City of Bellevue

Transportation Commission Study Session

DATE: March 4, 2021

TO: Chair Marciante and Members of the Transportation Commission

FROM: Kevin McDonald, Principal Transportation Planner, 425-452-4558
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SUBJECT: Multimodal Concurrency

DIRECTION REQUESTED

A preliminary recommendation and direction to staff (Action) on Multimodal Concurrency is requested on March 11, 2021.

X	**Action**
X	**Discussion**/Direction
X	**Information**

Staff described our recommendation for multimodal concurrency at the Transportation Commission study session on January 14, 2021. On February 11, 2021 Bellevue staff together with our consultants Chris Breiland and Don Samdahl at Fehr & Peers provided additional information and responded to questions. On February 23, 2021, Vice-Chair Stash and Commissioner Ting participated in briefings with staff and Chris Breiland to share understandings and perspectives of components of multimodal concurrency.

At this March 11 study session, staff will seek a preliminary recommendation to approve the fundamental components of multimodal concurrency and will receive any additional direction for refinements from the Commission. Please feel free to contact me prior to the meeting if you have questions about the agenda materials, or if you would like to schedule a briefing.

INFORMATION

Staff prepared a recommendation for multimodal concurrency as a key preliminary deliverable for the Mobility Implementation Plan. A final report on multimodal concurrency is linked here. That document and a complete multimodal concurrency library is located on the Mobility Implementation Plan web site.

BACKGROUND

At the Multimodal Concurrency workshop on February 11, Commission asked staff to follow-up on a number of items. Staff responses are provided as follows:

Bellingham system overview

The City of Bellingham implemented a multimodal transportation concurrency program in 2008. Underlying the program is the fundamental concept that quantifies the number of person trips available (PTA) for each mode. Metrics for each mode are shown in Table 1.

Table 1. Bellingham Metrics

Motorized	**Measurement**
Automobiles	Arterial volume-to-capacity measured during weekday p.m. peak hour based on data collected at designated concurrency measurement points in concurrency service areas
Public Transit	Seated capacity based on bus size and route frequency and ridership based on annual transit surveys measured during weekday p.m. peak hour based on data collected at designated concurrency measurement points for each concurrency service area
Non-motorized	**Measurement**
Bicycle	Credit person trips according to degree of bicycle network completeness for designated system facilities/routes for each concurrency service area
Pedestrian	Credit person trips according to degree of pedestrian network completeness for designated system facilities/routes for each concurrency service area
Trail Use	Credit person trips according to degree of trail network completeness, where trails serve a clear transportation function for a concurrency service area
Source: Bellingham Municipal Code 13.70 Multimodal Transportation Concurrency (2008)	

For automobiles, the calculated number of PTA is based on the estimated capacity of the road minus the actual traffic volume during the weekday PM peak hour. Transit PTA is based on the seated capacity and PM peak hour frequency of the bus minus the PM peak hour ridership of the bus. Non-motorized PTA considers and measures the completeness of the pedestrian and bicycle networks, understanding that these facilities are not capacity constrained. The ability of pedestrians and bicyclists to travel within the city is largely determined by the completeness and connectedness of the system. The specific PTA for pedestrians and bicycles is set by policy in the City code at 1,000 each for sidewalks, trails, and bicycle facilities. The percentage complete is defined by the networks defined in the City's Pedestrian and Bicycle Master Plans.

Note that to get PTA credit for improvements to the pedestrian, trail, or bicycle networks, there must be at least 50 percent of the network complete.

Bellingham has 20 concurrency service areas (CSA), as shown in Figure 1, although the City is looking to consolidate some of the CSAs to simplify the system and reduce the amount of analysis and data collection the City is required to undertake.

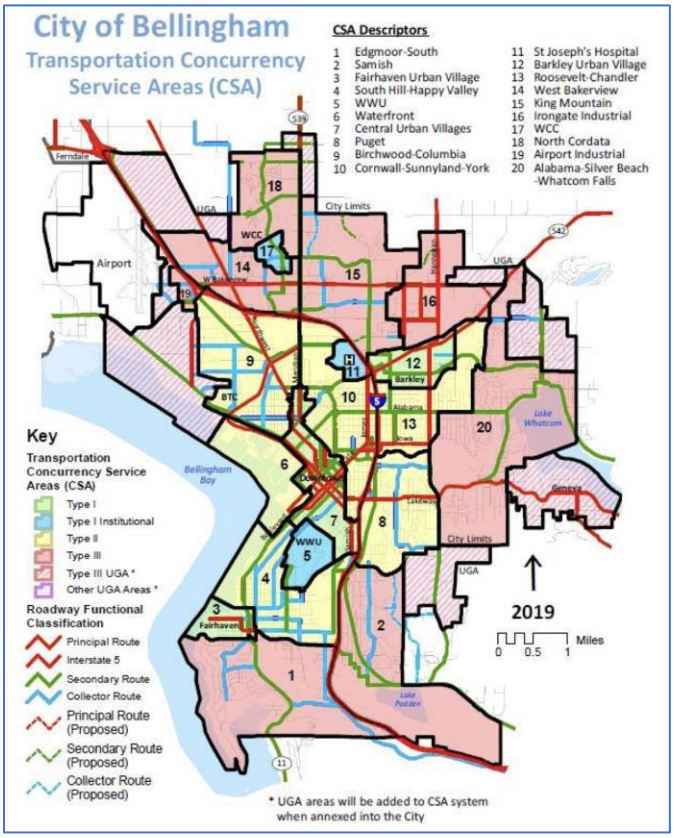


Figure 1. Bellingham Concurrency Service Areas

CSAs are defined into three basic types (I through III). Type I CSAs are the dense, mixed-use multimodal parts of the City while Type III are lower density, single use zones. Bellingham reduces the "weight" of the auto PTA in Type I areas and the weight of the transit PTA in Type III areas to reflect the relative importance of those modes in those parts of the City. The table on the following page shows the PTA available for each CSA and for each of the modes. Note that Bellingham does not identify a concurrency failure for each individual mode, but for the sum of PTA for all modes. In other words, having zero PTA for any individual mode is not considered a concurrency violation. Similarly, high traffic congestion (e.g., zero PTA for autos) could be addressed by completing more of the bicycle system if a CSA was at the risk of running out of PTA and adding traffic capacity was infeasible. As shown in

Table 2, none of the Bellingham CSAs are near a deficit of PTA and most of the PTA supply is provided by auto capacity.

Table 2

Table 3.1 Person Trips Available (PTA) by Concurrency Service Area (CSA) in 2020									
	Sidewalks[1]		Multiuse Trails		Bikeways[2]		WTA[3,4]	Auto[4]	2020
Concurrency Service Area (CSA)	% Complete	Credit PTA	% Complete	Credit PTA	% Complete	Credit PTA	Transit PTA	Arterial PTA	Net PTA[5]
1. Edgemoor/South	32%	0	42%	420	34%	0	50	990	**1,460**
2. Samish	22%	0	31%	310	3%	0	20	2,385	**2,715**
3. Fairhaven Urban Village	85%	700	13%	130	32%	0	250	1,400	**2,480**
4. South Hill-Happy Valley	60%	200	16%	160	45%	0	170	1,680	**2,210**
5. WWU IMP	85%	700	50%	500	69%	380	650	2,100	**4,330**
6. Waterfront District	43%	0	60%	100	48%	0	0	3,676	**3,776**
7. Urban Core (4 Villages)	95%	900	12%	120	34%	0	1,500	7,700	**10,220**
8. Puget	63%	260	38%	380	41%	0	220	2,700	**3,560**
9. Birchwood-Columbia	61%	220	14%	140	58%	160	400	1,920	**2,840**
10. Cornwall-Sunnyland-York	86%	720	24%	240	39%	0	700	2,800	**4,460**
11. St. Joseph's Hospital IMP	39%	0	0%	0	25%	0	150	2,450	**2,600**
12. Barkley Urban Village	88%	760	16%	160	63%	260	500	5,600	**7,280**
13. Roosevelt-Sussex-Chandler	74%	480	55%	550	62%	240	250	2,430	**3,950**
14. W. Bakerview-S. Cordata	77%	540	12%	120	64%	280	800	2,700	**4,440**
15. King Mountain	44%	0	20%	200	28%	0	400	1,800	**2,400**
16. Irongate Industrial Area	5%	0	0%	0	28%	0	0	2,250	**2,250**
17. WCC IMP	95%	900	0%	0	39%	0	550	2,250	**3,700**
18. North Cordata	60%	200	0%	0	45%	0	650	1,678	**2,528**
19. Airport Industrial (Annex)	100%	1,000	0%	0	0%	0	100	900	**2,000**
20. Whatcom-Alabama-Silver	59%	180	61%	610	63%	260	350	1,800	**3,200**
Totals	**66%**	**7,760**	**55%**	**4,140**	**44%**	**1,280**	**7,710**	**51,209**	**72,099**

Bellingham calculates the status of its concurrency program annually (the 2020 evaluation was conducted prior to the COVID-related shutdowns of transit and businesses). This involves extensive data collection for traffic counts, transit frequencies, and transit ridership. Bellingham also keeps track of the extent of sidewalk, trail, and bike facility completion. For the most part, this annual data collection and analysis effort allows for a simple concurrency review for a project where the number of new person trips generated by development must not exceed the PTA for any CSA. However, for large development projects, a more detailed analysis is required because vehicle and transit trips that may cross multiple CSAs need to be deducted from all relevant CSAs.

Redmond system overview

The City of Redmond implemented a multimodal transportation concurrency program in 2009. The Redmond system is very similar to the Bellevue staff recommendation. It evaluates concurrency based on *citywide person miles traveled*, which the City calls “mobility units”.

Similar to the Bellevue staff recommendation, Redmond uses a future year land use forecast provided by PSRC and King County to estimate total demand of mobility units, as calculated by

a travel demand forecasting model. The transportation supply is identified through Redmond's Transportation Facilities Plan. Through the TFP, Redmond works to balance 16 community performance goals against available funding to develop a long-range transportation investment plan. Figure 2 is a map of the current Redmond Transportation Facilities Plan projects.

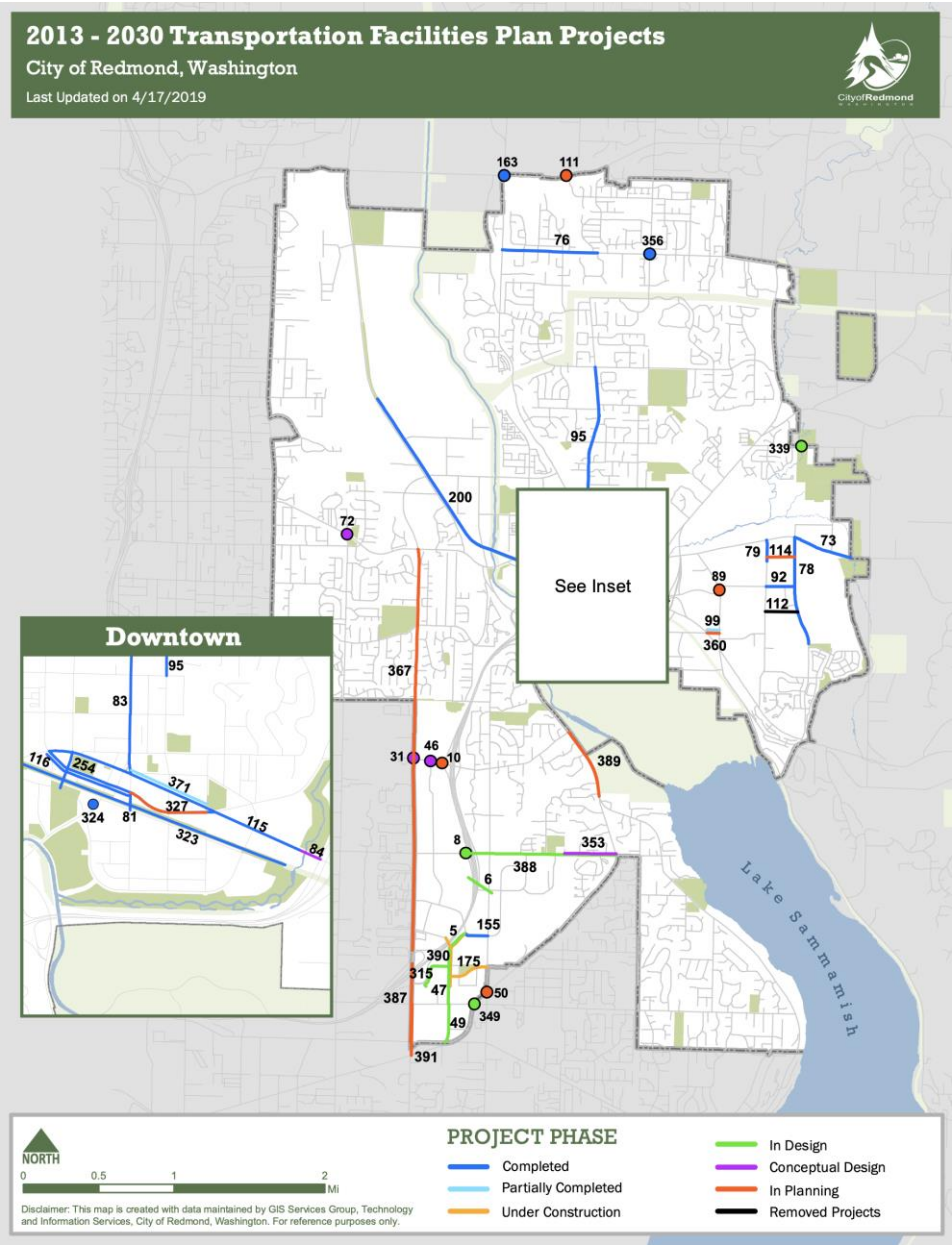


Figure 2. Redmond TFP Projects

The performance metrics that Redmond considers when developing the Transportation Facilities Plan include the following:

- Urban area connectivity (reducing the size of large street grids)
- Modal network completion (as measured against the City's unconstrained Transportation Master Plan) for pedestrians, bicycles, vehicles, transit users, and freight.
- Traffic congestion on arterials as measured in delay per mile during the PM peak hour

- Mode share
- Transit ridership
- Concurrency (mobility units of supply exceed mobility units of demand)
- Traffic safety (this is not forecasted, but projects are identified to address known safety issues)
- Air quality
- Water quality (as measured by the completeness of planned roadway water treatment projects)
- Pavement maintenance (this is not forecasted, but helps identify whether the City is directing enough funding to maintenance compared to building new infrastructure)

A notable difference between the Bellingham and Redmond systems is the scale of concurrency analysis. Bellingham has 20 CSA zones to track growth and PTA, while Redmond has a single citywide zone. There is a tradeoff in the level of granularity. Bellingham has noted that it is time-consuming and data intensive to track concurrency across 20 CSA zones and is seeking to simplify the structure. Tracking concurrency in Redmond is simple; and it is the City's responsibility to ensure that new growth (demand) is matched with new infrastructure (supply). Figure 3 is a diagram of the City's concurrency framework from the City website.

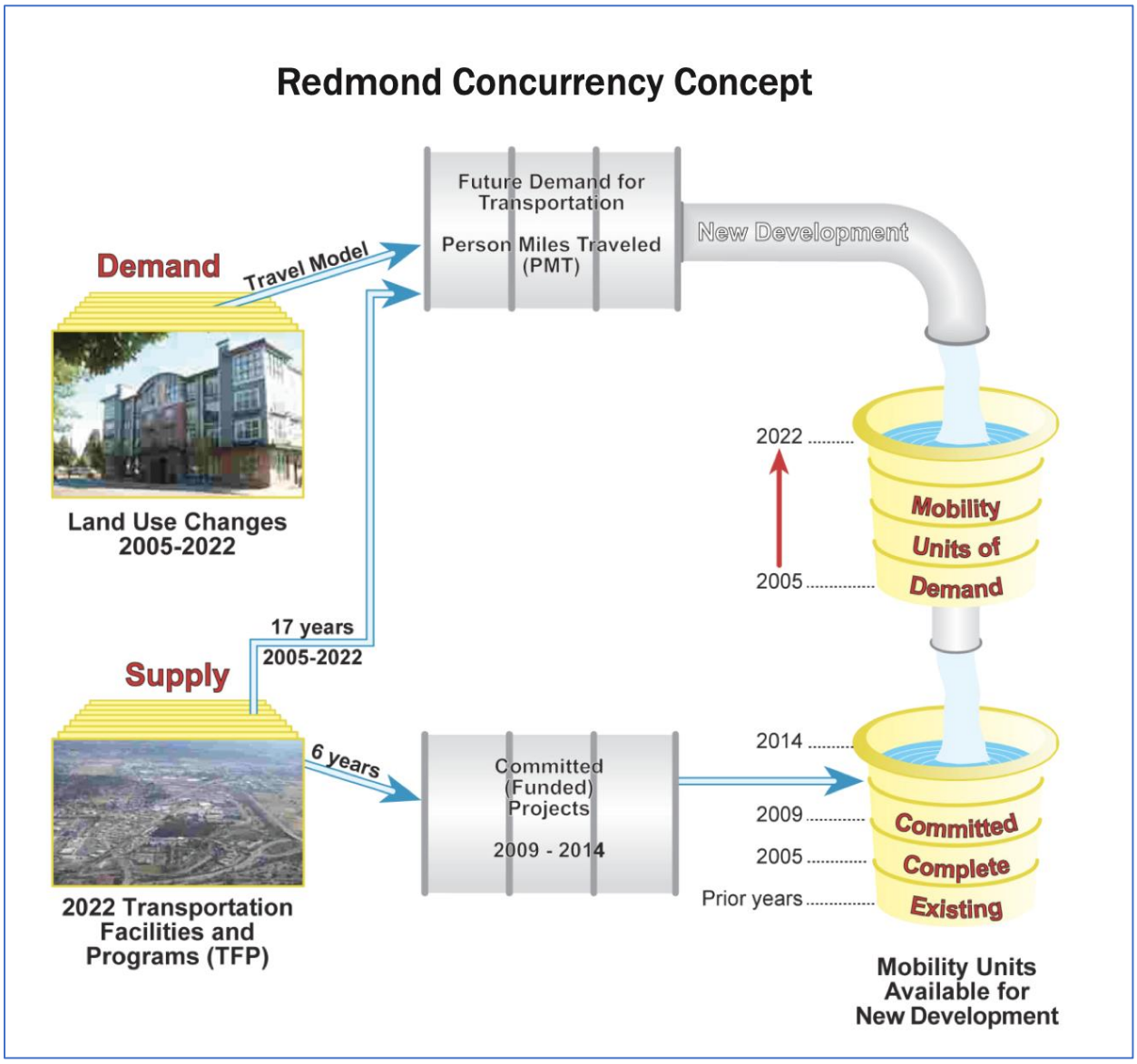


Figure 3. Redmond Concurrency Concept

BKRCast Data for Forecasting and Performance Monitoring

One of the questions raised in the February Transportation Commission meeting was regarding the specific performance measures Bellevue is prepared to forecast or track over time using its primary transportation analysis tool, BKRCast. After discussing the issue with the Bellevue modeling staff, we have summarized in Table 3, the measures that BKRCast can either forecast and/or monitor to help the City plan the mobility units of supply.

Table 3

Metric	Forecasting	Performance Monitoring
Volume-to-capacity (v/c) ratio at system intersections *Note: A system intersection is identified for transportation modeling and performance monitoring, including existing concurrency.*	X	X
Arterial speed/travel time along select arterial corridors or segments *Note: MMLOS identifies a travel speed guideline as a function of the arterial speed limit and the Mobility Management Area where the arterial is located.*		X
Transit trip generation by Mobility Management Areas	X	
Transit passenger boardings by route *Note: Could focus on the Frequent Transit Network routes*		X
Transit traveler speed (in a bus or train) between Activity Centers (Overlake, Downtown, Eastgate, Factoria, Crossroads) *Note: Transit Master Plan and MMLOS identify 14 mph as a target transit speed between activity areas.*	X	X
Pedestrian trip generation by traffic analysis zone (TAZ) and Mobility Management Area as well *Note: A traffic analysis zone is a small geographic area – a subset of a Mobility Management Area - that is used in transportation system planning and modeling. A TAZ can vary in size from a single block in Downtown to a large TAZ that covers most of Bridle Trails.*	X	
Bicycle trip generation by Mobility Management Areas	X	
Person trip generation by Mobility Management Areas	X	
Mode share by Mobility Management Areas	X	X
Vehicle-miles traveled (VMT) per capita *Note: VMT is commonly used to estimate the total amount of vehicle travel and greenhouse gas emissions related to travel*	X	X

In addition to wanting to learn the capabilities of the BKRCast model, Commissioners asked about how often the BKRCast model is updated. Staff indicated that the BKRCast base year model is updated every year – typically updates to land use, the transportation network, and traffic counts are included. Other data is embedded when it becomes available. For example, household travel surveys from the Puget Sound Regional Council are updated every 2-5 years. This data informs mode share and vehicle miles traveled, and helps to calibrate the model to the latest travel patterns.

Commissioner Briefing February 23

Between 9:00 AM and 11:30 AM on February 23, staff and consultants met with Vice-Chair Stash and Commissioner Ting to discuss a wide range of issues related to multimodal concurrency. What follows is a brief overview of topics discussed:

- Mobility Units of Supply

The equation to determine the Mobility Units of Supply involves two variables; the land use forecast and the available funding, both for the same planning horizon (12-year TFP).

Hypothetical Starting Assumptions in an update of the TFP

- 12-year land use forecast = 18,000 person trips
- 12-year TFP funding = $300,000,000

Calculate cost per Person Trip (Mobility Unit) (MU)

- 18,000 person trips/$300,000,000 = 1 person trip (MU)/$16,700
- 1 MU (person trip) "costs" $16,700

Example project

- New traffic signal costs $250,000 – funded in the CIP so it creates supply
- At the rate of 1 person trip supplied per each $16,700 spent, the new $250K traffic signal supplies 15 person trips

- Concurrency Geographies

The Commissioners discussed different geographies that are used for transportation planning and would be suitable for multimodal concurrency performance analysis.

- Transportation Analysis Zone (TAZ) – the smallest transportation planning geography typically used in Bellevue. Traffic modeling trip "origins" and "destinations" are often calculated between TAZs. Movement within a TAZ may not be considered a "trip" because the person may not use the transportation system (e.g., a trip within a building or on corporate campus).
- Mobility Management Area (MMA) – established in the Comprehensive Plan and the Traffic Standards Code as the geography for concurrency monitoring and reporting. Within each MMA (except Newport Hills) the volume/capacity ratio for system intersection is monitored and evaluated against the adopted standard of performance. Bellevue modeling staff also monitor other transportation performance metrics at the MMA level.
- Arterial Corridor – for the purposes of performance monitoring, a segment of an arterial corridor may be the appropriate geography for vehicle travel speed. Corridors can also be used to assess the completeness of modal connections, such as high comfort bicycle connections between growth areas or transit speeds between Activity Centers.
- City Wide – from a system completeness perspective, a city-wide view will reveal the progress made relative to the long-range modal plans. Many jurisdictions

also track other high-level performance metrics on a city-wide basis, such as vehicle-miles of travel (VMT), mode share, and transit ridership.

Following the discussion, Commissioner Ting expressed a desire to have multimodal transportation concurrency evaluated at a geographic unit smaller than city wide, but left the details open to additional discussion with the Commission.

- Concurrency Outcomes, Process, and Accountability

  The Commissioners raised some questions that a simple evaluation of "is the City spending enough money to support growth?" might be too simplistic for a strong concurrency program in Bellevue. Staff and the consultant clarified that while the concurrency standard itself might be that simple, identifying the transportation supply would involve much more planning and evaluation.

  The Commissioners acknowledged that "good planning" may be the well-established fact and process today, but without some documented guidance on specific transportation performance outcomes and accountability about what happens when the City does not meet the outcomes, the potential may exist for future City Councils to find a way around the concurrency system.

  Based on these observations, the Commissioners, staff, and the consultant identified a refined concurrency process. The intent is to embed specific performance expectations and the decision-making process that must be documented relative to those performance expectations. Key steps in the process – shown in Figure 4 and articulated in the "Concurrency Process" text that follows - provide latitude to reduce the risk of a development moratorium without relying on a complex and prescriptive concurrency framework.

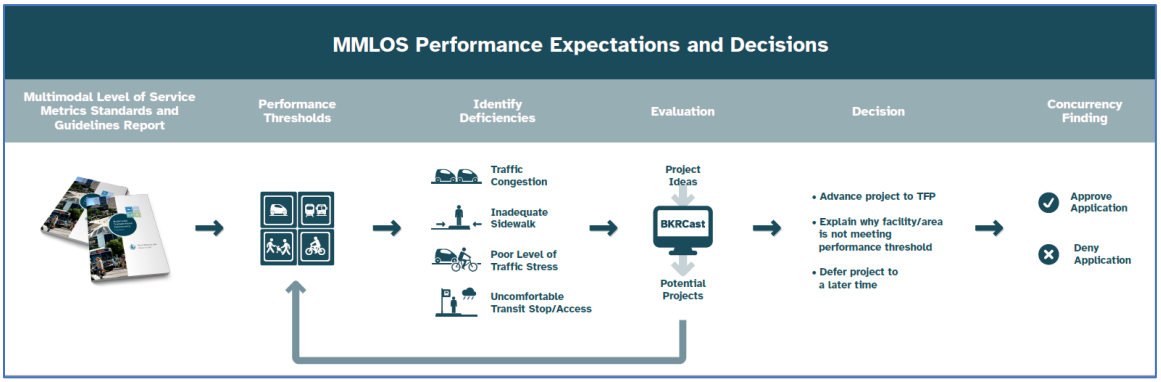


Figure 4. Concurency Flowchart

Concurrency Process

- Identify performance thresholds
    - Use the Transportation Commission's MMLOS Metrics, Standards, and Guidelines 2017 report to define the performance expectations for each mode.
    - Determine an appropriate pace by which to advance system completeness for modes with incomplete infrastructure (pedestrian, bicycle, transit).
- Monitor performance
    - For each mode, use performance thresholds within the appropriate geography to forecast, track, and report on the performance of the system.
- Identify "deficiencies"
    - Use BKRCast to forecast potential issues and/or concerns with the performance of any mode or any location. For example, identify system intersections that may have a high v/c ratio or transit corridors with operating speed slower than the target.
    - Use geographic information system tools to identify where sidewalks, crossings, and bicycle facilities do not meet MMLOS design/level of traffic stress or high comfort expectations.
    - Deficiencies that are identified can be studied and a determination can be made for design and feasibility options to address the problem.
    - In addition to forecasting, continual monitoring of the transportation system can identify existing or emerging issues to refine project designs/plans to address forecasted deficiencies.
- Decide what to do about the "deficiency"
    - Policy guidance – the Bellevue Comprehensive Plan describes the long-range vision for transportation, land use, environment and other components. Policy guidance will inform transportation system modal priorities, performance expectations, and project design.
    - Land use context – MMLOS supports the Comprehensive Plan to further describe the land use considerations to help inform modal priorities, performance expectations, and project design.

- System completeness goals – Modal plans that include the Pedestrian and Bicycle Transportation Plan and the Transit Master Plan describe the complete system for each mode. As best practices, community expectations, and other factors evolve, these plans or project descriptions may be superseded by more recent work, such as the ongoing work to describe the Growth Corridor High Comfort Bicycle Network for bicycle facilities within and between Downtown, BelRed and Wilburton. Further work in the Mobility Implementation Plan (ongoing) will determine the appropriate pace by which to build out these incomplete systems.
- Constraints – environmental, right-of-way, financial, and multimodal constraints will be considered in determining how to or even if to address a performance problem.
- Based on these considerations, any transportation metric that does not meet the performance expectations from MMLOS or the Mobility Implementation Plan (either forecasted or existing conditions) will need to be documented and addressed. To understand why a performance metric does not meet expectations is important, as such factors may inform how to or if to address the situation in that location. The reasons for not meeting the performance expectations could include environmental or land use constraints that preclude the implementation of a solution in that location, or policy or land use context that identifies modal priorities and acknowledges that all modal performance expectations may not be met in a given location. Performance metrics therefore, are intended to identify a problem and to inform potential ways to address a problem, but they do not dictate a solution. To maintain concurrency may require enhancing the performance of other modes in other places. Broadly, there may be a financial constraint that precludes implementation of a solution for the moment, but will be revisited in the next evaluation cycle.

Compared to the multimodal concurrency proposal discussed with the Commission at the February 11 study session, this refinement identifies clear performance expectations for each mode to identify future investments and *requires* that the City document when expectations are not met. This system would increase the transparency about what the City is planning to deliver to residents while allowing the City flexibility to exempt some areas from the performance expectations (along with a justification) or delay reaching those performance expectations until there is available funding. Note that staff does not propose to change the transportation concurrency

standard of "mobility units of supply exceed mobility units of demand" but rather to better describe how the City defines and maintains an adequate supply of mobility units.

Relationship of Multimodal Concurrency Performance Metrics to the Update of the Transportation Facilities Plan

- Current TFP Update – use the existing project selection and prioritization criteria. The process underway will continue for the 2022-2033 TFP update.
- Future TFP Updates – Through ongoing work on multimodal concurrency and the Mobility Implementation Plan, performance metrics, project selection and prioritization criteria will be prepared for implementation in future updates of the Transportation Facilities Plan.

COMMISSION RECOMMENDATION

Staff seeks a preliminary recommendation on multimodal concurrency. Fundamental components of multimodal concurrency would be considered together in a single vote. While there are details to consider, an affirmative vote would keep the process moving forward.

Staff seeks a recommendation from the Commission to **Approve** the fundamental components of multimodal concurrency:

- Employ a multimodal approach to transportation concurrency (vehicle, transit, pedestrian, bicycle)
- Achieve transportation concurrency when the supply of mobility exceeds the demand for mobility
- Supply is forecast in the TFP, created in the CIP, and may be in projects of all modes
- Demand is forecast in the TFP, created in a permit for new development, and is expressed as person trips
- Use quantitative and qualitative performance metrics for each mode that are derived from the Transportation Commission Multimodal Level of Service Metrics, Standards and Guidelines (2017)
- Use appropriate geographic scale and extents to monitor transportation system performance
- Establish a set of performance metrics and thresholds for each mode to identify deficiencies; and to describe the severity and specific locations of deficiencies
- A decision to address a performance deficiency will consider "layered network" modal priorities and any identified constraints

NEXT STEPS

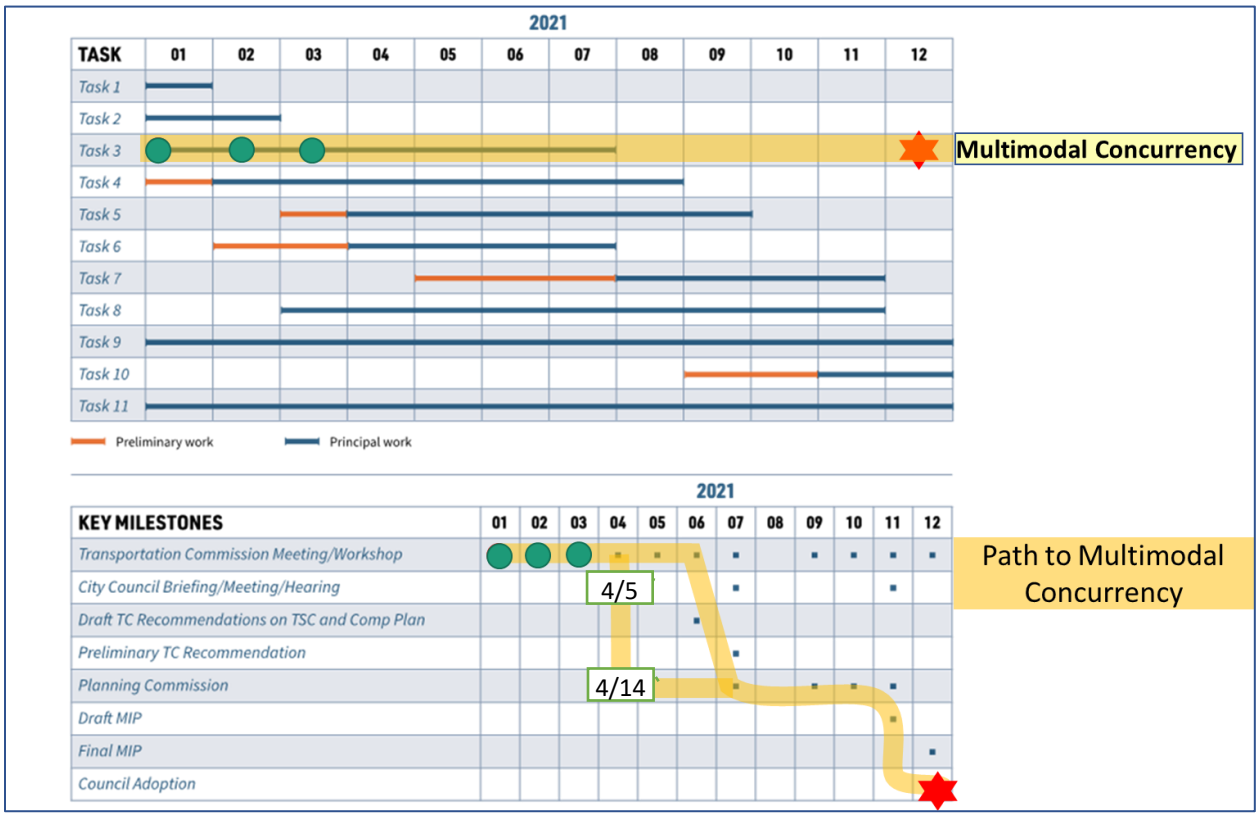
Staff will incorporate consensus Commission directions for refinements to the preliminary multimodal concurrency recommendation and will report back on April 8.

As noted in the timeline below, Council is asked to initiate a Comprehensive Plan Amendment for multimodal concurrency, and a staff request to repeal the Comprehensive Transportation

Project List from the Comprehensive Plan and to include those projects as part of the Transportation Improvement Plan project list. The Planning Commission, in its role as stewards of the Comprehensive Plan, will begin its review of all recommended 2021 annual amendments to the Comprehensive Plan as directed by Council.

Timeline

The following charts describe the process timelines for the Mobility Implementation Plan tasks and the path for multimodal concurrency toward adoption before the end of this year. At this time, Council is expected to consider initiating a Comprehensive Plan amendment on April 5, and the Planning Commission will be introduced to multimodal concurrency on April 14.



ATTACHMENT

Link is HERE to Multimodal Concurrency Staff Recommendation Final Report, January 14, 2021