



## CITY OF KIRKLAND

Department of Public Works

123 Fifth Avenue, Kirkland, WA 98033 425.587.3800

[www.kirklandwa.gov](http://www.kirklandwa.gov)

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### MEMORANDUM

**To:** Paul Stewart, Deputy Director, Planning and Community Development

**From:** David Godfrey, P.E., Transportation Engineering Manager

**Date:** January 2, 2013

**Subject:** Update from Transportation Commission: Concurrency, Level of Service and Project Evaluation

On November 20, 2012 the Transportation Commission held a study session with the City Council to discuss the Commission's progress on three items from the Commission's work plan:

- *Review and revise concurrency system*
- *Develop new level of service standards that align with transportation principles and further define what are those principles*
- *Develop clear goals and prioritization systems for project categories*

At the Study session, The Transportation Commission sought guidance on the following questions:

- *Are the ideas being presented clear to Council? Is there any other information that would be helpful?*
- *Is there basic agreement with the approach? Are there any changes that should be made?*
- *Should the Transportation Commission proceed to discuss the approach with other groups such as the Planning Commission.*

Council warmly received the Transportation Commission's recommendations and asked that the Planning Commission be informed of the Transportation Commission's work.

At the January 10 Planning Commission meeting, Transportation Commission chair Joel Pfundt and I plan to give the Planning Commission a presentation similar to that given to the Council on November 20, 2012. We are seeking any comments and suggestions the Planning Commission might have and will be happy to answer the Commissioner's questions.

The packet from the Council Study Session is attached. Note that the packet refers to the Transportation Commission work plan, but we will not be discussing the Work Plan on January 10.



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## MEMORANDUM

**To:** Kurt Triplett, City Manager

**From:** David Godfrey, P.E., Transportation Engineering Manager  
Ray Steiger, P.E., Public Works Director

**Date:** November 8, 2012

**Subject:** Council Transportation Commission Study Session

### **RECOMMENDATION:**

It is recommended that Council meets with the Transportation Commission and discuss the attached memo on Concurrency, Level of Service and Project Selection. The Commission's 2012-2013 work plan should also be discussed briefly.

### **BACKGROUND:**

#### **1. Concurrency, Level of Service and Project Selection**

On October 2, 2012 the Council received a briefing on the work the Transportation Commission has completed on three concurrency and level of service related items arising from the Transportation Conversations document presented to Council in June of 2010:

- *Review and revise concurrency system*
- *Develop new level of service standards that align with transportation principles and further define what are those principles*
- *Develop clear goals and prioritization systems for project categories*

Attachment 1 to this memo is a draft report describing the result of their work. At the Study session, The Transportation Commission is seeking guidance on the following questions:

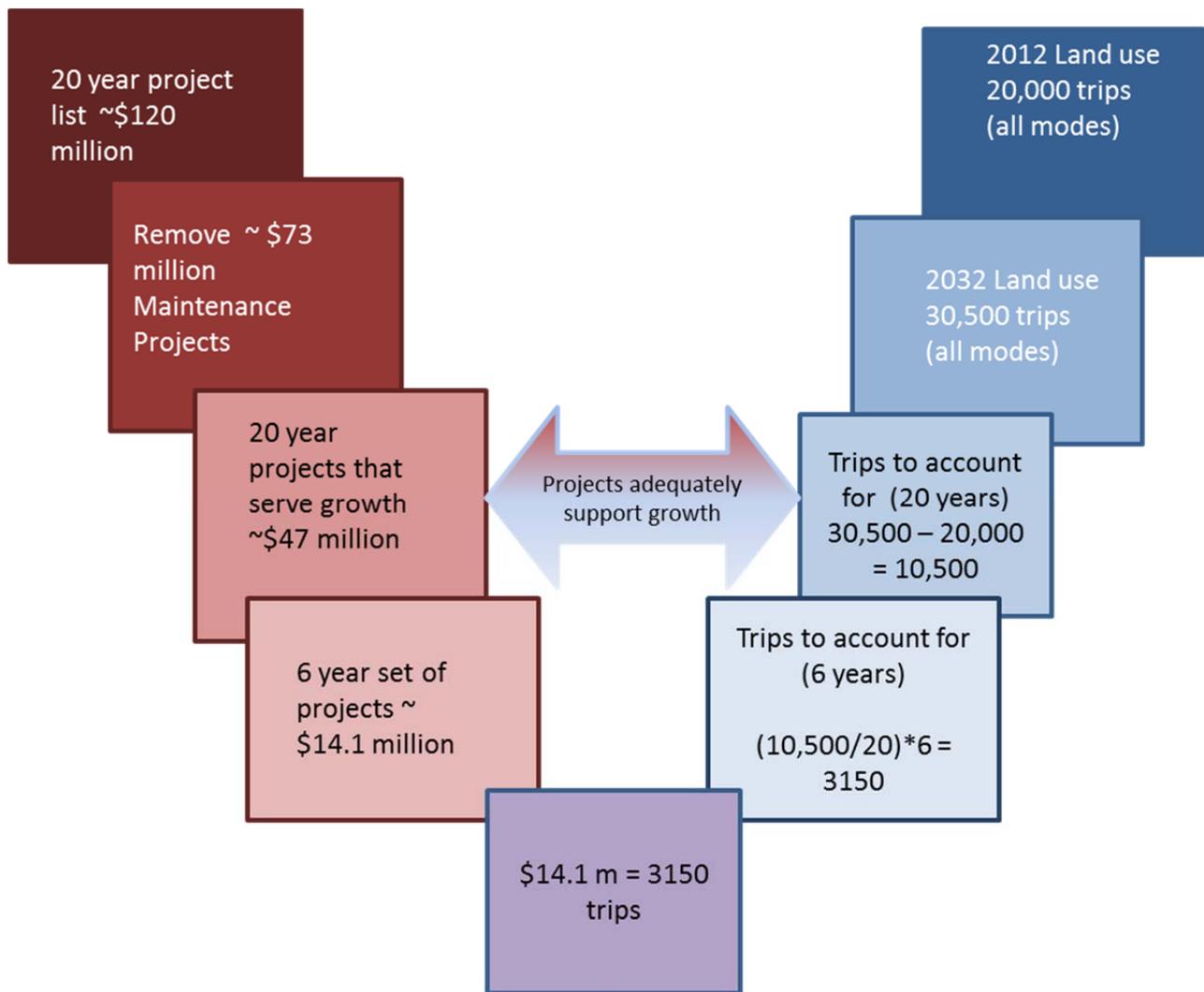
- *Are the ideas being presented clear to Council? Is there any other information that would be helpful?*
- *Is there basic agreement with the approach? Are there any changes that should be made?*
- *Should the Transportation Commission proceed to discuss the approach with the Planning Commission, and what outside groups should be briefed? Developers? Neighborhood groups? Should the process be rolled into the Comp Plan update?*

At the October 2 meeting Council asked for more examples of how the new system would work and raised two questions. Examples will be presented at the Study Session and the two questions are addressed below:

*Question 1: The proposed system appears to mismatch transportation improvements with land use. For example, what if a clearly auto oriented type development was required to install bicycle improvements?*

Answer: Figure 1 shows a relationship between land use and transportation improvements. It's also shown on Page 2 of Attachment 1.

Figure 1, Relationship between Trips and Transportation Projects



In the middle of the chart, the arrow between transportation projects on the left and land use on the right is meant to indicate that there is an agreed upon balance between the 20 year land use

plan and the 20 year transportation network. This would happen during the development of the Comprehensive Plan. This is the place in the process where we can make sure, on a broad level, that the types of projects being proposed match the types of land use being proposed. For example if we envision auto oriented big box developments, more auto related improvements and fewer bicycle projects might be appropriate. If more mixed use compact development is planned, then a higher number of pedestrian projects and fewer auto-capacity projects could be desirable. Concurrency is used to "keep score" and make sure that whatever land use and transportation projects are being planned, they are being constructed at a roughly equal pace. Concurrency doesn't determine what improvements are appropriate. SEPA is the process that requires site specific improvements

*Question 2: Isn't it possible that a big development could come in and "use up" all the available capacity in the system? It would then be left for the next development to have to construct improvements in order to pass concurrency.*

Answer: That scenario is possible with the new system of concurrency, just as it is possible with the existing system. One of the main strengths of the new system is that it is much easier for anyone to see how close we are to being "out of trips" at any particular time. This will allow more opportunities for "shortages" to be foreseen and addressed before a problem occurs. If a situation arises where capacity is limited occurs Council has several policy choices including changing the number of CIP transportation projects being funded, or making temporary increases to the number of trips that are allowed. The main safeguard is setting up the concurrency system so that plenty of trips, more than the number anticipated to be used in a given year for example, are available at the beginning of the year.

## **2. Work Plan**

The Transportation Commission has developed a Work Plan for the next 12 months (next page). If time is available at the study session, the Commission would be pleased to receive Council comments on the plan.

**Transportation Commission Work Plan**  
 October 2012 – September 2013

**Principles:** *Move People, Be Sustainable, Be an Active Partner, Link to Land Use*

<b>Major Accomplishments previous 12 months</b>		
ITEM	ACTION/COMMENTS	DATE
Completed Draft Scope of Work for CKC Master Plan	Approved by Council	8/7/12
Completed recommendation on Concurrency, Level of Service and Project Development	Scheduled for Council Consideration	October, 2012
<b>Most important items to be proactively pursued with action expected</b>		
ITEM	ACTION/COMMENTS	DATE
Cross Kirkland Corridor	Develop Master Plan	Begin January 2013
Update Comprehensive Plan through Transportation Master Plan	<ul style="list-style-type: none"> <li>• Include new neighborhoods</li> <li>• Finish concurrency/level of service/CIP prioritization and project development work</li> <li>• Link pollution, climate change and health</li> </ul>	Ongoing
Pedestrian Safety	Develop recommendations to improve crosswalk safety.	Begin 10/2012
Lake Washington Boardwalk	Subcommittee to continue to develop and refine concept. Report back to Commission	Ongoing
132nd Avenue NE Speed Limit	Understand neighborhood Association decision	March 2013
<b>Maintain these items are routine or recurring</b>		
ITEM	ACTION/COMMENTS	DATE
Elect Officers	Chair, Vice Chair	Last meeting of the year
CIP update	Recommend CIP Projects	Summer 2013
Active Trans. Plan implementation	Plan calls for annual report	December 2012
ITS Plan implementation	Commission to receive annual update	December 2012
Neighborhood/Business District	Comment as needed	Various
<b>Monitor no particular action needed, but keep track of what is going on with these items.</b>		
ITEM	ACTION/COMMENTS	DATE
SR 520 Eastside project/tolling		Throughout the year
I-405 Express Toll lanes		
Metro and Sound Transit Service Planning		
Determine transportation actions/investments that would be helpful for development of Totem Lake		
Bicycle connections to and along SR 520		
Juanita Drive Master Plan		



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**DRAFT**

### MEMORANDUM

**To:** Kurt Triplett, City Manager

**From:** David Godfrey, P.E., Transportation Engineering Manager  
Ray Steiger, P.E., Public Works Director

**Date:** DRAFT

**Subject:** Level of Service/Concurrency/Project selection

Over 10 years ago, the Transportation Commission was formed to grapple with the questions of concurrency and level of service. Although the scope of the Commission's work has broadened, the question of improving concurrency has remained on the Commission's work program for much of its history.

Most recently, the Commission has been working on three concurrency and level of service related items arising from the Transportation Conversations document presented to Council in June of 2010:

1. Review and revise concurrency system
2. Develop new level of service standards that align with transportation principles and further define what are those principles
3. Develop clear goals and prioritization systems for project categories

The Transportation Conversations document (Attachment 1) lays out the reasoning behind the need for addressing these issues in more detail. This memo summarizes Commission thinking that has been developed over more than 18 months of working on these questions. The Transportation Commission has agreed to a fairly clear plan of action for items 1 and 2. For item 3, the missing pieces have been identified, but filling in those pieces is not simple. Further, full development of item 1 requires a clear set of projects and completing item 3 is needed to develop that set of projects.

#### **1. Review and revise concurrency system**

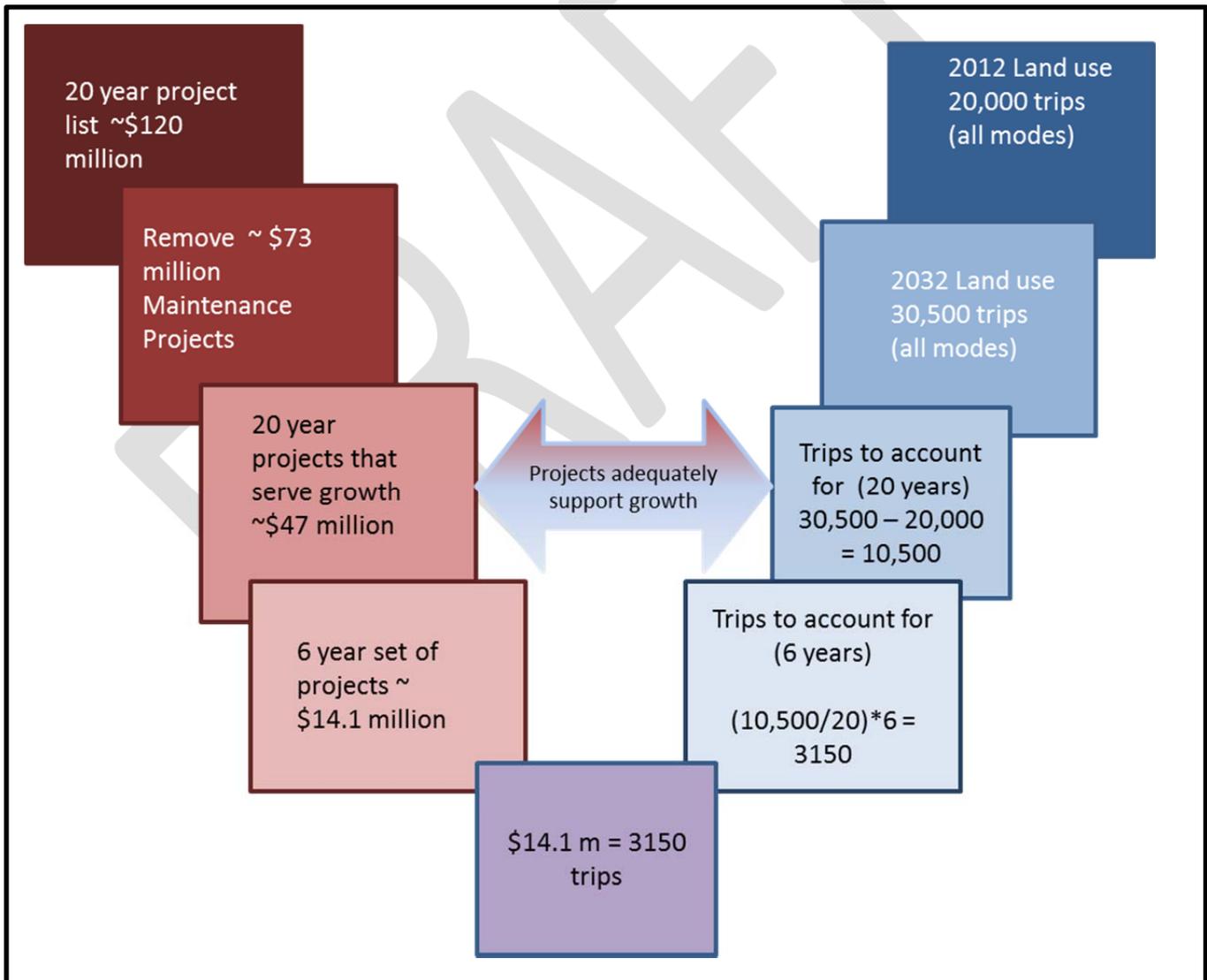
As recommended in Transportation Conversations, "Concurrency should be simplified and should consider transit, bicycling and walking...Concurrency should principally monitor the approved land use and transportation plans and insure that they are being completed in relative balance." Concurrency should help achieve land use and transportation goals, not be an impediment to achieving the goals. With its sole focus on auto capacity at traffic signals, the current concurrency

system does not help achieve the performance measures associated with a balanced transportation plan.

The Commission recommends adopting a concurrency system similar to the system in use by the City of Redmond. The City of Redmond has been successfully using their system for about 2 years. In this system, an agreed upon transportation project list that is fundable over the next 20 years is developed. This list does not include maintenance projects; only those projects that add capacity for any mode. Similarly, a land use plan for that same 20 year time period is identified.

The number of total new trips is assigned to be equal to the new capacity of the total project list. This translation between trips and projects means that the capacity (in trips) can be determined for a given list of projects, such as funded projects on the 6-year CIP.

Figure 1, Relationship between Trips and Transportation Projects



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 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. Concurrency will not decide whether or not development projects are “good” or “bad” only whether or not the number of new trips is being added at approximately the rate that capacity is being added. Furthermore, Concurrency will not decide whether or not the capacity being provided is the “right type” capacity. Again, this is decided when the transportation project list is determined and compared to the land use plan.

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 following hypothetical 6-year CIP.

Table 1 Hypothetical 6 year funded list (excluding maintenance projects)		
Project	Cost	New person trips
ITS project	\$1,400,000	<b>312</b>
Road project 1	\$1,100,000	245
Road project 2	\$2,043,000	456
Ped project 1	\$5,000,000	1115
Ped project 2	\$400,000	89
Bike project 1	\$1,210,000	270
Bike project 2	\$470,000	105
Bike project 3	\$2,500,000	558
<b>TOTAL</b>	<b>\$14,100,000</b>	<b>3150</b>

Note that all project types in the Transportation Plan contribute to capacity. A concerned person might ask “Do you expect all that new growth to be handled by bike lanes?” That question should be answered earlier in the process, where the Land Use Plan and Transportation Plan are developed. These two plans have to be in balance with the balance representing level of service. Concurrency’s role is to indicate whether or not the transportation facilities, regardless of their type, are being constructed at a rate approximately equal to the rate at which the land use plan is being fulfilled.

A ledger system can be set up, 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, it’s 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.

If fewer trips are available than what are required by the development, the development can:

- construct transportation improvements that add trip capacity
- wait until more trip capacity is built by the City
- scale back the development scope so that it requires less trip capacity.

**Table 2 Sample ledger system for Concurrency**

Date	Item	Trips	Balance	Pass?
1/1	Start with 6 years of funded projects	+3150	3150	n/a
Throughout the year	Development 1 (10,000 sq. ft. retail; 100 units residential)	-124	3026	Yes
	Development 2 (200 units residential)	-109	2917	Yes
	Development 3 (Retail store expansion)	-65	2852	Yes
	Other projects (details omitted here) total	-200	2758	Yes
12/31	New CIP approved resulting in another year of funded projects	+525	3283	n/a

One of the advantages of this system is its simplicity. It’s clear to developers, staff and the public how many trips are available for development at any given time. 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 Sample Trip rates for various land uses		
Example Land use	Unit	Trips
Attached and stacked housing	Dwelling	0.56
Restaurant	1000 sq ft	7.49
Drive-in bank	1000 sq ft	45.74
Shopping Center	1000 sq ft	3.75
General Office Building	1000 sq ft	1.49
Supermarket	1000 sq ft	10.45

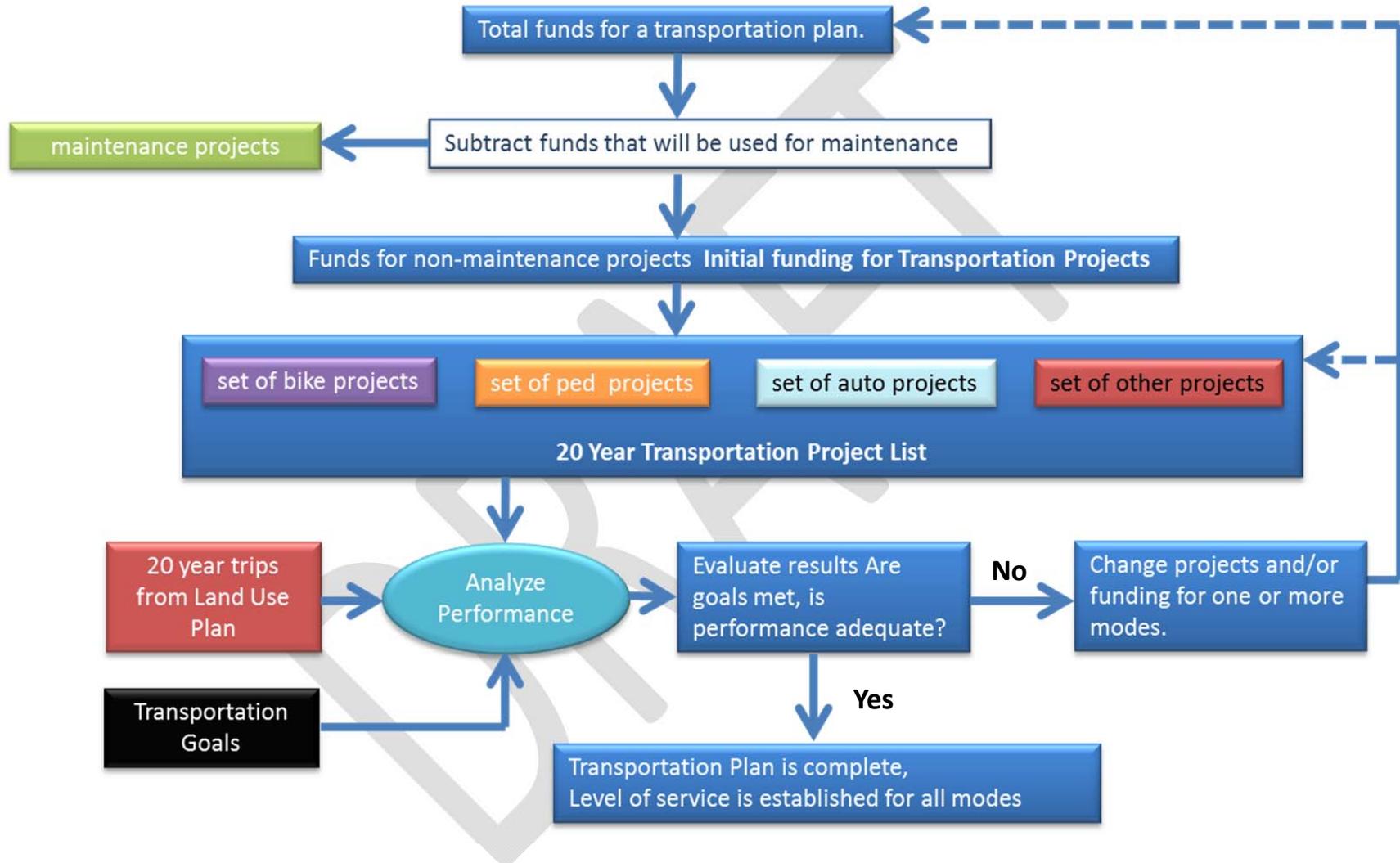
In contrast, the concurrency system we use today requires that, for each development, the number of trips that will go through each signalized intersection are estimated. Then, for each signal, a calculation is performed to determine the projected level of service at that signal. Finally, the performance of the signals is compared to the allowed level of service.

When concurrency is measured in this way – level of service at signalized intersections – only construction projects that add capacity at signalized intersections aid in meeting concurrency. It does not consider the full range of projects that should be in a transportation plan if that plan supports a balanced multi-modal transportation system. This is one reason why the Transportation Commission has recommended replacing the existing concurrency system.

**2. Develop new level of service standards that align with transportation principles**

As described above, Kirkland’s current vehicular level of service standard measures the auto volume to capacity ratio at signalized intersections. The primary purpose of the existing level of service is for use in concurrency testing. With the concurrency system proposed in 1 above, a level of service is established for various modes when the capacity of the 20 year project list is set equal to the number of new trips to be added to the system over the same number of years. Level of service is used to decide whether or not the transportation system is adequate for the Land Use being proposed. The diagram below shows how, by using funding levels and performance goals for the transportation system, a set of projects can be developed. An iterative process is envisioned where performance and funding across modes is adjusted until a satisfactory transportation plan for these performance measures can be tracked annually to help monitor transportation system performance.

Figure 2. Setting Level of Service



### 3. Develop clear goals and prioritization systems for project categories

The Commission has explored this issue extensively in the context of developing a set of funded projects for the CIP. We looked at a framework for preparing a project list that suggests:

- Adopted Plan documents (e.g. Active Transportation Plan, ITS Plan) are based on adopted goals and performance measures.
- Projects enter into the CIP from adopted plans which contain clear prioritization methods and which can be used to develop project lists.
- As funding is available, prioritized lists of projects are completed. Level of service is used here to determine the types of projects that should receive funding.
- Evaluation of the system is based on adopted performance measures that come from the original goals. This evaluation drives new projects.

The table below shows, for different project types, where elements of the framework are missing (blank squares) and where they exist.

Table 4 Project types across a framework for project development non-maintenance

Project type	High level goals	Specific plan document	Prioritization methods	Funding	Evaluation
ITS	Council adopted Performance measure	ITS Plan	Priorities in plan	Grant funding has been the source of ITS funding	Performance measure
Bicycle network	Council adopted Performance measure	Active Transportation Plan describes a network			
Sidewalk construction		Active Transportation Plan establishes goals	Method in Active Transportation Plan and existing project selection method		
Crosswalk upgrades				Funding has been traditionally \$35k/yr	
Auto network improvements	Comprehensive Plan sets traffic signal levels of service		Projects that are needed to meet concurrency		
School walk routes	Council adopted Performance measure for completion			Typically grant funded	

Table 5 Project types across a framework for project development Maintenance

Project type	High level goals	Specific plan document	Prioritization methods	Funding	Evaluation
Pavement maintenance	Council adopted Performance measure		Pavement maintenance software	Set in coordination with PCI goal	Measure PCI
Pavement marking Maintenance				Funding has been traditionally \$250k/yr	
Traffic signal maintenance					
Sidewalk maintenance				Funding has been traditionally \$200k/yr	

Although a complete or practically complete system exists for some project types, for example pavement maintenance, there are several key missing pieces in the city’s current methods.

In order to fill in the missing pieces, the Commission recommends preparation of a comprehensive multimodal transportation plan that describes how all elements of the transportation system fit together under over-arching goals. Without clear, complete, integrated goals, it is difficult to develop a comprehensive set of prioritization methods. Without prioritization methods, project lists can’t be developed in a straightforward manner. Without project lists it is difficult to determine where to best spend limited resources and identify critical funding gaps. It’s worth noting that the City of Kirkland has never developed a multimodal Transportation Plan.

One helpful step in the process of filling in the table above was the Council’s development of Performance measures (Figure 3) Unfortunately, given historic CIP funding, and the costs of the projects necessary to meet the measures, it is not possible to achieve all the measures simultaneously. Looking at a range of transportation projects under one plan will help alleviate this problem.

An update of the City’s Comprehensive Plan is scheduled to begin in 2013. A Transportation Master Plan could potentially also serve as the Transportation Element of the revised Comprehensive Plan. The Comprehensive Plan update would also require an updating of the City’s land use and transportation network.

**Recommendation**

The Commission recommends:

- Council affirm the direction proposed for the concurrency and Level of service systems. If the Council supports the proposal, the Transportation Commission would meet with the Planning Commission to hear their concerns and comments. Developing a complete Concurrency System requires a clear future land use plan and a companion list of transportation projects. The City's Comprehensive Plan update requires a revised land use plan and so will give the opportunity to supply the needed land use information.
- Funding for a transportation master plan be considered in the 2013-2014 budget process. A transportation master plan will allow missing gaps in project development system to be filled. Therefore such a plan would be an ideal opportunity to establish a transportation plan that reflects the needs of the new neighborhoods.

Figure 3 Performance measures for balanced transportation:

MEASURE	2008	2009	2010	2011	Target
<i>Percent of Capital Improvement Program Transportation funding devoted to Active Transportation</i>	17.65%	28.76%	34.48%	21%	33%
<i>Percent of proposed Intelligent Transportation Systems projects completed</i>	*	*	4%	6%	100% of ITS Strategic Plan
<i>Complete sidewalk construction on at least one side of all school walk routes</i>	78.6%	*	81.1%	83%	100% by 2019
<i>Percent of bicycle network construction improvement projects completed</i>	*	*	50%	50%	100% by 2018
<i>Percentage of arterials that are complete streets</i>	*	*	58%	58%	100%
<i>Residents surveyed are satisfied with maintenance of active transportation facilities<sup>1</sup></i>	83%	**	84%	**	90%
<i>Automobile crashes involving bikes</i>	12	8	17	14	0
<i>Automobile crashes involving pedestrians</i>	15	13	16	20	0
<i>Percent of total trips using active transportation mode (transit, pedestrian, bicycle)</i>	***	***	***	***	35% of trips in transit/other mode by 2022
<i>Major arterial travel times</i>	***	***	***	***	***

<sup>1</sup> Active Transportation Facilities include sidewalks, bike lanes, pedestrian flags, in-pavement lights, etc

\*No data available

\*\*Community Survey occurs in even years

\*\*\*Measure being refined for future reports

\*\*\*\*2011 data excludes needs in annexation area. Assessment of need will take place in 2012.