday PM peak hour as documented in **Table 2** of the Transportation Element.

B. The City has established the following levels of service (LOS) for intersection operations along arterial and collector roads based on methodologies in the latest edition of the *Highway Capacity Manual (HCM)*:

i. **LOS C** or better for traffic signal, roundabouts, or all-way stop controlled intersections based on overall average delay per vehicle.

ii The LOS standard for all two-way, stop controlled, unsignalized intersections within the City limits shall be **LOS C** and be applied to each approach or separate traffic movement at an intersection. On a case-by-case basis the City may allow the level of service for traffic movements from the minor street at a two-way, stop controlled intersection to operate below the adopted standard if the Public Works Director (or designee) determines that no significant safety or operational impact will result. As appropriate, mitigation will be identified and required to address potential impacts to safety or operations. Potential installation of traffic signals or other traffic control devices at these locations shall be based on the Manual on Uniform Traffic Control Devices, the Transportation Element, and sound engineering practices.

iii. The City will generally apply the intersection level of service standards based on the weekday PM peak hour, but may choose to require evaluation of other time periods in order to identify potential deficiencies and project impacts.

C. The City will apply Washington State Department of Transportation's level of service standards to intersections of state highways within the Ferndale area:

   i. LOS D or better within urban areas.

   ii. LOS C or better within rural areas.

D. The City will work with Whatcom County to coordinate level of service standards for roadways and intersections within the City's unincorporated Urban Growth Area.

E. The City has implemented a Transportation Concurrency Management program to ensure adequate transportation facilities are available concurrent with development.

F. The City will not apply concurrency to the interchange ramps with Interstate Five which is designated as a Highway of Statewide Significance (HSS).

G. As appropriate, the City will reassess its level of service standards, Transportation Concurrency Management program, and other development regulations based on growth and funding levels.

H. The City shall review development applications based in part on the existing level of service, and will identify responsible mitigation measures necessary to preserve existing level of service where appropriate.

I. The City will consider incorporating mechanisms into the Main Street Planned Action Ordinance and concurrency regulations that may fully utilize the concurrency time limits allowed by State law.