



**CITY OF KIRKLAND**  
**Department of Public Works**  
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**MEMORANDUM**

**To:** Kurt Triplett, City Manager  
**From:** David Godfrey, P.E., Transportation Engineering Manager  
Kathy Brown, Public Works Director  
**Date:** February 5, 2015  
**Subject:** Transportation Master Plan Update

**RECOMMENDATION:**

It is recommended that the City Council receive a briefing and give direction on the Transportation Master Plan (TMP). Specifically, staff is seeking comment on the draft concurrency and level of service approaches. It is also recommended that the City Council receive an informational briefing about the Bellevue Kirkland Redmond (BKR) Model, the standard tool City of Kirkland staff use to forecast traffic volumes.

**BACKGROUND DISCUSSION:**

**Introduction**

This is another in a series of updates on the Transportation Master Plan. Council has previously reviewed goals and policies (2 separate briefings), the 20 year project list, and impact fees. The Goals and Policies portion of the Transportation Master Plan will constitute the Transportation Element of the Comprehensive Plan. These goals and policies are expanded and amplified with other material to make up the Transportation Master Plan.

**Concurrency**

Concurrency is required by the Growth Management Act. The purpose of concurrency is to ensure that land use development and construction of the transportation network are concurrent so that facilities are provided in step with new growth. Improving the City's concurrency system has been a goal since the opportunity for improvement was raised by the Transportation Commission in 2010.

In *Transportation Conversations*<sup>1</sup>, recommendations for improvements to the concurrency system are offered:

"Concurrency should be simplified and should consider transit, bicycling and walking...Concurrency should principally monitor the approved land use and transportation plans and insure that they are being completed in relative balance."

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<sup>1</sup> Transportation Conversations is a transportation policy document written by the Transportation Commission in 2010. It is available [on line](#).

The Transportation Master Plan lays the framework necessary to make the change from the existing system to one that better supports these ideas. The new system was developed through the Transportation Commission, and the City Council was briefed on the elements of the revised concurrency plan in November 2012.

Concurrency is not intended to decide whether or not development projects are "good" or "bad," but rather, whether or not the number of new trips is being added at approximately the same rate at which transportation capacity is being added. Furthermore, concurrency will not decide whether or not the capacity being provided is the "right type" of capacity. This is decided when the 20 year transportation project list is created and compared to the land use plan, and the level of service provided by that combination is accepted.

#### *Overview of the current system*

Vehicular level of service at signalized intersections is the basis of the current concurrency system. New trips from proposed land use developments are forecasted and put onto the transportation network. The number of cars turning right, left or going straight at all signalized intersections are estimated. With that volume forecast and characteristics of the intersection, an intersection's performance can be calculated. Performance is averaged for each of four subareas and compared to a standard<sup>2</sup>. If the standard is met, then the development project passes concurrency.

Proponents of projects that fail concurrency have three general choices: scale back the project impact, construct mitigation, and/or wait for the City to construct projects that add capacity.

A drawback to the current system is the need for fairly complicated forecasting before a determination of concurrency can be made. This means that it is difficult to understand how much capacity is left for new development at any given time. Also, the measure used for intersection performance, called volume to capacity ratio, is not easily understood. Finally, with its sole focus on auto capacity at traffic signals, the current concurrency system does not help achieve the performance measures important to a balanced transportation plan.

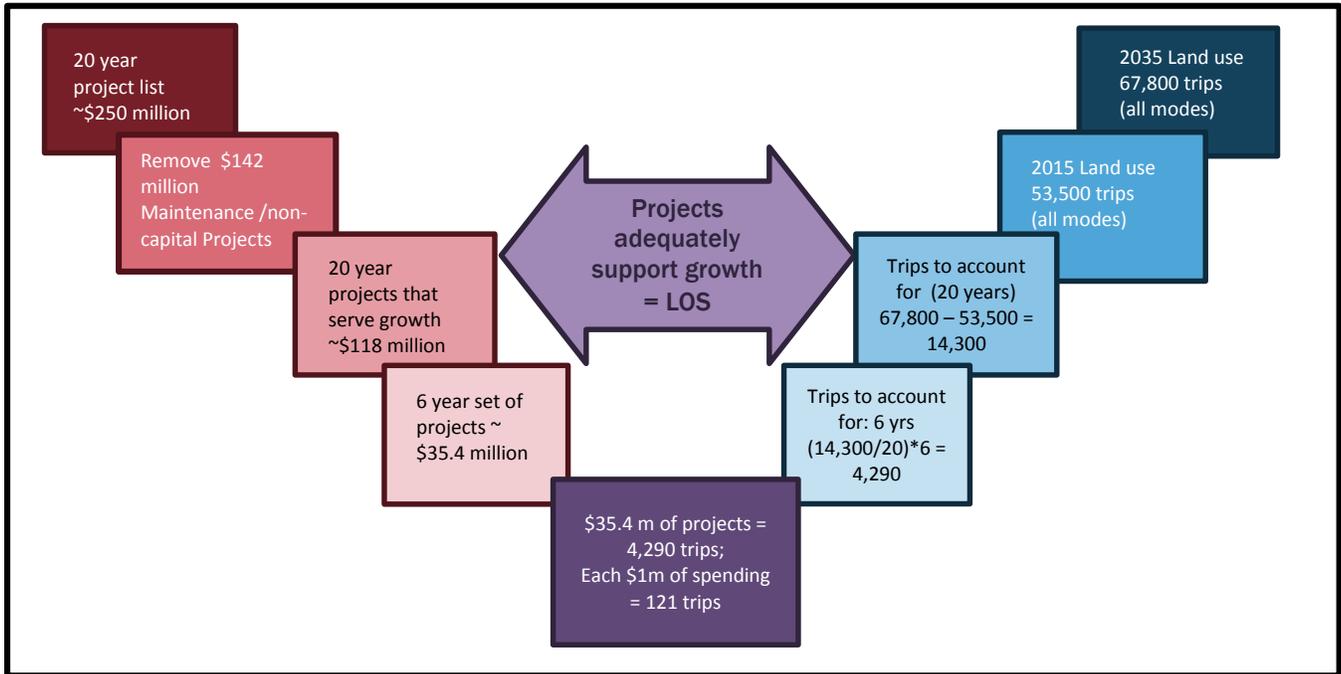
#### *The Proposed System*

The future system equates the number of new trips expected over the next 20 years with the cost of providing added capacity to the transportation network across all modes. This allows an expression of capacity spending needed per new trip allowed and allows spending to serve as a surrogate for project completion. Available trips are subtracted from the balance when new development projects are approved and are added to the balance when capacity projects are funded. A ledger system can be set up where the number of available trips is readily apparent.

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<sup>2</sup> There are two standards for passing concurrency. One is a subarea standard that compares conditions with the project to an average of intersections and the other is a maximum standard that prohibits any intersection from performing too poorly, regardless of the subarea average.

This system has the advantages over the existing system of both simplicity and importantly, accounting for improvement across all different modes, not just traffic signals. The new system is described graphically in the following set of illustrations:



**Figure 1. Relationship between land use and transportation network projects.**

On the right hand side of Figure 1 the upper blue boxes show how the total number of trips that need to be accommodated is calculated; it is the difference between the future and current number of trips. On the left hand side, the amount of funding available to provide facilities for the new trips is determined by subtracting maintenance and non-capital costs from the total funding amount.

The number of total new PM peak person trips is assigned to be equal to the new capacity of the total project list as shown by the purple arrow in the chart above. This is an important concept because this is the point where the plans for land use and transportation are joined. Success requires having strong plans that are supported by the community.

Equating trips and projects means that the capacity (in trips) can be determined for a given list of projects, such as funded projects on the hypothetical 6-year CIP shown in Table 1. The number of trips that a project can account for is based on the trips/\$ calculated in the lower purple box in Figure 1. For a given development project, the number of trips it produces is known based on readily available standards. Examples of these rates are shown in Table 2.

A ledger system can be set up (see Table 3) with a balance of trips "available" based on funded projects. As new land development projects are considered, the trips being proposed are compared to the trips available. If more trips are available than are being proposed by the new land development project, the project passes concurrency. If a project passes concurrency, its future trips are subtracted from the balance. Trips are added to the balance when transportation projects are added to the funded CIP. This system requires that if concurrency is to be maintained the 20-year project list needs to be implemented at a rate equal or faster than the rate of development, as measured by trips.

Table 1 Hypothetical 6 year funded list (excluding maintenance projects)		
Project	Cost	New person trips
Juanita Drive	\$20,000,000	2,428
ITS project	\$1,400,000	170
School walk routes	\$4,400,000	534
Shelters/stop amenities	\$1,300,000	158
New traffic signals	\$3,000,000	364
Flashing yellow arrows	\$1,000,000	121
Neighborhood Traffic Control	\$1,000,000	121
Greenways	\$3,250,000	393
<b>TOTAL</b>	<b>\$35,350,000</b>	<b>4,289</b>

Table 2 Sample Trip rates for various land uses		
Example Land use	Unit	Person Trips
Attached and stacked housing	Dwelling	0.94
Restaurant	1000 sq ft	16.55
Drive-in bank	1000 sq ft	29.59
Shopping Center	1000 sq ft	6.23
General Office Building	1000 sq ft	1.89
Supermarket	1000 sq ft	11.54

If fewer trips are available than what are required by the development, the development's proponents can choose how to move forward:

- Construct transportation improvements that add trip capacity. The nature of these improvements would be dictated by the City and be in keeping both with the impacts of the development and the projects that are on the City's project lists.
- Wait until more trip capacity is built by the City.
- Scale back the development scope so that it requires less trip capacity.

One of the advantages of the new system is its simplicity. It's clear to developers, staff and the public how many trips are available for development at any given time. As the example in Table 2 shows, because many land uses have standard trip rates associated with them, a table showing the number of trips a given size of development will contribute can be made. This allows anyone to understand the implications of a development to concurrency, and it streamlines the development review process.

Table 3 below illustrates the ledger concept:

Table 3 Sample ledger system for Concurrency				
Date	Item	Trips	Balance	Pass?
1/1	Start with 6 years of funded projects	+4290	4290	n/a
Throughout the year	Development 1 (10,000 sq. ft. retail; 100 units residential)	-156	4134	Yes
	Development 2 (200 units residential)	-188	3946	Yes
	Development 3 (Retail store expansion)	-103	3816	Yes
	Other projects (details omitted here) total	-400	3416	Yes
12/31	New CIP approved resulting in another year of funded projects	+525	4241	n/a

The numbers in Figure 1 and Tables 1 through 3 are based on the land use data associated with the 2035 no action alternative. Staff and the consultant are working to refine the numbers, especially with regard to how the Parkplace and Totem Lake projects should be treated Table 3. More information on this topic will be presented during the Study session presentation.

### *Concurrency options*

The above system describes a simple dollar-based method, which assigns trip values to new transportation network projects only based on project cost, rather than other policy objectives, such as modal accommodation or geographic equity. Below, we provide a high-level summary of how a dollar-based concurrency system might work compared with two other potential options. After reviewing the method described above and the two alternatives presented below, the Transportation Commission recommends the dollar based method and staff concurs with that recommendation.

- 1. Dollar-based method:** As described in the tables and text above, this is perhaps the most straightforward approach to tracking concurrency. Since the TMP will yield a project list that includes overall cost, and the City's target for new households and employees by 2035 is known, concurrency could be tracked by assessing how expenditures towards projects on the TMP project list is keeping pace with residential and employment growth. As previously described, concurrency would be measured by calculating whether the percent of the TMP project list completed (as measured in dollars) equals or exceeds the percent of planned development that has occurred (as measured in trips).
  - **Advantages:** Straightforward tracking and administration
  - **Disadvantages:** May favor large dollar value projects, and does not provide guidance on priorities amongst modes
- 2. Catch-up method:** Start with the dollar-based method, but weight the value of projects based on the relative gap between the current network and what is envisioned by 2035 (completion of the TMP). This "catch-up" method weights pedestrian, bicycle, and transit infrastructure more heavily since Kirkland's road network is relatively complete, yet the City has a long way to go to completing the bike, pedestrian, and transit networks. The weight is based on how much of a gap each mode has to close by 2035, as measured by the dollar value of projects to complete for that mode on the TMP project list. Using hypothetical numbers, if the auto system had \$20 million left in projects to complete 20-year envisioned network, but the pedestrian system had \$40 million in projects left to complete, this would translate into the need for the pedestrian network to be built at twice the rate of the auto/freight system from the perspective of closing the gap in ultimate system completion. The relative weights for each mode would be based on the gap between what is on the ground currently and the ultimate network as identified in the 20-year list.
  - **Advantages:** Provides guidance on modal priorities; weights can be updated over time to reflect the uneven pace of modal network completion
  - **Disadvantages:** Not as straight forward to implement and weights may be subject to debate
- 3. Policy-based method:** An alternative to the quantitative basis of the two prior methods is a policy-based approach that weights projects on how well they align with key City policies. This is an approach that has recently been considered in Redmond and to a certain extent in Bellingham. In Redmond, projects are prioritized for concurrency in a two-step process. First, projects are prioritized by the mode they serve with "policy points" developed to mirror the catch-up method's modal weights (in that system, pedestrian and transit projects are given the highest points and

auto/freight projects are given the lowest points). Then, individual projects within modal networks are rated based on how well a project advances the key transportation goals. For Kirkland, this could be adherence to the adopted goals in the Transportation Element.

- **Advantages:** Provides guidance on modal priorities; provides a clear nexus between the adopted goals and projects that move forward
- **Disadvantages:** Not as straightforward to implement; “policy points” may feel arbitrary and will be subject to debate

### *Summary*

It would be helpful if Council could consider the following questions regarding concurrency:

- Are there any aspects of the proposed system that still need explanation?
- Is the proposed concurrency system acceptable, or should changes be made?
- Should the Catch-up or policy based method be used in place of the dollar based method?

## Level of Service

### *Why do we have Level of Service standards?*

Under the Growth Management Act, Level of Service is a requirement of transportation elements in each city's Comprehensive Plan. Level of service serves as a useful evaluation tool. For example, it can be used as a prioritization factor for transportation projects. Under the existing concurrency system, the level of service at signalized intersection is the measure by which concurrency is determined. As outlined above, the proposed concurrency system is disconnected from the level of service.

**Table 4. Level of service in the current Transportation Element of the Comprehensive Plan for various modes.**

Mode	Existing Level of Service Standard
Walking	By 2022, 155 miles of pedestrian facilities; six east-west and four north-south completed corridors
Biking	By 2022, 59 miles of bicycle facilities; four east-west and 2 north-south completed corridors
Transit	by 2022 35% transit/bike/ped modes split for peak-hour trips between work and home
Auto	V/C ratio at signalized intersections in four subareas, and no intersection with V/C ratio greater than 1.4.

Perhaps most fundamentally, level of service can be used to assess whether or not the proposed land use and transportation network are appropriate matches for each other (see the purple arrow in Figure 1 above in the discussion on Concurrency). Given a land use plan and a transportation network, if the proposed levels of service are not acceptable, adjustments to either the network or land use plan have to be made, and, if necessary, goals and policies that underpin the network and land use choices need to be revisited.

### *Anatomy of a level of service standard*

On January 28, the Transportation Commission had a hearty discussion about level of service standards and their recommendations are the basis for the system described below. Level of service standards for each mode primarily address completeness of various aspects of the transportation network, in order to complement the concurrency system and to directly measure something for which the city has control. Therefore, we are using the term level of completion in place of level of service when referring to the actual measure. Because the Growth Management Act requires we use the term Level of Service, that's the term used for the overall approach. The level of completion choices made for each mode are aligned with the proposed 20 year project list as discussed at the October 21, 2014 Council meeting (see discussion beginning on Page 6 of Attachment 1).

In general, the level of completion is an outcome of choices made based on available funding and on the goals and policies of the Transportation Master Plan. This is in contrast to being chosen for purely subjective reasons. For example a set of auto projects could have been

developed around a relatively low level of delay. This would be a very expensive set of projects that would have resulted in the types of road widening that is not in keeping with the Plan vision. Staying with the auto example, in the proposed method, rather than using performance as an input, it is an outcome. Based on the goals and policies, which include being fiscally sustainable, the auto project list is focused on ITS and selected intersection projects. The resulting delay is forecast to be somewhat poorer than today's level of delay. Considering level of service as an outcome rather than an input is consistent with the manner in which it is treated in the current and in previous Comprehensive Plans.

Each level of completion standard has 3 values:

- Behind schedule – completion is 90% or less of target
- On schedule – completion is between 90% and 110% of target
- Ahead of schedule – completion is more than 110% of target

Time is the basis of the level of completion. Level of completion measures the rate of project completion over the course of the 20 year period. For example, after 5 years (one quarter or 25% of the 20 year period), the target is for at least one quarter or 25% of projects to be completed.

#### *What's being measured?*

The draft 20 year transportation plan that was shared with Council on October 21 (Attachment 1, beginning on Page 6) had 21 categories of capital projects as shown in Table 5. The items in red are those selected for measuring level of completion and their completion targets are shown in Table 6.

Other measures of effectiveness can be reported in "report cards" and annual reports such as crashes, volume and progress toward support related measures and this is certainly the intention based on the direction in the Plan's goals and policies. The measures chosen for level of service standards were selected based their relative ease of measurement and their importance for their respective mode.

#### *Completion versus Capacity*

Note that for some items, like the Greenway network, completion is the important factor. The need is to complete a network; it's not likely to be overly congested. This is in contrast to the auto network where we are usually concerned with capacity instead of completion. The Transportation Commission suggested using number of new trips<sup>3</sup> instead of, or in addition to the time based method described above. Having two measures is somewhat confusing, and for most measures time is the appropriate basis. A trip based measure should be calculated and reported as a measure of effectiveness.

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<sup>3</sup> That is, the fraction of new trips forecast to be on the system in the next 20 years.

**Table 5. Capital project categories. Categories with level of completion standards are shown in red.**

<b>Maintain</b>	<b>Walk</b>	<b>Bike</b>	<b>Auto</b>
Pavement	Sidewalks	On-street bike lanes	Safety
Markings	CKC	Greenways	Respond/support development
Signals	Crosswalks	Support	Efficiency
Sidewalks	Trails		Capacity
	Accessibility		
	Support	<b>Transit</b>	
		Service	
		Speed and reliability	
		Passenger environment	
		Support/TDM	

**Table 6. Level of completion**

Item	What is to be completed with the 20 year plan
Maintain: Pavement condition	Collector and arterial streets with new surface.
Walk: School Walk Routes	Collector and arterial streets with complete walkway on one side.
Walk: 10 minute neighborhoods	Collector and arterial streets with complete walkway on one side, (highest scoring 10 minute neighborhoods).
Walk: Crosswalks	Upgrade 85 crosswalks on arterials that have limited improvements and 71 crosswalks with poor lighting.
Bike: On-street bike lanes	Improve the bike system (see Map 1) to better than 5' wide buffered lanes.
Bike: Greenway network	Complete the greenway network <sup>4</sup> (see Map 1).
Transit: Passenger environment	Improve lighting, shelters, etc at 30 highest ridership locations.
Transit: Speed and reliability	Transit signal priority at 45 intersections <sup>5</sup> on high priority transit routes.
Auto: ITS	Improvements to ITS system <sup>6</sup> including connecting signals, parking technology, advance control methods and improved traveler information. Budget = \$5.8m
Auto: Capacity projects	NE 132 <sup>nd</sup> Street intersection and street projects 100 <sup>th</sup> Avenue construction Interchange design/development Juanita Drive Auto improvements

<sup>4</sup> Excludes two bridges over I-405

<sup>5</sup> Placeholder improvements pending completion of transit plan

<sup>6</sup> Improvements beyond work currently funded

Table 7 illustrates how the level of completion would be reported using a hypothetical example in year 5 of 20. The 3<sup>rd</sup> column from the left shows a hypothetical amount of completion in the 5<sup>th</sup> year. The rightmost column shows a level of completion based on the scoring levels on page 8.

**Table 7. Hypothetical Level of Completion report. Year 5 of 20 (25%)**

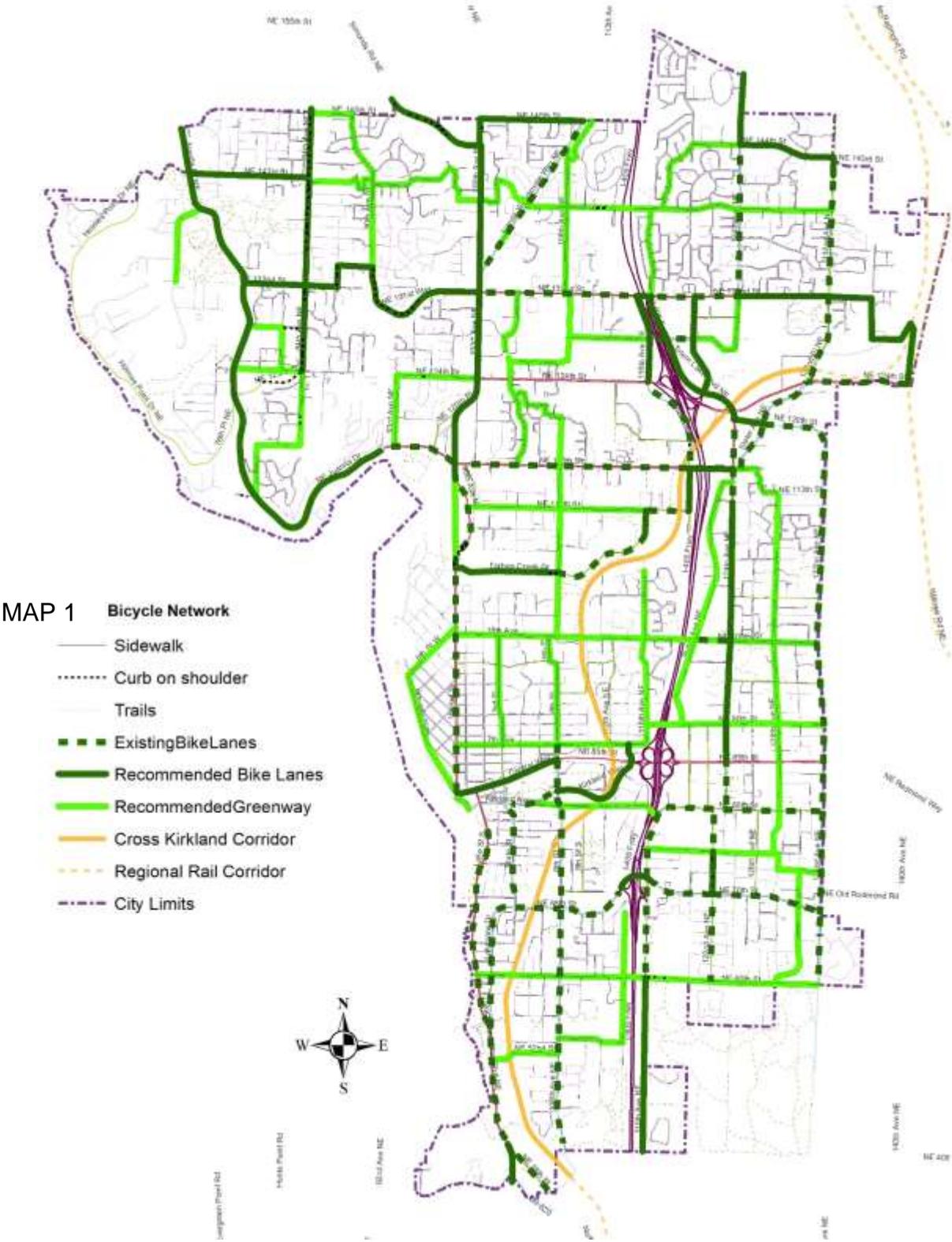
Item	What is to be completed with the 20 year plan	Example % of 20 yr list complete	Example Level of Completion
Maintain: Pavement condition	Collector and arterial streets with new surface.	25%	On Schedule
Walk: School Walk Routes	Collector and arterial streets with complete walkway on one side.	50%	Ahead of Schedule
Walk: 10 minute neighborhoods	Collector and arterial streets with complete walkway on one side, (highest scoring 10 minute neighborhoods).	10%	Behind Schedule
Walk: Crosswalks	Upgrade 85 crosswalks on arterials that have limited improvements and 71 crosswalks with poor lighting.	23%	On Schedule
Bike: On-street bike lanes	Improve the bike system (see Map 1) to better than 5' wide buffered lanes.	30%	Ahead of Schedule
Bike: Greenway network	Complete the greenway network <sup>7</sup> (see Map 1).	45%	Ahead of Schedule
Transit: Passenger environment	Improve lighting, shelters, etc at 30 highest ridership locations.	27%	On Schedule
Transit: Speed and reliability	Transit signal priority at 45 intersections <sup>8</sup> On high priority transit routes.	0%	Behind Schedule
Auto: ITS	Improvements to ITS system <sup>9</sup> including connecting signals, parking technology, advance control methods and improved traveler information. Budget = \$5.8m	0%	Behind Schedule
Auto: Capacity projects	NE 132 <sup>nd</sup> Street intersection and street projects 100 <sup>th</sup> Avenue construction Interchange design/development Juanita Drive Auto improvements	15%	Behind Schedule

<sup>7</sup> Excludes two bridges over I-405

<sup>8</sup> Placeholder improvements pending completion of transit plan

<sup>9</sup> Improvements beyond work currently funded

Map 1. Bicycle Network



*Summary*

It would be helpful if Council could consider the following questions regarding level of service/level of completion:

- Are there any aspects of the proposed system that still need explanation?
- Is the proposed method the right approach?
- Are we measuring the right things?
- Is there general agreement with transportation network that is being proposed for completion over the next 20 years?

## **Travel Modeling**

The Bellevue-Kirkland-Redmond travel model (BKR model) is an analysis tool used by multiple Eastside communities to forecast travel demand growth for various transportation planning applications, including impact assessments, concurrency, and impact fees programs. Accordingly, the BKR model is being used to inform traffic forecast development for the TMP, Comprehensive Plan Environmental Impact Statement, and Totem Lake Planned Action Ordinance. As described below, several updates and adjustments were applied to the BKR model to generate results in-line with the Kirkland No Action land use alternative.

### *Background on the BKR Model – What is it?*

The BKR model was originally developed in the early 1990s by Cities of Bellevue, Kirkland and Redmond staff as a tool for transportation planning and concurrency monitoring. The model has been periodically updated over the years in a cooperative manner by staff from the cities and consultants to incorporate changes in land uses and travel patterns. Current updates planned for the model include:

- Refine traffic analysis zones (TAZ described below) within Bellevue, Kirkland and Redmond to ensure land use data consistency and more accurate traffic model forecasting.
- The Puget Sound Regional Council (PSRC) recently conducted a household travel survey in the Puget Sound region, providing detailed information about individual's trip making behavior and the model is being updated to take advantage of the information from that survey.
- Movement to a model that does a better job of predicting trips from non-auto modes. This will improve the validity and accuracy of travel forecasts to better support our short- and long-range planning efforts.

The BKR model is a classic four-step model. For over half a century, four-step models have been the primary tool for estimating future travel demand for transportation planning projects in the United States. These models use a series of calculations that determine trip characteristics based on assumed land use patterns, socio-economic data and transportation system parameters.

In a typical travel demand modeling exercise a study area is divided into geographic subareas called Travel Analysis Zones (TAZ). Map 2 shows the boundaries of the TAZs in Kirkland. In urban areas, TAZs can range in size from a few blocks to a small neighborhood. The travel demand model is comprised of four sequential sub-models– hence the four-step nomenclature. As shown in Figure 3, these steps are:

1. Trip Generation
2. Trip Distribution
3. Mode Choice
4. Route Assignment

Map 2. Transportation Analysis Zones for the BKR model in Kirkland.

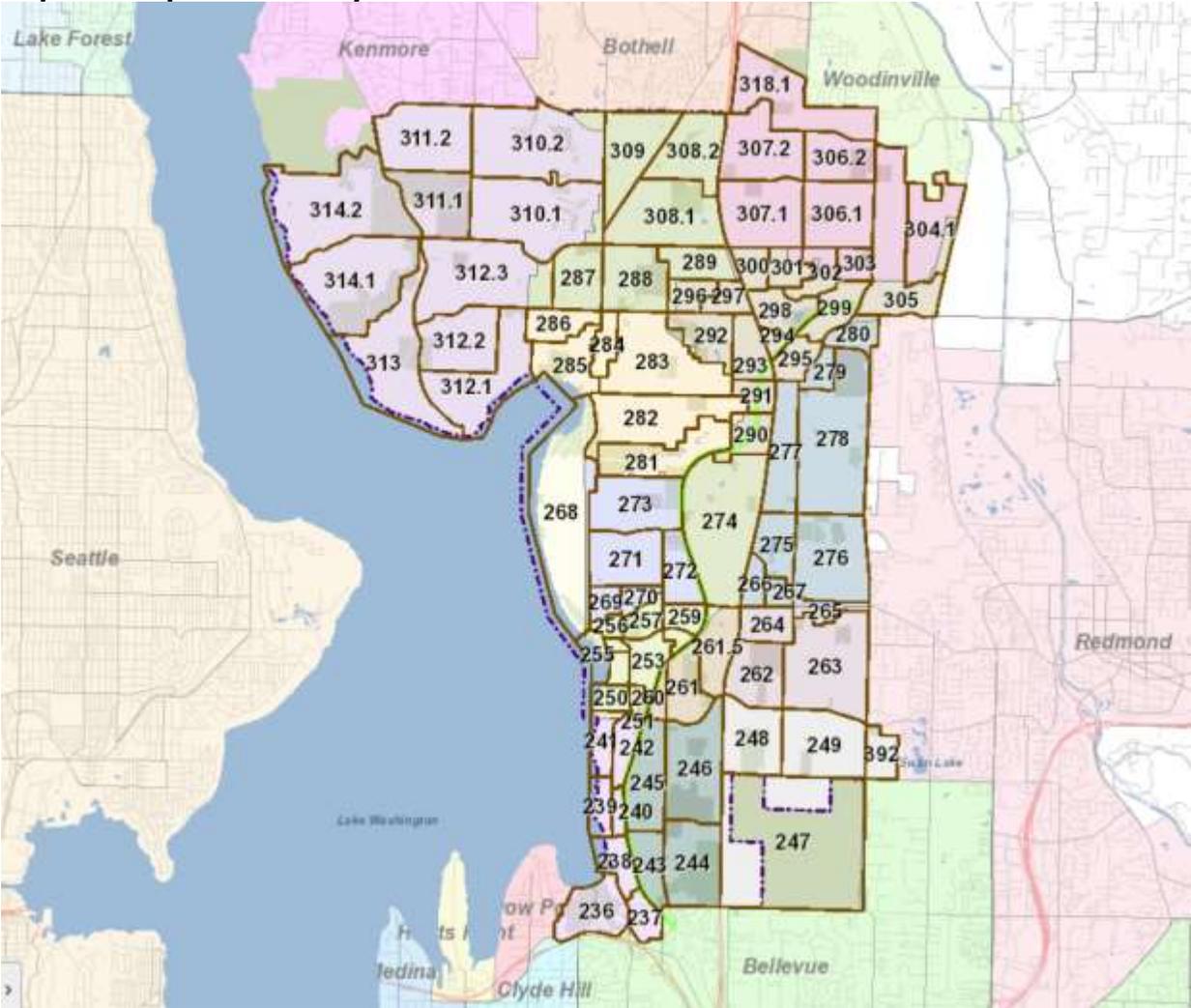
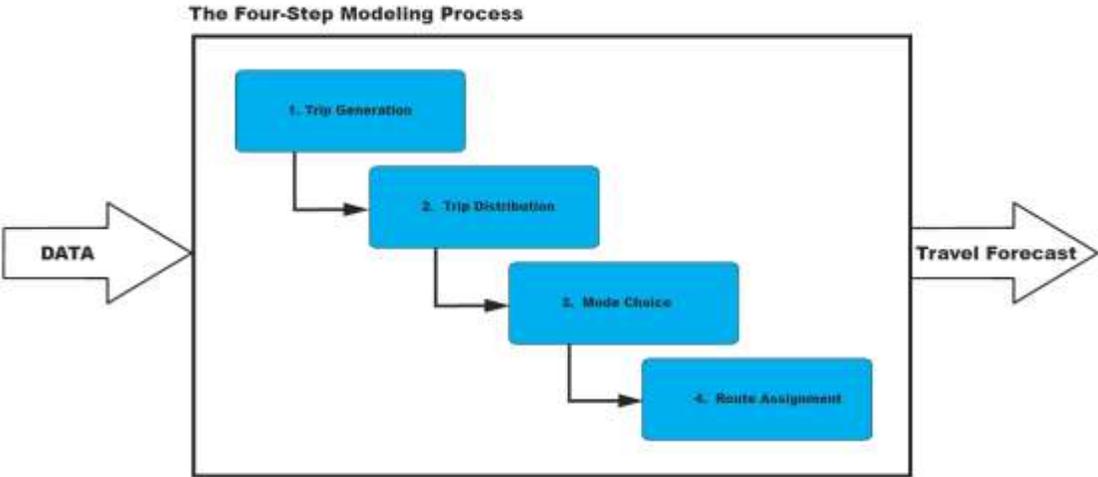


Figure 3. The four step modeling process.



Trip Generation – determines the number of trips generated in a TAZ based on land use and socio-economic parameters. For instance, highly populated zones with affluent households tend to generate more trips. Trip generation rates are based on regression analysis of historical data.

Trip Distribution – determines originating and destination zones of each predicted trip based on gravity models that judge the relative attractiveness of individual zones. In this case zones with more retail space will attract more shopping trips. And all things being equal, trips will be distributed between closer zones avoiding long distance trips.

Mode Choice – determines the travel mode used for individual trips based on utility model focusing on cost, convenience and travel time comparisons between modes. To this point in the model, all trips are analyzed as person trips. Based on mode choice decisions, vehicle trips can be estimated using assumed vehicle occupancy levels.

Route Assignment – determines which path each trip will take between its origin and destination. This step assigns automobile trips to specific roadways and transit trips to unique bus routes. This is an iterative process seeking to minimize travel time based on traffic congestion. For example, if too many trips are assigned to a given street, the resulting congestion causes excessive delays and trips need to be reassigned to alternate paths until the overall system is balanced.

Before being used to forecast alternative transportation system scenarios, model results are calibrated against known travel demands, adjusting calculation parameters (coefficients) to match model outputs to known travel demands. Model parameters and calibration use data available from vehicle (all modes) counts, transit passenger counts, regional household survey and US Census data.

#### *Operations Analysis*

The end product of a travel model is an estimate of traffic volumes along individual segments of the network. The BKR model can provide both segment-level forecasts (for example, the number of cars traveling along Lake Washington Boulevard in the PM peak hour) as well as turn movements at individual intersections.

The segment and turn movement forecasts, in turn, are used to evaluate traffic operations on Kirkland's streets and intersections. Turning movements can be input into a variety of more detailed operational models that predict measures such as vehicle wait times at intersections.

#### *Land Use Input Updates*

The most recent version of the BKR model uses 2035 land use inputs collected and assembled by the City of Bellevue. As part of the Comprehensive Plan update, the City of Kirkland has developed a more refined set of land use data for the 2035 no action growth alternative based on a development capacity analysis. This data set was provided to Fehr & Peers and integrated into the BKR model so that it more accurately reflects 2035 no action land use conditions.

#### *Mixed-Use Development (MXD) Model Adjustment*

In its current state, the BKR model does not fully recognize the reduction in vehicle trips that occurs in and around mixed-use developments, such those that currently exist in Downtown Kirkland and those envisioned for portions of the Totem Lake neighborhood. To account for vehicle trip reductions, Fehr & Peers used an innovative trip generation analysis technique

known as the mixed-use development (MXD) model. The MXD model is based on a growing body of research which focuses on the relationship between travel and the built environment. This method supplements conventional trip generation methods to capture effects related to built environment variables (known as the Ds) including density, diversity of land uses, destinations (accessibility), development scale, pedestrian and bicycle design, distance to transit services, and demographics. In short, places with higher densities, a rich variety of land uses close to one another, and high quality pedestrian, bicycle, and transit environments have lower vehicle trip generation rates. People have more choices in terms of both the travel mode as well as how far they must travel to reach various destinations. The MXD method provides a more reasonable picture of how travel characteristics change over time by avoiding overestimates of the number of vehicle trips that infill projects generate.

Using the MXD model, Fehr & Peers produced vehicle-trip reduction factors for Downtown Kirkland and Totem Lake, two neighborhoods with existing mixed-use developments and/or significant mixed-use growth envisioned under the 2035 No Action lane use alternative. These vehicle trip reduction factors were applied to the BKR model and integrated into the final traffic forecasts as summarized below:

**Table 10, Vehicle Trip Reduction Factors Applied to BKR Model**

<b>Neighborhood</b>	<b>Current Year</b>	<b>2035 No Action</b>
Downtown	32%	36%
Totem Lake	0%	25%

### **Next Steps for the TMP**

A Council Study Session is planned for April 21 at which time a nearly complete Transportation Master Plan will be presented for Council review. The Planning Commission and Houghton Community Council will also be reviewing the plan in late April. Portions of the Plan will be finalized with completion of the CIP and adoption of the Comprehensive Plan. The Transportation Commission continues to be the lead group in reviewing and guiding development of the Plan.



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**MEMORANDUM**

**To:** Kurt Triplett, City Manager  
**From:** David Godfrey, P.E., Transportation Engineering Manager  
Kathy Brown, Public Works Director  
**Date:** October 9, 2014  
**Subject:** Transportation Master Plan Update

**RECOMMENDATION:**

It is recommended that the City Council receive a briefing and give direction on the Transportation Master Plan (TMP). Specifically, staff is seeking comment on the draft Goals and Policies, a draft 20 year Project List and on initial information concerning Impact Fees.

**BACKGROUND DISCUSSION:**

**Introduction**

Kirkland’s TMP will serve two major purposes (Figure 1). Its goals and policies will be the basis of the Transportation Element in the revised Comprehensive Plan. Action items, priorities and other information will also be provided to complete the TMP and form a fuller picture of how the goals and policies are to be implemented than would be covered in a Transportation Element by itself. Development of the plan is being guided by the Transportation Commission with extensive public input through the City’s overall Comprehensive Plan public involvement process.

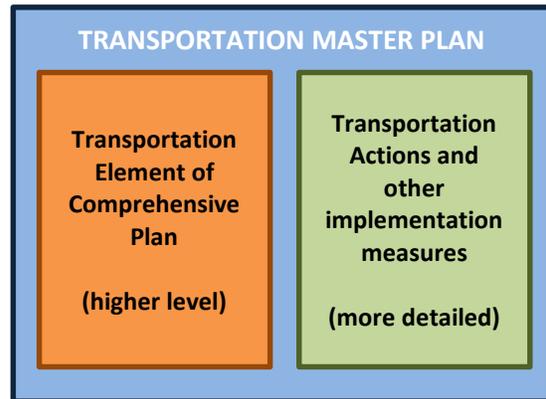


Figure 1 The Transportation Master Plan has two major components.

**Goals and Policies**

Goals and Policies are the basis for the Transportation Element of the Comprehensive Plan. At the January 7, 2014 Council meeting draft goals and policies were discussed and a large amount of valuable feedback was received. Revisions and expansion of the Goals and Policies based on those comments and Puget Sound Regional Council requirements has been completed and is Attachment 1. The Transportation Commission has reviewed the document in detail, and the Planning Commission also offered comments at a recent briefing.

In Summary, the Goals and Policies are meant to reflect the Kirkland 2035 vision – Green, Livable, Walkable, Vibrant, Accessible, Sustainable-- and four transportation principles<sup>1</sup>: Move People, Link to Land Use, Be Sustainable, Be an Active Partner. There are 49 policies arranged under 8 goals, as shown in Table 1.

<sup>1</sup> These principles are from the *Transportation Conversations* document prepared by the Transportation Commission and endorsed by the City Council in 2010

There are still portions of the Goals and Policies that are yet to be fully written and minor new material that will likely be added in response to other comments that are received through future reviews.

As described above, although the Goals and Policies are the foundation of the Transportation Master Plan, more information will be added to the Goals and Policies, prior to Council adoption, to make a comprehensive document. A first aspect of that expansion is included in the form of Actions that accompany many Goals. Note that to complete some of these Actions (e.g. revise the Active Transportation Plan, prepare a Transit Plan) funding will be required.

We are requesting that Council members provide any comments they have on the draft document at the study session. This will allow staff to finalize the Goals and Policies and complete a draft of the final Transportation Master Plan. Given the length of the document and the time available at the study session, Council may not have time to discuss the Goals and Policies in detail during the study session and may instead want to discuss only points of particular interest. The following questions are offered as possible starting points for that discussion:

- Are there questions or comments about the introduction or the transportation concept?
- Are there overall themes that need more emphasis or decreased emphasis in the Goals and Policies?
- Should other goals or policies be added? Is there material that should be deleted?
- Are there any particular areas that need changes?

Table 1 Goals and Policies

***T-1 Walking - Form a safe network of sidewalks, trails and crosswalks where walking is comfortable and the first choice for many trips.***

**Policies**

1. Identify and remove barriers to walking.
2. Improve the safety of walking in Kirkland.
3. Make getting around Kirkland on foot intuitive.
4. Prioritize and design sidewalk construction in a manner that supports other goals in the Plan.
5. Develop world-class walking facilities along the CKC/Lakeshore.
6. Make it safer and easier for children to walk to school and other destinations.
7. Improve street crossings.

***T-2 Biking – Interconnect bicycle facilities that are safe, nearby, easy to use and popular for people of all ages and abilities.***

**Policies**

1. Measure bicycle use and safety.
2. Create and improve on-street bike facilities.
3. Build a network of greenways.
4. Implement elements and programs that make cycling easier.
5. Make it easy to navigate the bike network.
6. Make the Cross Kirkland Corridor an integral part of the bicycle network and connect it to the region.

***T-3 Public Transportation - Support and promote a transit system that is recognized as a high value option for many trips.***

**Policies**

1. Plan and construct an environment that supports frequent and reliable transit service in Kirkland.
2. Support safe and comfortable passenger facilities.
3. Integrate transit facilities with pedestrian and bicycle networks.
4. Support Transportation Demand Management in Kirkland particularly at the work sites of large employers and other locations.
5. Implement transit on the Cross Kirkland Corridor.
6. Work with Sound Transit to incorporate investments in Kirkland.
7. Partner with transit providers to coordinate land use and transit service.

Table 1 Goals and Policies (continued)

***T-4 Motor Vehicles - Provide for efficient and safe vehicular circulation recognizing congestion is present during parts of most days.***

**Policies**

1. Make strategic investments in intersections and street capacity to support existing and proposed land use.
2. Use ITS to support optimization of roadway network operations.
3. Position Kirkland to respond to technological innovations such as electric vehicles and driverless cars.
4. Take an active approach to managing on-street and off-street parking.
5. Work with the Washington State Department of Transportation and the State Legislature to improve the way I-405 and SR 520 meet Kirkland's transportation interests. (see Partnership Policy T-7.3)
6. Reduce crash rates for motor vehicles.
7. Mitigate negative impacts of motor vehicles on neighborhood streets.

***T-5 Link to Land Use - Create a transportation system that is united with Kirkland's land use plan.***

**Policies**

1. Focus on transportation system developments that expand and improve walkable neighborhoods.
2. Create a transportation network that supports economic development goals.
3. Develop transportation improvements tailored to commercial land use districts such as Totem Lake, Downtown and neighborhood business areas.
4. Adopt requirements and practices for all future development that support transportation infrastructure

***T-6 Be Sustainable – As the transportation system is planned, designed, built, maintained and operated, provide mobility for all using reasonably assured revenue sources while minimizing environmental impacts.***

**Policies**

1. Balance overall public capital expenditures and revenues for transportation.
2. Place highest priority for funding on maintenance and operation of existing infrastructure rather than on construction of new facilities. Identify and perform maintenance to maximize the useful lifetime of the transportation network at optimum lifecycle cost.
3. Support modes that are energy efficient and that improve system performance.
4. Minimize the contribution of transportation to air and water pollution; comply with Federal and State air and water quality requirements.
5. Safeguard the Transportation System against disaster.
6. Create an equitable system that provides mobility for all users.
7. Implement transportation programs and projects in ways that prevent or minimize impacts to low-income, minority and special needs populations.
8. Actively pursue grant funding and innovative funding sources.

Table 1 Goals and Policies (continued)

***T-7 Be an Active Partner - Coordinate with a broad range of groups, public and private, to help meet Kirkland's transportation Goals.***

**Policies**

1. Play a major role in development of Sound Transit facilities in Kirkland.
2. Establish commitments from transit providers to provide high quality transit service in exchange for land use and transportation commitments that support transit. Partner with King County Metro to meet mutual interests.
3. Work with WSDOT and the Washington State Legislature to achieve mutually beneficial decisions on freeway interchanges and other facilities.
4. Participate in and provide leadership for regional transportation decision making.
5. Work closely with the Lake Washington School District to encourage more children to walk and bicycle to school.
6. Coordinate multi-modal transportation systems with neighboring jurisdictions.
7. Partner with the private sector and other new partners.
8. Engage in a multi-agency, multi-disciplinary Safety program.

***T-8 Transportation Measurement - Measure and report on progress toward achieving goals and actions.***

**Policies**

1. Use a multi-modal plan based concurrency method to monitor the rate at which land use development and the transportation system are constructed.
2. Establish acceptable level of service for all modes.
3. Mode split (under construction)
4. Ensure implementation of the Goals and Policies in the Transportation Element and monitor progress toward those goals.

**20 year project list**

A 20 year project list is a required element of the Transportation Element and of the Capital Facilities element of the Comprehensive Plan. It serves as a source and guide from which projects for the 6-year Capital Improvement Program will be selected. Although funding does not have to be identified for each project on the 20 year list, it is required that, as a whole, funding for the projects can be reasonably expected to be available over the life of the plan.

The intent of the Study Session on October 21 will be for Council to become familiar with an initial set of projects that can be funded with reasonably expected revenue. As is described below, for some categories of projects significant detail is available. In other areas, more detail needs to be provided prior to completing a list. Before staff and the consultant begin a more detailed refinement of the list, it will be helpful to have Council's reactions to the draft list in a general sense. This is reflected in some suggested questions for Council near the end of this section. At the study session we hope to have additional maps available that will help explain the project list.

Based on past data, funding over the next 20 years is expected to be a total of approximately \$250 million for capital needs (Table 2). The appropriate allocation of this \$250 million across project categories is the essence of creating the 20 year project list.

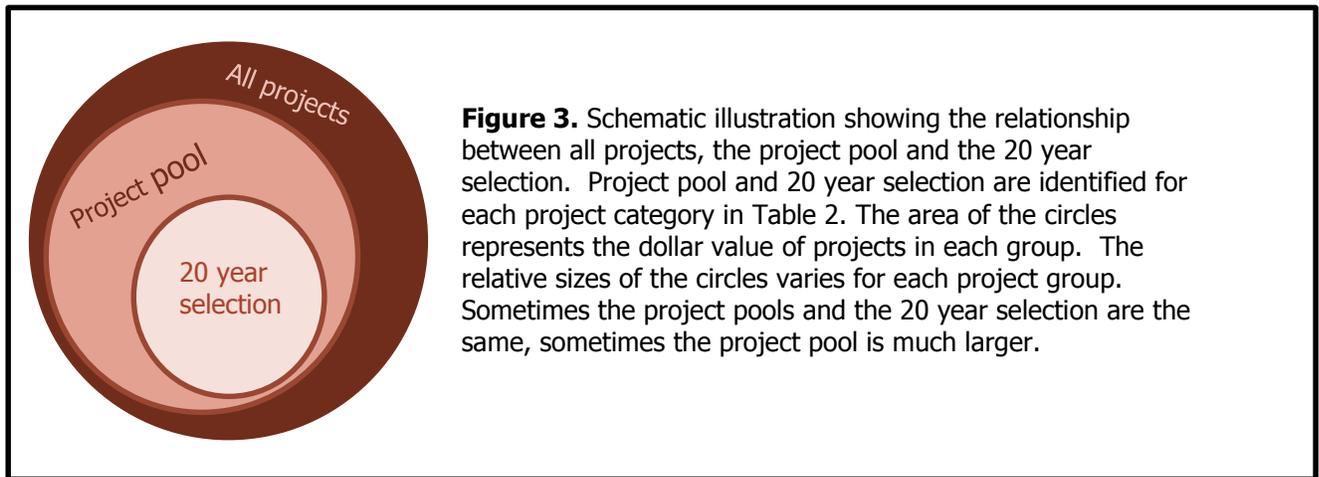
Table 2 Sources of Capital project funding

Capital project funding	
Source	Annual Amount (million)
Gas tax	\$ 0.56
Sales tax	\$ 0.27
Real estate excise tax	\$ 1.42
Street levy	\$ 2.60
Solid waste fund	\$ 0.30
Surface water fund	\$ 0.50
Impact fees	\$ 2.00
Grants	\$ 3.50
Developer Fees	\$ 1.25
Other	\$ 0.25
TOTAL	\$12.65
	<i>Rounded down to \$12.50 million per year or \$250 million over 20 years.</i>

Staff's approach for preparing the 20 year project list was as follows:

1. By policy, recognize a 20 year street maintenance budget of approximately \$85 million of street levy and other committed funds.
2. Establish project categories within each mode (Walk, Bike, Transit, Auto) based on results from the April 15, 2014 Council study session (see Table 2).

3. For each project category, develop a *pool* (see figure 3) of potential projects. This is a larger set of projects in a given category based on staff judgment, complete networks, existing CIP projects, corridor studies, etc.
4. For each project category, develop a *recommended set of projects* (see Figure 2). For most project categories, this is based on a combination of a) projects that will meet the goals and policies in the draft plan, b) fiscal balance across project types c) projects that have been previously developed and d) staff's judgment of a sensible level of completeness for a project category. Sometimes it represents a placeholder amount awaiting another level of analysis.
5. Perform an analysis similar to 2 and 3 above for other maintenance needs over the next 20 years.



It's expected that after the 20 year list is finalized, it will serve a main source of future CIP projects and individual projects will be prioritized within groups based on the prioritization criteria in the Goals and Policies. The 20 year list should be updated in coordination with the CIP process. In many cases, pool projects that are not recommended could serve as an unfunded list of projects to be considered for grant opportunities and to illustrate what is to be constructed in the longer term.

Using the method described above, an initial allocation of funding has been made as summarized in Table 2 below. Note that, in order to give them context and because they directly support goals and policies, several non-capital funding categories (for example transit funding and support for bicycle and walking) have been included in the summary table. Those costs have been subtracted from the overall cost to give a final total of \$250 million. In order to pay for these non-capital projects, other sources of capital funding would need to be identified.

A summary of the information in Table 2 is represented in Figure 4 and more detail is shown in Figure 5. These charts do not include pavement maintenance since the funding amount is set by policy.

Table 3, beginning on page 11, shows, in more detail, the projects that are in both the pool and that were selected for the 20 year project list recommendation. Information about the category's relationship to safety, considerations for timing of project delivery and relationship to the goals and policies is also shown.

Note that although not many projects are specifically designated as "safety projects", almost all the projects have aspects that increase safety for pedestrians, cyclists or drivers. The Motor Vehicle safety category includes a "target zero" type program. Target Zero is Washington State's name for a multi-disciplinary, multi-agency approach to reducing injuries and fatalities to zero. Because of its statewide focus, Target Zero has emphasis areas that may not be appropriate for Kirkland. Programs from other cities such as New York or San Francisco may be better candidates to adopt to our needs. A common feature of all these programs is that they consider safety improvements from a broad perspective as opposed to developing silos around engineering, injury treatment, collision avoidance systems within a vehicle, etc.

### **Remarks on the 20 year project list shown in Table 3**

- The term "project" is used for simplicity but some of the "projects" are actually programs (Support for biking or walking) or groups of smaller projects (e.g. complete greenway network).
- The Transportation Commission has reviewed and commented on the draft 20 year list at both their regular September meeting and a Special meeting on October 3.
- If new funding were available, the Transportation Commission's highest priorities would be for increased funding for the Cross Kirkland Corridor.
- A Transportation Benefit District is an example of a potential new funding source; a \$20 car tab is expected to generate approximately \$2 million per year.
- As described above, some of the items in Tables 2 and 3 are not capital costs, but are included in these tables to put them in context with rest of the capital improvements.
- At this point, the project costs are at a planning level of accuracy. As noted in Table 3, in some cases the magnitude of the complete or 20 year project need is not known and placeholder amounts are shown.
- For some groups, the recommended area includes a placeholder amount, for example the flashing yellow arrow program.

A series of reference maps begins on Page 19. They are intended to help give some geographic context to the projects in Table 3. Additional and more refined versions of these maps will be available at the Study Session on October 21.

- Figure T-1 is a map of street classifications from the existing Comprehensive Plan, there are references to various street classifications in Table 3.
- Map 1: traffic signals and sidewalk coverage this may be useful in understanding maintenance needs for these items.
- Map 2: the proposed bicycle network.
- Map 3: school walk routes, completed and incomplete.
- Map 4: includes crosswalks that are candidates for lighting and other improvements.
- Map 5: transit routes and stop volumes.
- Map 6: Motor vehicle projects in the capacity and respond to new development categories.

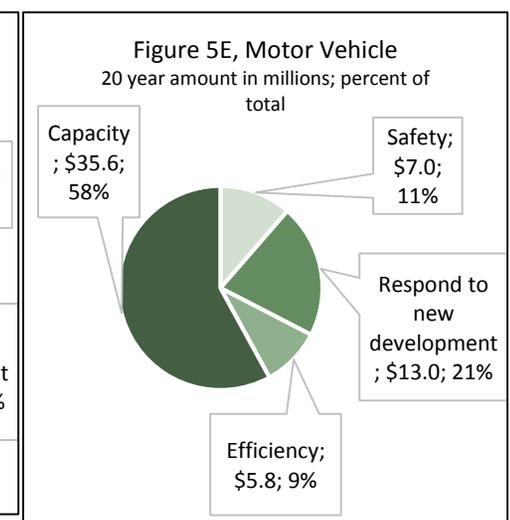
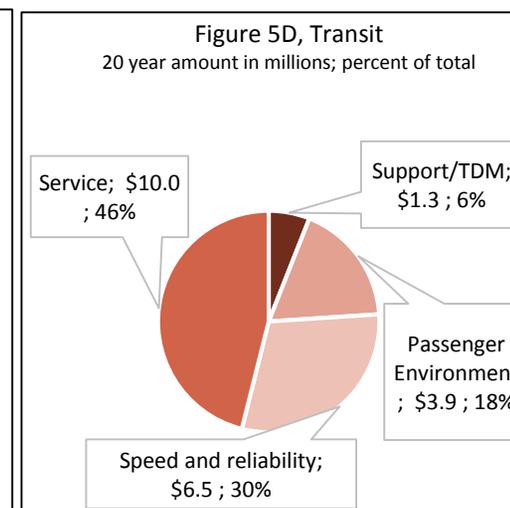
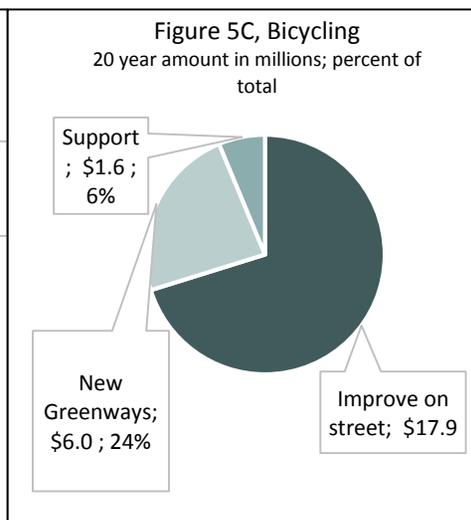
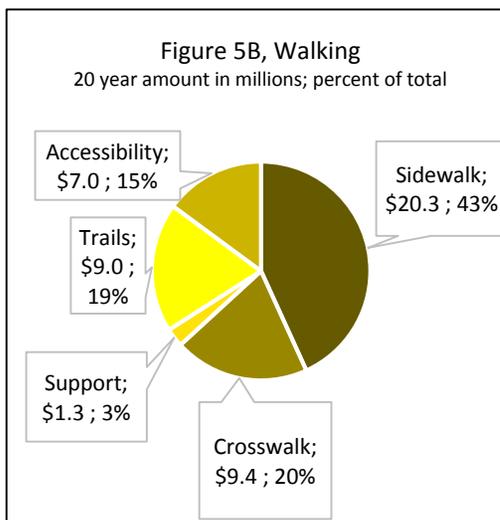
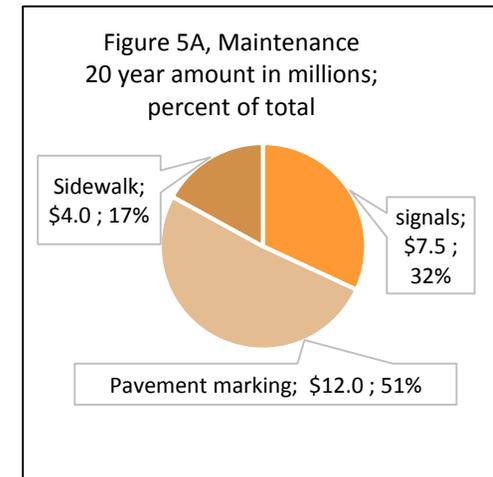
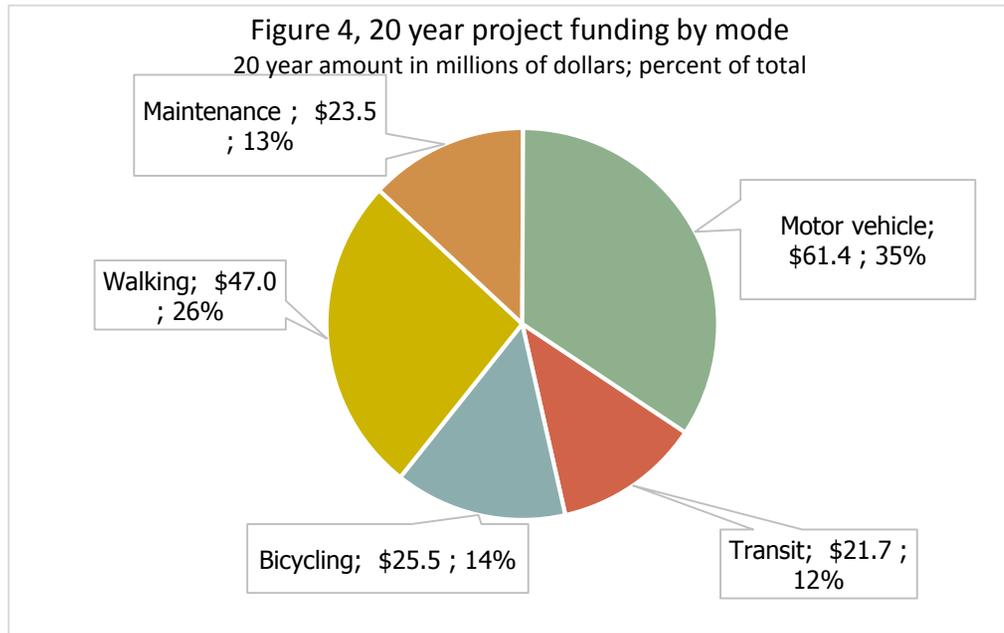
As with the Goals and Policies it will be helpful if Council members can provide any comments they may have on the 20 year list. Staff will be available to answer questions and clarify any details that are unclear. Some potential questions/discussion points are presented below:

- Is the balance appropriate across project modes?
- Are there project categories that should be added or modified?
- Does the proposed project list adequately reflect the goals and policies? If not, what changes should be made?

**Table 2 Summary of recommended funding categories and 20 year funding proposals**

<b>MAINTENANCE (CIP CONTRACTED)</b>		<b>WALK</b>		<b>BIKE</b>		<b>TRANSIT</b>		<b>MOTOR VEHICLES</b>	
Category	20 year funding (millions)	Category	20 year funding (millions)	Category	20 year funding (millions)	Category	20 year funding (millions)	Category	20 year funding (millions)
<b>Signal maintenance</b> Signals, RRFB, School flashers, etc.	<b>\$7.5</b>	<b>Sidewalk</b> Build new sidewalks	<b>\$20.3</b>	<b>On-Street</b> Create new and improve existing on-street bike facilities.	<b>\$17.9</b>	<b>Service</b> Supplement main Metro service, including CKC	<b>\$10.0</b> (non-capital)	<b>Safety</b> Projects to improve auto safety. Zero crash based safety across modes	<b>\$7.0</b>
<b>Sidewalk maintenance</b> Repair damaged sidewalk	<b>\$4.0</b>	<b>Crosswalk</b> Improve existing and create new crosswalks	<b>\$9.4</b>	<b>Greenways</b> Create greenway network	<b>\$6.0</b>	<b>Speed and Reliability</b> Projects that make buses able to travel with less delay and more on-schedule	<b>\$6.5</b>	<b>Respond to new development</b> Funds for road and intersection projects that support development	<b>\$13.0</b>
<b>Pavement marking maintenance</b> Maintain pavement markings	<b>\$12.0</b>	<b>Trails</b> CKC and other new trail links	<b>\$9.0</b>	<b>Support</b> Parking, way-finding, encouragement, promotion	<b>\$1.6</b> (non-capital)	<b>Passenger Environment</b> Places where passengers wait and get on buses	<b>\$3.9</b>	<b>Efficiency</b> Intelligent transportation improvements	<b>\$5.8</b>
<b>Pavement maintenance</b> Maintain pavement condition.	<b>\$85.0</b> (amount set by policy)	<b>Accessibility</b> Improve ADA accessibility	<b>\$7.0</b>			<b>Support/Transportation Demand</b> Management, CTR compliance.	<b>\$1.3</b> (non-capital)	<b>Capacity</b> Street and intersection widening.	<b>\$35.6</b>
		<b>Support</b> Maps, wayfinding, encouragement, promotion	<b>\$1.3</b> (non-capital)			<b>TOTAL</b>	<b>\$21.7</b>	<b>TOTAL</b>	<b>\$61.4</b>
<b>TOTAL</b>	<b>\$108.5</b>	<b>TOTAL</b>	<b>\$47.0</b>	<b>TOTAL</b>	<b>\$25.5</b>	<b>Total all categories</b>	<b>\$264.1</b>	<b>Total after subtracting non capital of \$14.2</b>	<b>\$249.9</b>

**Figures 4 and 5, 20 year project funding by mode and by category within mode**



**Table 3 Detailed 20 year project list, 20 year costs in millions (Maintenance CIP Contracted)**

Category	Pool	Cost	Recommended	Cost	Safety	Timing	Policy
Signal maintenance Signals, RRFB, School flashers, etc.	Generous replacement schedule for all items	\$20.0	Minimum replacement schedule for all items.	\$7.5	All areas have High Safety value.	Maintenance is generally uniformly distributed over time although recent investments in Flashing Beacons and ITS will defer replacement in these areas	Place high priority on maintenance, Use ITS  Policy T-6.2, T-4.2
Sidewalk maintenance	Need more data to determine larger need	\$4.0	Keep current funding amount as placeholder	\$4.0			Place high priority on maintenance, Remove barriers to walking improve safety of walking, integrate transit with ped/bike networks  Policy T-6.2, T-1.1, 1.2 T-3.3
Pavement Marking maintenance	Estimate of large replacement program	\$15.0	Current amount (\$5 m 20 year equivalent) is small. Suggest relatively large funding to support higher level of service and increase in markings with new projects, particularly bicycle projects	\$12.0			Place high priority on maintenance, increase safety, improve facilities, build networks for bikes.  Policy T-1.2 T-2.1,2.2,2.3
			TOTAL	\$ 23.5			

**Table 3 Detailed 20 year project list, 20 year costs in millions (Walking part 1)**

Category	Pool	Cost	Recommended	Cost	Safety	Timing	Policy
Sidewalks	<i>Sidewalk on one side of:</i>		<i>Sidewalk on one side of:</i>		Emphasis on collector and arterial streets reflects risk presented by higher speed, volume and number of lanes on these streets.  Although all projects improve safety, they are also selected for connectivity value.	School walk route projects have traditionally been successful grant candidates, timing should follow grant opportunities. Advance CKC connection project due to its multi-modal value	Walking: remove barriers, increase safety, improve walk to school. Improve pedestrian connections to transit Improve walkable neighborhoods, connect to commercial areas. Promote energy efficient modes, reduce pollution, provide mobility for all users.  Policy T-1.1,1.2,1.6 T-3.3, T-5.1, 5.3 T-6.3,6.4, 6.6
	All school walk routes	\$16.0	School walk routes collectors and above	\$4.4			
	10 minute neighborhood streets <sup>2</sup> highest 3 categories (some overlap with project below)	\$15.0	10 minute neighborhood streets (highest 2 categories)	\$6.0			
	Principal and minor arterials (overlap with other projects)	\$14.0	Complete sidewalk on one side of principal and minor arterial (overlap removed)	\$2.9			
	CKC Connections	\$13.0	CKC connection at Kirkland Way	\$6.9			
			TOTAL	\$20.3			
Crosswalks	Upgrade locations with few crossing improvements or poor lighting	\$15.4	Upgrade at crossings on arterials and at all poor lighting locations	\$6.4	These projects are safety based.	Current CIP allocates funds every two years for crosswalk improvements. May consider packaging like projects together e.g. lighting improvements. Timing should consider grant funding cycles	All policies for sidewalks (above) plus, improve crossings for pedestrians  Policy T-1.1,1.2,1.6 T-3.3, T-5.1, 5.3 T-6.3,6.4, 6.6 Policy T-1.7
	Improvements at signals (Estimate of need)	\$2.0	Improvements at signals	\$2.0			
	New crosswalks (Estimate of need)	\$1.0	New crosswalks	\$1.0			
			TOTAL	\$9.4			

<sup>2</sup> Street segments were scored for their 10 minute neighborhood value and sorted into four categories high, medium high, medium low and low based on that score. .

**Table 3 Detailed 20 year project list, 20 year costs in millions (Walking part 2)**

Category	Pool	Cost	Recommended	Cost	Safety	Timing	Policy
Trails	Complete CKC to Master Plan vision	\$70.0	Complete design on strategic selected sections of CKC (up to 50% of full length) in preparation for grants	\$7.0	These projects provide safety through separate facilities for biking and walking	Completing CKC design in intended to help secure construction funding; therefore it should be completed early	Develop CKC for walking and biking, integrate ped and bike networks with transit, promote energy efficient modes, reduce pollution, implement transit on CKC, Provide mobility for all users.  Policy T-1.5 T-2.6 T-3.3, 3.5 T-6.3, 6.4, 6.6
	Design CKC to Master Plan vision <sup>3</sup> subset of previous project	\$14.0					
	Other trail connections (estimate)	\$2.0					
Accessibility	Projects that improve ADA accessibility More data needed to improve estimate of total need	\$7.0	Same as pool	\$7.0	These projects improve safety and accessibility	Sidewalk inventory will improve estimate of the need and influence timing. Pavement overlay program also provides ADA improvements.	Remove barriers to walking, provide mobility for all users, minimize impacts to special need populations.  Policy T-1.1, T-6.6 T-6.7
Support	Other projects and services that support and promote walking such as wayfinding, maps, promotion/education includes 0.25 FTE staff (estimate of need)	\$1.3 <sup>4</sup>	Same as pool	\$1.3	Education and promotion improve safety <sup>5</sup>	Annual program	Remove barriers to walking, make walking intuitive, work with LWSD to encourage walking and biking to school.  Policy T-1.1,1.3 T-7.5
			TOTAL WALKING	\$ 47.0			

<sup>3</sup> Design cost assumed to be 20% of total cost

<sup>4</sup> Some of this cost is not capital

<sup>5</sup> Pedestrian safety is often thought to consist of 4 “Es” Engineering, Enforcement, Education and Encouragement (promotion)

**Table 3 Detailed 20 year project list, 20 year costs in millions (Biking)**

Category	Pool	Cost	Recommended	Cost	Safety	Timing	Policy
On Street bike network	Restriping to provide wider or buffered bike lanes, better intersections in some cases, separated bike lanes - on or parallel to streets e.g. "cycle tracks"	\$6.0	Same as pool	\$6.0	These projects provide safety through separate facilities for biking and walking	Helpful to coordinate with pavement overlay projects	Improve safety, create and improve on-street bikeways, bicycle connections to transit, connect to commercial areas.  Policy T-2.1,2.2, T-3.3, T-5.3
	Juanita Drive. basic cross-section and other bike and pedestrian safety (from corridor study)	\$11.9	Juanita Drive. basic cross-section and other bike and pedestrian safety (from corridor study)	\$11.9	Juanita Drive corridor study improvements are safety based	Coordinate with grant opportunities	
	116 <sup>th</sup> Ave bike lanes NE 60 <sup>th</sup> to City limits	\$3.4					
Greenway network	Greenway network	\$6.0	Greenway network	\$6.0	Improved facilities increase ridership. Increased ridership has been tied to improved safety	A relatively small investment can create an entire network so this is a good candidate for early investment	Improve safety, build a network of greenways, bicycle connections to transit, connect to commercial areas  Policy T-2.1, 2.3, T-3.3, T-5.3
	Bridges over I-405 at NE 141 <sup>st</sup> St. and NE 90 <sup>th</sup> St.	\$9.0					
Support	Other projects and services that support and promote walking such as wayfinding, maps, parking, promotion/education includes 0.25 FTE staff (estimate of need)	\$1.6 <sup>6</sup>	Same as pool	\$1.6	Education and promotion improve safety <sup>7</sup>	Annual program	Make bicycling easier, make navigation easier, work with LWSD to encourage walking and biking to school.  Policy T-2.4,5, T-7.5
			<b>TOTAL BIKING</b>	<b>\$ 25.5</b>			

<sup>6</sup> Some of this cost is not capital

<sup>7</sup> As with pedestrian safety, bicycle safety benefits from the four E consist of 4 "Es" Engineering, Enforcement, Education and Encouragement (promotion). The American Bicycle League [recognizes encouragement](#) as a cornerstone of a bicycle friendly community.

**Table 3 Detailed 20 year project list, 20 year costs in millions (Transit Part 1)**

Category	Pool	Cost	Recommended	Cost	Safety	Timing	Policy
Service	Service Kirkland would purchase from Metro. 10,000 annual hours of service <sup>8</sup> at \$170/hour (current Metro rate)	\$34.0	Innovative demand responsive local service \$500,000 per year as a placeholder		These projects are not safety projects.	Completing a Transit Study would be helpful in clarifying how to handle many of these issues; so timing for implementation may be after that plan is completed.	Create environment to support transit service, support transit trips around and through Kirkland, implement transit on the CKC.  Policy T-3.4, 3.1 3.5
	Innovative demand responsive local service. Need more definition before costing			\$10.0 <sup>9</sup>			
	Transit on CKC. Need more definition before costing						
Speed and reliability	Projects including Transit signal priority and intersection widening/transit lanes			\$6.5			Create environment to support transit service, partner to provide transit projects in exchange for service.  Policy T-3.1, T-7.2

<sup>8</sup> About half the hours in the current routes like 234,236, or 238. Assume ridership of 10 riders/platform hour.

<sup>9</sup> This is not a capital cost

**Table 3 Detailed 20 year project list, 20 year costs in millions Transit (part 2)**

Category	Pool	Cost	Recommended	Cost	Safety	Timing	Policy
Passenger Environment	Construct TOD at Kingsgate	\$28.0			Not a safety project	Completing a Transit Study would be helpful in clarifying how to handle this issue; so timing likely after the first 6 years of the program	Create environment to support transit service, partner to provide transit projects in exchange for service  Policy T-3.1,T-7.2
	Shelters, lighting and next bus equipment at 30 highest ridership stops	\$3.9	Same as pool	\$3.9	Lighting and shelters improve safety		Support safe and comfortable passenger facilities.  Policy T-3.2
Support/ Transportation Demand Management	Development of Totem Lake GTEC and support for CTR and TMP sites <sup>10</sup> . Other projects and services that support promotion/education of transit includes 0.25 FTE staff (estimate of need)	\$1.3	Same as pool	\$1.3 <sup>11</sup>	Not a safety project; develops ridership	Annual program	Support ridesharing and transit  Policy T-3.4
			TOTAL TRANSIT	\$21.7			

<sup>10</sup> Council designated the Totem Lake Urban Growth Center as a Growth and Transportation Efficiency Center (GTEC) site. The City of Kirkland is required to provide oversight of Commute Trip Reduction (CTR) sites within the City. CTR sites have more than 100 employees reporting between the hours of 7:00 and 9:00 AM. Transportation Management Program (TMP) sites have entered into agreements to implement various demand management strategies as part of their development and also require oversight by the City.

<sup>11</sup> Non-capital costs

**Table 3 Detailed 20 year project list, 20 year costs in millions (Motor Vehicle part 1)**

Category	Pool	Cost	Recommended	Cost	Safety	Timing	Policy
Safety	New traffic signals (4@\$1m each)	\$4.0	New traffic signals (3@\$1m each)	\$3.0	These projects are selected to address common crash sources such as turning traffic at traffic signals. Also includes "target zero" like safety system.	Safety program can begin immediately and is an annual program. Neighborhood Traffic Control is also an annual program.  Other categories can be implemented over time based on need and funding	Reduce crash rates for motor vehicles, mitigate impacts of motor vehicles on neighborhood streets  Policy T-4.6, 4.7
	Multi-disciplinary zero injury based safety program (more research needed to confirm estimate)	\$1.0	Multi-disciplinary zero injury based safety program (more research needed to confirm estimate)	\$1.0			
	Driveway management (locations to be determined)	\$2.8	Driveway management	\$1.0			
	Flashing yellow arrow program (locations to be determined)	\$1.0	Flashing yellow arrow program (locations to be determined)	\$1.0			
	Neighborhood Traffic Control	\$1.5	Neighborhood Traffic Control	\$1.0			
			Subtotal	\$7.0			
Respond to new development	Existing unfunded CIP projects connected with circulation and previous Totem Lake Mall proposal (\$62.7 m) and Park Place (\$4.6 m) development proposals.	\$67.3	Opportunity fund for circulation and development proposals (\$10 Totem Lake/\$1 Park Place)	\$11.0	These projects support smaller blocks, traffic signals which provide safety benefits. Also include bicycle and pedestrian facilities.	Coordinate with development opportunities	Make investments in capacity to support proposed land use, support economic development goals, tailor improvements to commercial land use districts.  Policy T-4.1 T-5.2,5.3
	Parking expansion City hall site and 150 @ 30,000/stall	\$6.5	Parking expansion at City Hall site (150 stalls)	\$2.0			
			Subtotal	\$13.0			

**Table 3 Detailed 20 year project list, 20 year costs in millions (Motor Vehicle part 2)**

Category	Pool	Cost	Recommended	Cost	Safety	Timing	Policy
Efficiency	Various ITS improvements (including parking)	\$5.8	Various ITS improvements (including parking)	\$5.8	ITS has components that are helpful for auto, pedestrian and bicycle safety	Current ITS projects will be on-going for the next 2 years. New ITS projects should occur after an update of the ITS Plan	Use ITS to support optimization of roadway networks.  Policy -4.2
Capacity	Capacity projects from unfunded CIP plus Juanita Drive, 100 <sup>th</sup> Avenue and I-405 interchange development funds (3 @\$5m each)	\$133.0	NE 132nd intersections and Street projects in CIP 100th Avenue projects NE 132 <sup>nd</sup> Interchange fund (\$5m) Juanita Drive Auto improvements	\$35.6	NE 132 <sup>nd</sup> Street projects include improvements for bicycle and pedestrian facilities. 100 <sup>th</sup> Avenue includes key missing links	Timing should be coordinated with WSDOT and with grant opportunities	Make strategic investments in intersection and street capacity, Work with WSDOT on interchange improvements.  Policy T-4.1, T-7.3
			TOTAL MOTOR VEHICLE	\$61.4			

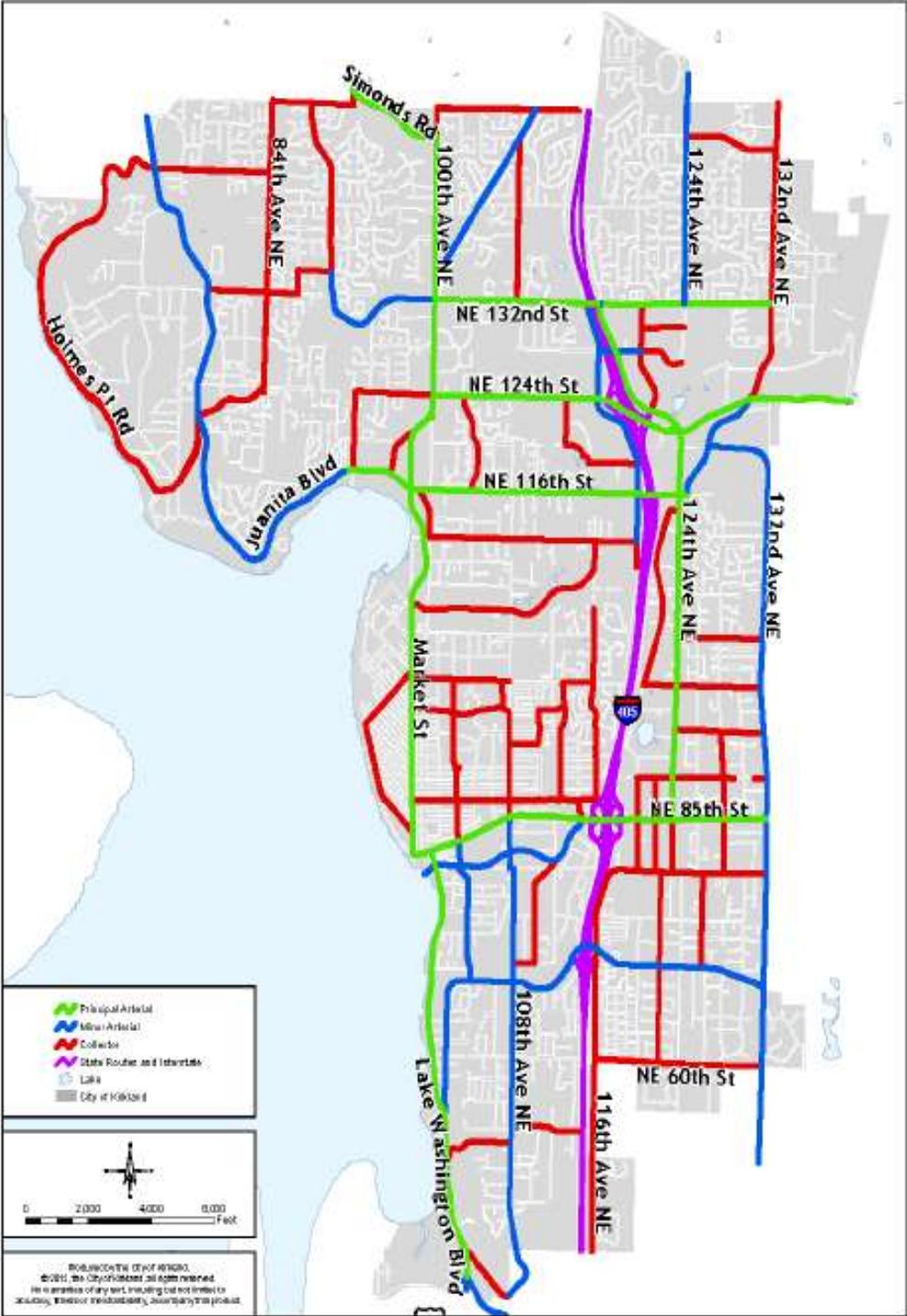
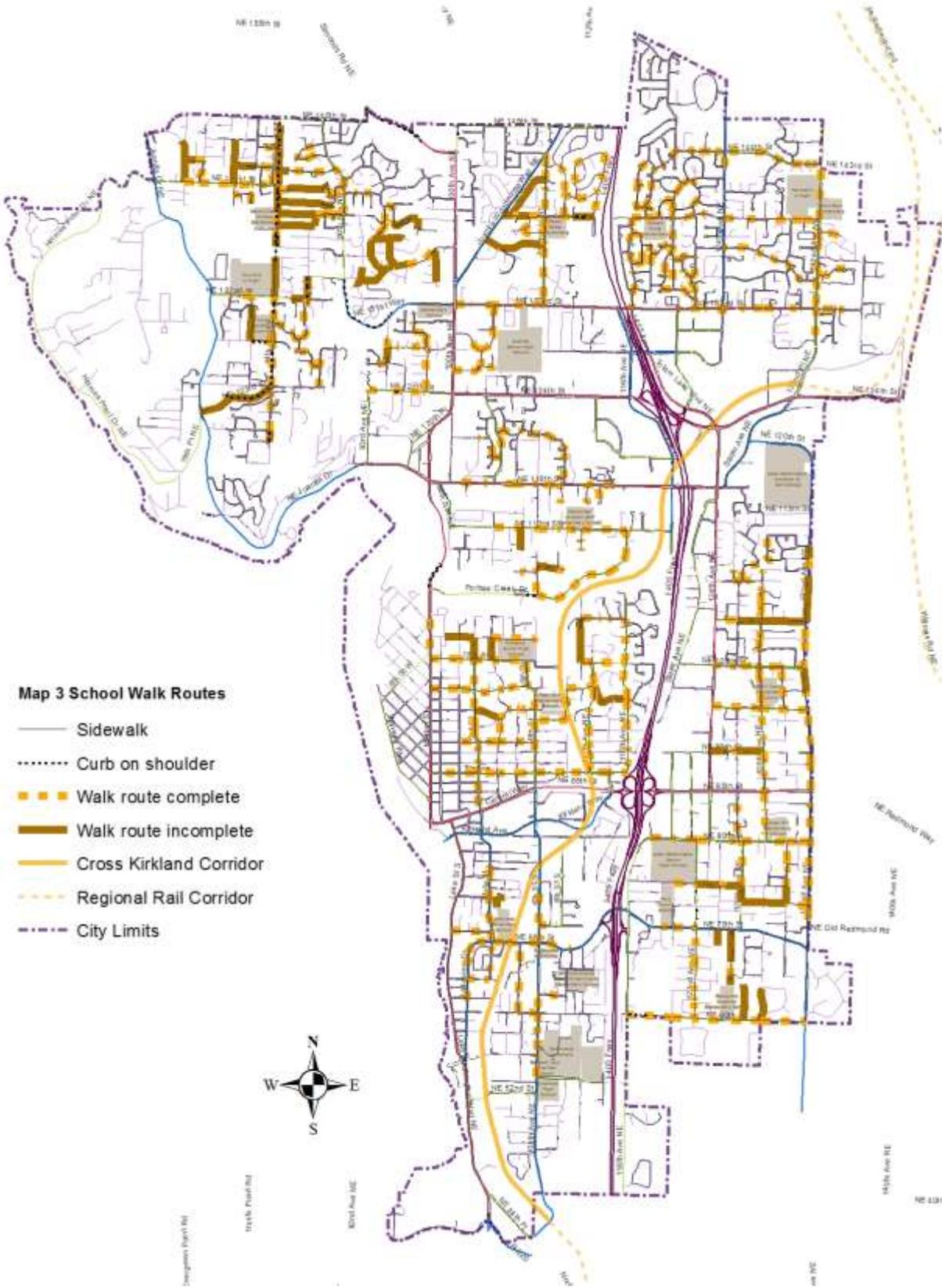
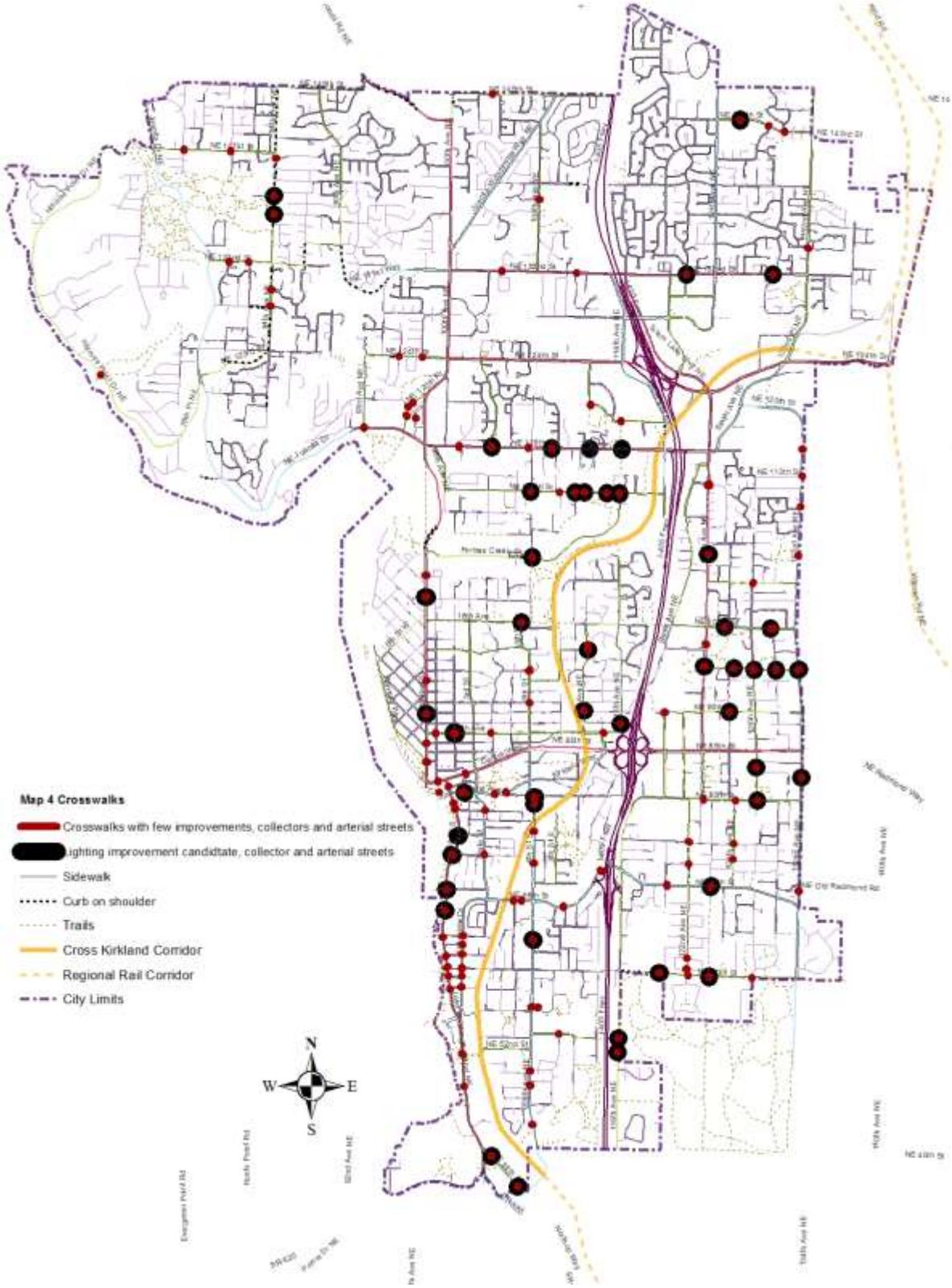


Figure T-1: Street Classifications and State Routes

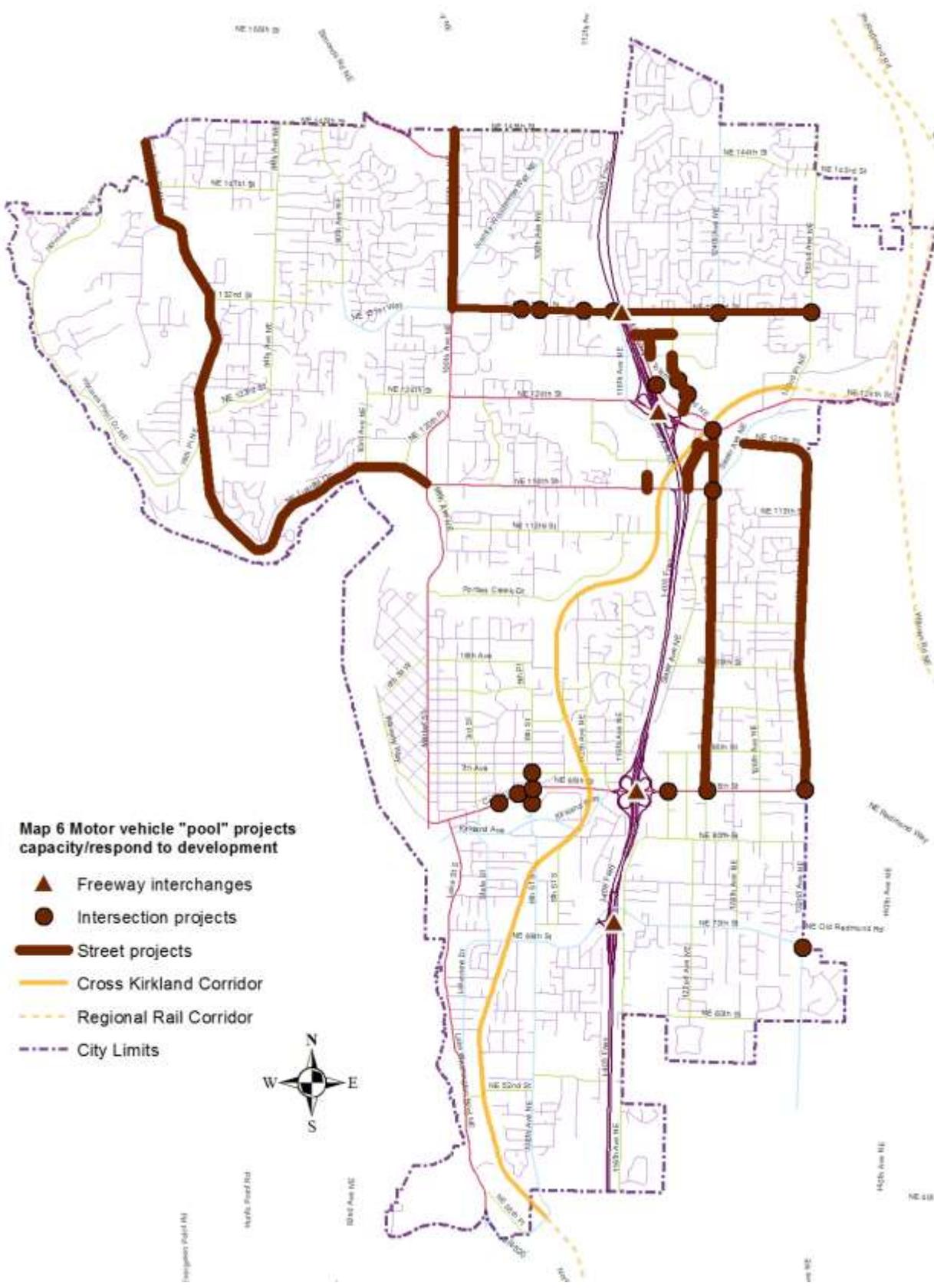












## **Impact Fees**

This discussion of impact fees is intended to give Council an update on initial findings and raise some questions Council may wish to consider. As the 20 year project list and land use forecasts are finalized, work on impact fees can be advanced. Coordination between Road Impact Fees and Park Impact Fees is also underway, and a revised impact fee ordinance will be coming to Council in 2015.

Transportation impact fees are designed to collect a fair share of transportation improvement costs from new development. The Growth Management Act allows impact fees to be charged for system improvements that reasonably relate to the impacts of new development and specifies that fees are not to exceed a proportionate share of the costs of improvements.

Impact fees are part of a development's transportation mitigation requirements. Developments also must undergo a concurrency evaluation which determines whether there is sufficient transportation infrastructure to support the new development. Assuming that concurrency is achieved, development pays an impact fee to cover its share of the transportation system costs.

During the process of preparing the Transportation Master Plan for the City over the last few months, the Consultant has proposed a network of roadway, biking, walking and transit projects that are substantially different than the projects that are the focus of the city's current impact fees. Historically, Kirkland has narrowly defined the projects eligible for funding with impact fees, notably those that we have identified in our "concurrency network." Given the move to a multimodal concurrency program, the breadth of transportation projects that could be considered for impact fees is expanded.

At the same time, the growth forecasts for the city over the next 20 years are higher than they were back in the 1990's and early 2000's when the current impact fee program was developed. If the growth materializes, there is a larger base over which to spread the impact fee costs. We are working to refine a reasonable expectation for growth that would occur over the 20 year period.

Based on our analysis to date, we expect that the total cost of the impact fee project list will be roughly comparable to the current list, while the amount of growth will increase. Because impact fee rates are proportional to the cost of the projects divided by the number of trips, this could result in impact fee rates that are similar to or less than current rates. The ultimate size of the fee will depend on the extent to which we are successful at including non-motorized and transit projects within the impact fee list.

City staff are also examining possible revisions to the 'change of use' code provisions to make it easier to change land uses within activity centers such as downtown and Totem Lake. Finally, staff is considering an option of designating certain activity centers in the city (e.g. downtown) as mixed use/transit centers, which would reduce trip generation rates and proportionally lower impact fee rates.

### *Methodology*

The flow of steps involved in the Kirkland impact fee process is shown in Figure 5. The key steps include: Establishing travel forecasts and trip patterns (based on land use data and the

future transportation network) and identifying growth-related transportation projects and costs, and preparing the fee schedule.

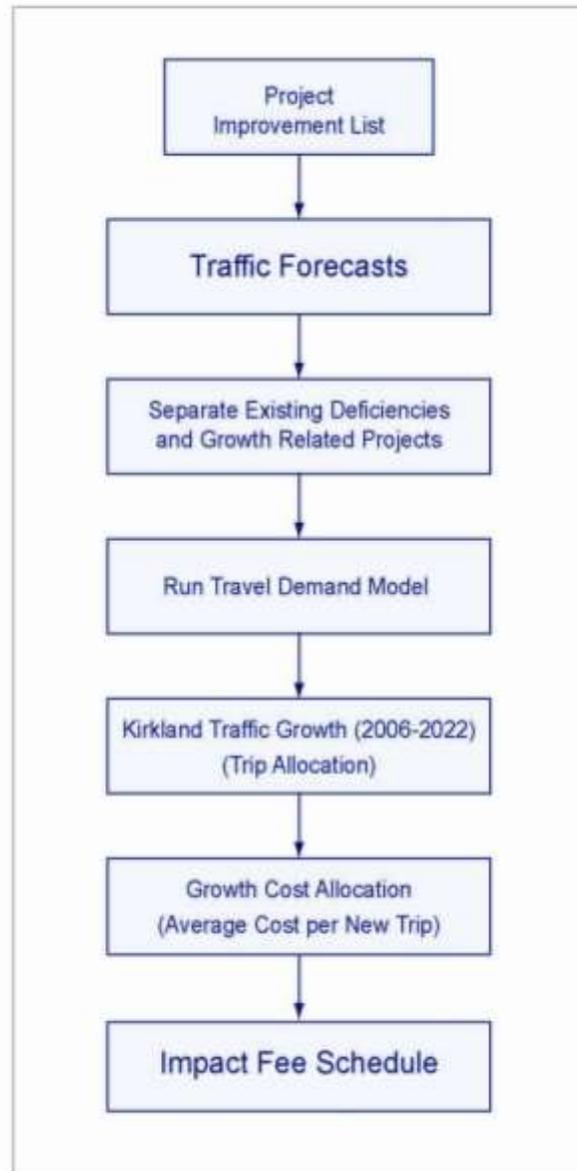


Figure 5- Impact Fee Methodology

#### Project List

To begin the process, the City compiled the existing impact fee project list and selected other eligible projects from the Capital Improvement Plan (CIP) and the proposed Transportation Master Plan (TMP). As described earlier in this memo, the City is developing a multimodal project list that goes beyond the traditional roadway and intersection capacity projects. Notably, it is the intent to include a portion of the Cross Kirkland Corridor (CKC) costs, since the CKC will provide a vital north-south transportation link within the city. To facilitate this, we are focusing on person movement rather than traffic volumes as the base for both the impact fee and concurrency programs.



This change of use provision primarily affects retail development where one use (e.g. a florist) is replaced by another use (e.g. a restaurant). These changes occur frequently within shopping districts such as downtown.

In the future, the city may want to consider developing a new impact fee land use category called "activity center retail." Uses within this category would function similar to a shopping center, which by its nature has a mixture of land uses that change over time. Using this designation in certain parts of the city would remove the need to calculate a change of use impact fee when building tenants change. Change of use impact fees would still apply when a building is replaced, enlarged, or substantially redeveloped.

Until a new impact fee system is implemented, and decisions about how change in uses should be handled, the current suspension could be continued. This extension will be on the agenda for the City Council's October 21<sup>st</sup> Council meeting.

#### *Mixed Use/Transit Impact Fee Adjustments*

Another possible change in impact fees would be to designate certain activity centers within the city as mixed use/transit areas (e.g. downtown Kirkland). These areas have vehicle trip generation rates that are lower due to the presence of mixed land uses and better transit service. The impact fee program would remain a citywide program, but the trip generation rates for certain land uses would be reduced within the impact fee schedule. Research shows that impact fee rates would likely be reduced by 15-30% depending on the use and location.

#### *Impact Fee Questions*

As the impact fee program is being updated, there are several questions that Council may wish to consider:

- It does not currently appear likely, but given it could be supported technically, would an increase to the current impact fee rates be reasonable to consider?
- What reaction does Council have to the concept of an 'activity center retail' land use category?
- Should selected zones of the city be designated as 'mixed use/transit' areas with lower impact fee rates based on lower trip generation?

## **Next Steps**

Based on comments from the City Council, staff and the consultant will finalize the Goals and Policies and take the project list to the next level of refinement. Selected upcoming meetings are listed below:

**November 12:** Community event. Staff will display the Goals and Policies along with a draft 20 year project list -reflecting Council comments from the October 21<sup>st</sup> meeting.

**November 18:** There is an item scheduled on the Council's regular meeting agenda to discuss Concurrency and Level of Service as they relate to the Master Plan.

**January 20, 2015:** Study session on draft plan.

**March 2015:** Present the Master Plan to Council for adoption. The Transportation Element of the Comprehensive Plan will be adopted with the Comprehensive Plan.

The Transportation Commission will continue to provide direction for Plan development on behalf of the Council. Staff will also work closely with the Planning Commission as part of the Comprehensive Plan update. A briefing for the Houghton Community Council is scheduled for October 27.