Chapter

05

Transportation Vision

- Introduction to Layered Network
- Modal Networks
  - Pedestrian Network & Planning Guidelines
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→ Introduction to Layered Network

Kent's TMP takes a layered network approach to focus on how the city's transportation network can function as a system to meet the needs of all users. While the City of Kent is committed to developing "complete streets," determining how each mode should be accommodated on any individual street can be challenging in practice.

To address this practical challenge, the city's layered network is designed to create a high-quality experience for all users by considering the function of streets and transportation facilities together, rather than individually. This approach allows for certain streets to emphasize specific modes or user types, while discouraging incompatible uses. For example, a downtown street may be planned to provide a pleasant experience for shoppers on foot, recreational bicyclists and people wishing to park on the street, while discouraging use by "cut-through" traffic and regional goods movement.

The following sections introduce the priority networks for each mode, describe the city's vision for how those modes are served, and describe the types of infrastructure that would be needed to achieve that vision.

Pedestrian **Bicycle** **Transit** **Freight** **Auto**

→ Modal Networks

The following sections outline the multimodal level of service (MMLOS) standards and guidelines that have been established for each of the modal networks. LOS standards for automobiles are corridor or intersection-based. Other MMLOS metrics are guidelines identifying ways to create comfortable pedestrian and bicycle environments and more efficient transit service to assist the city in identifying future projects that can best serve transit, walking, and biking in Kent.

Pedestrian Network & Planning Guidelines

Pedestrian LOS guidelines describe the comfort of someone walking. Comfort levels change depending on the roadway type and land use context of a given street, as there are different expectations for physical space, modal separation, and street crossing amenities. Therefore, pedestrian facility guidelines are tailored to different street/land use contexts.

Table 6 shows the recommended pedestrian LOS policies. This table provides an overall framework for pedestrian accommodation, but future updates to the city's design guidelines may differ to reflect more detailed contextual information.

Component	Downtown/ TODs	Areas of High Pedestrian Activity	Industrial Collector Arterials/Principal Arterials/Critical Residential Collectors	Arterials Elsewhere
Minimum Sidewalk Width	8 feet	8 feet	8 feet	6 feet
Minimum Amenity Zone Width	4 feet	4 feet	Industrial Collector Arterials: 2 feet Principal Arterials: 4 feet	4 feet
Arterial Crossing Frequency	≤ 330 feet	Within 300 feet of a stop pair along FTN or community asset Elsewhere: ≤660 feet	Within 300 feet of a stop pair along FTN[1] or community asset[2] Elsewhere: ≤1,320 feet	Within 300 feet of a stop pair along FTN or community asset Elsewhere: ≤1,320 feet
Sidewalk – Side of Street	Both	Both	Both	Both

Table 6 Pedestrian Level of Service Policies.

[1] *Frequent transit network*

[2] *A community asset is defined as a park, school, community center, or library*

Notes: This table applies to arterial roadways, which include minor arterials, industrial collector arterials, and residential collector arterials. The listed minimum sidewalk width does not include the amenity zone.

Figure 23 shows how the recommended guidelines would apply. These guidelines indicate the type and quality of pedestrian facilities on arterial roadways, including principal arterials, minor arterials, industrial collector arterials, and residential collector arterials. The guidelines do not address non-arterial roadways, including residential collectors and unclassified streets such as residential and private streets.

Role of Guidelines - It's important to recognize that the guidelines described here set the default for how pedestrian facilities should be provided as streets are rebuilt or adjacent properties develop. These guidelines do not guarantee that projects will be built. The TMP provides guidance as to how sidewalk projects should be prioritized when the city constructs pedestrian infrastructure. Key criteria considered in this prioritization are the presence and condition of existing sidewalks and trails, proximity to community amenities, other surrounding land uses, co-benefits of constructing pedestrian infrastructure with other projects, and collision history.

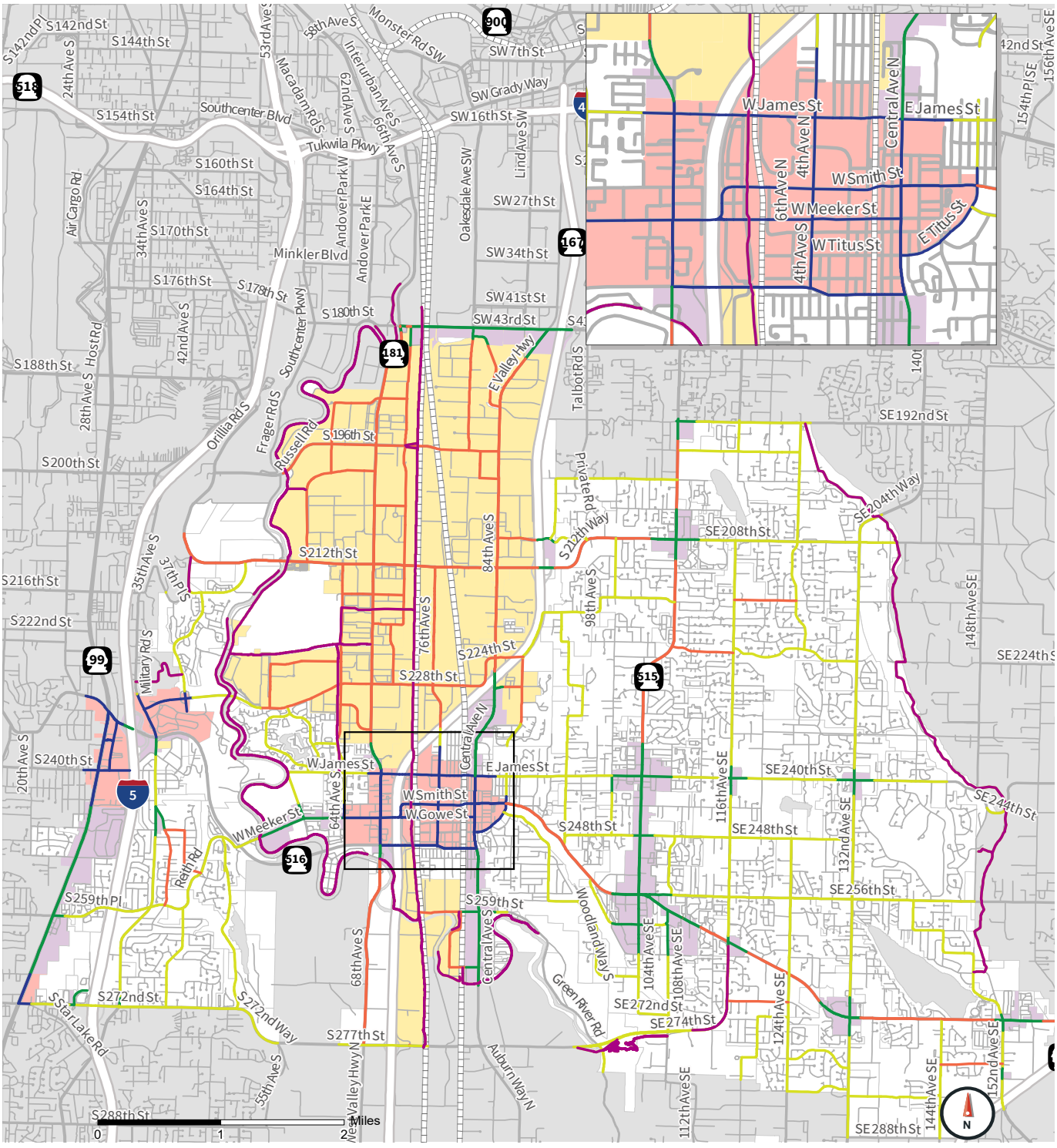

Figure 23
Pedestrian Network

Sidewalk Standard
- Downtown/TOD
- Areas of High Pedestrian Activity
- Industrial Collector Arterials/Principal Arterials/Critical Residential Collectors
- Other Arterials
- Shared Use Path

Land Use
- Downtown/TOD
- Other Areas of High Pedestrian Activity
- Industrial/ Manufacturing
- Other

Bicycle Network & Planning Guidelines

Level of traffic stress (LTS) is the current best practice for planning bicycle facilities. This approach provides a framework for planning bikeway facilities to meet the needs of their intended users. **Figure 24** describes the four typical categories of cyclists, each of which requires different levels of accommodation for these users to feel comfortable using the system.

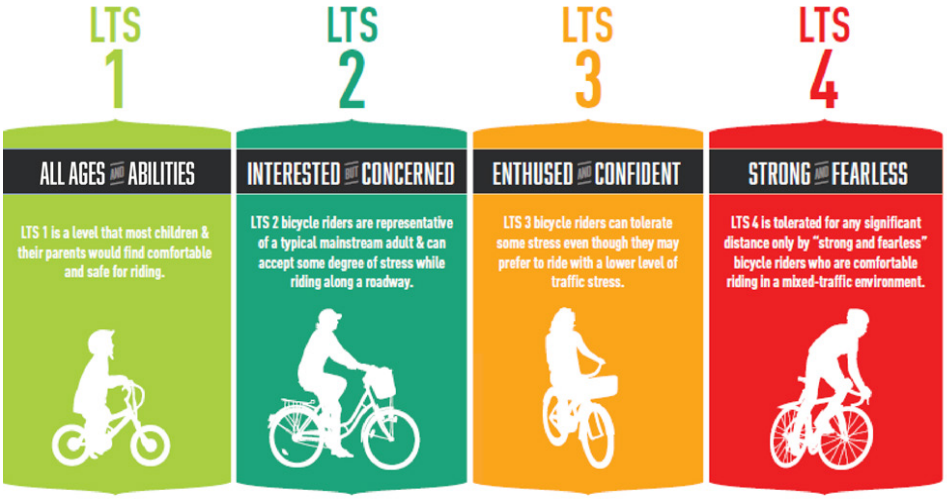

Figure 24 Bicycle Level of Traffic Stress and Rider Categories

In general, the City aspires to provide a connected network where a low stress route, such as LTS 2, is available approximately every ½ mile. This network considers variables like grade and freeway crossings, in addition to the typical variables that are considered in an LTS analysis, which include speed and daily traffic volume, which help to determine an appropriate type of separation. **Table 7** shows how bicycle LTS can be used to define treatment options on specific corridors.

Roadway Characteristics		Bicycle Facility Components: Guideline to Achieve Intended Level of Service/Level of Traffic Stress					
Speed Limit (MPH)	Arterial Traffic Volume	No Marking	Greenway/ Bike Boulevard	Striped Bike Lane	Buffered Bike Lane (Horizontal)	Separated Bike Lane (Vertical)	Physically Separated Bikeway
≤20	Any	1	1	1	1	1	1
25	<1.5k	1	1	1	1	1	1
	1.5-7k	3	2	2	2	1	1
	≥7k	3	3	2	2	1	1
30	<7k	4	4	2	2	1	1
	7-15k	4	4	3	2	1	1
	15-25k	4	4	3	3	2	1
	≥25k	4	4	3	3	2	1
35	<25k	4	4	3	3	3	1
	≥25k	4	4	4	3	3	1
>35	Any	4	4	4	4	3	1

Table 7 Bicycle LTS and Roadway Characteristics

When a bicycle facility along an arterial corridor comes to an intersecting arterial, the corridor LOS should be carried across the arterial; otherwise the intersection may become a barrier to bicycle travel. **Table 8** shows how bicycle LTS can be used to define treatment options at intersections.

Bicycle LOS/ LTS	Bike Signal	Street Crossing	Approach to Intersection	Approach to Intersection with Right Turn Lane
LOS 1	Bike Signal	Green solid or skip-stripe	Green bike box	Curb ramp to wide sidewalk, Dutch Intersection
LOS 2	Bike Signal	Skip stripe	Bike box	Green bike lane to left of turn lane
LOS 3	Green Cycle Length	Sharrow lane markings	Automatic signal actuation	Bike lane to left
LOS 4	No specific design guideline for LTS/LOS 4			
Trail or Mid-Block Crossing	Full signal or HAWK or RRFB	Green solid or skip-stripe	N/A	N/A

Table 8 Recommended Bike Facility Treatments at an Intersection

Figure 25 shows the level of accommodation that the City aspires to provide on individual streets. LTS 1 facilities are very low stress: they are intended to be welcoming to cyclists of all abilities and levels, and generally include separated facilities, such as off-street trails, or leverage low-speed, low volume residential streets. The next level of accommodation is LTS 2, which is the category that describes most cyclists, and generally can be met by installing striped or buffered bike lanes on lower speed arterials and collectors. The highest level of traffic stress planned for in the city's bikeway network is LTS 3, a level that is considered tolerable by more experienced riders. It is generally achieved through provision of bike lanes on arterial streets. The city's bikeway network does not plan for LTS 4 facilities, as these are not welcoming for a large segment of the biking population.

Role of Guidelines - It's important to recognize that the guidelines described here set the default for how bicycle facilities should be provided as streets are rebuilt or adjacent properties develop. It is recognized that these guidelines do not guarantee that projects will be built. The TMP provides guidance as to how bicycle projects should be prioritized when the city constructs bicycle infrastructure.

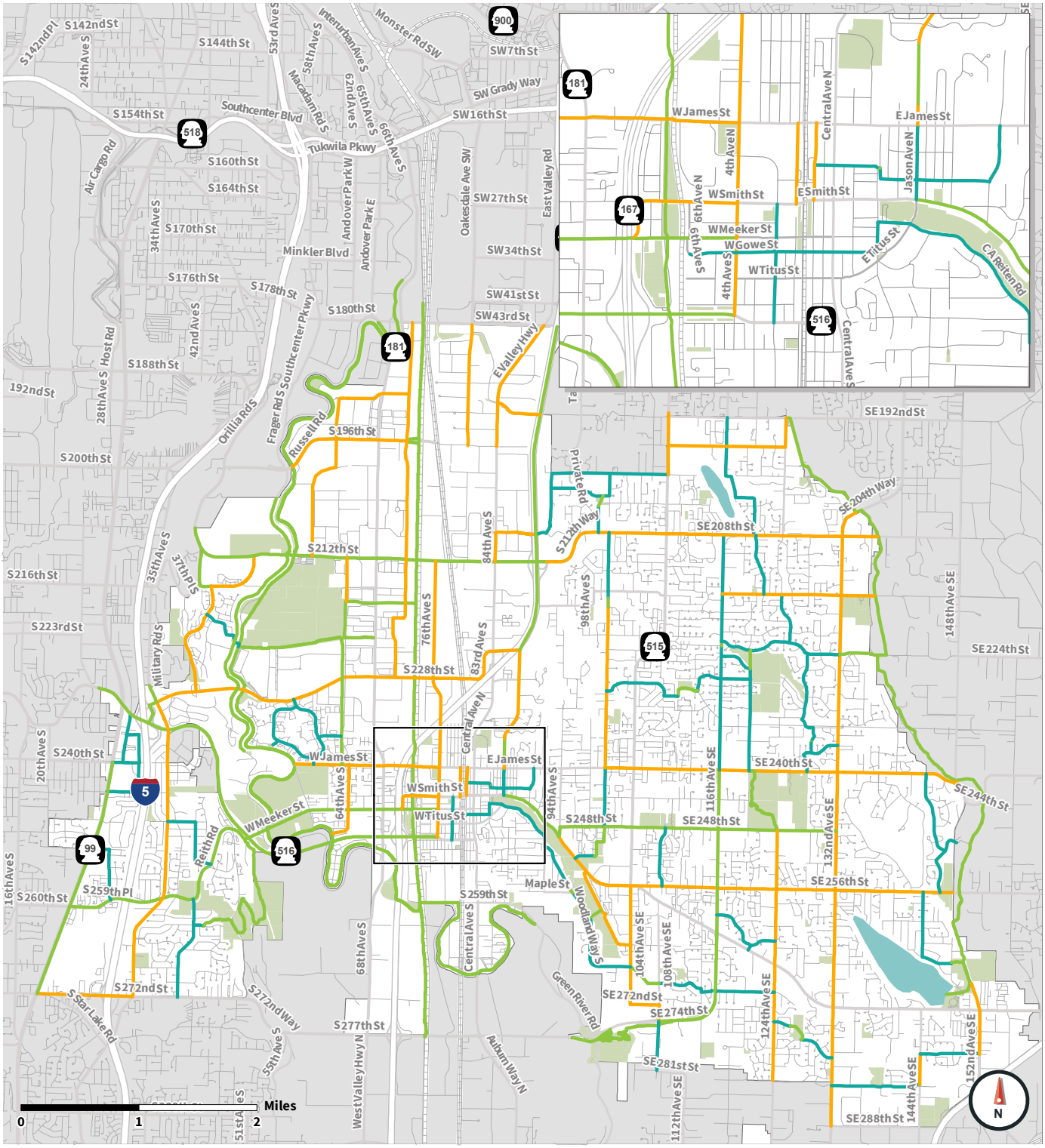

Figure 25

Proposed Bicycle Level of Stress Network

LTS

- 1
- 2
- 3

Transit Network & Planning Guidelines

Since King County Metro and Sound Transit operate transit service in Kent, the city's role in transit service is generally limited to providing access and being an accommodating host.

Although King County Metro is responsible for bus stop treatments, the city is empowered to advocate for higher-quality bus stop treatments along city roadways. **Table 9** shows recommended transit treatments that correspond with the transit network in **Figure 26**.

Stop Component	Local Transit Corridor	Frequent and Express Transit Network Corridor
Weather Protection	Yes, priority with 25+ daily boardings	Yes for Rapid Ride stops, priority with 25+ daily boardings on other Frequent/Express stops
Seating	Yes, adjacent to community assets	Yes for Rapid Ride stops, priority with 25+ daily boardings on other Frequent/Express stops
Paved Bus Door Passenger Zone	Yes, zone length 25-30 feet	Yes, zone length 60 feet
Wayfinding	Yes, priority with 25+ daily boardings	Yes for Rapid Ride stops, priority with 25+ daily boardings on other Frequent/Express stops
Other Amenities (trash, lighting, bike parking)	Yes, priority with 25+ daily boardings	Yes for Rapid Ride stops, priority with 25+ daily boardings on other Frequent/Express stops

Table 9 Guidelines for Transit Treatments

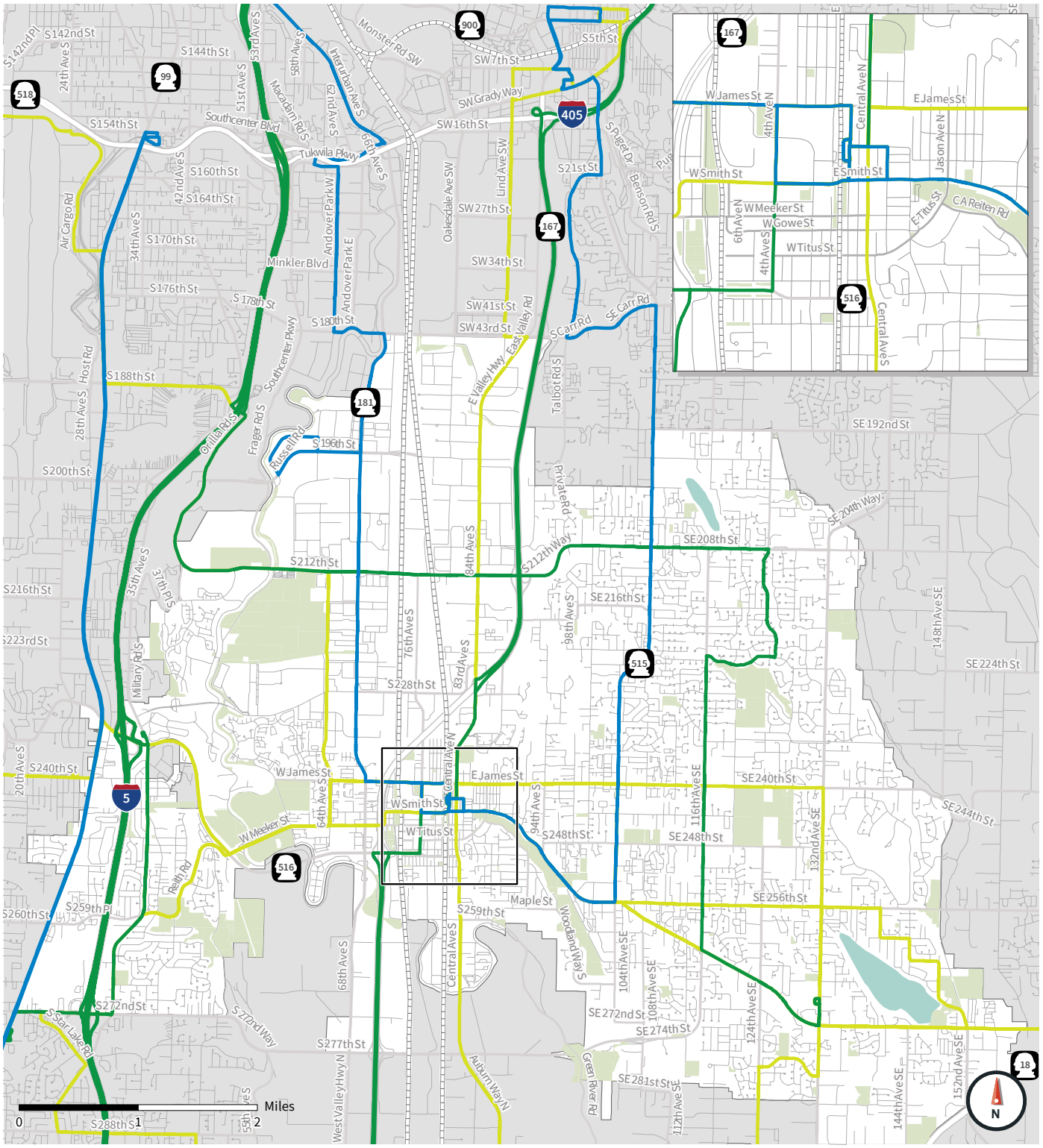

Figure 26
Transit Network

Freight Network & Planning Guidelines

The freight network is based on existing truck counts (as estimated by WSDOT's Freight and Goods Transportation System tonnage calculator). The network was developed considering competing modes that may lead to uncomfortable conflicts, such as bicycle routes provided in **Figure 25**. Networks were developed in tandem, taking into consideration local land uses, posted speeds, current and future volumes, existing geometries, and public feedback to determine the priority mode of travel on each corridor.

For roadways that are included in the freight priority network, the city will be taking special care to ensure the needs of large vehicles are considered in future improvements. This includes incorporating design considerations like lane widths and turning radii that accommodate larger vehicles, enhanced modal separation to protect vulnerable active modes from large trucks, consideration of thicker and more durable paving treatments, and potential space provided for truck queuing and other curb space needs.

Figure 27 shows the City's freight network.

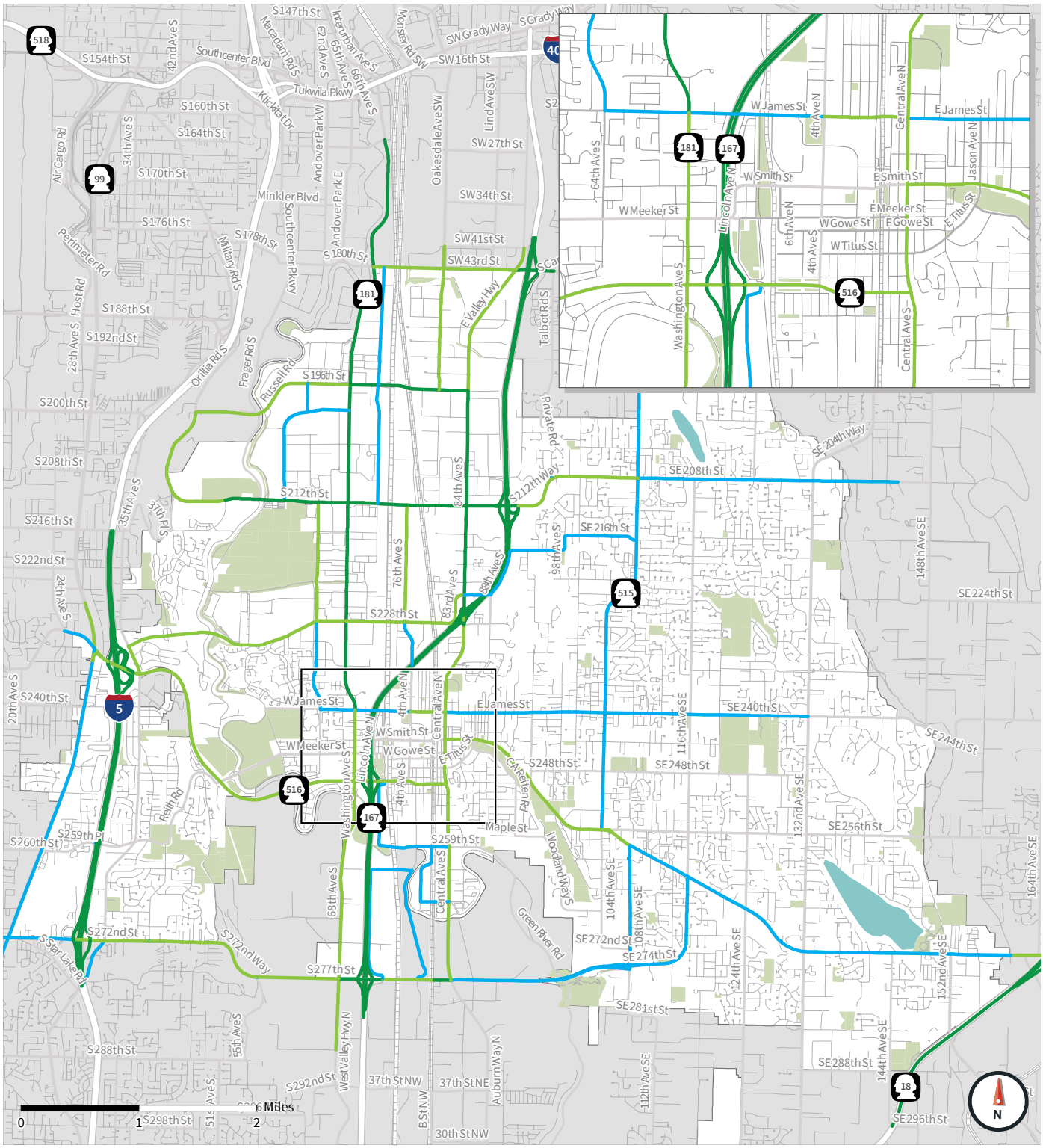

Figure 27
Freight Network

Freight and Goods Transportation System (FGTS) Class

- T-1
- T-2
- T-3

Auto Network & LOS Standards

For more than a decade, Kent's auto level of service standards have been based on average vehicle delay along corridors that span the entire city. Since most trips in Kent are more localized and residents expect different levels of congestion in different areas of the city (based on the surrounding land use context), this TMP incorporates a subarea approach to the city's corridor LOS standards.

Figure 28 shows the city's five subareas, which represent the contextual areas where travelers might expect different travel conditions:

- **Downtown** – the city's most walkable district, where vehicle congestion must be balanced with a strong mix of other modes
- **Midway/West Hill** – the city's up-and-coming regional growth center, which will be the home to the future Kent-Des Moines and Star Lake light rail stations
- **Central City** – the neighborhoods surrounding downtown, includes a fairly dense mix of residential and commercial uses and incorporates a mix of modes
- **Industrial Valley** – Kent's industrial heart, which hosts a large share of large trucks, but also carries substantial regional traffic, particularly when state routes are congested
- **East Kent** – Kent's largely residential district, which is home to single family and low-rise multifamily homes

Within these districts are the city's 18 roadway corridors, which will be monitored based on weighted averaged vehicle delay across identified study intersections. Intersections located within the boundaries of the Downtown Subarea Action Plan and along Meeker Street are measured separately. These separate intersections allow for higher vehicle delay to balance multimodal accommodation with vehicular mobility.

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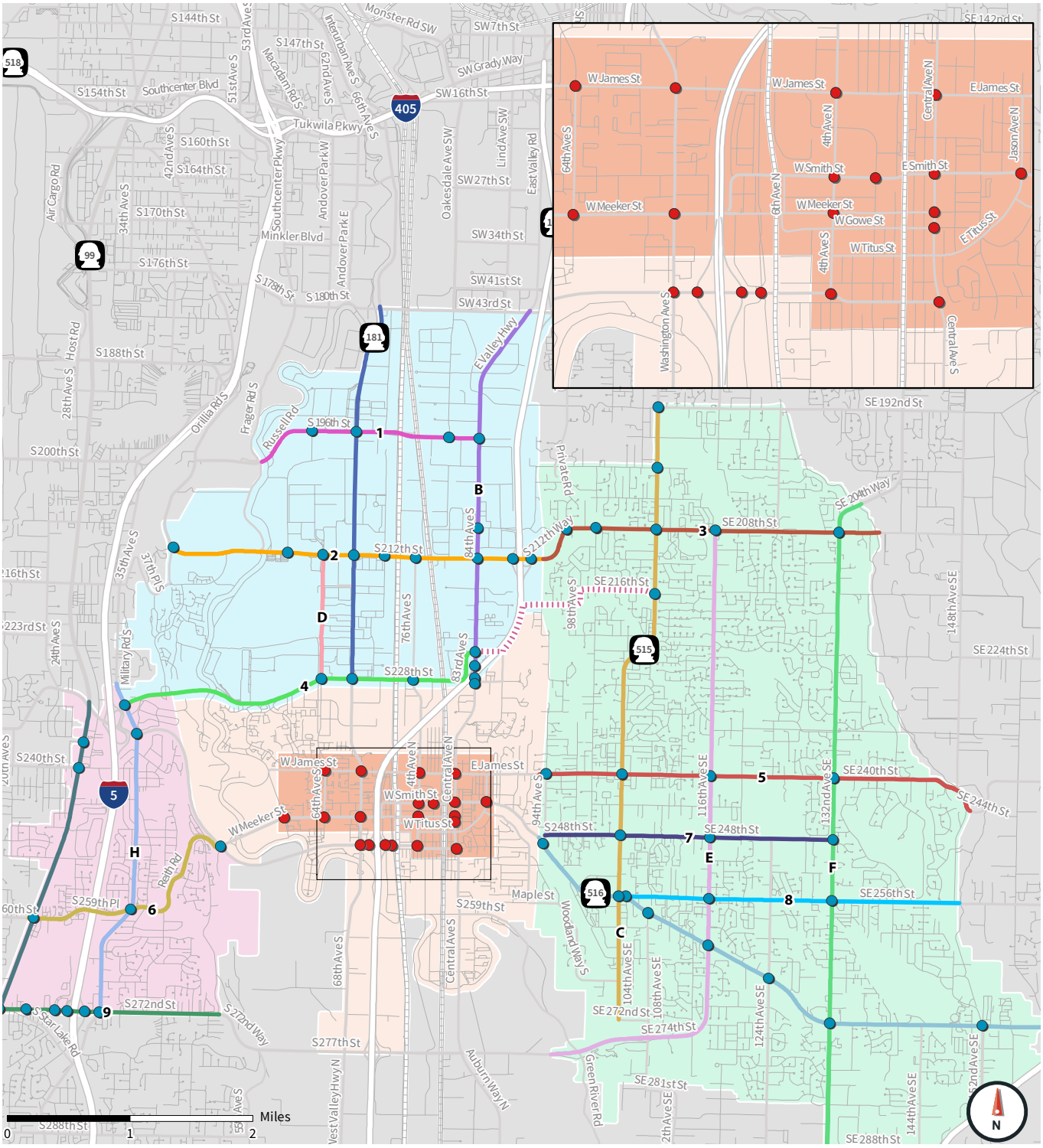


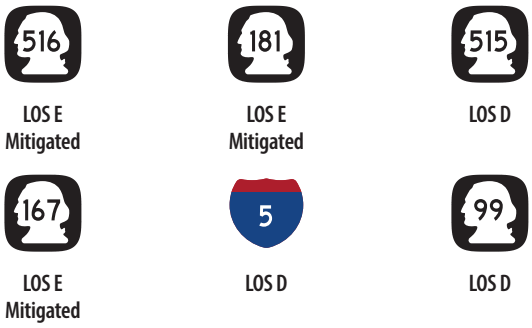
Figure 28
Study Intersections

LOS Standards for City Corridors, Intersections, and State Facilities

To balance growth, multimodal accommodation, and mobility, this TMP establishes the following LOS standards for Kent's roadway corridors:

- LOS D along frequent transit corridors
- LOS F (maximum of 90 seconds of delay) for isolated intersections in Downtown
- WSDOT standard for intersections along state facilities
- LOS E average intersection delay for all other Citywide corridors

Many of Kent's arterials are state routes: SR 515 (Benson Road SE/104th Avenue SE), SR 516 (Kent Des Moines Road/SE Kent-Kangley Road), SR 181 (68th Avenue S/Washington Avenue N), and SR 99 (Pacific Highway). I-5 and SR 167 also traverse Kent City limits and include ramp terminal intersections with city arterials. In developing LOS standards for these facilities, the city must adhere to the state's current LOS standards:



Automobile Network Performance Today

Table 10 shows the existing automobile LOS results for each corridor and for intersections in Downtown and along Meeker Street, as measured using Synchro software.

Appendix B shows the preliminary vehicle delay results for each intersection.

Corridor ID	Corridor Name	Volume-Weighted Average Delay	LOS
1	S 196 St Corridor	57.1	E
2	S 212th St Corridor	45.2	D
3	SE 208th St Corridor	41.7	D
4	S 228 St Corridor	46.4	D
5	SE 240 St Corridor-East Kent	35.1	D
6	Reith Rd/S 259 Pl/S 260 St Corridor	48.6	D
7	SE 248 St Corridor	32.7	C
8	SE 256 St Corridor	39.3	D
9	S 272 St Corridor	39.7	D
10	E Canyon Dr/SE Kent Kangley Rd Corridor	41.7	D

Table 10 Preliminary Vehicle LOS Results by Corridor (2019 Conditions)

Corridor ID	Corridor Name	Volume-Weighted Average Delay	LOS
A	68 Ave S Corridor - Industrial Valley	52.0	D
B	84 Ave S Corridor - Industrial Valley	46.9	D
C	104 Ave SE/108 Ave SE	47.0	D
D	64 Ave S Corridor - Industrial Valley	33.0	C
E	116 Ave SE Corridor	39.1	D
F	132 Ave SE Corridor	42.2	D
G	Pacific Hwy S Corridor	52.3	D
H	Military Rd S/36 Ave S Corridor	53.4	D
	Isolated Intersections		
	SR167 SB & SR 516	21.8	C
	SR167 NB & SR 5161	17.7	B
	74th Ave S & W Willis St.1	26.6	C
	4th Ave & Willis St.	39.2	D
	Central Ave & Willis St.	57.5	E
	4th Ave & Meeker St.	14.8	B
	Central Ave & Gowe St.	20.9	C
	Central Ave & Meeker St.	16.7	B
	2nd Ave & Smith St.	17.6	B
	4th Ave & Smith St.	32.0	C
	Central Ave & Smith St.	53.2	D
	Jason Ave & Smith St.	18.9	B
	Central Ave & James St.	78.4	E
	4th Ave & James St.	34.6	C
	Washington Ave & Meeker St.	57.2	E
	64th Ave S & Meeker St.	41.0	D
	Russell Rd & W Meeker St.	21.4	C
	Washington Ave & James St.	39.2	D
	64th Ave S & James St.	13.5	B
	Willis St & Washington Ave	44.7	D

Table 10 continued

Future Auto Operations

This TMP looks out to year 2040. To understand how the City's roadway facilities are likely to operate in 2040, a travel model was developed to estimate how regional growth as well as growth in the city would be accommodated by the city's street network. The majority of the inputs in the City of Kent model are consistent with the assumptions from PSRC. Information detailing the model development is provided in **Appendix E and F**.

The model anticipates that almost 80,000 new daily person trips will be generated by 2040, a 12 percent increase over the number of daily person trips that occurred in Kent in 2019. Although 75 percent of the new person trips are vehicle trips, transit, walk and bike trips grow substantially compared to the number that occur today. The overall percent growth in person trips is less than the percent increase in households and employment (approximately 20 percent) due to several factors, including:

- Assumed changes in the underlying household demographics (older/smaller households) that result in lower average trip generation rates
- Increased future travel costs, including regional tolling and the growing cost of parking around the region will serve to slow growth in traffic
- Disruptive trends like work from home, online shopping and lower auto-ownership rates

Corridor ID	Corridor Name	Volume-Weighted Average Delay	LOS
1	S 196 St Corridor	62.8	E
2	S 212th St Corridor	49.1	D
3	SE 208th St Corridor	41.2	D
4	S 228 St Corridor	41.2	D
5	SE 240 St Corridor-East Kent	43.6	D
6	Reith Rd/S 259 Pl/S 260 St Corridor	93.3	F
7	SE 248 St Corridor	53.0	D
8	SE 256 St Corridor	47.4	D
9	S 272 St Corridor	59.6	E
10	E Canyon Dr/SE Kent Kangley Rd Corridor	46.2	D
11	S 224th/218th/216th St Corridor	38.5	D
A	68 Ave S Corridor - Industrial Valley	55.5	E
B	84 Ave S Corridor - Industrial Valley	47.3	D
C	104 Ave SE/108 Ave SE	60.1	E
D	64 Ave S Corridor - Industrial Valley	39.1	D
E	116 Ave SE Corridor	53.5	D
F	132 Ave SE Corridor	56.6	E
G	Pacific Hwy S Corridor	61.6	E
H	Military Rd S/36 Ave S Corridor	54.4	D

Table 11 Vehicle LOS Results by Corridor (2040 Conditions)

Isolated Intersections		
SR167 SB & SR 516	26.3	C
SR167 NB & SR 516	23.7	C
74 Ave S & W Willis St.	22.8	C
4th Ave & Willis St.	36.6	E
Central Ave & Willis St.	57.7	E
4th Ave & Meeker St.	15.4	B
Central Ave & Gowe St.	24.6	C
Central Ave & Meeker St.	17.3	B
2nd Ave & Smith St.	17.0	B
4th Ave & Smith St.	34.7	C
Central Ave & Smith St.	55.4	E
Jason Ave & Smith St.	20.1	C
Central Ave & James St.	78.8	E
4th Ave & James St.	39.4	D
Washington Ave & Meeker St.	94.7	F
64th Ave S & Meeker St.	57.6	E
Russell Rd & W Meeker St.	22.2	C
Washington Ave & James St.	45.4	D
64th Ave S & James St.	14.3	B
Willis St & Washington Ave	67.3	E

Table 11 continued

Based on the findings above, **Figure 29** shows which corridors and intersections would require improvements by 2040 to achieve the LOS standards established in this TMP.

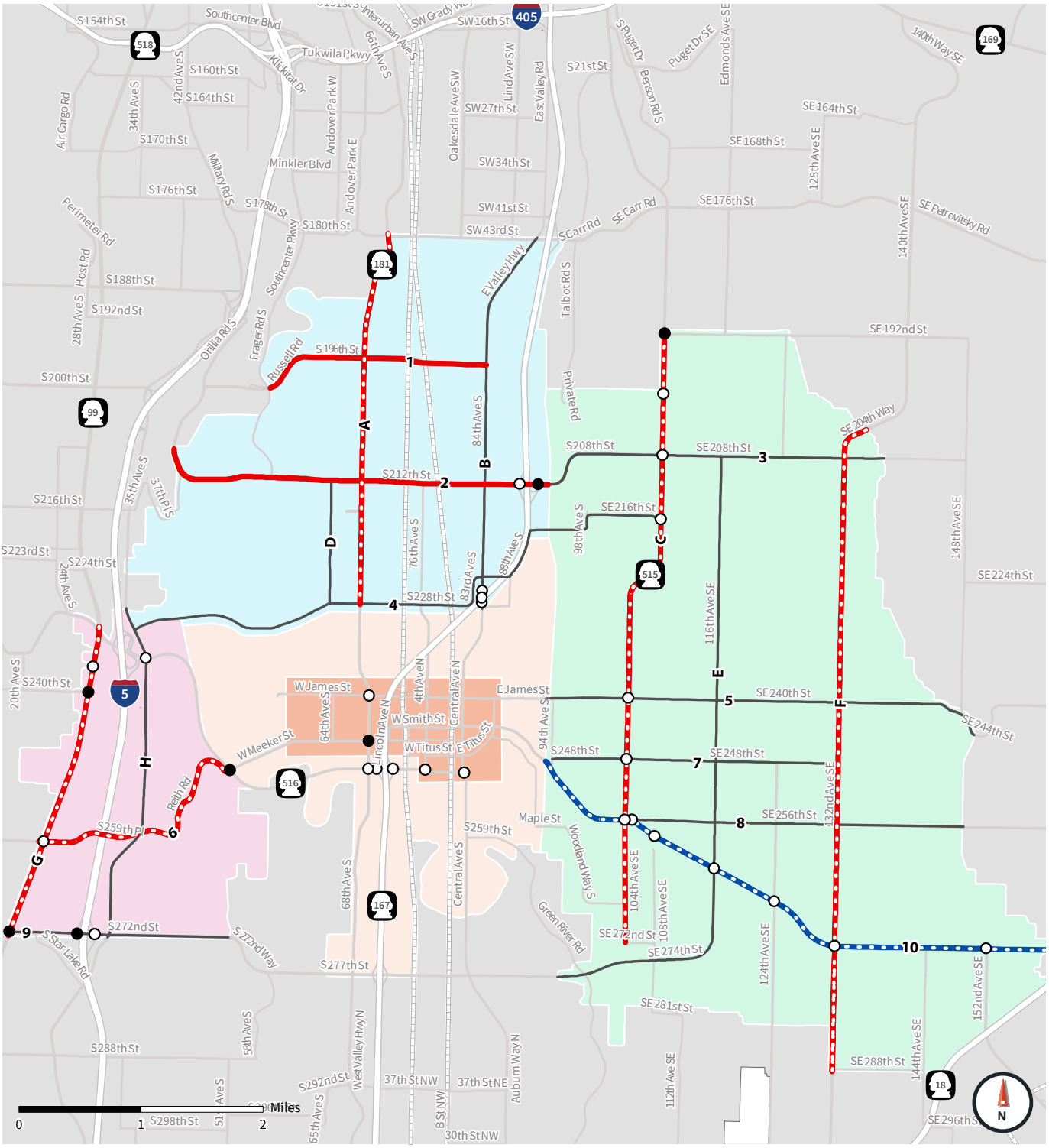


Figure 29

2040 Automobile Policy Results

LOS E for most Kent corridors, LOS D on Transit Priority Corridors, LOS F (90 seconds max) Downtown, and WSDOT Intersections per State standards

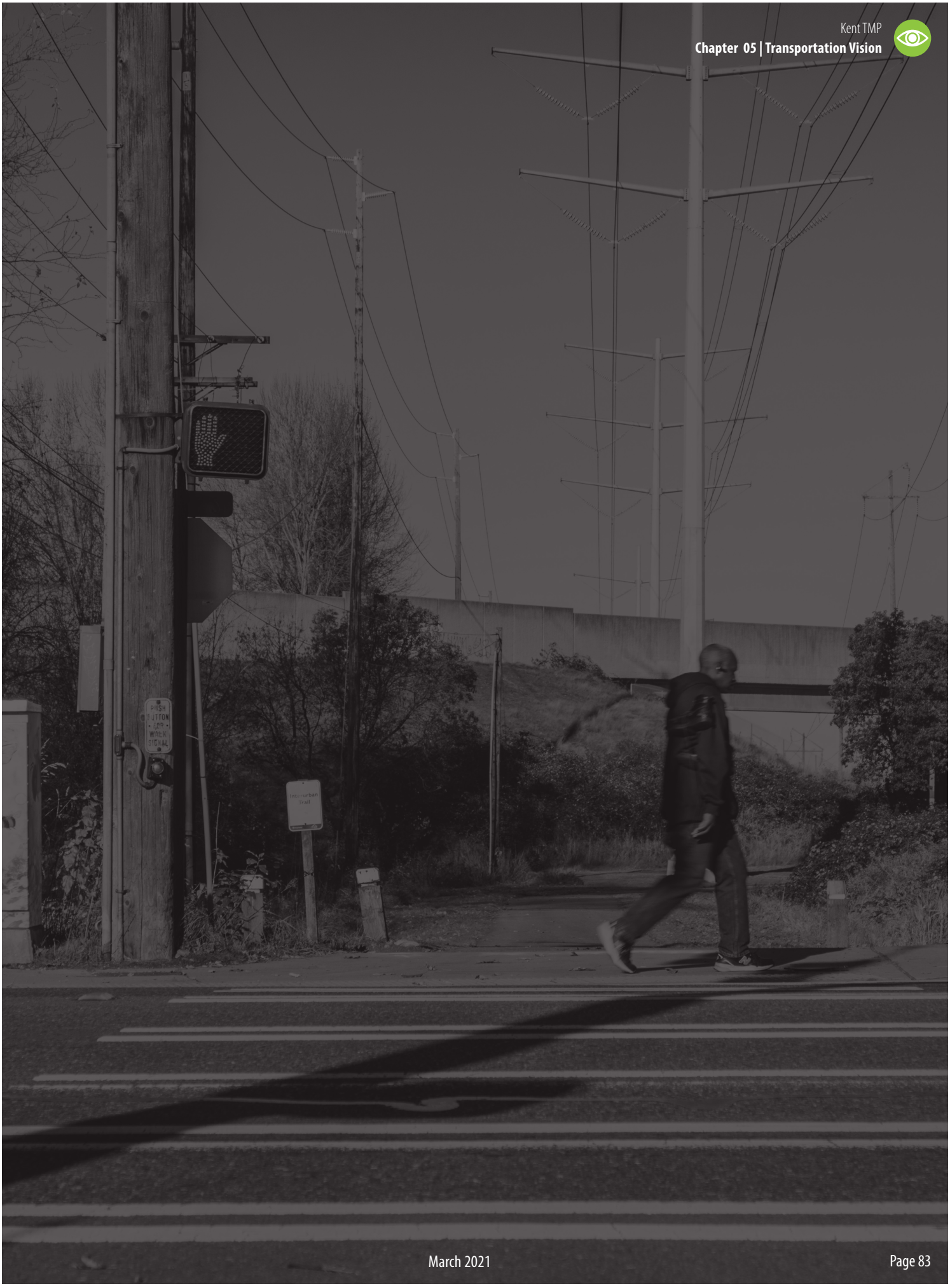
The projects identified to help achieve Kent's auto LOS standard by 2040 are included in the Priority Projects list in **Chapter 6**. **Table 12** shows the results after mitigating failing corridors and intersections.

Corridor ID	Corridor Name	Volume-Weighted Average Delay	LOS
1	S 196 St Corridor	63.8	E
2	S 212th St Corridor	47.1	D
3	SE 208th St Corridor	36.1	D
4	S 228 St Corridor	41.2	D
5	SE 240 St Corridor-East Kent	41.5	D
6	Reith Rd/S 259 Pl/S 260 St Corridor	48.5	D
7	SE 248 St Corridor	53.0	D
8	SE 256 St Corridor	47.4	D
9	S 272 St Corridor	41.4	D
10	E Canyon Dr/SE Kent Kangley Rd Corridor	46.2	D
11	S 224th/218th/216th St Corridor	38.5	D
A	68 Ave S Corridor - Industrial Valley	53.9	D
B	84 Ave S Corridor - Industrial Valley	47.3	D
C	104 Ave SE/108 Ave SE	48.2	D
D	64 Ave S Corridor - Industrial Valley	39.1	D
E	116 Ave SE Corridor	53.5	D
F	132 Ave SE Corridor	56.1	E
G	Pacific Hwy S Corridor	49.7	D
H	Military Rd S/36 Ave S Corridor	54.4	D

Table 12 Vehicle LOS Results by Corridor (2040 Conditions with Mitigation)

Isolated Intersections		
Central Ave & Willis St.	57.7	E
4th Ave & Meeker St.	15.4	B
Central Ave & Gowe St.	24.6	C
Central Ave & Meeker St.	17.3	B
2nd Ave & Smith St.	17.0	B
4th Ave & Smith St.	34.7	C
Central Ave & Smith St.	55.4	E
Jason Ave & Smith St.	20.1	C
Central Ave & James St.	78.8	E
4th Ave & James St.	39.4	D
Washington Ave & Meeker St.	45.0	D
64th Ave S & Meeker St.	57.6	E
Russell Rd & W Meeker St.	22.2	C
Washington Ave & James St.	45.4	D
64th Ave S & James St.	14.3	B
Willis St & Washington Ave	67.3	E
Russell Rd & W Meeker St.	21.4	C
Washington Ave & James St.	39.2	D
64th Ave S & James St.	13.5	B
Willis St & Washington Ave	44.7	D

Table 12 continued


PUSH
BUTTON
FOR
WALK
SIGNAL
Interurban
Trail