CITY OF KIRKLAND
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DEPARTMENT OF PUBLIC WORKS
PRE-APPROVED PLANS POLICY

POLICY R-17: SPEED LIMIT SETTING POLICY

INTRODUCTION

A posted speed limit is the maximum speed a driver is legally permitted to travel along a roadway. States establish statutory speed limits for specific types of roads—such as freeways, rural roads, or urban streets—which are enforceable even if the speed limit signs are not posted. In Washington, local agencies such as the City of Kirkland are granted the authority to establish or alter posted speed limits.[1]

This policy outlines the approach and procedure for establishing posted speed limits on public streets within the City of Kirkland's jurisdiction to prioritize consistent, safe, and context-appropriate driving speeds citywide. The methodology outlined in this policy is adapted from the National Cooperative Highway Research (NCHRP) Report 966 Posted Speed Limit Setting Procedure and Tool.

POLICY PRINCIPLES

1. Posted speed limits should be reasonable and safe.
2. Changes in speed limits along a street segment should occur in five mile per hour (mph) increments.
3. The preferred maximum speed limit is 30 mph for collector and arterial streets.
4. Roadways classified as local streets shall have a default regulatory speed of 20 mph, once enacted by Kirkland City Council. Citywide signage changes will follow a phased approach through the budget process as resources allow.
5. Speed limits are enforceable once appropriate signage is installed per RCW 46.61.415.
6. Designated school speed zones and streets designated as Neighborhood Greenways shall have a regulatory speed limit of 20 mph.
7. With the approval of the Public Works Director, Transportation Division staff shall be authorized to implement temporary speed adjustments within construction zones.
8. Arterial and collector roadways do not have a default speed limit. Any proposed revisions to existing speed limits for these roadways should be assessed for appropriate speed limits under this policy.

[1] WA State Legislature RCW 46.61.415 https://app.leg.wa.gov/RCW/default.aspx?cite=46.61.415

9. New collector or arterial roadways without an established speed limit should be assessed for appropriate speed limits under this policy.

POLICY APPLICATION

This policy is a framework and procedure for City Transportation Division staff to evaluate speed limits on arterial and collector roadways. There are no specific thresholds when the speed limit evaluation process should be completed; this policy can be used at any time on any existing or proposed roadway if deemed appropriate by City Transportation Division staff.

City Transportation Division staff should perform a speed limit evaluation during the design process of a roadway project that would substantially change the roadway environment and may affect speed and driving behavior. Project types that are NOT candidates for speed limit evaluations include regular maintenance activities, isolated paving work, utility work, and storm water work. Special projects will be evaluated by City Transportation Division staff on a case-by-case basis.

Some key considerations for when to use the policy in this setting include:

- **Location and length of road segment to be analyzed.** Speed limits should be assessed and applied in a manner that provides a clear, consistent message to motorists. Frequent changes in speed limits should be avoided.
- **Changes to the roadway environment.** In general, any proposed reductions in speed limits should be paired with capital projects that change the road environment to encourage slower, safer speeds.

ROADWAY FUNCTIONAL CLASSIFICATION

The City of Kirkland currently classifies its roadways into Principal Arterials, Minor Arterials, Collector Streets and Local Streets or Neighborhood Access Streets as shown in Table 1 below.[2].

Table 1. Roadway Classifications

CLASSIFICATION	DESCRIPTION/PURPOSE
Principal Arterial	Connect to major commercial areas and other cities.
Minor Arterial	Serve major traffic generators that are not served by principal arterials.
Collector Street	Provide connections between arterials and local streets.
Local Street or Neighborhood Access Street	Provide access to residential areas, businesses, and other local areas.

ROADWAY CONTEXT

Roadway context refers to the surrounding physical, functional, and land use environment in which a roadway operates. This includes the characteristics of adjacent development and intensity (e.g., residential, commercial, mixed-use), access point density, and potential development. These factors shape appropriate operating speeds, access and mobility demands, and the mix of roadway users.

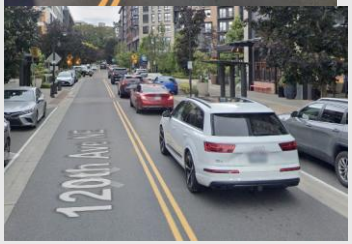
Context definitions may also incorporate roadway characteristics such as traffic volumes, lane widths, and the anticipated level of multimodal activity based upon the presence or absence of sidewalks and bicycle facilities. For roadways with comparable land use patterns, access characteristics, and mobility demands, applying a shared roadway context classification allows setting appropriate posted speed limits. Roadway context provides a framework for aligning appropriate posted speed limits with the surrounding land use and community needs.

The roadway context classifications established in this policy are based on the land use definitions outlined in the Comprehensive Plan Land Use Element.

Table 2 provides descriptions of three different roadway contexts specific to the City of Kirkland.[3]

[2] https://www.kirklandwa.gov/files/sharedassets/public/v/1/public-works/transportation/plans-and-studies/kirkland-tsp-final.pdf
[3] https://www.kirklandwa.gov/files/sharedassets/public/v/1/planning-amp-building/kirkland-2044-comp-plan/k2044-people/land-use/pdfs/k2044_final_land-use-element.pdf

Table 2. Roadway Contexts in Kirkland

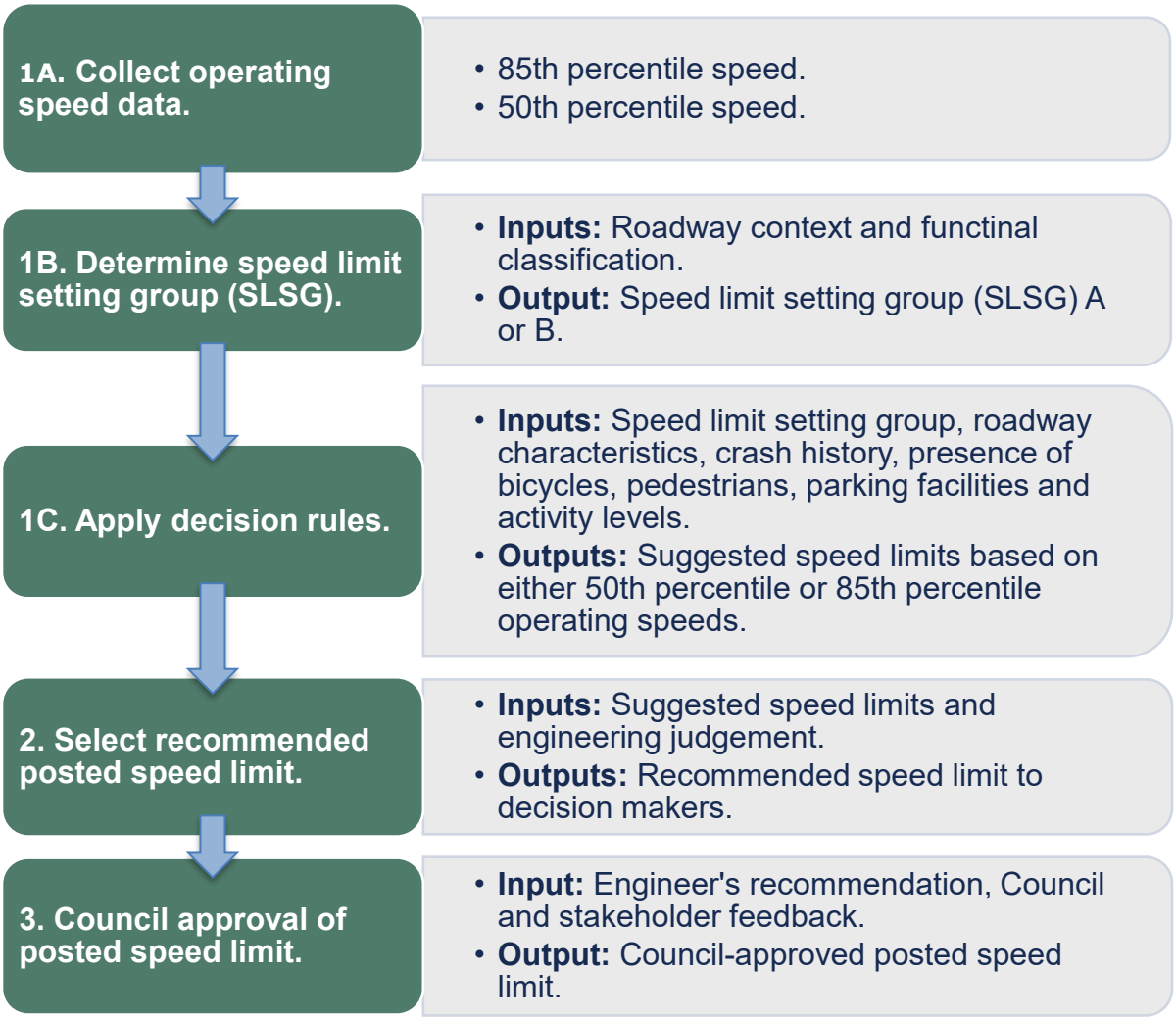
NCHRP 966 Roadway Context	City of Kirkland Land Use Designations	Land Use Description	Photo Description	Examples
Urban Core / Traditional Downtown	**Transit Oriented Development / Center Mixed Use**	Accommodates compact and walkable communities with a land-use mix, intensities, and provides access to residential, commercial, and recreational opportunities around high-capacity and/or frequent transit. Supports both large and small businesses that provide a network and mixture of commercial services and housing that make it possible for people to live near employment and everyday destinations.	 	Downtown Kirkland Totem Lake Urban Center Juanita Village NE 85th St Station Area Lake Street
Urban / Urban Mix	**Community Mixed Use**	Accommodates individual commercial uses and small collections of commercial uses, either with or without residential development, that are located primarily away from major streets and serve residential communities.	 	NE 68th St/108th Ave NE Market Street Snyder's Corner mixed used area at/within the vicinity of NE 70th /132nd Ave NE 124th Ave NE/NE 144th Street

NCHRP 966 Roadway Context	City of Kirkland Land Use Designations	Land Use Description	Photo Description	Examples
				Juanita Drive/ NE 141st Street Juanita mixed use area on 100th Ave NE north of NE 132nd Street
Urban or Suburban / Residential Corridor	**Residential / Industrial**	Accommodates predominantly residential uses with a range of allowed building types, generally ranging from single-unit to middle-housing types. This area may include small-scale commercial uses (e.g., corner stores, daycares, home-based businesses), institutional, and semi-public uses. Or accommodates production and non-production uses, recognizing that while many buildings in these areas are no longer viable for modern production industries, they are increasingly occupied by a wide variety of uses that contribute to the economic health and diversity of the city.	 	Remainder of Kirkland

SPEED LIMIT SETTING PROCESS FOR ARTERIAL AND COLLECTOR STREETS

The speed limit setting process for arterial and collector streets is outlined in Figure 1. This approach considers factors such as collision history, roadway geometrics, pedestrian and bicycle activity, and available facilities including parking, sidewalks, bicycle lanes and the surrounding environment. A thorough understanding of the road environment helps determine the most appropriate speed limit.

Figure 1. Overview of the speed limit setting procedure



The following steps will guide the determination of a recommended posted regulatory speed limit, using methodologies adapted from the National Cooperative Highway Research Program (NCHRP) Report 966 Posted Speed Limit Setting Procedure and Tool.[4]

[4] https://nap.nationalacademies.org/catalog/26216/posted-speed-limit-setting-procedure-and-tool-user-guide

STEP 1A. COLLECT CURRENT OPERATING SPEEDS

If speed data isn't available within the last three years, collect vehicle operating speeds and determine the average speed, 50th percentile speed (median speed), and 85th percentile speed for the roadway segment under evaluation. Ensure data is collected in locations where operating speeds are accurately represented. Speed data collection points should be set away from driveways, intersections, crosswalks, traffic signals, or traffic calming devices (e.g., speed bumps, humps, or cushions) and special zones (e.g., school zones or work zones). Data collection shall not occur during adverse weather events such as snow, ice, or excessive winds, and should avoid holidays and school breaks. Speed data should be documented for each roadway segment to be evaluated.

STEP 1B. DETERMINE SPEED LIMIT SETTING GROUP (SLSG)

Next, determine a Speed Limit Setting Group (SLSG). Speed Limit Setting Groups are various combinations of Roadway Classification and Land Use Designations depicted in Table 3 below. SLSG A and SLSG B are defined by the characteristics most represented of the study segment. Consult the table below to select the Speed Limit Setting Group that best applies to the roadway segment being evaluated.

Table 3. Speed Limit Setting Groups

	City of Kirkland Land Use Designation		
Roadway Classification	**Transit Oriented Development / Center Mixed Use**	**Community Mixed Use**	**Residential / Industrial**
Principal Arterial	**A**	**B**	**B**
Minor Arterial	**A**	**B**	**B**
Collector Street	**A**	**A**	**B**

SLSG A applies to urban, multimodal streets—such as downtown corridors or main streets—where there's high interaction between vehicles, pedestrians, and bicyclists. It prioritizes multimodal safety and comfort by using lower speed-setting methods:

- Rounded Down 50th percentile (RD50)
- Closest 50th percentile (C50)

SLSG B is suited for higher-speed roadways, typically in less dense or more separated contexts. It balances mobility and safety, offering a broader range of speed-setting methods:

- Closest 50th percentile (C50)
- Rounded Down 85th percentile (RD85)
- Closest 85th percentile (C85)

Both groups use pedestrian environment assessments (via Table 5 and Table 7) but apply them within different threshold contexts. SLSG A is more sensitive to non-motorized user activity and environmental factors, while SLSG B gives more weight to roadway design, traffic operations, and crash history.

STEP 1C. APPLY DECISION RULES

Determine the speed limit setting statistic selections appropriate to the selected speed limit setting group. Speed limit setting statistic selections include:

- **C85:** The 85th percentile, rounded to the nearest 5-mph increment.
- **RD85**: The 85th percentile speed, rounded down to the nearest 5-mph increment.
- **C50:** The 50th percentile speed, rounded to the nearest 5-mph increment.
- **RD50:** The 50th percentile speed, rounded down to the nearest 5-mph increment.

From the operating speed data, or when multiple traffic studies have been conducted, the lower operating speed from both directions on two-way facilities should be used for calculating the speed limit statistics selection. Engineering judgement should be used in cases where multiple traffic studies or two directions of travel are dramatically different.

SPEED LIMIT SETTING GROUP A

Table 4 outlines associated variables applicable to Speed Limit Setting Group A (SLSG A) for selecting an appropriate suggested speed limit for the roadway under evaluation. Review each variable in Table 4 for the segment under consideration to determine whether the suggested speed limit should be set at the Rounded Down 50th percentile (RD50) or the Closest 50th percentile (C50). The presence of any variable in the RD50 column will take precedence and determine the suggested speed limit. For instance, if the Closest 50th (C50) percentile is selected for the first seven variables, but the Crash Rate is categorized as High or Medium, then the recommended speed limit should be the Round Down 50th Percentile Speed (RD50).

Table 4. Speed Limit Setting Group A Decision Matrix

Variable*	Rounded Down 50th (RD50)	Closest 50th (C50)
Signal Density	>8 signals/mile	≤8 signals/ mile
Access Density	>60 driveways and/or unsignalized intersections per mile	≤60 driveways and/or unsignalized intersections per mile
Bicycle Level of Traffic Stress	BLTS 2 or 3 or 4	BLTS 1
Pedestrian Activity (high, some, or negligible), and **Sidewalk Presence / Width** (none, narrow, adequate or wide), sidewalk buffer (present or not present)	See Table 5: Decision Matrix for Sidewalk Presence/Width, Sidewalk Buffer, and Pedestrian Activity combinations for SLSG A.	See Table 5: Decision Matrix for Sidewalk Presence/Width, Sidewalk Buffer, and Pedestrian Activity combinations for SLSG A.
On-Street Parking Availability	High	Some or no parking
On-street Parking Type	Angle parking present for 40% or more of segment	No parking present or <40% of the segment
Crash Rate	High or Medium	Low

*See Table 5 through Table 13 for variable definitions and thresholds.

Table 5. Decision Matrix for Sidewalk Presence/Width, Sidewalk Buffer, and Pedestrian Activity combinations for SLSG A

Pedestrian Activity	Sidewalk Presence/Width	Sidewalk Buffer	Speed Percentage
High	Adequate	Not Present	RD50
High	Adequate	Present	C50
High	Narrow	Not Present	RD50
High	Narrow	Present	RD50
High	None	N/A	RD50
High	Wide	Not Present	C50
High	Wide	Present	C50
Some	Adequate	Not Present	RD50
Some	Adequate	Present	C50
Some	Narrow	Not Present	RD50
Some	Narrow	Present	RD50
Some	None	N/A	RD50
Some	Wide	Not Present	C50
Some	Wide	Present	C50
Negligible	Adequate	Not Present	C50
Negligible	Adequate	Present	C50
Negligible	Narrow	Not Present	C50
Negligible	Narrow	Present	C50
Negligible	None	N/A	C50
Negligible	Wide	Not Present	C50
Negligible	Wide	Present	C50

See next page for variable thresholds and definitions.

Table 6. Pedestrian Activity is determined based on the following criteria

High	Pedestrians are frequently observed on sidewalks or walking in, or adjacent to the roadway. There are multiple locations where pedestrians are observed to be crossing the roadway. Pedestrian generators are located on the roadway, such as transit stops, parks, hotels, recreational facilities and government facilities.
Some	Pedestrians occasionally walk along or cross the roadway. Pedestrian generators are nearby such as transit stops, parks, hotels, recreational facilities and government facilities.
Negligible	It is very uncommon or rare to see pedestrians walk along or cross the roadway.

Table 7. Sidewalk Width is defined by the minimum sidewalk section in the Kirkland Roadway Pre-Approved Plans[5]

Wide	Greater than 5 feet in width.
Adequate	5 feet in width.
Narrow	Less than 5 feet in width.

Bicycle Level of Traffic Stress (BLTS) is defined based on the Washington Department of Transportation's Level of Traffic Stress fact sheet.[6, 7]

Table 8. Bicycle Level of Traffic Stress Definitions

Bicycle Level of Stress 1 (BLTS 1) Definition: Suitable for all ages and abilities; children could walk or bike here independently. Separated and/or barrier protected.
Bicycle Level of Stress 2 (BLTS 2) Definition: Comfortable for most adults, including most adults experiencing disabilities. Some separation, no barrier.
Bicycle Level of Stress 3 (BLTS 3) Definition: Tolerable for enthusiastic and/or confident adults. Little space, no separation.
Bicycle Level of Stress 4 (BLTS 4) Definition: Only used by highly confident people, or those with no alternative. No dedicated space, no separation.

See the following page for BLTS criteria.

[5] https://www.kirklandwa.gov/Government/Departments/Development-Services-Center/Tools-and-Resources/Pre-Approved-Plans/Roadway-Pre-Approved-Plans
[6] https://wsdot.wa.gov/sites/default/files/2024-07/LTS%20Level%20of%20Traffic%20Stress%20Flyer_0.pdf
[7] https://wsdot.wa.gov/sites/default/files/2022-06/DesignBulletin2022-01.pdf

Table 9. Bicycle Level of Traffic Stress Criteria - Bike Lane Without Separation from Traffic

Bike Lane without Separation from Traffic (paint stripe or buffer < 2 feet wide)					
Bike Lanes are greater than or equal to 7 feet (allows for 5 ft lane plus 2 ft buffer)					
Lanes	**ADT**	**Existing Posted Speeds**			
		20 mph	25 mph	30 mph	35 mph
1 thru lane per direction or 1 lane one-way street	0 – 750	1	1	2	3
	751 – 1,500	1	1	2	3
	1,501 – 3,000	1	1	2	3
	3,000 +	2	2	2	3
2 thru lanes per direction	0 – 7,000	2	2	2	3
	> 7,000	2	2	3	3
3 + thru lanes per direction	Any ADT	3	3	3	4
Bike Lanes are less than 7 feet (must be 5 ft or greater to be within standard)					
Lanes	**ADT**	**Existing Posted Speeds**			
		20 mph	25 mph	30 mph	35 mph
1 thru lane per direction or 1 lane one-way street	0 – 750	1	2	2	4
	751 – 1,500	1	2	2	4
	1,501 – 3,000	1	2	2	4
	3,000 +	2	2	2	4
2 thru lanes per direction	0 – 7,000	2	2	3	4
	> 7,000	3	3	3	4
3 + thru lanes per direction	Any ADT	3	3	4	4

Table 10. Bicycle Level of Traffic Stress Bike Lane With Separation From Traffic

Bike Lane with Separation from Traffic (buffer 2 feet wide or greater)					
Protected Bicycle Lane (parking or robust vertical barrier separation)					
Lanes	**ADT**	**Existing Posted Speeds**			
		20 mph	25 mph	30 mph	35 mph
1 thru lane per direction or 1 lane one-way street	0 – 750	1	1	1	2
	751 – 1,500	1	1	1	2
	1,501 – 3,000	1	1	1	2
	3,000 +	2	2	2	2
2 thru lanes per direction	0 – 7,000	2	2	2	2
	> 7,000	2	2	2	2
3 + thru lanes per direction	Any ADT	2	2	2	2
Vertically Delineated Bicycle Lane (Buffered bike lane with flexible delineator/candlestick)					
Lanes	**ADT**	**Existing Posted Speeds**			
		20 mph	25 mph	30 mph	35 mph
1 thru lane per direction or 1 lane one-way street	0 – 750	1	1	2	2
	751 – 1,500	1	1	2	2
	1,501 – 3,000	1	1	2	2
	3,000 +	2	2	2	3
2 thru lanes per direction	0 – 7,000	2	2	2	3
	> 7,000	2	2	3	3
3 + thru lanes per direction	Any ADT	2	2	3	3

Table 11. Parking Availability is determined based on following criteria

High	Parking exists at least on one side of the road with or without parking time limits.
Not High	Some or no on-street parking activity is present or permitted.

Table 12. Crash Rate Categories

High	Highest 1/3 of all study segments based on crash rate.
Medium	Middle 1/3 of all study segments based on crash rate.
Low	Lowest 1/3 of all study segments based on crash rate.

Crash rate quantifies the frequency of traffic crashes relative to a specific measure of exposure, such as traffic volume or distance traveled. This allows for meaningful comparisons between different roadways or segments, regardless of their size or traffic levels. The crash rate will be calculated as follows:

$$R = \frac{100{,}000{,}000\ x\ C}{365 \text{ x N x V x L}}$$

Table 13. Crash Rate Variable Terms

Variable	Definition
R	Crash rate for the road segment expressed as crashes per 100 million vehicle-miles of travel (VMT)
C	Total number of crashes in the study period
N	Number of years of data
V	Number of vehicles per day (both directions)
L	Length of the roadway segment in miles

SPEED LIMIT SETTING GROUP B

Table 14 outlines associated variables applicable to Speed Limit Setting Group B (SLSG B) for selecting an appropriate suggested speed limit for the roadway segment under evaluation. Review each variable in Table 14 for the segment under consideration to determine whether the suggested speed limit should be set at the Closest 50th percentile (C50), Rounded Down 85th percentile (RD85) or the Closest 85th percentile (C85). The presence of any variable in the C50 column will take precedence and determine the suggested speed limit. For example, if C85 is selected for the first four variables but On-Street Parking is categorized as High, the suggested speed limit should be based on C50.

Table 14. Speed Limit Setting Group B Decision Matrix

Variable	Closest 50th (C50)	Rounded-Down 85th (RD85)	Closest 85th (C85)
Signal Density	>4 signals/mile	>3 signals/ mile	<3 signals/ mile
Access Density	>60 driveways/ unsignalized intersections per mile	>40 and ≤60 driveways/unsignalized intersections per mile	<40 driveways/unsignalized intersections per mile
Number of lanes / Median type (undivided, two-way left-turn lane (TWLTL) or divided)	Not used	Four or more lanes with painted median or no median	Four or more lanes with raised median or TWLTL* Fewer than four lanes regardless of median or no median
Bicycle Level of Traffic Stress	BLTS 3 or 4	BLTS 2	BLTS 1
Pedestrian Activity (high, some, or negligible), and **Sidewalk Presence / Width** (none, narrow, adequate or wide), sidewalk buffer (present or not present)	See Table 15: Decision Matrix for Sidewalk Presence/Width, Sidewalk Buffer, and Pedestrian Activity combinations for SLSG B.	See Table 15: Decision Matrix for Sidewalk Presence/Width, Sidewalk Buffer, and Pedestrian Activity combinations for SLSG B.	See Table 15: Decision Matrix for Sidewalk Presence/Width, Sidewalk Buffer, and Pedestrian Activity combinations for SLSG B.
Parking Availability	High	Not used	Not High
On-street parking type	Angle parking present for ≥40%	Parallel Parking present Angle Parking present for <40%	None
Crash Rate	High	Medium	Low

*TWLTL refers to Two-Way Left-Turn Lane

Table 15. Decision Matrix for Sidewalk Presence/Width, Sidewalk Buffer, and Pedestrian Activity combinations SLSG B

Pedestrian Activity	Sidewalk Presence/Width	Sidewalk Buffer	Speed Percentage
High	Adequate	Not Present	RD85
High	Adequate	Present	C85
High	Narrow	Not Present	C50
High	Narrow	Present	RD85
High	None	N/A	C50
High	Wide	Not Present	C85
High	Wide	Present	C85
Some	Adequate	Not Present	RD85
Some	Adequate	Present	C85
Some	Narrow	Not Present	C50
Some	Narrow	Present	RD85
Some	None	N/A	C50
Some	Wide	Not Present	C85
Some	Wide	Present	C85
Negligible	Adequate	Not Present	C85
Negligible	Adequate	Present	C85
Negligible	Narrow	Not Present	C85
Negligible	Narrow	Present	C85
Negligible	None	N/A	RD85
Negligible	Wide	Not Present	C85
Negligible	Wide	Present	C85

Table 16. Pedestrian Activity is based on the following criteria

High	Pedestrians are frequently observed on sidewalks or walking in, or adjacent to the roadway. There are multiple locations where pedestrians are observed to be crossing the roadway. Pedestrian generators are located on the roadway, such as transit stops, parks, hotels, recreational facilities and government facilities.
Some	Pedestrians occasionally walk along or cross the roadway. Pedestrian generators are nearby such as transit stops, parks, hotels, recreational facilities and government facilities.
Negligible	It is very uncommon or rare to see pedestrians walk along or cross the roadway.

Table 17. Sidewalk Width is defined by the minimum sidewalk section in the Kirkland Roadway Pre-Approved Plans[8]

Wide	Greater than 5 feet in width.
Adequate	Approximately 5 feet in width.
Narrow	Less than 5 feet in width.

Bicycle Level of Traffic Stress (BLTS) is defined based on the Washington Department of Transportation's definitions and Level of Traffic Stress fact sheet.[9, 10]

Table 18. Bicycle Level of Traffic Stress Definitions

Bicycle Level of Stress 1 (BLTS 1) Definition: Suitable for all ages and abilities; children could walk or bike here independently. Separated and/or barrier protected.
Bicycle Level of Stress 2 (BLTS 2) Definition: Comfortable for most adults, including most adults experiencing disabilities. Some separation, no barrier.
Bicycle Level of Stress 3 (BLTS 3) Definition: Tolerable for enthusiastic and/or confident adults. Little space, no separation.
Bicycle Level of Stress 4 (BLTS 4) Definition: Only used by highly confident people, or those with no alternative. No dedicated space, no separation.

See the following page for BLTS criteria.

[8] https://www.kirklandwa.gov/Government/Departments/Development-Services-Center/Tools-and-Resources/Pre-Approved-Plans/Roadway-Pre-Approved-Plans
[9] https://wsdot.wa.gov/sites/default/files/2024-07/LTS%20Level%20of%20Traffic%20Stress%20Flyer_0.pdf
[10] https://wsdot.wa.gov/sites/default/files/2022-06/DesignBulletin2022-01.pdf

Table 19. Bicycle Level of Traffic Stress Criteria - Bike Lane Without Separation From Traffic

Bike Lane without Separation from Traffic (paint stripe or buffer < 2 feet wide)					
Bike Lanes are greater than or equal to 7 feet (allows for 5 ft lane plus 2 ft buffer)					
Lanes	**ADT**	**Existing Posted Speeds**			
		20 mph	25 mph	30 mph	35 mph
1 thru lane per direction or 1 lane one-way street	0 – 750	1	1	2	3
	751 – 1,500	1	1	2	3
	1,501 – 3,000	1	1	2	3
	3,000 +	2	2	2	3
2 thru lanes per direction	0 – 7,000	2	2	2	3
	> 7,000	2	2	3	3
3 + thru lanes per direction	Any ADT	3	3	3	4
Bike Lanes are less than 7 feet (must be 5 ft or greater to be within standard)					
Lanes	**ADT**	**Existing Posted Speeds**			
		20 mph	25 mph	30 mph	35 mph
1 thru lane per direction or 1 lane one-way street	0 – 750	1	2	2	4
	751 – 1,500	1	2	2	4
	1,501 – 3,000	1	2	2	4
	3,000 +	2	2	2	4
2 thru lanes per direction	0 – 7,000	2	2	3	4
	> 7,000	3	3	3	4
3 + thru lanes per direction	Any ADT	3	3	4	4

Table 20. Bicycle Level of Traffic Stress Bike Lane With Separation From Traffic

Bike Lane with Separation from Traffic (buffer 2 feet wide or greater)					
Protected Bicycle Lane (parking or robust vertical barrier separation)					
Lanes	**ADT**	**Existing Posted Speeds**			
		20 mph	25 mph	30 mph	35 mph
1 thru lane per direction or 1 lane one-way street	0 – 750	1	1	1	2
	751 – 1,500	1	1	1	2
	1,501 – 3,000	1	1	1	2
	3,000 +	2	2	2	2
2 thru lanes per direction	0 – 7,000	2	2	2	2
	> 7,000	2	2	2	2
3 + thru lanes per direction	Any ADT	2	2	2	2
Vertically Delineated Bicycle Lane (Buffered bike lane with flexible delineator/candlestick)					
Lanes	**ADT**	**Existing Posted Speeds**			
		20 mph	25 mph	30 mph	35 mph
1 thru lane per direction or 1 lane one-way street	0 – 750	1	1	2	2
	751 – 1,500	1	1	2	2
	1,501 – 3,000	1	1	2	2
	3,000 +	2	2	2	3
2 thru lanes per direction	0 – 7,000	2	2	2	3
	> 7,000	2	2	3	3
3 + thru lanes per direction	Any ADT	2	2	3	3

Table 21. Parking Availability is determined based on following criteria

High	Parking exists at least on one side of the road with or without parking time limits.
Not High	No on-street parking or no parking activity is present or permitted.

Table 22. Crash Rate Categories

High	Highest 1/3 of all study segments based on crash rate.
Medium	Middle 1/3 of all study segments based on crash rate.
Low	Lowest 1/3 of all study segments based on crash rate.

Crash rate quantifies the frequency of traffic crashes relative to a specific measure of exposure, such as traffic volume or distance traveled. This allows for meaningful comparisons between different roadways or segments, regardless of their size or traffic levels. The crash rate will be calculated as follows:

$$R = \frac{100{,}000{,}000\ x\ C}{365 \text{ x N x V x L}}$$

Table 23. Crash Rate Variable Terms

Variable	Definition
R	Crash rate for the road segment expressed as crashes per 100 million vehicle-miles of travel (VMT)
C	Total number of crashes in the study period
N	Number of years of data
V	Number of vehicles per day (both directions)
L	Length of the roadway segment in miles

STEP 2 ENGINEER'S RECOMMENDED SPEED LIMIT

The Suggested Posted Speed Limit, as determined from the above process, should be compared to the Target Speed ranges shown in Table 24 below. Then, engineering judgement should be applied to ensure proper application given several real-world factors.

TARGET OPERATING SPEEDS

The target speed is the highest speed at which vehicles should operate on a throughfare in a specific context, consistent with the level of multimodal activity generated by adjacent land uses, to provide both mobility for motor vehicles and a desirable environment for pedestrians, bicycles and public transit users.11 NCHRP Research Report 855 provides additional information on target speeds.[12]

Table 24. Target Speeds by Roadway type and context

	Roadway Context		
Roadway Type / Classification	**Transit Oriented Development / Center Mixed Use**	**Community Mixed Use**	**Residential / Industrial**
Principal Arterial	25 – 30	30 – 35	30 – 35
Minor Arterial	25 – 30	25 – 35	30 – 35
Collector Street	25 – 30	25 – 30	25 – 35

If the suggested speed limit does not fit within the suggested target speed ranges, first confirm calculations and then identify potential reasons for the difference. The engineer should identify any unique characteristics along the segment and consult traffic safety and operations resources related to speed limit setting (e.g., NCHRP Report 966, FHWA Office of Safety publications, established industry experts), to determine the Engineer's Recommended Speed Limit.

[11] https://www.wsdot.wa.gov/publications/manuals/fulltext/M22-01/design.pdf
[12] https://nap.nationalacademies.org/catalog/24775/an-expanded-functional-classification-system-for-highways-and-streets

ENGINEERING JUDGEMENT

Following the determination of the recommended speed limit for a given roadway segment, apply engineering judgement considering additional factors such as:

- Continuity of speed limits across adjacent roadway segments along the same corridor
- Coordination with neighboring jurisdictions
- Historical community input, complaints, and requests
- Crash risk or injury minimization

Speed limits should be assigned to roadway segments that are reasonably uniform in roadway characteristics, context, and type. When a change to one of these variables occurs, a new roadway segment should be defined. For example, changes to the number of lanes or roadway context (Transit Oriented Development/Center Mixed Use, Community Mixed Use, and Residential) necessitate a new segment. Keep segment lengths reasonable for driver's expectations and for sign maintenance operations. Changing speed limits too often can be confusing for road users, onerous to maintain records of each change, and burdensome for maintaining the signs themselves.

Regulatory speed limits should not be adjusted due to isolated speed-related concerns, such as horizontal curves; these should be addressed with the use of standard MUTCD approved warning treatments (e.g., a posted advisory speed or curve warning signs). Each case should be reviewed and determined with engineering investigation.

When addressing posted speed limits near city boundaries, coordinate with the neighboring jurisdiction. Engineering staff should contact the appropriate representative to notify them of the study and discuss potential coordination needs on a shared corridor.

SETTING SPEED LIMITS ON NEW ROADWAYS

When looking to establish posted speed limits on new collector or arterial roadways, the Target Speed (Table 24) can be used to determine an initial posted speed limit for newly constructed roadways. In alignment with the City's Vision Zero goals, the lowest speed should be used as a starting point. Higher speeds within the range may be used with justification. Other factors to consider when selecting Target Speeds for a new roadway:

- Pedestrian and Bicycle Facilities (Refer to Table 6 - Table 10)
- Anticipated Pedestrian and Bicycle Activity Levels (Refer to Table 6 - Table 10)
- Presence of On-Street Parking (Refer to Table 11).

STEP 3 SECURE COUNCIL APPROVAL

The final recommendation for a posted speed limit should be based on the procedures established in this document and the application of engineering judgement. At a given location, factors outside the data elements (variables) used in this procedure may be appropriate to include to help establish the most appropriate posted speed limit. Engineering judgement is often required to determine the Recommended Posted Speed Limit. Posted speed limits are approved through City Council adoption of a resolution as the City's legislative body.

Once the speed limit is physically posted on signage, then it becomes enforceable.

GLOSSARY

Below is a list of relevant terms to understand the policy and process for the evaluation of appropriate posted speed limits.

Table 25. List of Relevant Speed-Related Definitions

Term	Definition
50th Percentile Speed	The speed at which 50% of motor vehicle drivers travel at or below. Often referred to as the "Median Speed".
85th Percentile Speed	The speed at which 85% of motor vehicle drivers travel at or below.
Average Speed	The summation of the instantaneous or spot-measured speeds at a specific location of vehicles divided by the number of vehicles observed.[13]
Posted Speed	The maximum speed a driver is legally permitted to travel along a roadway. This numeric speed limit value is displayed on regulatory speed limit signs.
Operating Speed	The speed at which motor vehicles generally travel on that road.
Recommended Speed Limit	Speed limit based on both the Speed Limit Setting Tool and engineering experience and judgment.
Roadway Functional Classification	The categorization of roads is based on the type of service they provide within the overall transportation network. It reflects the balance between mobility (efficient movement of vehicles) and access to land uses (connecting to homes, businesses, and other destinations). For Kirkland's roadway functional classifications, refer to the 2024 Transportation Strategic Plan[14], Figure 3-11.

[13] https://mutcd.fhwa.dot.gov/pdfs/11th_Edition/mutcd11thedition.pdf
[14] https://www.kirklandwa.gov/Government/Departments/Public-Works-Department/Transportation/Plans-and-Studies-Transportation-Division/Transportation-Strategic-Plan

Term	Definition
Roadway Context	The land uses adjacent to a roadway that influences geometric design practices in terms of desired operating speeds, mobility/access demands, and user groups.
Roadway Characteristics	The physical and operational features of a road that influences how it functions and how vehicles and pedestrians interact. Features include, but are not limited to, lane width, shoulder width, number of lanes, median type, horizontal and vertical alignment, traffic volumes, and access points.
Speed Limit Setting Group	Roadway group categorization based upon roadway functional classification (e.g., principal arterial, minor arterial collector streets and local streets) and roadway context (e.g., Transit Oriented Development/Center Mixed Use, Community Mixed Use, Residential), forming the basis for assessing appropriate speeds.
Speed Limit Setting Group reference: Closest 50th Percentile (**C50**)	The 50th percentile speed rounded to the nearest 5-mph increment.
Speed Limit Setting Group reference: Closest 85th Percentile (**C85**)	The 85th percentile speed rounded to the nearest 5-mph increment.
Speed Limit Setting Group reference: Rounded Down 50th Percentile (**RD50**)	The 50th percentile speed rounded down to the nearest 5-mph increment.
Speed Limit Setting Group reference: Rounded Down 85th Percentile (**RD85**)	The 85th percentile speed rounded down to the nearest 5-mph increment.
Target Speed	The target speed is the highest speed at which vehicles should operate on a throughfare in a specific context, consistent with the level of multimodal activity generated by adjacent land uses, to provide both mobility for motor vehicles and a desirable environment for pedestrians, bicycles and public transit users
Tool Output Speed or Suggested Speed	Speed limit determined by the Kirkland Speed Limit Setting Tool's decision matrix (based on data inputs).