

## CITY OF KIRKLAND

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### PRE-APPROVED PLANS POLICY

#### Policy R-17:      **SPEED LIMITS**

##### BACKGROUND

The City Council asked the Transportation Commission to establish a policy for setting speed limits. Transportation Staff reviewed technical information, heard from interested citizens and considered various approaches to setting speed limits. The findings were presented at the January 3, 2006 Council meeting and modified in response to direction given by the City Council. (Ref. attached Memorandum to the Kirkland City Council from the Transportation Commission dated January 5, 2006.)

##### POLICY PRINCIPLES

1. This policy is one of the Public Works Administrative Policies and is for use on collector and arterial streets.
2. Kirkland streets are posted at one of three speed limits: 25; 30; or 35 MPH.
3. Changes to existing speed limits should generally occur in 5 MPH increments.
4. Posted speed limits are based on the 85th percentile of prevailing speeds as measured on the roadway in question. Figure 1 shows the relationship between prevailing and posted speed.
5. As shown in Figure 1, for certain prevailing speeds, more than one speed limit could be selected for posting. These prevailing speeds are shown near the striped arrows on the prevailing speed side of Figure 1. In these cases the higher posted speed should be used unless special conditions are present. Typical special conditions are shown in note 3 of Figure 1.
6. Posted speed limits should be reasonable, safe and based on engineering/traffic studies.
7. When there is a need to reduce operating speeds, traffic operational or physical changes should be considered to change the feel of the road so that drivers will tend to drive more slowly.

##### IMPLEMENTING THE POLICY

1. Speed limit evaluations should take place when specific concerns are raised rather than on a routine basis.
2. Findings of all evaluations should be reported to the Transportation Commission
3. The Transportation Commission will report their findings to Council. The City Council makes the final decisions as to whether or not a speed limit should be changed.

##### GUIDELINES FOR THE EVALUATION OF REQUESTS TO CHANGE SPEED LIMITS

Changes are made in five MPH increments between 25, 30 and 35 MPH. This results in four possible changes as shown in the shaded boxes below:

**Possible speed limit changes**

To	From		
	25 MPH	30 MPH	35 MPH
25 MPH	X	Lower by 5 MPH	Lower by 10 MPH
30 MPH	Raise by 5 MPH	X	Lower by 5 MPH
35 MPH	Raise by 10 MPH	Raise by 5 MPH	X

The policy is for use on collector and arterial streets. The speed limit on local streets is 25 MPH.

The 85th percentile speed (the speed at which 85% of the traffic is traveling at or below) is used to determine the prevailing speed. This is a simple and fact-based method for establishing a posted speed limit based on the logic that most drivers will operate at speeds that are safe and reasonable. This is the key tenet of our policy.

Further, *prevailing speeds do not change when the speed limit alone is changed* and artificially low speed limits have several negative effects. First, they may not be in keeping with RCW requirements for reasonableness. Second, complaints are received from those who think that drivers should be traveling closer to the speed limit. These complaints are extremely difficult to address without committing unreasonably high levels of enforcement personnel. Low speed limits also create frustration and complaints from drivers. Some other negative consequences include general disregard for speed limits, dangerous maneuvers by frustrated drivers –both those who wish travel faster and those who think all should follow the low speed limit-- and inconsistency between speed limits on similar roadways.

The most effective way to alter the travel speed is to change the feel of the road so that drivers will tend to drive more slowly. This type of change is often difficult and expensive to accomplish. Nonetheless, locations where speeds are perceived to be too high should be considered for measures to reduce prevailing speeds. There is a wide range of such arterial traffic calming measures, but typical examples include medians, curb bulb-outs, and landscape strips between sidewalk and curbs. Land use characteristics such as building fronts which are close to the street are also useful although such changes usually take place over relatively long time periods. Once prevailing speeds are reduced, the speed limit can be lowered.

#### MEASURING THE PREVAILING SPEED

Automatic counters are used to measure speeds for several days. This typically results in thousands of data points. Peak and off-peak observations are used together to determine the 85th percentile speed.

#### DETERMINING THE SPEED LIMIT

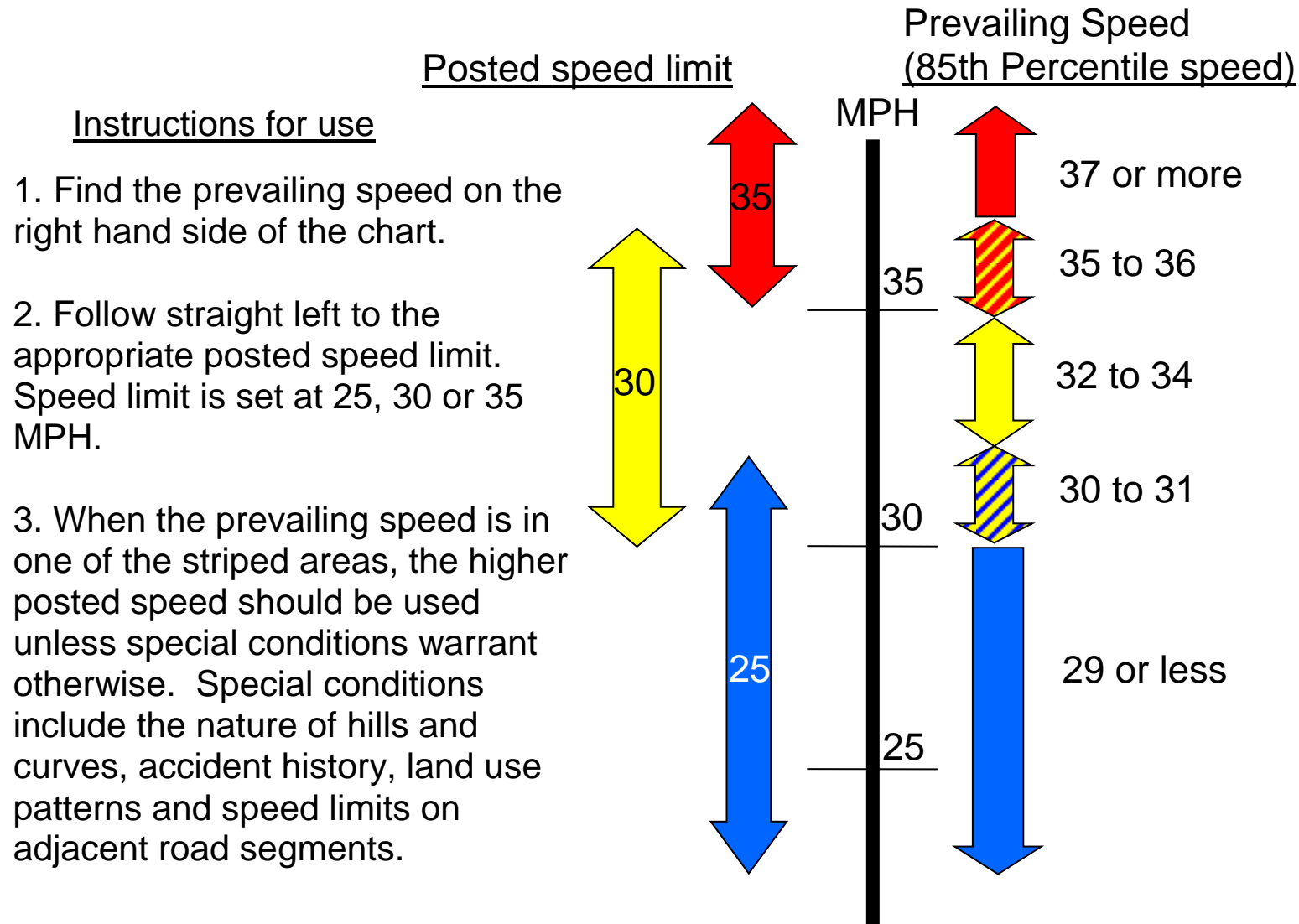
Figure 1 shows the relationship between prevailing and posted speed. Note that it is skewed to recommend a posted speed just slightly lower than the prevailing speed. This recognizes most citizens' support for lower rather than higher speed limits.

Note that for some prevailing speeds, Figure 1 allows more than one posted speed. The decision is made

by considering the prevailing speeds that are shown next to the striped arrows on the prevailing speed side of Figure 1. In these cases the higher posted speed should be used unless special conditions are present. For example, an 85th percentile speed of 31 MPH could be posted at 25 or 30 MPH. In this example, the speed limit should be posted at 30 MPH unless conditions warrant a lower speed limit. Examples of these conditions are indicated on Figure 1, but we do not intend for that list to be an exhaustive one. Staff should evaluate and consider the conditions on a consistent but case by case basis.

Flexibility is intentionally built into the policy. While this does not give a predetermined precise answer for each and every application, it makes for a policy that is better suited to a wide range of conditions.

Figure 1. Relationship between prevailing and posted Speed





## CITY OF KIRKLAND

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### MEMORANDUM

**To:** Kirkland City Council

**From:** Kirkland Transportation Commission, Dan Fisher, Chair

**Date:** January 5, 2006

**Subject:** Speed Limit Policy

### BACKGROUND

As part of the Commission's 2005 work plan, the City Council asked the Transportation Commission to establish a policy for setting speed limits. During the past year we have reviewed technical information, heard from interested citizens and considered various approaches to setting speed limits. We presented our findings at the January 3, 2006 Council meeting and Council asked that a seventh principle be added. That principle describes reduction of operating speeds through means other than lowering speed limits.

### POLICY

#### *Policy principles*

1. This policy is one of the Public Works Administrative Policies and is for use on collector and arterial streets.
2. Kirkland streets are posted at one of three speed limits: 25; 30; or 35 MPH.
3. Changes to existing speed limits should generally occur in 5 MPH increments.
4. Posted speed limits are based on the 85th percentile of prevailing speeds as measured on the roadway in question. Figure 1 shows the relationship between prevailing and posted speed.
5. As shown in Figure 1, for certain prevailing speeds, more than one speed limit could be selected for posting. These prevailing speeds are shown near the striped arrows on the prevailing speed side of Figure 1. In these cases the higher posted speed should be used unless special conditions are present. Typical special conditions are shown in note 3 of Figure 1.
6. Posted speed limits should be reasonable, safe and based on engineering/traffic studies.
7. When there is a need to reduce operating speeds, traffic operational or physical changes should be considered to change the feel of the road so that drivers will tend to drive more slowly.

#### *Implementing the policy*

1. Speed limit evaluations should take place when specific concerns are raised rather than on a routine basis.
2. Findings of all evaluations should be reported to the Transportation Commission
3. The Transportation Commission will report their findings to Council. The City Council makes the final decisions as to whether or not a speed limit should be changed.

This portion of the memo is intended to provide information about policy's basis.

*What types of speed limit changes are covered by this policy?*

Since changes are made in five MPH increments between 25, 30 and 35 MPH, this leaves four changes as shown in the shaded boxes below:

To	Possible speed limit changes		
	From		
	25 MPH	30 MPH	35 MPH
25 MPH	X	Lower by 5 MPH	Lower by 10 MPH
30 MPH	Raise by 5 MPH	X	Lower by 5 MPH
35 MPH	Raise by 10 MPH	Raise by 5 MPH	X

The policy is for use on collector and arterial streets. The speed limit on local streets is 25 MPH.

*Are there state laws that govern speed limits set by local governments like Kirkland?*

RCW § 46.61.415 requires local agencies to perform an "engineering and traffic investigation" to support posting of speed limits which are "reasonable and safe." After reviewing the speed limit policies of multiple jurisdictions and agencies we found that without exception they were based on similar principles. School zone speed limits are also covered by RCW and are time-of-day speed limits near schools.

*Why is the 85th percentile speed used as a basis for the posted speed limit?*

Setting speed limits based on the prevailing speed of traffic is common and accepted practice across the US and in other countries as well. Typically, measurement of the 85th percentile speed (the speed at which 85% of the traffic is traveling at or below) serves as the method for determination of the prevailing speed. The logic behind this is as follows: Since most drivers will operate at speeds that are safe and reasonable, measuring the prevailing speed of traffic is a simple and fact-based method for establishing a posted speed limit. This is the key tenet of our policy.

*How is the prevailing speed determined?*

Automatic counters are used to measure speeds for several days. This typically results in thousands of data points. Peak and off-peak observations are used together to determine the 85th percentile speed.

*How is the appropriate posted speed determined once the 85th percentile speed is known?*

Figure 1 shows the relationship between prevailing and posted speed. Note that it is skewed to recommend a posted speed just slightly lower than the prevailing speed. This recognizes most citizens' support for lower rather than higher speed limits.

*For some prevailing speeds, Figure 1 allows more than one posted speed. How do you pick which posted speed to use?*

As shown in Figure 1, for certain prevailing speeds, more than one speed limit could be selected for posting. These prevailing speeds are shown next to the striped arrows on the prevailing speed side of Figure 1. In these cases the higher posted speed should be used unless special conditions are present. For example, an 85th percentile speed of 31 MPH could be posted at 25 or 30 MPH. In this example, the speed limit should be posted at 30 MPH unless conditions warrant a lower speed limit. Examples of these conditions are indicated on Figure 1, but we do not intend for that list to be an exhaustive one. Staff should evaluate and consider the conditions on a consistent but case by case basis.

*Why does the policy have so much "wobble room"?*

We have intentionally built flexibility into the policy. While this does not give a predetermined precise answer for each and every application, it makes for a policy that is better suited to a wide range of conditions.

*Why does the policy support a higher speed limit even if drivers are already going too fast?*

Part of the answer to this question is contained in the answer to why the 85th percentile speed is used (see above). Further, based on the information we have reviewed, we conclude that *prevailing speeds do not change when the speed limit alone is changed*. This is an important concept and based on our discussions with citizens it is one that most people find counterintuitive. It means that if the prevailing speed is perceived to be too high, a reduction in the speed limit alone is not adequate to lower speeds. Perhaps the most practical evidence in support of the fact that speed limits do not, by themselves, alter travel speeds is experienced on roadway segments where the speed limit "feels too low." It is this "feel" that is the most important factor in determining how fast drivers will travel. When speeds are measured on streets where the speed limit feels too low, it is usually found that the 85th percentile speed is well above the posted speed limit.

*If the speed limit can't be lowered, but cars are still traveling too fast, what else is available?*

The most effective way to alter the travel speed is to change the feel of the road so that drivers will tend to drive more slowly. This type of change is often difficult and expensive to accomplish. Nonetheless, locations where speeds are perceived to be too high should be considered for measures to reduce prevailing speeds. There is a wide range of such arterial traffic calming measures, but typical examples include medians, curb bulb-outs, and landscape strips between sidewalk and curbs. Land use characteristics such as building fronts which are close to the street are also useful although such changes usually take place over relatively long time periods. Once prevailing speeds are reduced, the speed limit can be lowered.

*Prevailing speeds might be lowered by lowering the speed limit, why not try it?*

It is common for those who support a speed limit not in keeping with the prevailing speed to argue that lowering the speed limit has no negative effects. Speed limits that are too low do have several negative effects. First, they may not be in keeping with RCW requirements for reasonableness. Second, complaints are received from those who think that drivers should be traveling closer to the speed limit. These complaints are extremely difficult to address without committing unreasonably high levels of enforcement personnel. Low speed limits also create the feeling described above of a speed limit that is too low which leads to frustration and complaints from drivers. Some other negative consequences include general disregard for speed limits, dangerous maneuvers by frustrated drivers—both those who wish to travel faster and those who think all should follow the low speed limit—and inconsistency between speed limits on similar roadways.

*Were other methods for determining speed limits considered?*

In our discussions with citizens we heard proposals for three other methods for establishing speed limits. One was to let neighborhood associations vote to determine an appropriate speed limit. We feel that this would violate the RCW requirements of basing speed limits on an engineering and traffic investigation and possibly the requirement that speed limits be safe and reasonable.

Another citizen proposed a much more detailed approach to setting the speed limit. It involved detailed quantitative evaluation of a series of factors for each speed limit considered. We viewed this approach as involving more analysis than is necessary given the effort necessary to develop and implement it. This conclusion is based mainly on Staff comments that speed limit review has been requested on only three to five sections of roadway in the past 12 years. Also, those who are unhappy with the outcome would have a series of factors and ratings to debate; instead of making decisions less subject to speculation, this more detailed approach might make them made more so.

Rising out of a concern for more consistency between speed limits, it was proposed that one speed limit be proposed for all streets or that speed limits be posted based on street functional classification. While we felt that consistency of speed limits between sections of the same roadway is a valid concern, it should not be the only factor considered nor should it outweigh prevailing speed as the primary factor. Consistency between speed limits on adjacent roadway segments should be considered when choosing a posted speed. (see discussion of Figure 1 above and note 3 on Figure 1).

Figure 1. Relationship between prevailing and posted Speed

