Traffic & Concurrency

City Council Meeting
July 10, 2017

City of Sammamish Washington

Purpose

- Educate Council & the Public
- Promote shared understanding
- Provide background in preparation for the:
  - Transportation Element Update Discussion (7/11/17)
  - Transportation Master Plan (TMP) (2017-18)

Agenda

1. Introduction to Concurrency
2. Terms & Definitions
3. Level of Service
4. Concurrency & Growth
5. Outside Transportation Impacts
6. Traffic Demand Model
7. Testing for Concurrency
8. Policy Considerations
9. LOS Case Study: Issaquah-Pine Lake Road
10. Next Steps

Introduction to Concurrency

- What is Concurrency?
- Why is concurrency important?
- What does the Growth Management Act (GMA) require?
- How can cities comply with concurrency?
- When did concurrency start in Sammamish? How has it changed?

Transportation Concurrency | **What is Concurrency?**

Concurrency refers to the timely provision of public facilities and services relative to the demand for them.

To maintain **concurrency** means that adequate public facilities are in place to serve new development as it occurs or within a specified time period.

> **NOTE:** The impact of new development occurs at the time of occupancy, not when the development receives its concurrency certificate.

Concurrency is one of the requirements of the Growth Management Act (GMA).

Concurrency Policy | **Policy History**

Sammamish inherited a rural King County road network upon incorporation.

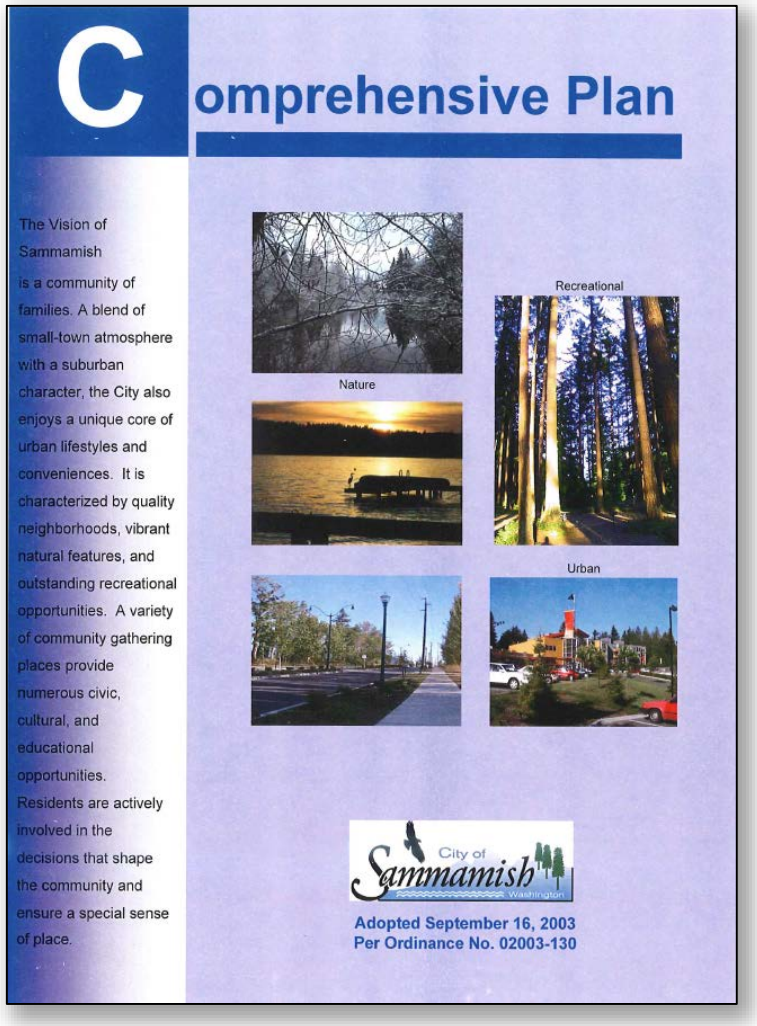
- It is important to understand the issues caused by ***existing deficiencies*** (what we inherited) vs. issues related to ***growth***. Unfortunately, we have both.
- Large capital investments will continue to be needed to improve from rural road infrastructure to urban street infrastructure.
  - Reason Sammamish has the highest Traffic Impact Fee in the State.
  - Ex: 228th Improvement Project.

228th in 1999

228th Today

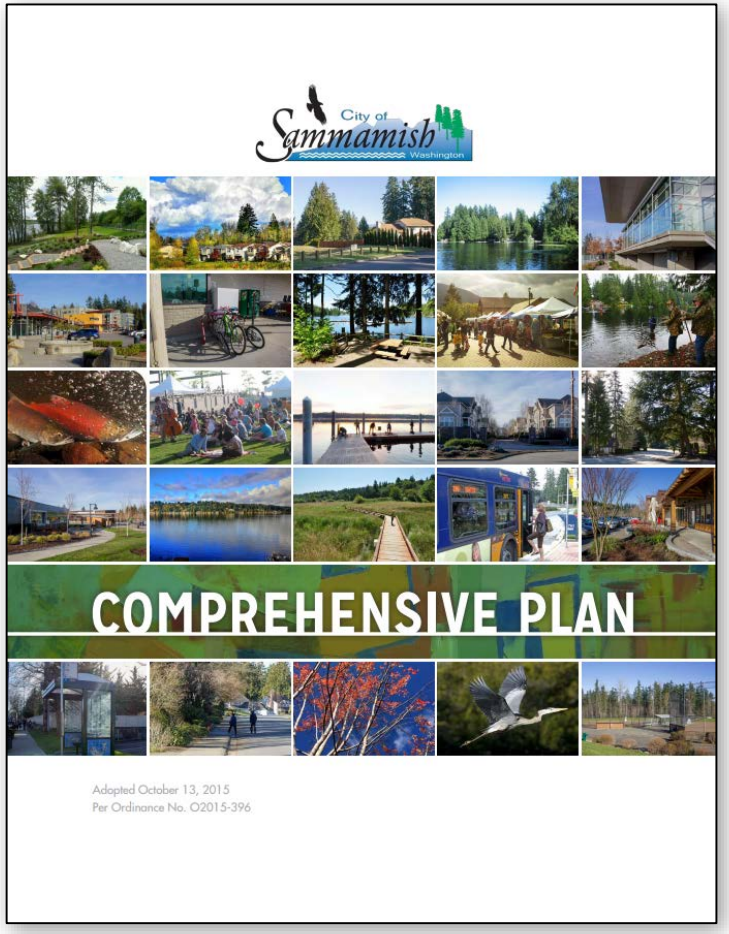
Concurrency Policy | **Policy History**

- **August 1999:** Sammamish incorporated.
- **August 1999:** Adopted Ordinance O99-29 establishing City's transportation concurrency and mitigation payment system.
- **September 2003:** Adopted City's first Comprehensive Plan, which established City Council's desired transportation level of service (LOS).
- **January 2004:** Adopted Ordinance O2004-136 to allow collection of transportation impact fees (TIF).
- **February 2004:** Adopted Ordinance O2004-139 establishing a new concurrency program for the City (implementing the requirements of 2003 Comp Plan Transportation Element).



Concurrency Policy | **Policy History**

- **December 2005:** Adopted Ordinance O2005-192 amending the Comp Plan Transportation Element to add corridor LOS.
- **November 2006:** Adopted Ordinance O2006-208 amending the concurrency program, LOS standards for corridors and TIF.
- **January 2013:** Adopted Ordinance O2013-341 increasing the time allowed for the City to spend TIF from 6 years to 10 years in compliance with revised State law.
- **December 2013:** Adopted Ordinance O2013-363 amending the Comp Plan Transportation Element to add a threshold capacity credit for regional trails and to change SE 4th Street classification from collector to minor arterial.
- **October 2015:** Adopted the 2015 Comp Plan.



Transportation Concurrency | **GMA**

The **Growth Management Act (1990)** requires state and local governments to manage Washington's growth by identifying and protecting critical areas and natural resource lands, designating urban growth areas, preparing comprehensive plans and implementing them through capital investments and development regulations.

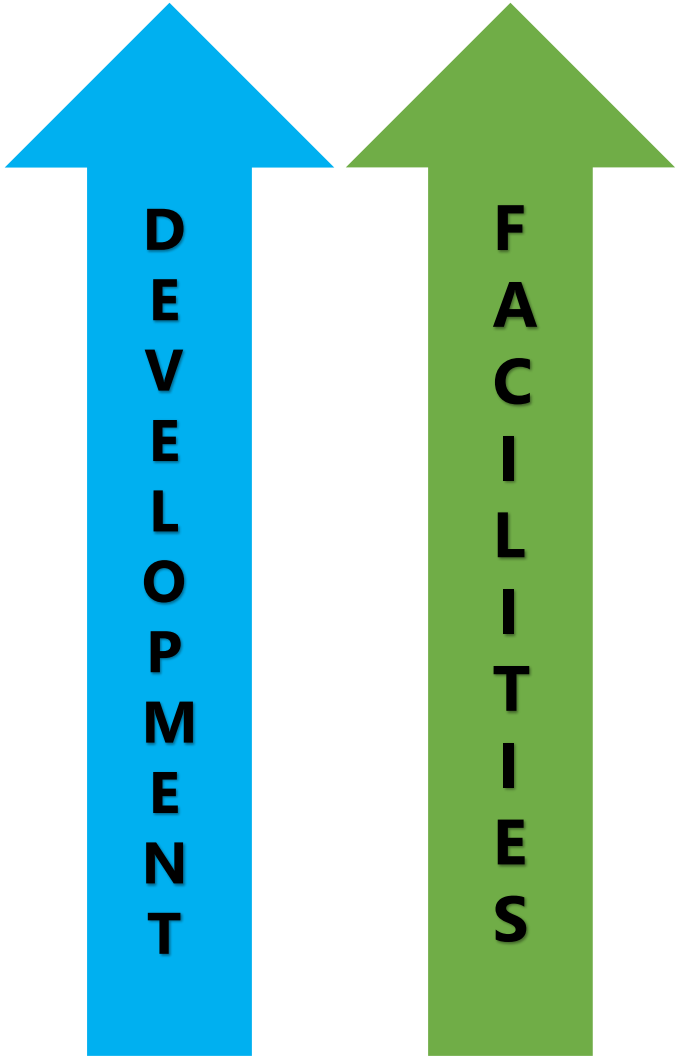
WA Department of Commerce

Transportation Concurrency | **Concurrency**

- GMA requires that transportation improvements or strategies to accommodate development impacts be made **concurrently** with land development.

- **"Concurrent with the development"** = improvements or strategies are in place at the time of development, or that a financial commitment is in place to complete the improvements or strategies within six years of development impact.

  NOTE: The impact of new development occurs at the time of occupancy, not when the development receives its concurrency certificate.



Transportation Concurrency | **Managing Growth**

Does the GMA empower cities to deny growth if infrastructure is behind?

Not quite. Cities are required to deny development permits if new development doesn't meet the concurrency standards adopted by Council. If concurrency is not being met, there are a few options:

1. **Adopt more permissive concurrency standards** to allow development to continue.
2. **Fund and build the necessary infrastructure** to allow for development to resume at existing standards.
3. **The Developer also has options** to phase development so standards are met, or they can build the required improvement themselves.

Doing nothing as a strategy to slow growth is not an option.

Terms & Definitions

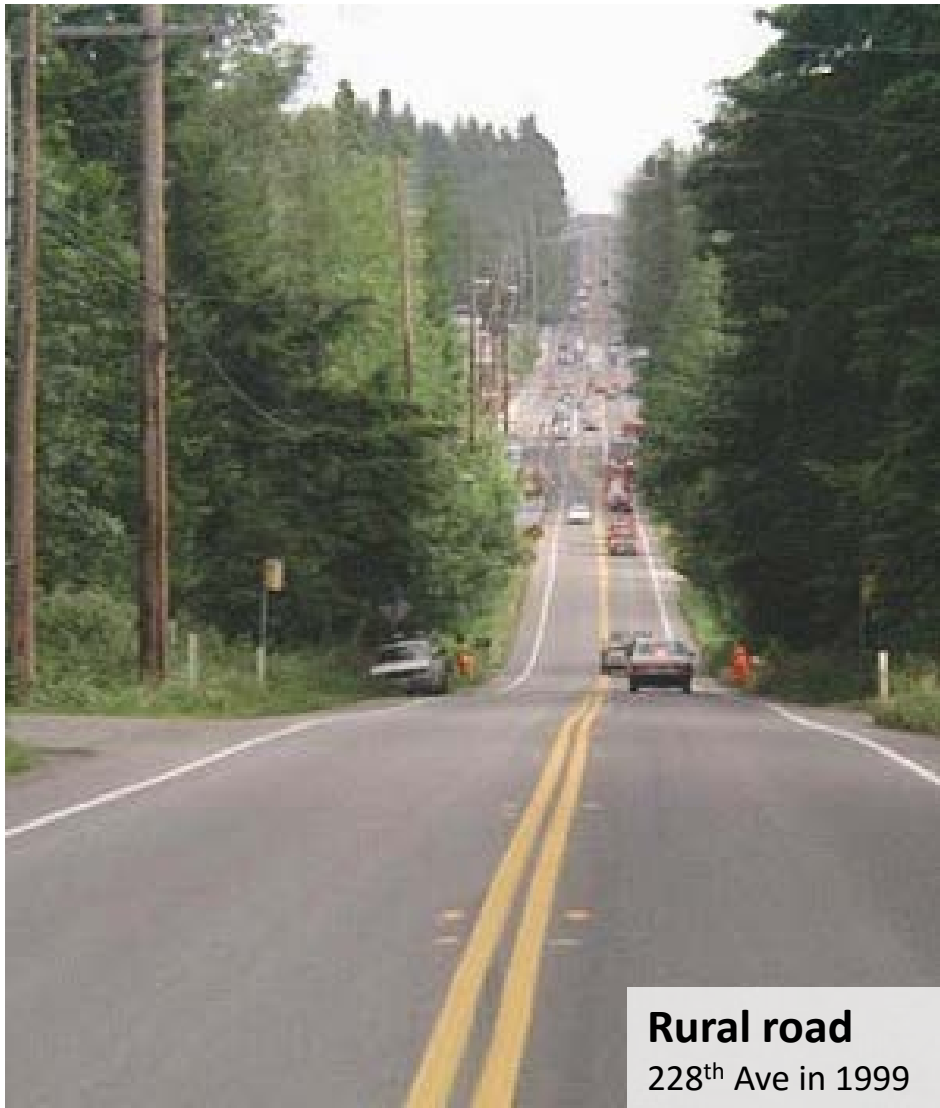
- Important terms, acronyms and definitions

Transportation Concurrency | **Terms & Definitions**

- **Traffic Impact Fee:** Paid by new development to cover proportionate share of improvements needed to maintain LOS standards.

- **Road:** Rural standards, inherited from a time before incorporation.

- **Street:** Urban standards, typically multiple lanes, complete with curb/gutter, sidewalks, bike lanes, and street trees.
  (Commonly referred to as **"Complete Streets"**).



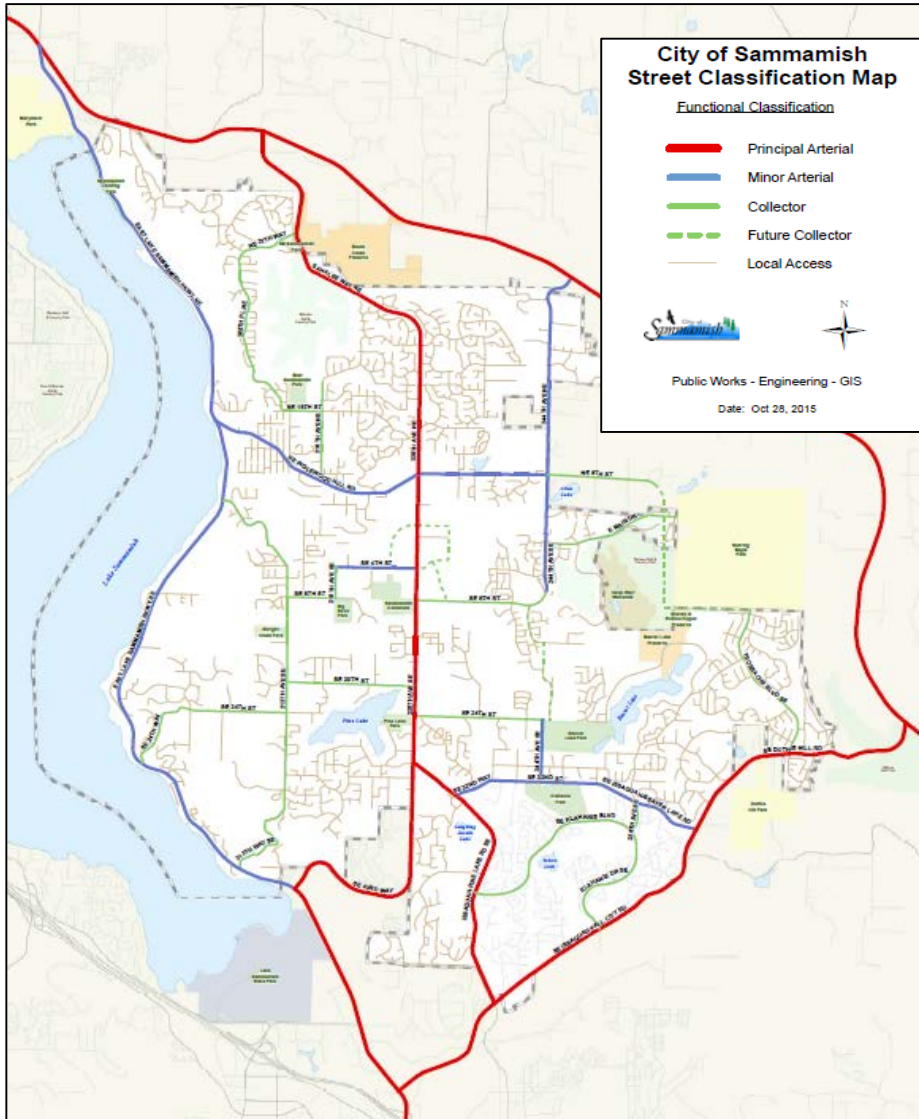
Rural road
228th Ave in 1999

Transportation Concurrency | **Terms & Definitions**

- **Principal Arterial**: Connects major community centers & facilities; limited direct access on/off.
  - 228th Ave, Issaquah-Fall City Rd, Issaquah-Pine Lake Rd

- **Minor Arterial:** Connects community centers & facilities; greater access on/off.
  - SE 32nd Way, 244th Ave SE, NE Inglewood Hill Rd

- **Collector Arterial:** Connects neighborhoods and commercial areas; high access on/off.
  - SE 20th St, 212th Ave SE, SE Klahanie Blvd



Transportation Concurrency | **Terms & Definitions**

- **Average weekday daily traffic (AWDT):** Average of daily traffic counts, M-F.

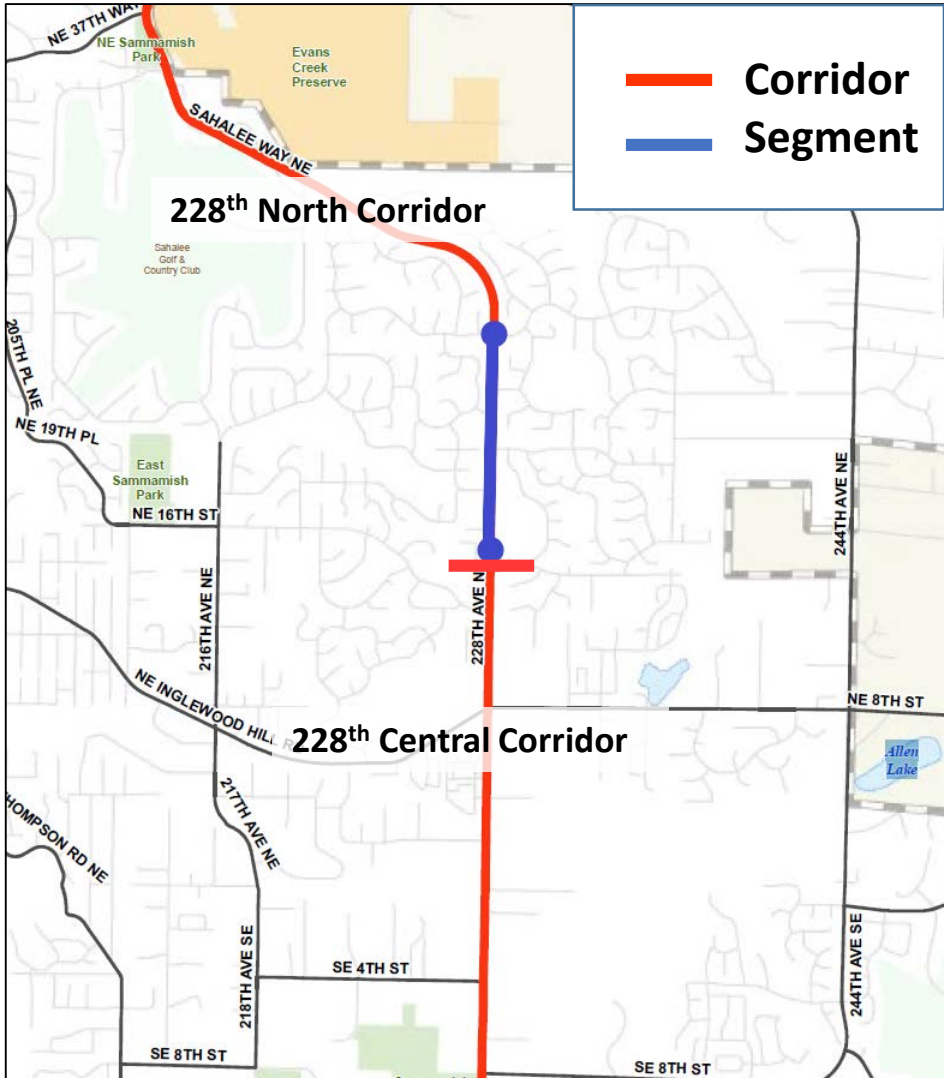
- **AWDT Threshold:** The allowable volume threshold for each classification of arterial based upon its functional classification and physical attributes.

Transportation Concurrency | **Terms & Definitions**

- **Segments:** Portions of roadways/streets selected based on roadway characteristics, adjacent land uses, length, AWDT, etc.

- **Corridors:** Portions of roadways/streets made up of one or more segments that are monitored for concurrency.

- **Intersections:** Signalized, roundabout, all-way stop, & two-way stop.

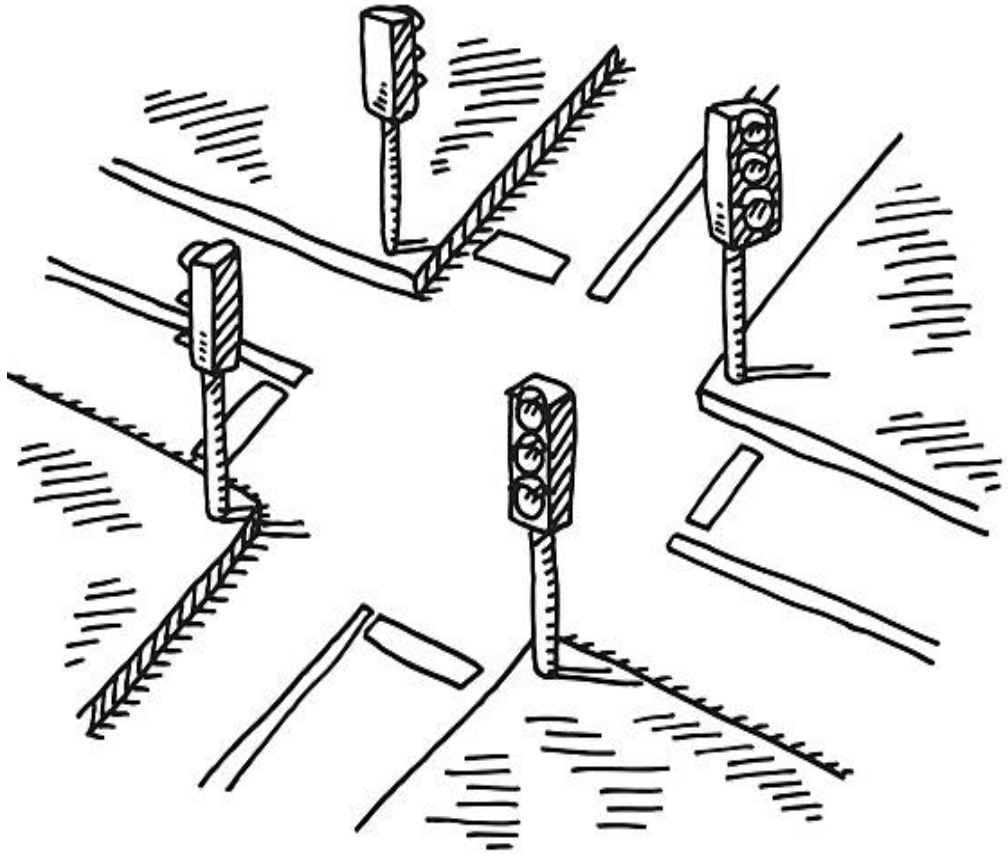


Level of Service

- What is Level of Service?

Transportation Concurrency | **LOS**

- Concurrency, as provided by GMA, requires cities to adopt a **Level of Service (LOS)** for arterial streets.
- GMA does not, however, define the specific LOS standard - this is a City policy decision.
- **LOS** is used to determine whether the impacts of a proposed development can be met through existing capacity and/or identify what level of additional facilities will be required.



Transportation Concurrency | **LOS**

LOS in Sammamish is measured in three areas:

1. **Intersection LOS**

   Measured in average delay per vehicle (seconds).

2. **Roadway Segment LOS**

   Determined by traffic volume (AWDT)/roadway threshold capacity (v/c).

3. **Roadway Corridor LOS**

   Determined by the weighted average v/c of the segments that make up the corridor.

Note: Many cities measure LOS at intersections only.

Level of Service

- What are the City's Level of Service Standards?

Level of Service | **Intersections**

What standards do we use to determine Intersection LOS?

The Highway Capacity Manual (HCM) assigns letter grades to various intersection levels of service, ranging from A–F.

LOS A is the most free flowing standard.

- Shortest delay at traffic signals, roundabouts, etc.

LOS F is the least free flowing standard (e.g. congestion).

- Longest delay at traffic signals, roundabouts, etc.

Level of Service | **Intersections**

Sammamish Intersection LOS Standards:

- **LOS C** for intersections that include Minor Arterials or Collector roadways.
- **LOS D** for intersections that include Principal Arterials.
  - **LOS E** allowed if intersection requires >3 approach lanes in any direction.

LEVEL OF SERVICE	AVERAGE SIGNALIZED INTERSECTION DELAY
A	0 – 10 sec
B	10 – 20 sec
C	20 – 35 sec
D	35 – 55 sec
E	55 – 80 sec
F	> 80 sec

Level of Service | **Roadway Segments/Corridors**

What standards do we use to determine roadway segment/corridor LOS?

The Highway Capacity Manual (HCM) does not assign letter grades for segment/corridor LOS like it does for intersection LOS.

Instead, roadway and segment LOS standards are set by City policy.

Level of Service | **Roadway Segments/Corridors**

What standards do we use to determine roadway segment/corridor LOS?

The volume to capacity ratio (V/C) is used for both segments and corridor LOS, but only corridor LOS is used to determine concurrency.

- Corridor LOS is based on the weighted average V/C of the segments that make up the corridor.
- A corridor can have an acceptable V/C even if one of its segments fails.

Level of Service | **Roadway Segments/Corridors**

What standards do we use to determine roadway segment/corridor LOS?

$$\textbf{Segment \& Corridor LOS} = \frac{\textbf{Traffic Volume (AWDT)}}{\textbf{Roadway Capacity}}$$

Level of Service | **Roadway Segments/Corridors**

Capacity is the allowable volume for the roadway segment.

Capacity is determined by:

- *Functional classification*
- *Number of lanes/lane width*
- *Median or turn lane treatments*
- *Provision of non-motorized facilities*

<u>High Capacity</u>

- Principal arterial
- More/wider lanes
- Medians and turn lanes
- Sidewalks, bike lanes, parallel trails

<u>Low Capacity</u>

- Minor arterial
- Fewer/narrower lanes
- No medians or turn lanes
- No sidewalks, bike lanes, or parallel trails

Level of Service | **Roadway Segments/Corridors**

How is capacity determined?

Background Table T–8
Background Assumptions for Concurrency AWDT Threshold Definitions

TWO-DIRECTIONAL ROADWAY		TWO-DIRECTIONAL CAPACITY (VEHICLES PER DAY)		
		Principal or Minor Arterial	*Collector*	*Neighborhood Collector*
Base Capacity		**12,850**	**9,020**	**2,850**
Lane Width	10 feet	0	0	0
	11 feet	1,620	1,130	320
	12 feet	3,240	2,260	640
Striped Bike Lane/ Shoulder width[1]	8 feet max.	580	410	120
Median	None	0	0	0
	Median	4,640	3,240	920
	Left-Turn Lane	4,640	3,240	920
Walkway/Bikeway[2]	None	0	0	0
	Walkway	1,160	810	230
	Bikeway	1,620	1,130	320
	Both	1,620	1,130	320
Regional Trail width[3]	12 feet max.	580	0	0
MAXIMUM CAPACITY		**25,370**	**17,800**	**5,100**

Level of Service | **Roadway Segments/Corridors**

How is capacity determined?

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Example: Issaquah-Pine Lake Road (SE 32nd Way to SE Klahanie Blvd)

12,850 Principal Arterial (base 10’ lanes)

+1,620 11’ Lane width

+3,480 6’ Shoulder width (580 * 6)

+0 No Median

+0 No Walkway/Bikeway

+0 No Regional Trail

17,950 MAXIMUM THRESHOLD CAPACITY

Concurrency & Growth

- What does it mean that growth pays for growth?
- How have the Transportation Impact Fees been used in the past?

Concurrency Policy | **Growth Pays for Growth**

What is meant by our policy that growth pays for growth?

New development must pay for the facilities needed to support the demand created by the new development.

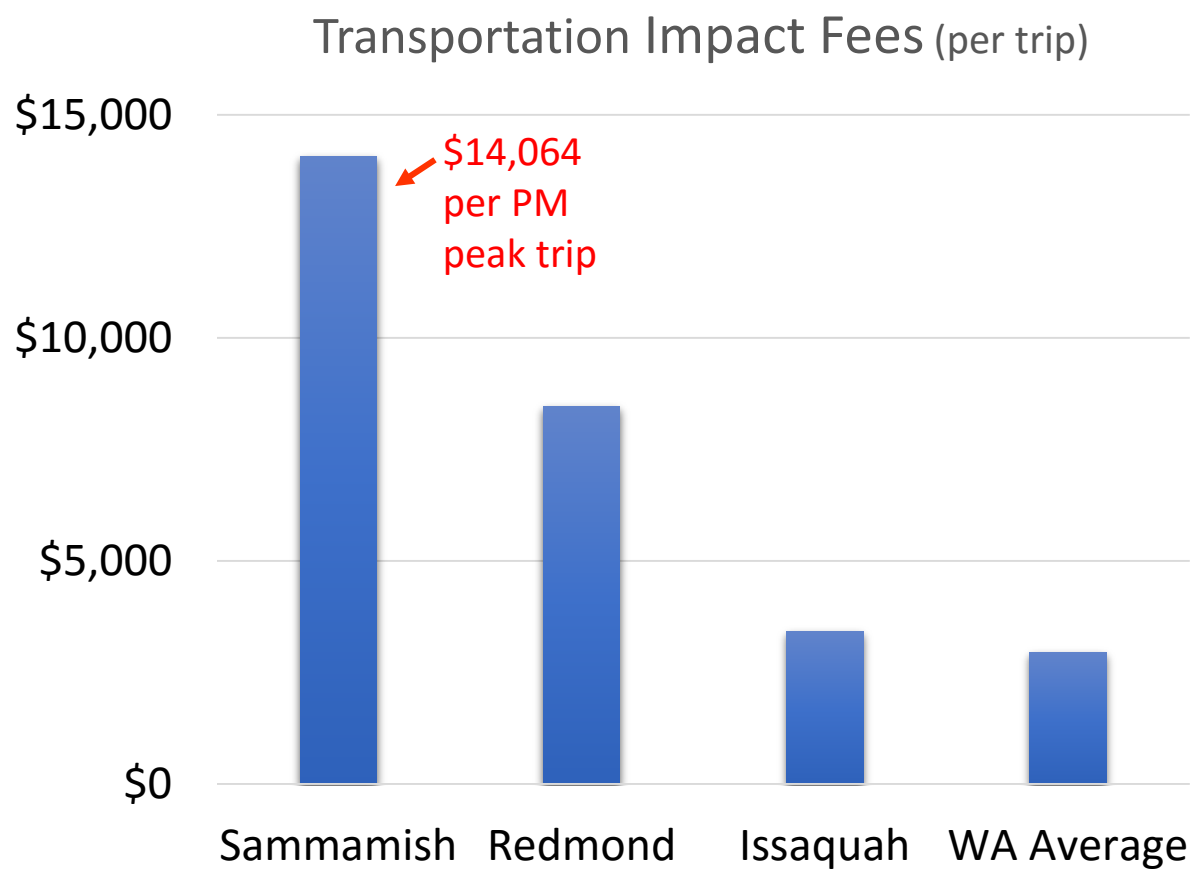
To ensure that growth pays for growth:

- The City measures new development's share of impacts on transportation facilities and calculates an impact fee that will fund projects to mitigate the impacts.
- The impact-mitigating projects are included in the 6-year Transportation Improvement Plan (TIP) and the 20-year Capital Facilities Plan. (The TIP is the capital funding plan for transportation projects).

Concurrency Policy | **Growth Pays for Growth**

Does growth really pay for growth in Sammamish?

- Yes, to the extent allowed by the Comp Plan's growth forecast and land use assumptions and by the GMA.
- Sammamish charges developers the highest transportation impact fee (TIF) base rate in the state. Our TIF is:
  - **66%** higher than Redmond, which has the second highest TIF in the state.
  - **379%** higher than the average Washington TIF.



Source: https://www.cob.org/Documents/pw/transportation/2017-WA-Statewide-TIF-Graph-Chart.pdf

Concurrency Policy | **TIF Projects**

Where have TIFs been spent so far?

The City's TIF has helped fund a number of concurrency projects, including:

- 228th Avenue
- 244th Avenue
- East Lake Sammamish Parkway
- Sahalee Way – NE 25th to City Limits
- SE 4th Street - 218th to 228th

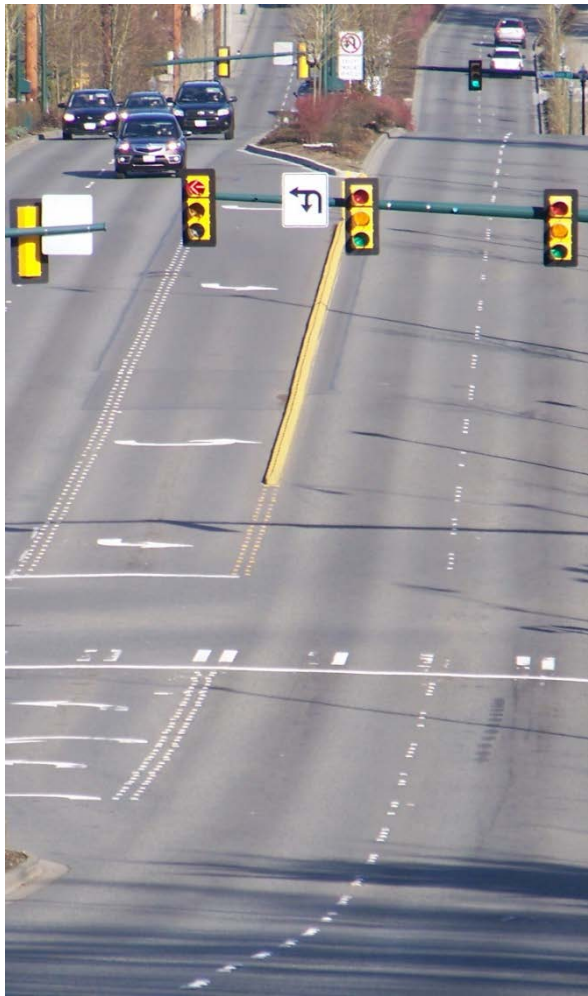
Can we build infrastructure faster?

- Why improve infrastructure as growth occurs instead of in anticipation of growth?

Concurrency Policy | **Growth Pays for Growth**

Why don't we improve infrastructure before growth occurs?

- The City <u>can</u> make a policy decision to complete improvements before they're needed.
- This was done for 228th Ave in the early 2000's.
  - After the City completed the 228th improvements, new development's share of the project was included in the impact fee calculation, so early fee collections could be used to pay back the City's investment.
- Policy discussions related to funding transportation projects will be a critical component of the **Transportation Master Planning (TMP)** process. (2017-18 Planning Project).



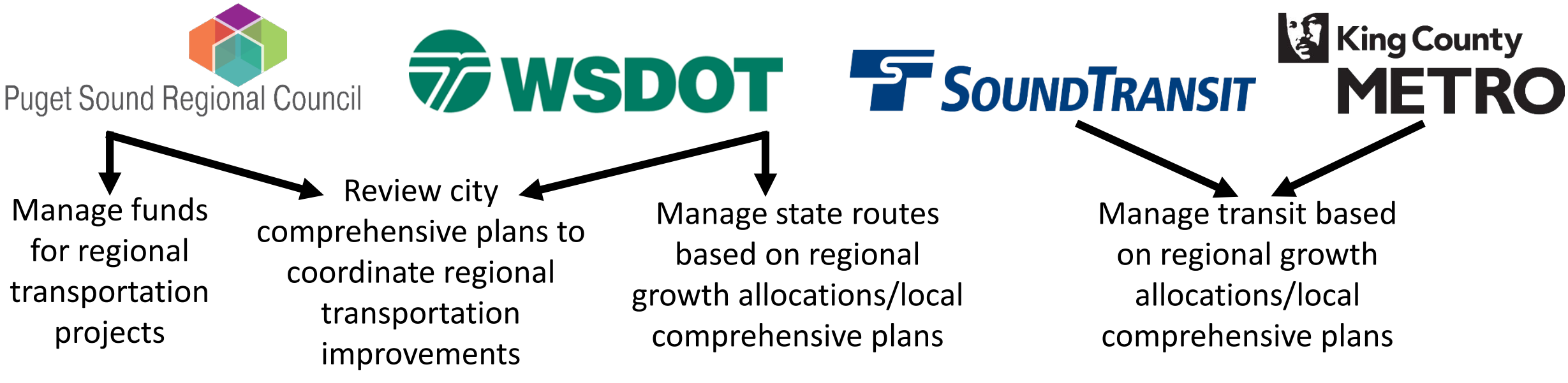
Outside Transportation Impacts

- Why aren’t traffic impacts from outside the city considered?

Concurrency Policy | **Outside Impacts**

Why aren't traffic impacts from outside the city considered?

- The City can't regulate actions of adjacent cities or transportation providers.
- The City does work collaboratively on regional initiatives and transportation solutions. Some examples include:
  - Adjusting the timing of the signal at SR 202 and funds to study SR 202.
  - Meeting regularly with Issaquah, Redmond, Sound Transit, Metro and others.

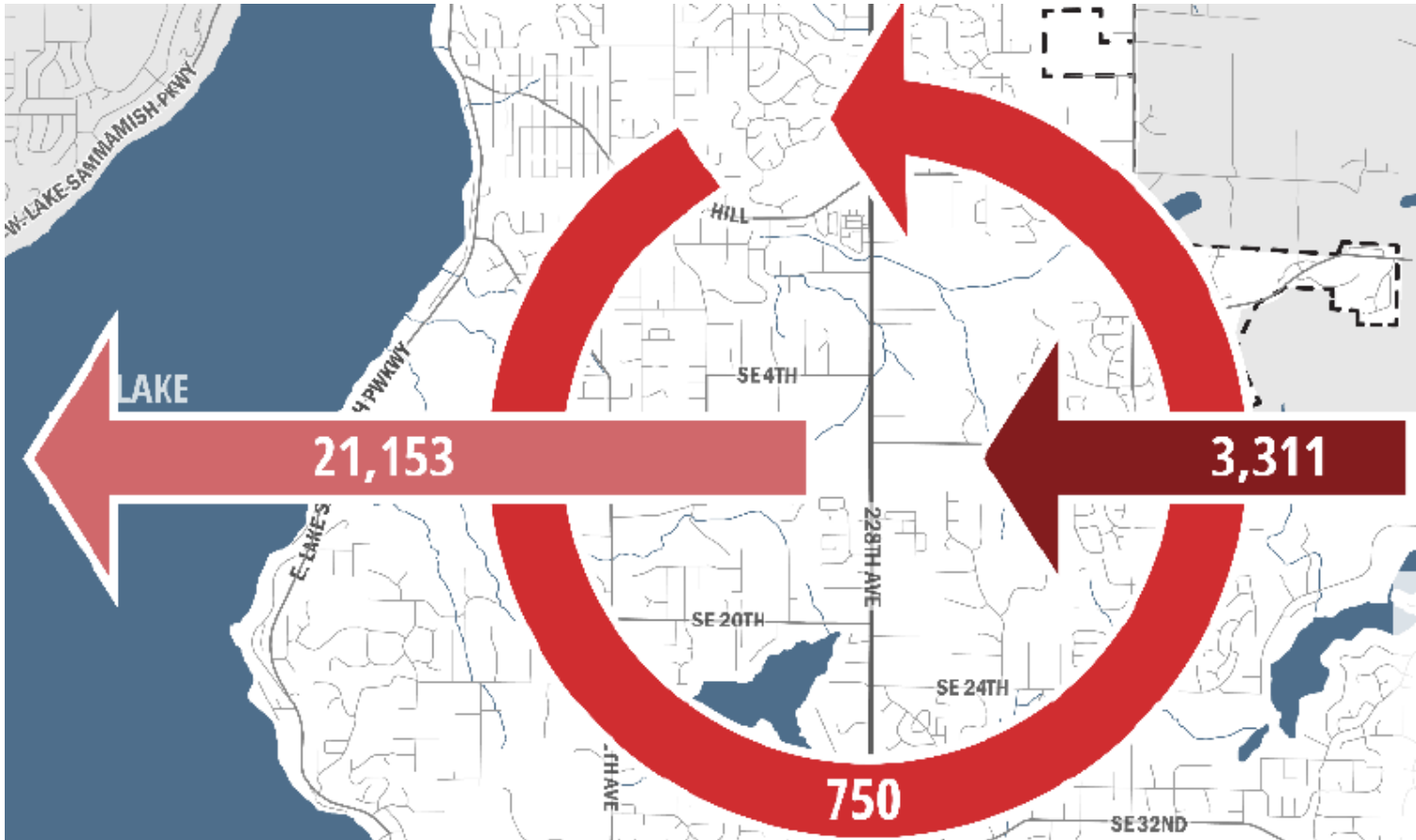


Concurrency Policy | **Outside Impacts**

Why aren't traffic impacts from outside the city considered? (Cont.)

A good reminder that Sammamish traffic impacts other cities much more than those cities impact us.

- **21,903** Sammamish residents work
- **21,153** commute *outside* of the city for work (97%)
- Only **750** work *within* the city
- **3,311** non-residents commute to Sammamish for work



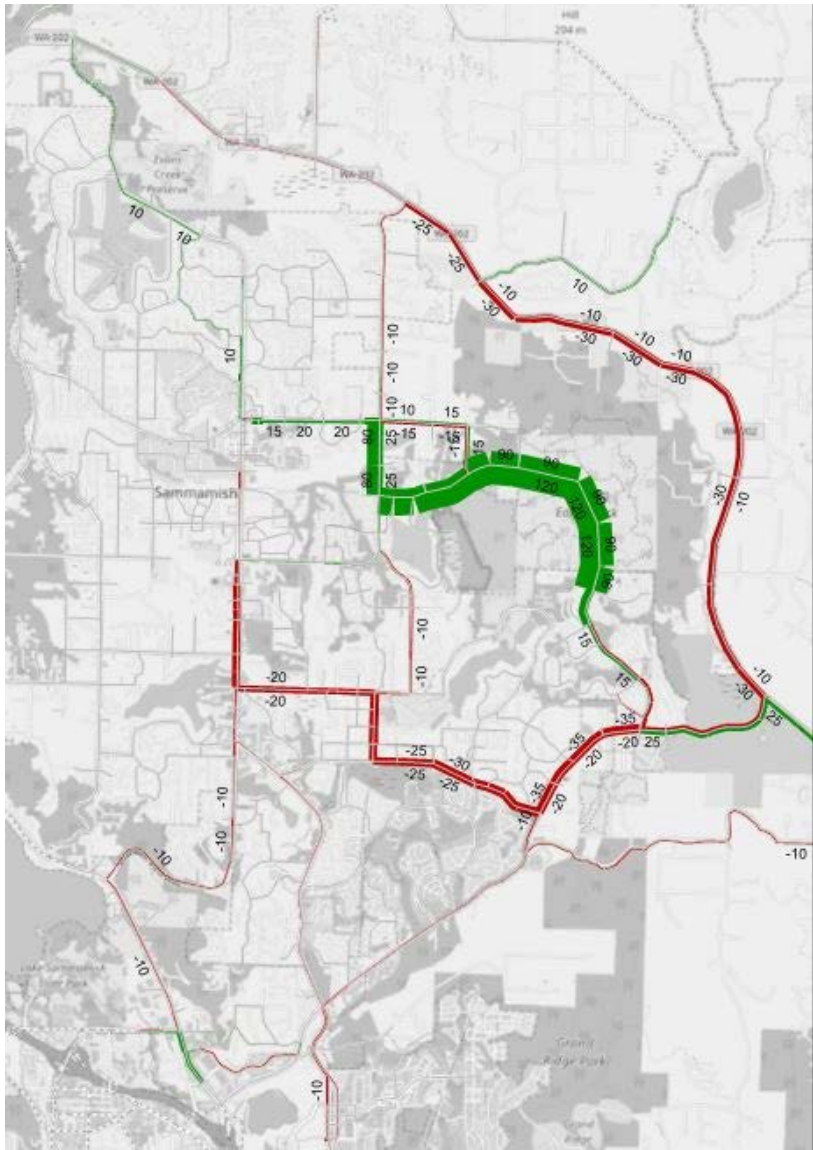
Source: 2017 Sammamish Demographic and Economic Profile

Traffic Demand Model

- What is a traffic demand model and how is it used?

Traffic Demand Model | **Explanation**

- Sammamish developed a traffic demand model shortly after incorporating.
- The model is a very complex engineering calculation. (More on that later.)
- The model incorporates many data inputs (three-legged stool analogy) to predict traffic impacts.
- The model is used to test for concurrency.
- The Sammamish traffic model is one of the most comprehensive models used in our region.
- It’s also pretty darn accurate.



Traffic Model | **How Do We Compare?**

LESS ROBUST ← → **MORE ROBUST**

- **Track land use & compare to Comprehensive Plan.**

- **Track land use.**
- **Review Traffic Impact Assessments (TIAs) submitted by developers & confirm operations are within agency standards.**

- **Track land use.**
- **Review Traffic Impact Assessments (TIAs) submitted by developers.**
- **Internally manage traffic demand and operational model to test whether new developments meet concurrency standards.**

Continuously add trips as new developments are approved.

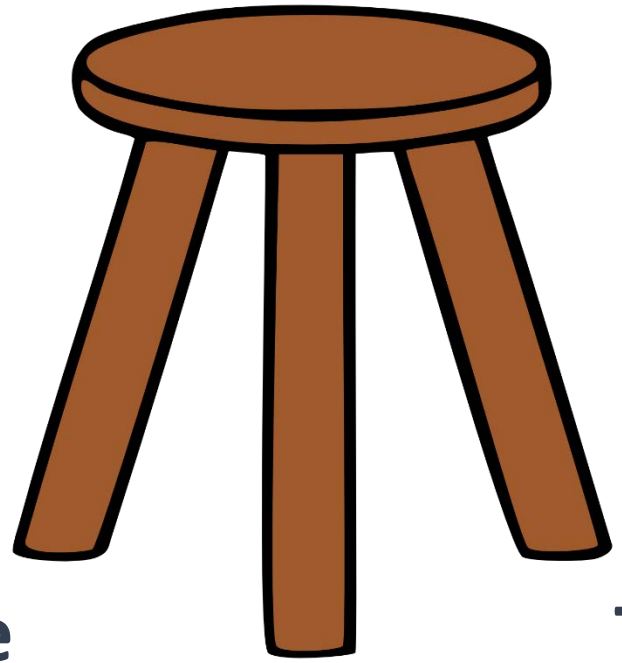
City of Sammamish Washington

Data & Inputs

- What data and inputs are used in the Sammamish Traffic Model?

Traffic Demand Model | **Data & Inputs**

Traffic Model



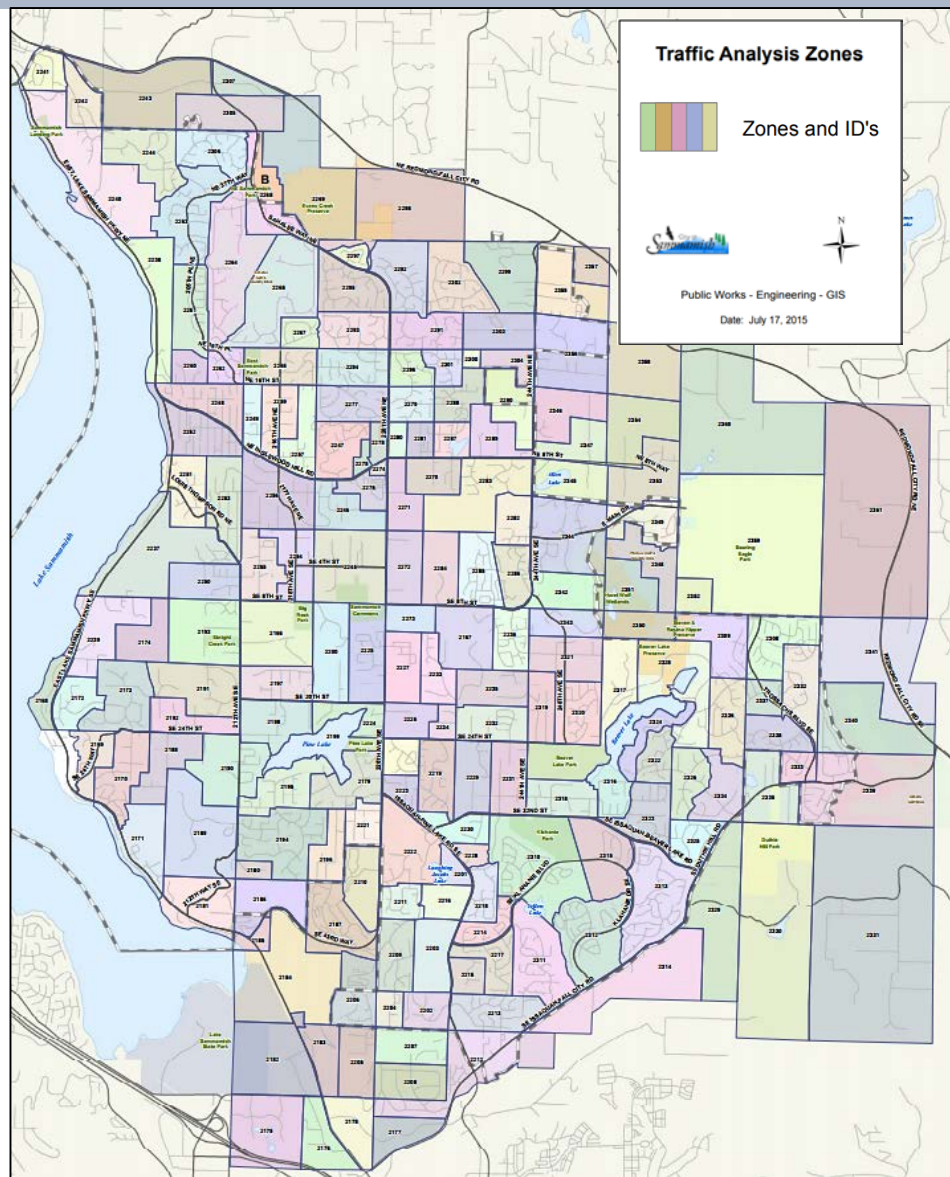
Land Use

Traffic Counts

Roadway Network

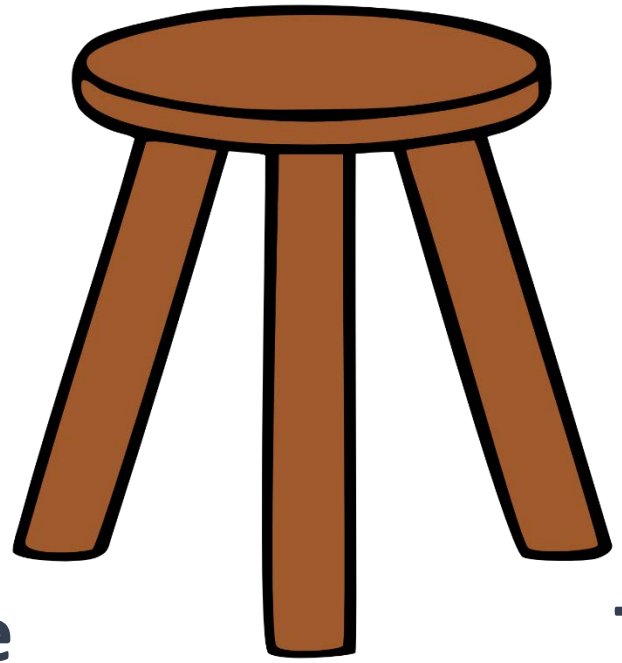
Traffic Demand Model | **Land Use**

- Land use is the most critical component of the traffic model.
- Trips are allocated to and from more than 300 city **Transportation Analysis Zones (TAZs),** each of which contain some combination of trip productions and attractions.
- The number and distribution of allocated trips changes based on zoning and land use in each **TAZ**.



Traffic Demand Model | **Data & Inputs**

Traffic Model



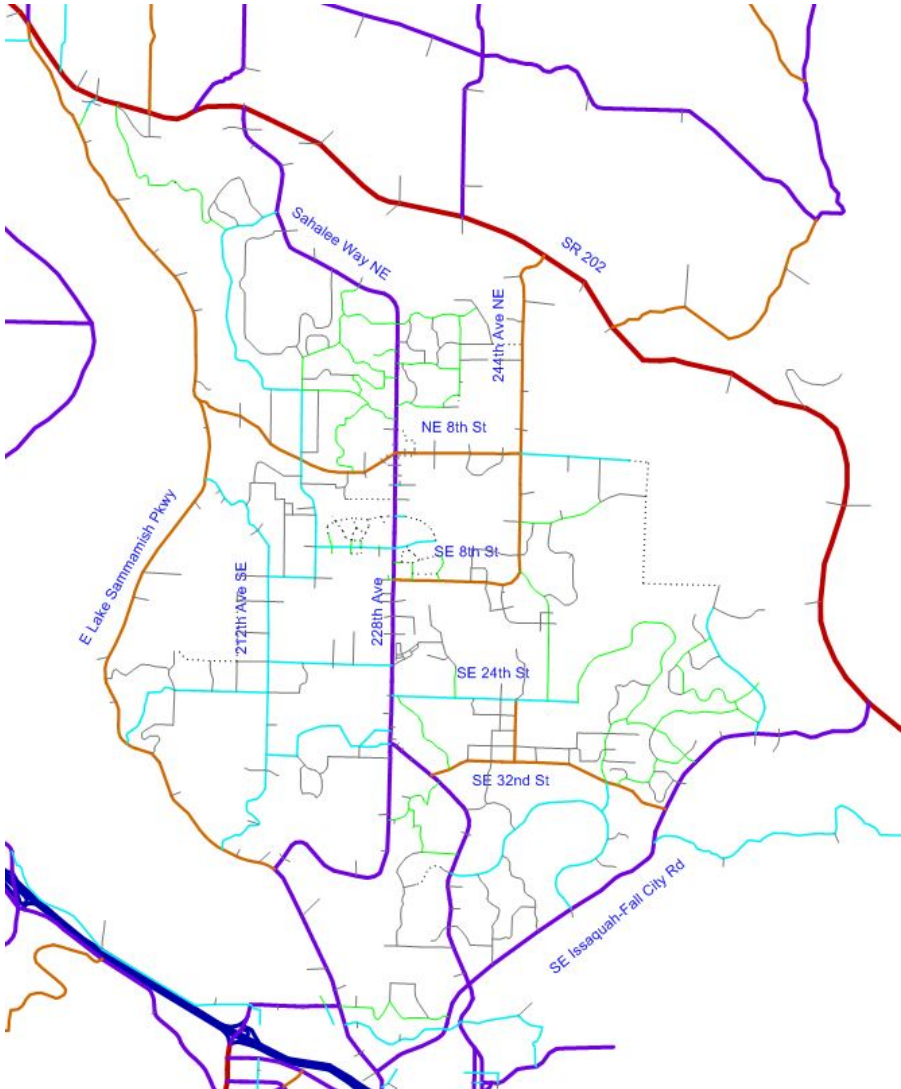
Land Use

Traffic Counts

Roadway Network

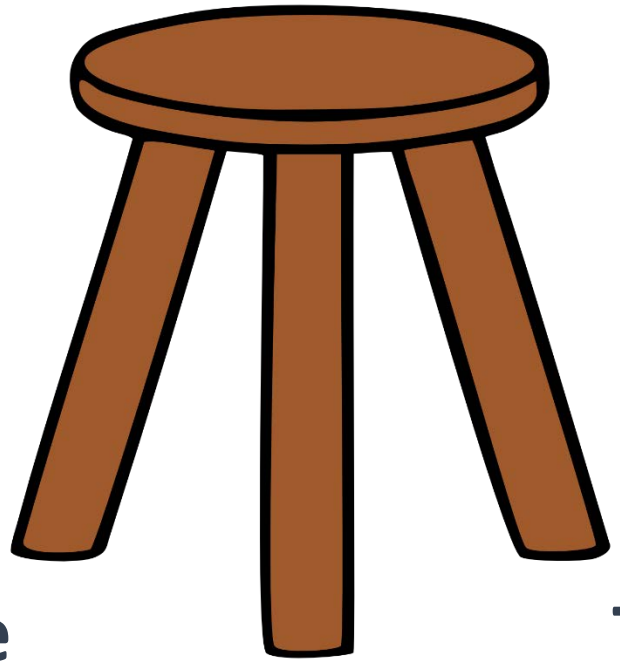
Traffic Demand Model | **Roadway Network**

- The traffic model relies on information about the existing roadway network and planned improvements.
- As roads are added and improved, the shortest travel time between two points may change.
- As the road network is built out, trips allocated along one road might be reallocated to different roads.
- **The model is dynamic.** As inputs change that information is included in the model.



Traffic Demand Model | **Data & Inputs**

Traffic Model



Land Use

Traffic Counts

Roadway Network

Traffic Demand Model | **Traffic Counts**

- Traffic counts are the third and least important component of the traffic demand model.

- Traffic counts are used to:

    1. Calibrate the traffic model (every few years)
    2. Validate the traffic model (each year)

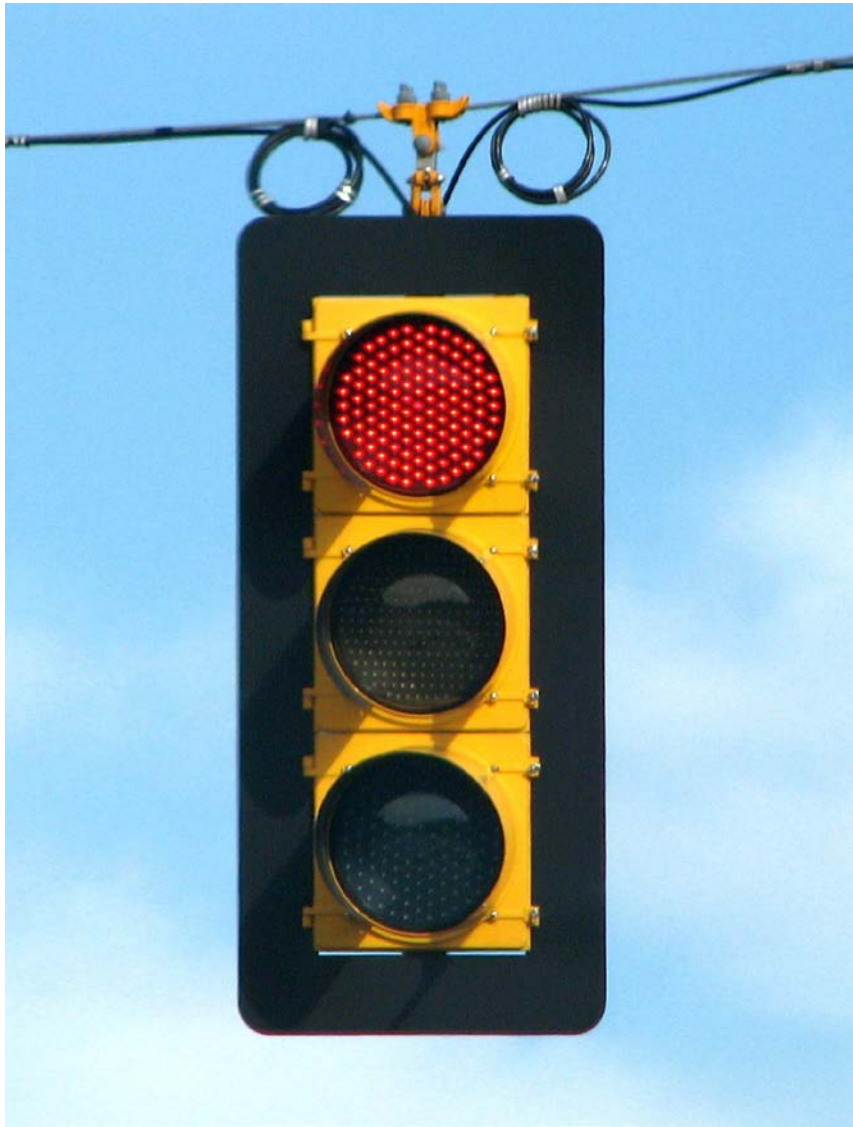
TRAFFIC COUNTS ≠ TRAFFIC MODEL

Traffic Demand Model | **Traffic Counts**

- Taking traffic counts is the action of counting motor vehicles at designated locations around the City.
- Average weekday daily traffic (AWDT) counts are calculated by averaging the daily traffic counts of Monday - Friday.
- Traffic counts have been taken annually since 2011. Before then, counts were taken every two to three years.

Traffic Demand Model | **Traffic Counts**

- 2016 traffic counts were collected at over 70 segment locations plus almost 50 intersections.
  - **Segments**: AWDT counts taken.
  - **Intersections**: Turning movement counts taken.
- The traffic model uses traffic counts collected at the PM peak 15 minutes, when volumes are highest.
  - In 2016, AM peak volume was better than PM peak volume in all but a handful of locations. And in those other locations, the AM peak counts were still within 5% of PM peak volumes.



Traffic Demand Model | **Traffic Counts**

Why did the City begin taking traffic counts for more segments in 2016?

- Before 2016, traffic counts were not taken for each individual segment. Segment demand was calculated via proportional allocation of corridor demands.

- Beginning in 2016, the City began taking traffic counts at each segment and sub-segment in order to improve concurrency monitoring and the calibration of the traffic model.

Concurrency & New Development

- What happens when a new development is proposed?
- What is the process?

Concurrency Review | **New Development**

- When a development comes in…
  1. Trip generation is calculated based on current and forecasted land use.
  2. Trips are distributed to predicted destined locations.
  3. Trips are assigned along predicted routes and times.
  4. LOS is checked against the newly predicted traffic volumes for all monitored segments and intersections.
- This process repeats over and over until capacity threshold is reached.

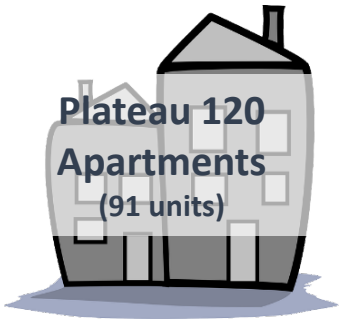
Concurrency Review | **Process**

- Begins when a development application is received.
- In order for a development application to be approved, the proposed development must pass a **concurrency test.**
- Payment of impact fees is due at final plat or building permit application.

Example: Plateau 120 Apartments

11,850 AWDT available
-605 New Trips
= 11,245 Trips remaining

Developer

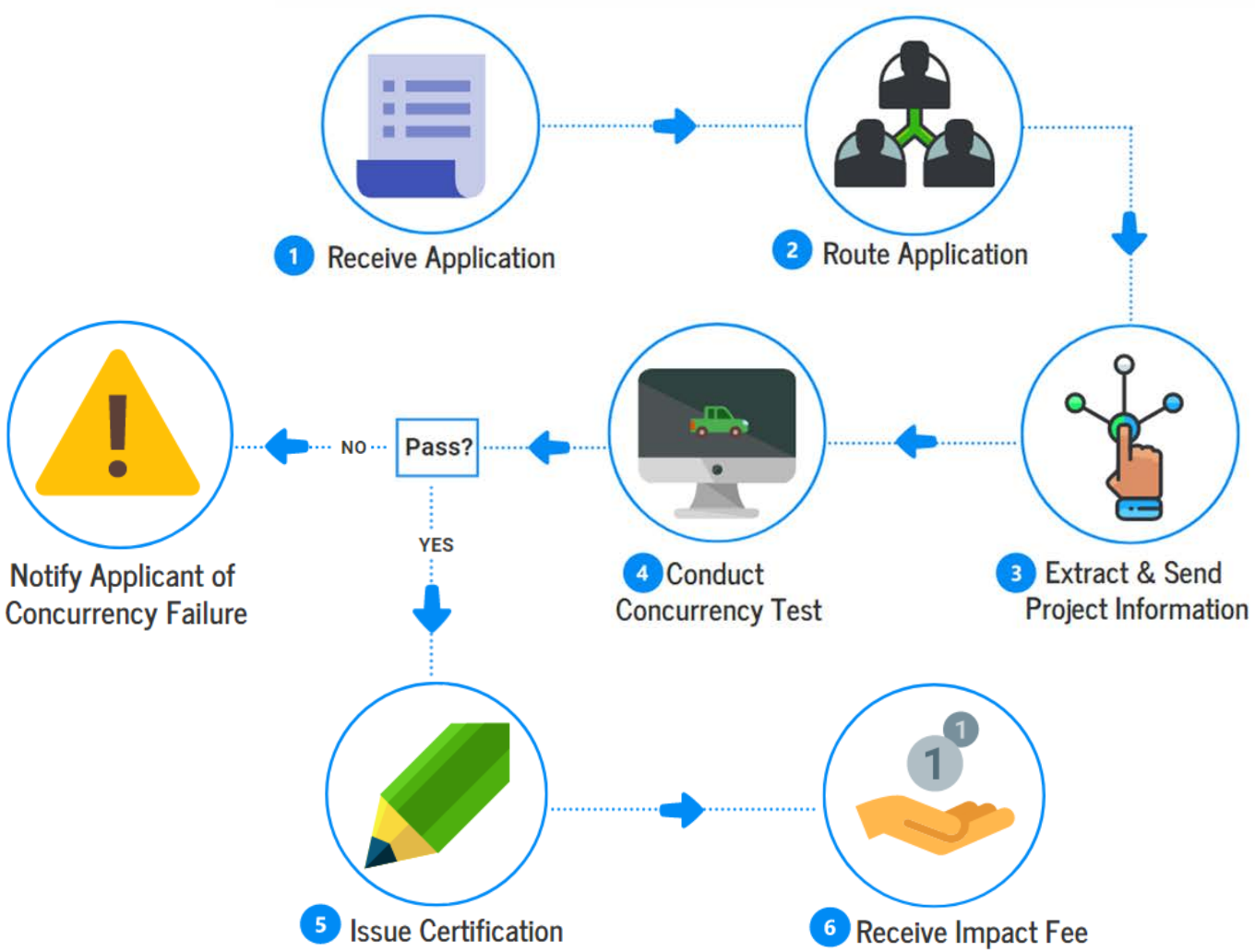


= 605 New Trips

Pays $793,470 in **impact fees** to fund TIP projects citywide

AWDT based on 2015 Comprehensive Plan, Table T-7

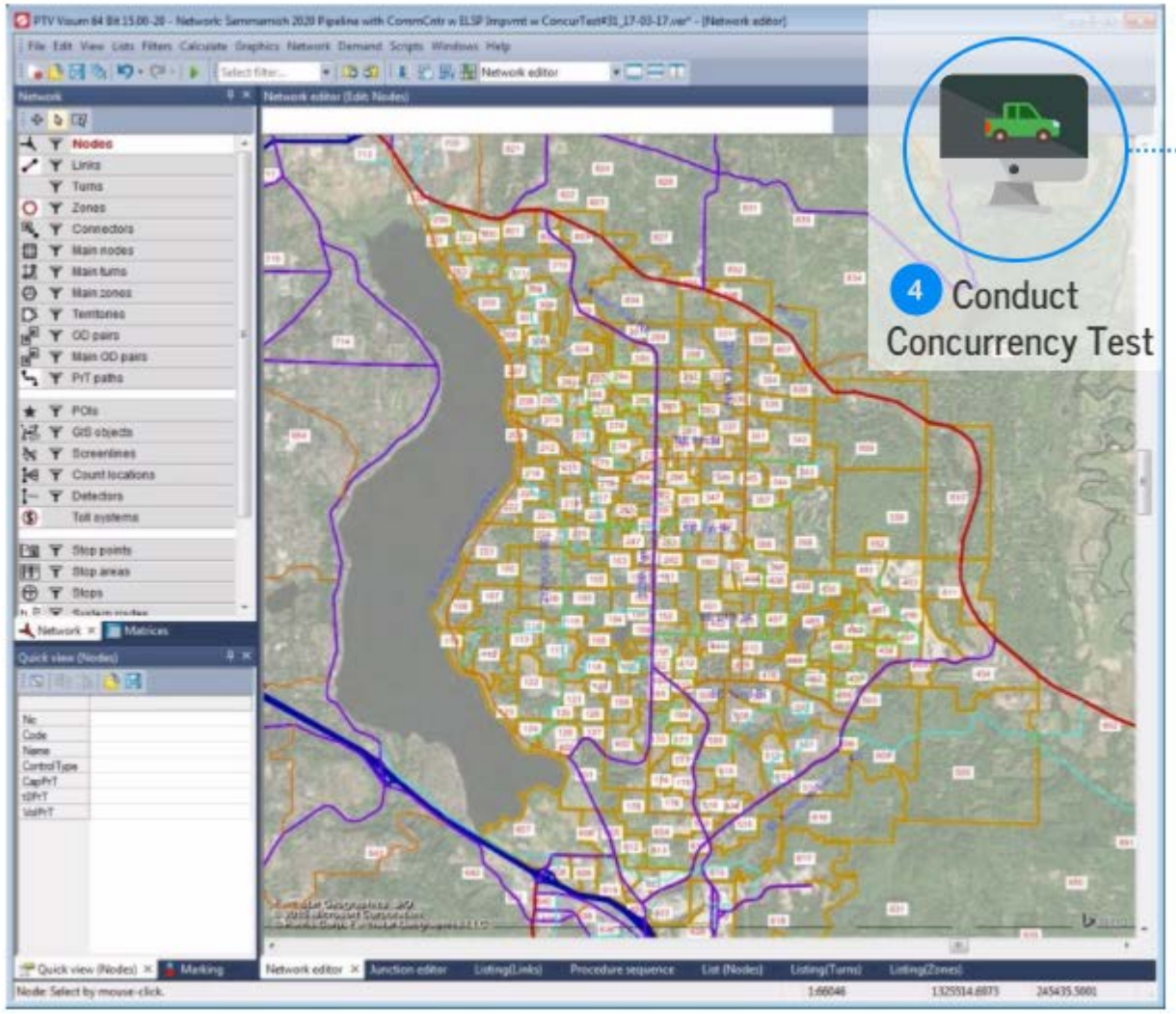
Concurrency Review | **Another Look at the Process**



Testing for Concurrency

- What are the exact steps involved in testing for concurrency?

Concurrency Review | **Concurrency Test Steps**



1. Assign development to one of almost 300 existing city Transportation Analysis Zones (TAZs).
2. Import updated land uses into travel demand model.
3. Update any new roadway geometrics in travel demand model.
4. Assign trips between TAZs.
5. Export resulting vehicle demands to Excel.
6. Summarize link demands.
7. Update any new roadway geometrics in traffic operations model.
8. Import vehicle demands to Synchro.
9. Summarize intersection operations .
10. Update summaries, charts, and figures.
11. Compile and submit final report.

Source: City of Sammamish Traffic Model

Testing for Concurrency

- Can you explain the math behind the model?

Concurrency Review | **Calculation**

The traffic model uses the following equation to model traffic between any two Traffic Analysis Zones (TAZs). This equation is run over 450,000 times during a concurrency test.

$$T_{ij} = P_i \frac{A_j F_{ij} K_{ij}}{\sum_n A_j F_{ij} K_{ij}}$$

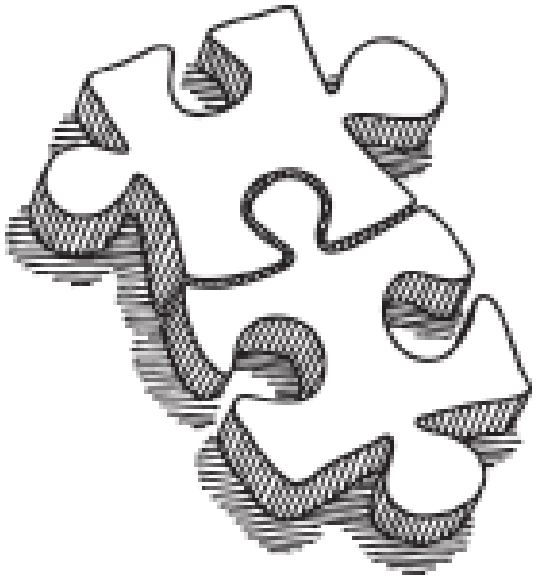
Where:
- T_{ij} = number of trips produced in zone i and attracted to zone j
- P_i = number of trips produced in zone i
- A_j = number of trips attracted to zone j
- F_{ij} = travel time or "friction" factor
- K_{ij} = zone-to-zone adjustment factor (takes into account the effect on travel patterns of defined social or economic linkages not otherwise incorporated in the gravity model)

Testing for Concurrency

- What assumptions are made when we test for concurrency?

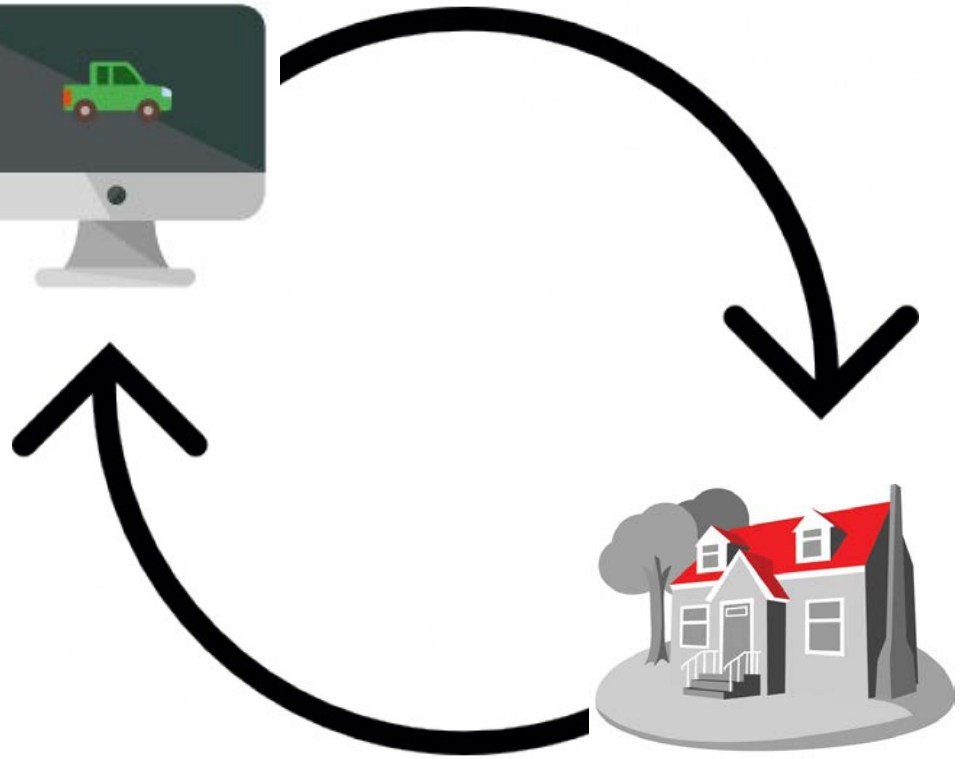
Concurrency Review | **Methods & Assumptions**

- Corridor and segment LOS analysis is based on established capacity thresholds = functional classification + roadway characteristics.
- Intersection analysis based on HCM 2000 (not HCM 2010).
- No direct LOS for sidewalks and bike paths.
- Model adjusts for pass-by trips to account for trips with multiple destinations.
- School start and end times generally do not affect the PM peak. School land uses are included in the model.



Concurrency Review | **Methods & Assumptions**

- Updated land use assumptions from permitted development is input continuously throughout the year.
- Smaller developments are held until ≈ 50 PM peak trips are generated.
- Inputs for larger developments are entered immediately.
- A reminder, the model is **dynamic** and changes throughout the years as data and inputs change.



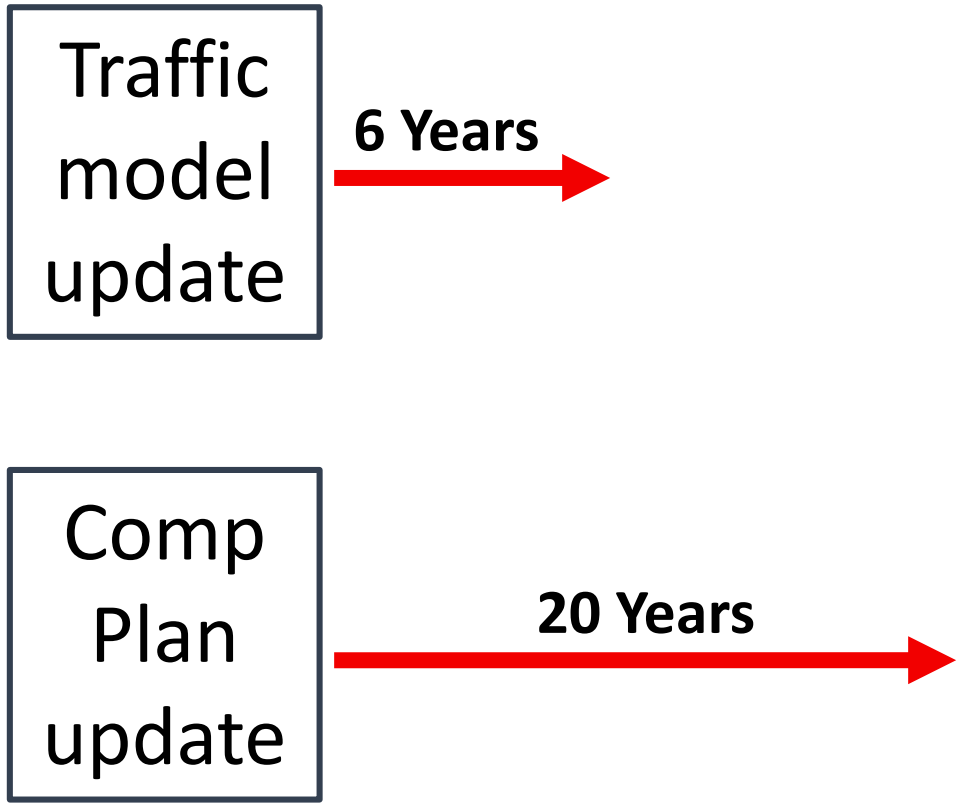
Concurrency Review | **Methods & Assumptions**

Forecast window:

Concurrency review: 6 years from last model update. Includes all current and approved traffic. Roadway characteristic assumptions reflect 6-year TIP.

Comprehensive Plan: 20-year horizon (currently ending in 2035).

- Land use assumptions based on PSRC allocations and forecasts.
- Land use assumptions for outside City limits based on Issaquah and Redmond forecasts.



Policy Considerations

- How do our intersection LOS standards compare to other cities?

Policy Considerations | **LOS Comparison**

Adopted Intersection LOS		
City	**LOS**	**Comments**
Sammamish	C/D	C for minor arterial and collector road intersections. D for principal arterials (E allowed if >3 approach lanes required).
Issaquah	D	Six specific intersections may operate at LOS E or F, but the overall average of all intersections must not drop below LOS D.
Mercer Island	D	Two intersections are LOS C.
Shoreline	D	LOS E for State Routes.
Newcastle	D/E	D for arterial intersections outside the Business Center area. E for arterial intersections within Business Center area.
Redmond	?	Uses unique LOS measurement based on person miles traveled. Not easily comparable to HCM methodology.

Policy Considerations

- How does LOS relate to the driver's experience?

Policy Considerations | **Driver Experience**

How does LOS relate to the driver's experience?

- At intersections, LOS D means that all drivers will, on average, wait between 35 to 55 seconds to get through the intersection.
  - Once the average wait time is longer than 55 seconds, that intersection "fails" to meet LOS D.
- On unimproved segments:
  - Drivers will experience bicycles in the travel lane, pedestrians walking close to the roadway, and increased wait time due to left turns being made from the travel lane.
  - Risk of crashes is higher for vehicles, bicycles, and pedestrians. Transit is ineffective since pedestrians cannot access bus stops without sidewalks.

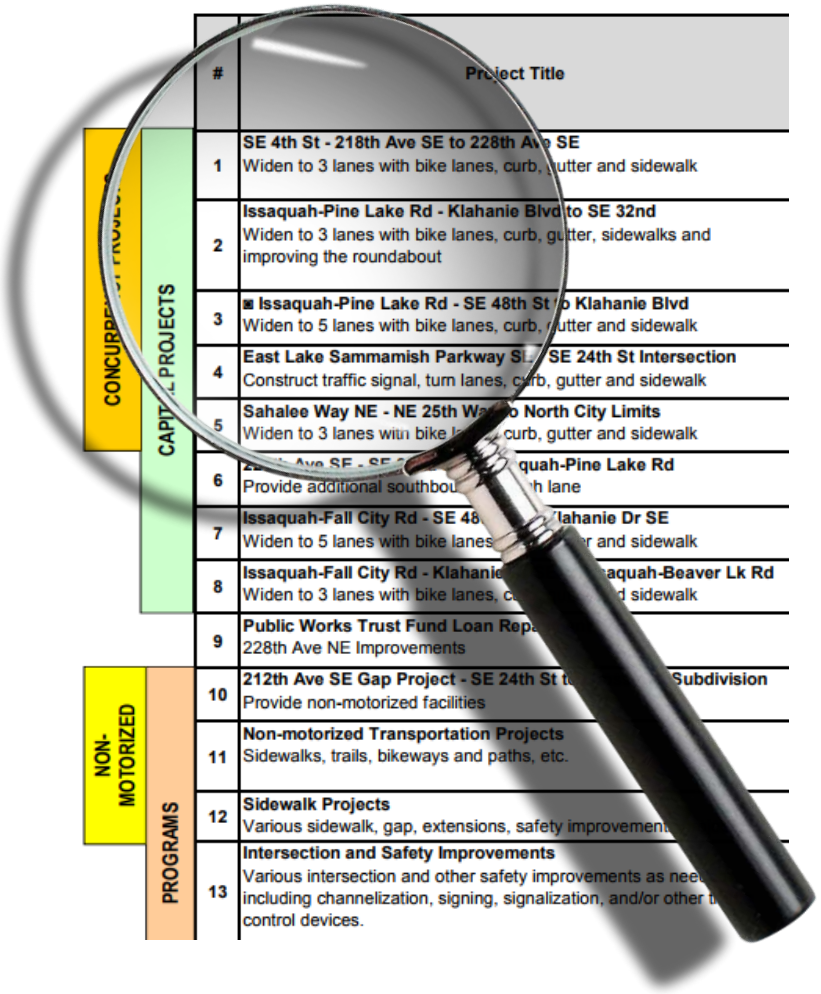
Policy Considerations

- What happens when concurrency projects identified on the TIP are not built in 6 years?

Policy Considerations | **Lagging Projects on the TIP**

What happens when concurrency projects on the 6 year Transportation Improvement Plan (TIP) are not built within 6 years?

- Because priorities and funding change over time, cities are not always able to complete a concurrency project within 6 years.
- As long as the project remains on the TIP, the concurrency model assumes the project will be built and thresholds will not change.



Policy Considerations | **Lagging Projects on the TIP**

If a concurrency project is completely removed from the TIP:

- Thresholds may revert back to reflect the current state of the road and impact fees may need to be readjusted.
- This could create a **concurrency failure** that impedes development, in which case the City would be required to fund the project or the City may be found out of compliance with GMA.
- Development could be delayed until the project is funded, or development could construct the improvement.

Policy Considerations

- How is the City coordinating with the School Districts to plan for growth?

Policy Considerations | **Impact on Schools**

How does the City confirm with the school districts that they will be able to support proposed development?

- Like cities, school districts are required to plan for new development and adopt capital facilities plans based on common growth assumptions.
- School districts calculate their own impact fees on new development, which the City collects on the District's behalf.
- School districts are notified about proposed large developments located within the school district.

LOS Case Study

- Should the City's LOS standards change?
- What happens if LOS changes along a key corridor?
- How much time is saved for the average driver?
- How much do improvements cost?

Policy Considerations | **Changing LOS**

What if Sammamish decided to raise its LOS?

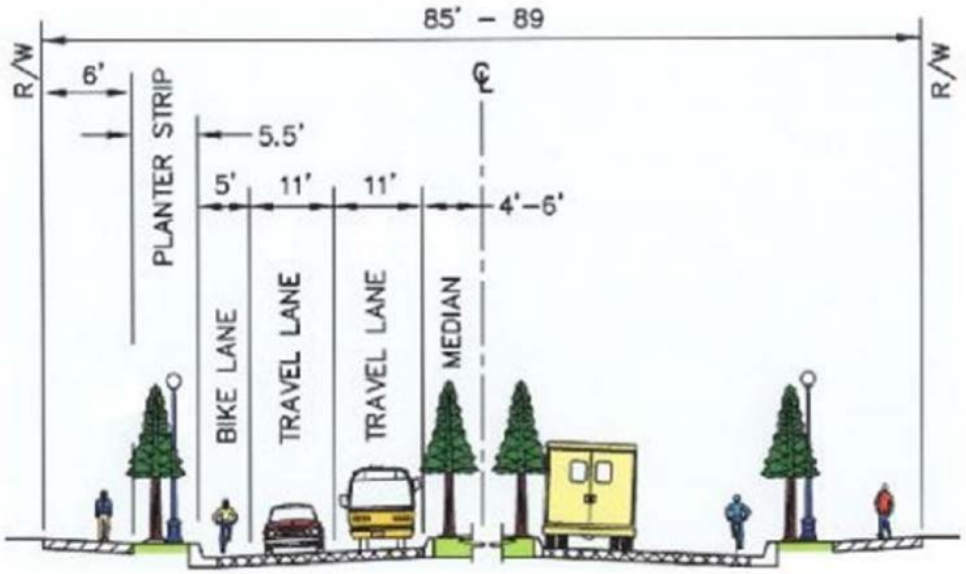
- LOS may be raised by amending the Comp Plan, however:
  - Intersections and corridors that were close to failing on the current standard would likely fail on the new standard.
  - The City would be required to fund improvements to fix the newly failing facilities (impact fees cannot be used).
  - The City could lose grant funds.
  - The City could face legal challenges by property owners.
- Potential changes to LOS standards will be discussed as part of the **Transportation Master Planning** Process.
- Let's consider a case study…

LOS Case Study | **Issaquah-Pine Lake Road**

Issaquah-Pine Lake Road (IPLRD) Capital Project

- This is a future capital project currently included, but not funded, on the City's TIP. The scope of the project includes:

- SE 32nd to SE Klahanie Blvd:
  - Center two way turn lane/medians
  - Bike lanes, sidewalk, landscaping
- SE Klahanie to SE 48th/ City Limits:
  - A 2 travel lanes + center turn lane/median
  - Bike lanes, sidewalk, landscaping



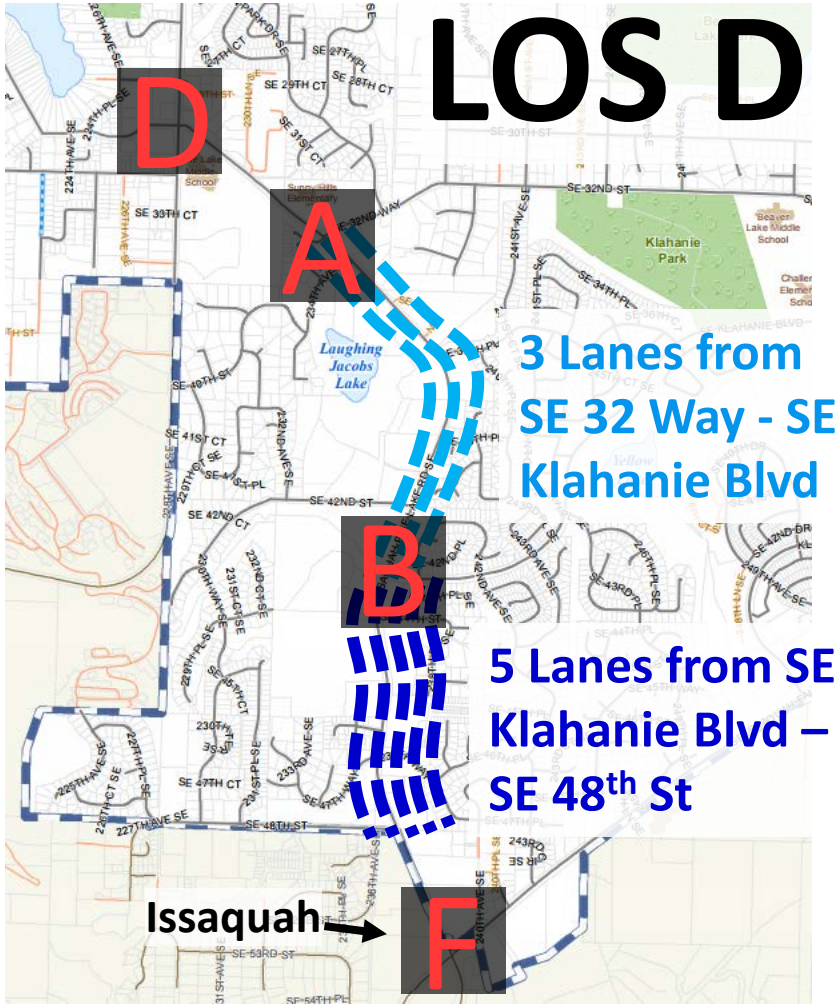
Principal Arterial Roadway Section Design Standard

LOS Case Study | **Issaquah-Pine Lake Road**

What are the benefits of the project?

- Improves the existing rural roadway up to the local street standard.
- Improves intersection and segment/corridor LOS.
- Adds capacity by adding lanes.
- Increases safety for all roadway users.
- Ensures concurrency requirements of the corridor to meet 2035 capacity.

LOS Case Study | **Issaquah-Pine Lake Road**

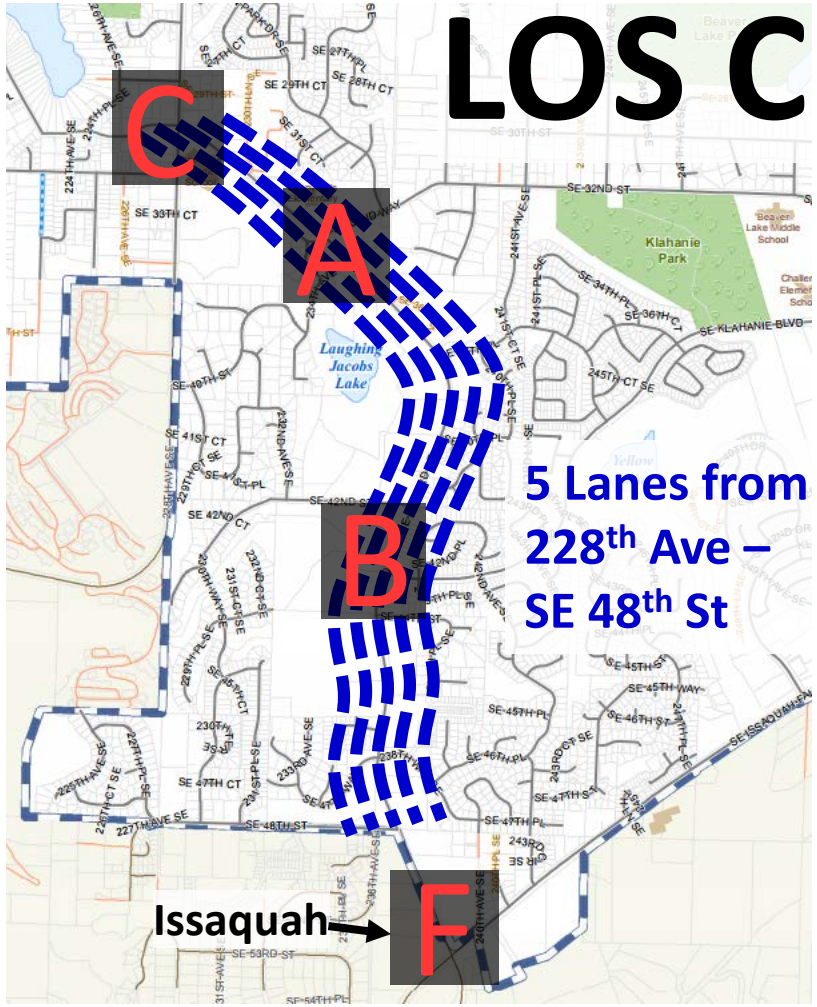


If the project is built as planned…

- **Average intersection wait:** 41s
- **Estimated cost:** $46 million

Assumes the median of the range of allowable average delay at each signal.

LOS Case Study | **Issaquah-Pine Lake Road**



If additional lanes are added to bring intersections up to LOS C…

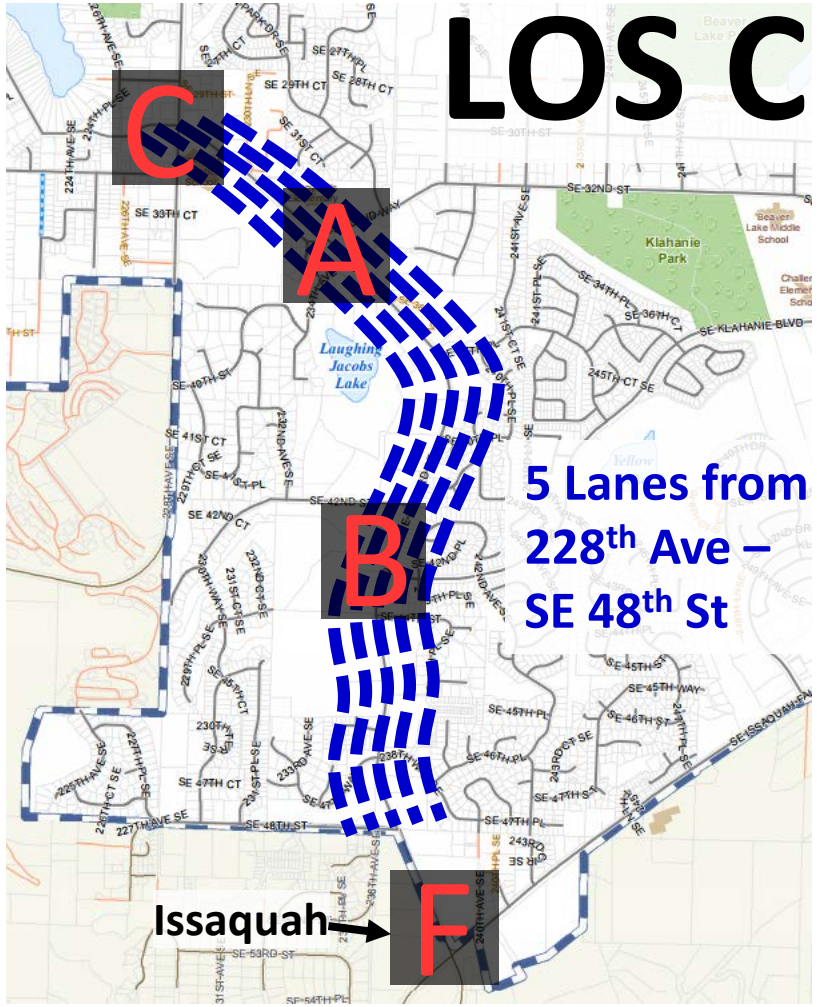
- **Average intersection wait:** Reduced from 41s to 33s
- **Estimated cost:** More than double the cost of the original project improvements ($85 million+).

= $5 million for each second of time gained

But wait, there's more….

Assumes the median of the range allowable average delay at each signal.

LOS Case Study | **Issaquah-Pine Lake Road**



If additional lanes are added to bring intersections up to LOS C…

Other impacts:

- Ripple effect…. capacity issues on connecting streets.
- IPLRD would still transition back to 2 to 3 lanes south of SE 48th St in Issaquah, which is the location of the real bottleneck in this corridor at this time.
- Additional 228th Ave and South Pine Lake Route improvements would be required.
- The fire station would need to be relocated.

Assumes the median of the range allowable average delay at each signal.

LOS Case Study | **Issaquah-Pine Lake Road**

What happens if LOS is changed and improvements are <u>not</u> made?

- Permitting for new development around that area will slow.
- City is financially responsible for correcting any deficiencies (can’t use impact fees).
- City risks losing transportation grant funding.
- City may face legal action from property owners.

Next Steps

- How is the City ensuring accuracy in the concurrency traffic model?
- What steps is the City taking to manage traffic?
- What opportunities are available for shaping transportation policy going forward?

Next Steps| **Upcoming Activities**

	DATE	ACTIVITY
✓	2016	Calibrate traffic model to 2016 conditions and establish current intersection and corridor LOS
	2017	Transportation Element/ Comprehensive Plan update **(in progress)**
	2017	Update traffic impact fee **(in progress)**
	2018	Adopt Transportation Master Plan (TMP) **(in progress)**
	2019	Opportunity to review LOS and concurrency based on TMP recommendations

Discussion

Additional Responses to Council Questions

- We received a number of other questions from council members on items not covered during the previous part of the presentation.

Additional Responses | **AWDT Threshold Definitions**

Q. Explain Table T-8 in the Transportation Element of the Comprehensive Plan.

Background Table T–8
Background Assumptions for Concurrency AWDT Threshold Definitions

TWO-LANE ROADWAY		TWO-DIRECTIONAL CAPACITY (VEHICLES PER DAY)		
		Principal or Minor Arterial	*Collector*	*Neighborhood Collector*
Base Capacity		**12,850**	**9,020**	**2,850**
Lane Width	10 feet	0	0	0
	11 feet	1,620	1,130	320
	12 feet	3,240	2,260	640
Striped Bike Lane/ Shoulder width[1]	8 feet max.	580	410	120
Median	None	0	0	0
	Median	4,640	3,240	920
	Left-Turn Lane	4,640	3,240	920
Walkway/Bikeway[2]	None	0	0	0
	Walkway	1,160	810	230
	Bikeway	1,620	1,130	320
	Both	1,620	1,130	320
Regional Trail width[3]	12 feet max.	580	0	0
MAXIMUM CAPACITY		25,370	17,800	5,100

Additional Responses | **AWDT Threshold Definitions**

A. This table provides background assumptions for Concurrency AWDT Threshold definitions.

   Calculations are based in general on the HCM 2000 discussion of roadway capacity, with actual segment threshold capacity values determined and assigned to various improvements by City engineering staff and consultants and codified in city code.

   Zeros in the table indicate a base threshold capacity condition for roadways within the City. For example, lanes wider than 10 feet or the addition of a median will increase the AWDT threshold over the base. No additional capacity is provided for 10 foot wide lanes.

Additional Responses | **Reading Test Reports**

Q. What is the correct way to interpret a concurrency test report?

A. Compare forecast AWDT to the Six-Year Committed Threshold. Don't use the existing AWDT or outdated thresholds – those numbers are for reference only. For 228th Central Corridor, even the existing 2016 AWDT is well below the allowable threshold.

Concurrency Segment Analysis
2012 Comp Plan Method

City of Sammamish, Washington

Concurrency Casefile= Concur#31

Development Case = 2020 Concurrency Test #31 PM

Forecast Year= 2020

Road System = 2020

LOS Failures =	0
Citywide Total Vehicle-Miles =	423,831
Citywide Total Capacity-Miles =	636,334
Average V/C weighted by distance =	*0.666*
Daily Excess Vehicle-Hours [e] =	881
Average Speed =	*28.24*

Table V-I		*Comprehensive Plan Inventory Segments*					Improvements	*Development*				*Table V-S*	
Existing 2012 AWDT	Existing 2006 Threshold	C. P. Segment Number	Traffic Model Link ID	Road Funct. Class	Route Name	Segment Location		(w/Dvlpmt) Forecast AWDT	Six-Year Committed Threshold [c]	Capacity Reserve [d] (percent)	Fail?	Final Plan AWDT	Final Planned Threshold
23,100	24,000	24-25	228th Avenue Central Corridor					26,950	34,950	***	-	27,800	34,950
23,200	24,300	24	134	Principal	228th Avenue NE	s/o NE 8th St		25,400	34,950	***	-	24,700	34,950
23,000	23,700	25	142	Principal	228th Avenue SE	s/o SE 8th St		28,500	34,950	***	-	30,900	34,950

Note: Existing 2016 AWDT = 26,297
2016 Six-Year Committed Threshold = 33,927

Additional Responses | **228th Ave Capacity**

Q. Why did the threshold for 228th Ave increase from 24,000 (Existing 2006 Threshold) to 34,900 (Six-Year Committed Threshold, 2012) even though no improvements were planned?

A. The 2006 threshold number is a holdover from before 228th Ave was widened in 2003. This was done intentionally to show developers share of construction that had been done in anticipation of growth. The 2012 model updated 228th Ave capacity threshold to reflect the construction that took place in 2003.

Concurrency Segment Analysis
2012 Comp Plan Method

City of Sammamish, Washington

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23,000	23,700	25	142	Principal	228th Avenue SE	s/o SE 8th St		28,500	34,950	***	-	30,900	34,950

Additional Responses | **SE 4th Classification**

Q. How do service level thresholds relate to road classification? Why was SE 4th St reclassified as a minor arterial in 2015?

A. Service level threshold calculations depend on functional classification.

Minor arterials are generally designed to handle more traffic than collector arterials, so thresholds are set higher.

SE 4th St had been classified as a collector arterial, but was reclassified as a minor arterial in 2015 in order to balance the multi-purpose function and character of the Town Center.

Even before the reclassification, SE 4th St was nowhere close to its service level threshold.

Based on updated plans for the Town Center, the 2017 transportation element update aims to classify SE 4th as a collector arterial once again.

Additional Responses | **ELSP North Segment**

Q. What is the context behind the March 29, 2013 Memorandum from Laura Philpot to the Planning Commission? Is it true that the North segment of East Lake Sammamish Parkway is exempt from concurrency standards?

A. The issue was raised due to City Council concerns regarding the cost and impact to adjacent homes of improving the first segment of ELSP from Inglewood Hill north.

City council requested an evaluation of LOS to reduce future construction costs and impacts to private property. This evaluation took place over the course of 5 Planning Commission meetings (including a public hearing), three City Council meetings, and included 7 memos from Public Works staff.

Council adopted Ordinance #2013-363 amending the City's LOS standards to allow "Regional Trail" capacity benefits for principal and minor arterials.

No segment of East Lake Sammamish Parkway is exempt from concurrency standards.

Additional Responses | **East Lake Sammamish Parkway Capacity**

Q. Does East Lake Sammamish Trail (ELST) contribute to the AWDT capacity threshold for East Lake Sammamish Parkway (ELSP)?

A. Yes. In December 2013, the City Council approved a threshold capacity credit for principal or minor arterials that are parallel and in close proximity to a paved regional trail.

The credit allows a capacity increase of 580 vehicles per day, per foot of width of paved regional trail.

At 12 feet wide, the ELST adds a 6,960 vehicle per day increase to the segment threshold capacity of the ELSP segments at the north end of the City.

Additional Responses | **Issaquah-Pine Lake Capital Project**

Q. Is the Issaquah-Pine Lake Road (IPLRD) Project on the TIP only for the purpose of being grant & impact fee eligible since no funding is attached? What does the 2016 data say about the IPLRD segment from SE 46th St to SE 48th St? Do you have recent raw data on trips per day for Issaquah-Pine Lake segments?

A. No, the IPLRD project exists on the TIP because it will improve the existing road, add capacity, improve safety, and help the corridor meet concurrency requirements for future growth.

According to the 2016 model, Segment #34B from SE 46th St to SE 48th St./city limits (21,630 AWDT) fails the segment threshold capacity (18,965 AWDT) based on existing conditions.

- Construction of the IPLRD capital improvement project will correct this failure.
- NOTE: This is not a concurrency failure as the IPLRD "Corridor" does not fail its v/c LOS standard.

Additional Responses | **Issaquah-Pine Lake Capital Project**

2016 AWDT Traffic Counts for Issaquah-Pine Lake Road	
Segment Location	Vehicles per Day
32nd Way roundabout to Klahanie Blvd	16,870
Klahanie Blvd to SE 46th St	19,500
SE 46th St to SE 48th St (city limit)	21,630

Additional Responses | **Issaquah-Pine Lake Capital Project**

Q. Has there been any development permitted that impacts traffic on IPLRD since 2006 where the allowance of the permit relied on the IPLRD Project to be done within the next 6 years? If so, what year?

A. All developments that have received a concurrency certificate since 2006 have had some impact on projected traffic volume for IPLRD. According to AWDT forecast data, the existing Issaquah-Pine Lake corridor (without committed project improvements) would continue to pass concurrency in 2020. So, any concurrency certificates awarded since 2006 would still have been awarded, even if the City had not committed to the IPLRD Project.