APPENDIX B

Technical Memo 6: Concurrency Measurement Systems Recommended for Further Study

Completed: February 2003

PURPOSE

This memo suggests several transportation concurrency measurement approaches that we recommend for case study trial this spring. It also suggests criteria for selecting the geographic areas of the case studies. The suggestions outline below will be the topic of discussion at the upcoming ESC meeting on February 19, 2003. At that meeting, we hope to receive guidance on which concurrency alternatives and geographic areas to test.

BACKGROUND

In November 2002, the Project Team began the second phase of work on the Eastside Transportation Concurrency Project. We shifted our attention from the four Eastside cities' existing concurrency practices to possible alternatives that could be tested in case studies. We began identifying alternative programs and practices that might better align Growth Management Act transportation concurrency requirements with each city's goals for growth and transportation service. Specifically, we focused on level of service measures and transportation demand management (TDM) programs that could

- shift the focus of concurrency from road capacity to mobility,
- improve roadway performance, and
- increase access to transportation choices.

In the last three months we have looked at more than a dozen alternative concurrency approaches, including practices from nearby Puget Sound neighbors like Renton and recognized national leaders in growth management such as Maryland and Florida. To narrow the list of possibilities, we met with many of you in January asking once again what each city wants its transportation and land use futures to be and how it plans to get there. Our research and discussions with the ESC and TAC members has led us to recommend several measurement approaches and applications for case study consideration.

MEMO OUTLINE

This memo is divided into two parts. Part I provides a general overview of our suggestions and their potential applications. Part II explains each measure in more detail and suggests several variations for each approach. We expect to work with the TAC and other city staff during the case studies to tailor these measures to the needs of each jurisdiction.

PART I

This section presents three transportation concurrency measurement approaches:

- enriched v/c measures (traditional v/c ratios adjusted for the availability of alternative modes of transportation);
- travel time measures (a combination of travel times and transit availability);
- vehicle miles traveled (VMT) reduction measures (a combination of coordination between land use and development plans and a VMT reduction target).

It also discusses several ways the three measures could be applied most effectively, through project-by-project analysis (enriched v/c measures) or area-wide or region-wide analysis (travel time and VMT reduction). Finally, the section suggests geographic, land use, and transportation system characteristics we believe should be represented in the case study areas.

Measurement Approaches

Almost all transportation in the eastside cities is roadway-based, and therefore the measurements must be focused on roadway travel. However, the goal of our suggested approaches is to create measures that encourage jurisdictions to use existing roadways more effectively. We believe these approaches link the land use and transportation elements of your comprehensive plans, in a way that makes it easier for developers and city staff to determine what types of development are permitted (even encouraged), where those developments are permitted to occur, and what transportation characteristics they should entail. We suggest three approaches:

- **Enriched Volume/Capacity (v/c):** Currently, all four jurisdictions use the facility-based measure of v/c, but none incorporate the availability of alternative transportation choices in their performance measurement system. By enriching the traditional v/c metric with information about transportation alternatives to SOV travel, this approach enables cities to make a policy decision to tolerate higher v/c ratios (and thus allow additional development) where significant transportation choices exist. For example, road segments where transit service exceeds a certain threshold (say 5 buses an hour during peak periods) would be eligible for a pre-determined LOS adjustment based on their ability to move more people through the roadway segment. In addition, roadways that have transit service plus other transportation choices or improvements (say Transit Signal Priority, HOV lanes, bike lanes, under-used Park & Ride lots, etc.) could receive additional LOS credit. The availability of a LOS adjustment for transportation choices would provide an incentive for developers to locate projects in areas where transportation choices exist or to develop transportation choices in areas currently ineligible for the adjustment as part of a concurrency mitigation package.

- **Travel Time:** Travel time is a performance measure as opposed to a capacity measure. In addition, travel time is a measure that is easier to relate to the travel experience of city residents than the current v/c measure. By setting LOS standards based on travel time, city staff and residents could ground LOS discussions in the experience of residents, and could have more frank discussions about desired levels of mobility. Under this approach, each city would set travel time standards for all transportation modes (SOV, HOV, transit, and possibly others) for key corridors, zones, and/or trips. Travel times would be measured periodically and the standard attained/maintained by a combination of project improvements, increased HOV use, or decreased new development. This approach could also combine travel time measures with transit availability, permitting more development where transportation choices exist. A combination of travel time and transit availability would build into the concurrency system incentives for developers to locate along transit corridors and to develop alternative transportation options.

- **VMT Reduction:** As traffic counts during this period of economic downturn demonstrate, if people drive marginally less, road congestion lessens. This approach has two parts. First, cities would identify areas of their jurisdictions that could develop without dramatically increasing peak-period VMT, and would target development to those areas. For example, the city would target development to areas that are not heavily SOV dependant. Second, the cities would set peak-period VMT reduction targets (at either the city, sub-region, or regional level) by which cities would judge concurrency. For example, the four cities may work together to maintain VMT at 2002 levels or commit to a 1% reduction in VMT each year. This approach moves the concurrency's focus away from local projects toward a recognition of the regional aspects of travel. It encourages a region-wide agreement on a target to reduce peak-period SOV travel, and allows cities to channel development into the areas where their comprehensive plans call for expanded transportation choices. Each jurisdiction would employ a variety of TDM, transit, non-motorized, or parking fee measures to attain the VMT reduction target. Periodic calculation of VMT levels would be used to determine if additional traffic control measures were needed or if development needed to be curtailed.

<u>Applications</u>

The three measurement approaches can be applied at varying geographic scales—intersections, corridors, zone, city, sub-region, or region. And, the concurrency decisions based on these approaches can be made at various times—during development approval, during yearly assessment of LOS standards, or during the creation of a concurrency plan. Each of the proposed measures can be modified to fit any scale and time, but we suspect the approaches fit most naturally with a particular scale and time. For example, enriched v/c likely works best if applied to intersections, corridors or zones, and judged on a project-by-project basis. Travel time likely works best if applied to corridors or zones, and judged on a yearly basis. And, VMT reduction likely works best applied to sub-regions or regions, and judged on a yearly basis. Though we think these approaches work best at a particular scale and time, we recommend experimenting with approaches, scales, and times during the case studies to find the best fit for each approach.

These measures, especially travel time and VMT reduction, would be most effective if implemented through the creation of *transportation concurrency maps.* These maps combine information from the land use, transportation, and capital improvement elements of each city's comprehensive plan with concurrency measurement data (travel times, transit availability, etc.). Once compiled, these maps would visually display where development is encouraged by the comprehensive plan and allowed by concurrency. Drawing on examples in Maryland and New Jersey, the transportation concurrency map would show areas in green where development is encouraged and supported by adequate transportation options, areas in red where development is not permitted due to transportation constraints, and areas in yellow where development would need to be mitigated through developer agreements and adjustments to the available transportation options. The transportation concurrency map could be updated annually, to reflect the effects of transportation facility and service improvements.

Case Study Area Selection

We propose that the participating cities test one or more of the approaches in a range of different case study areas. The case studies should represent the following:

- Centers where uses are mixed, and density, infill, and transit are greater
- Peripheral development where lower density residential development prevails and collector/arterial dependence is greatest
- Corridors that link centers in different cities
- Areas of joint influence like Overlake where cities have to cooperate
- Areas of primarily office uses and areas of primarily retail activities

We would like each city and members of the TAC and ESC to recommend corridors, neighborhoods, centers, and zones that have these characteristics.

What We Hope to Learn from the Case Studies

- Do the approaches work with data that is readily available to city staff?
  - Do approaches work in at various geographic scales and with a variety of land uses?
  - Are they easily understood by professional staff, residents, developers?

- Will they require more or less staff time to implement?

- How do they balance future development with transportation options?

PART II

This section provides a more detailed description of the measurement approaches and highlights some possible variations under each approach. We plan to work with the TAC and other city staff to design approaches that will work best in each jurisdiction.

Measurement Approaches

1. Enriched V/C

This approach adjusts v/c LOS standards based on the availability of transportation choices. A frustration of existing enriched v/c measures, such as those used in Florida, is that it is difficult to predict the amount of capacity transportation choices add to a roadway. Our suggested approach avoids that problem by having cities make a policy decision (rather than a capacity decision) to tolerate more congestion if significant transportation choices exist. The concurrency requirement of the GMA allows such policy decisions in setting LOS standards, requiring only that cities determine the level of transportation service they need to support development. There are several variations on this simple approach.

Variation A: If concurrency zone has a specified level of transit (say 5 buses per hour on designated transit corridors), adjust the average v/c ratio permitted within that zone upward by some designated amount. For example:

Existing Permitted Zone LOS	LOS Permitted if transit-equipped	LOS if transit, plus HOV lanes, TSP, bike lanes etc.
0.95	1.05 (+0.1)	1.15 (+0.2)

Variation B: Instead of adjusting the entire zone v/c ratio upward, make the adjustments at the intersection level. Intersection adjustments allow cities to target their congestion tolerance to those specific areas that have transit options. The intersection adjustment would involve discounting a set amount from the actual intersection v/c to account for transit capacity. For example:

Actual intersection v/c	v/c if transit-equipped	v/c if transit equipped, plus HOV lanes, TSP, bike lanes, etc.
1.1	1.0 (-0.1)	0.9 (-0.2)

Under this option, the permissible zone LOS would remain the same, but specific intersections, if transit-equipped, would be allowed to exceed the “non-transit equipped”

LOS standard. (Again the size of the numerical benefit to v/c would be set by a policy decision, and only for those improvements that are part of the transportation plan, and that serve the needs of the desired levels of development.)

Variation C: This option would allow application of alternative B only to those developments that were near designated transit-equipped facilities. For example, the adjustment could be given to commercial developments within ¼ mile of a transit corridor and to residential developments within ¼ mile of a transit corridor or 1 mile from Park & Ride facility able to serve the development's residents. The benefit of this alternative is that it would provide an incentive for developers to build along transit corridors or to fund transit service so that a corridor fit the "transit-equipped" definition.

Variation D: This option would apply alternative B only to those developments where the four-step model projects that have a high percentage of the new trips generated (say 60%) will use the transit-equipped corridor. The benefit of this alternative is that it would provide an incentive for developers to build in areas with easy access to transit corridors or to fund transit service so that a corridor fit the "transit-equipped" definition.

2. Travel Time

This measurement approach would base the concurrency calculation on a combination of corridor travel times and transit availability. LOS standards would be set for each zone and would most likely be measured on a yearly basis. LOS standards would be determined by a two-step analysis:

Step One: Set Travel Times. Establish travel time standards for critical arterials in each zone, setting standards for different modes of travel including SOV, HOV and transit. Measure current travel times and project number of trips that could be added before travel time standards are exceeded. Based on analysis assign geographic areas a color designation based on compliance with the travel time standards:

- Green – meets travel time standards and projected development will not jeopardize compliance;
- Yellow – meets travel time standard but additional development will put compliance in jeopardy; or
- Red – does not meet travel time standards.

Step Two: Calculate Transportation Choices. Identify arterials where significant transportation choices exist, or will exist. The determination of a transit corridor should be based on the planned densities along the corridor and the planned amount of future transit service, rather than simply the existing amount of service. (This avoids a chicken-or-the-egg situation where transit providers are reluctant to provide extra service where demand does not yet exist but development isn't allowed because the transit service is not in place.) For example, transportation choice could be coded on the following basis:

- Basic Arterial – arterials that are SOV-oriented and do not provide many transportation choices.

- Transit-Equipped Arterial – arterials that have transit service of some set minimum level (for example, at least 5 buses an hour during peak periods.)

- Transit-Plus Arterial – arterials that have significant transit service as well as other alternative transportation capacity (such as TSP, HOV, bike lanes, Park & Ride facilities.)

Using this two-step framework, there are several variations on the travel time measurement approach. The variations are described below.

<u>Variation A:</u> Using a zone approach, jurisdictions would overlay a map of transit-coded arterials on a map of the travel time zones. Concurrency determinations and mitigation requirements would be based on the following criteria:

- *Green Zone, plus transit arterials*: Priority area for density development. Development may proceed.
- *Green Zone without transit arterials*: Development may proceed.

- *Yellow Zone, plus transit arterials*: Development may proceed if development agrees to X, Y, and Z pre-determined TDM requirements

- *Yellow Zone without transit arterials*: Development may proceed only if developer agrees pre-determined TDM requirements and to build transit capacity in the area. (They could choose from a list of available transit projects, such as installation of TSP or bus shelters.)

- *Red Zone, plus transit arterials*: Development may proceed only if developer agrees to build transit capacity or other roadway improvements.

- *Red Zone without transit arterials*: Development may not proceed.

<u>Variation B:</u> This variation expands the analysis done in Step Two. Instead of merely identifying transit corridors, Step Two would involve an analysis of the development location, concurrency goals, and transportation choices. The specific combination of these factors for a particular development, added to the color-coded travel time standards, would determine whether a development is concurrent, whether concurrency mitigation is required, or whether development may not proceed. (See Appendix A for a graphical demonstration of how Step Two of this variation would work.)

Under any option that predetermines mitigation requirements, the approach will need to address how to match the level of mitigation projects to the development size, so that a large office building is required to do more than an espresso cart and (somewhat related) how to define the extent of a development's impact (e.g., what happens if a development is located at an intersection where two corridors cross).

Variation C: This variation uses the two-step analysis as first describe but takes a corridor approach. It targets the benefits of the transit arterial to the land immediately surrounding the arterial. Areas within ¼ mile of a transit-equipped or transit-plus arterial would bump up color zones, creating ½ mile development corridors surrounding transit capacity. Therefore, if a travel time zone were red, the transit corridors through that zone would be upgraded to yellow. Similarly, if the zone were yellow, the transit corridors through that zone would be upgraded to green.

3. VMT Reduction

This approach achieves concurrency by targeting development in areas that have transportation choices and by setting VMT reduction targets. This approach, like travel time, involves a two-step analysis. First, cities would identify areas in their jurisdictions that could develop without dramatically increasing peak-period VMT and target development to those areas. This involved combining the land use, transportation, and capital improvement elements of the comprehensive plan to create a picture of where development can happen in the city. Development areas could be expressed graphically through a green/yellow/red map similar to the one described under the travel time approach.

Second, the cities would set single occupancy vehicle VMT reduction targets for a geographic area. Targets, such as a 1% reduction of VMT each year, could be set for the city, sub-region or region. (In many respects, given the regional nature of traffic, a regional reduction target makes the most sense.) VMT for single occupancy vehicles would be measured through model outputs, although those outputs could be compared against ground count VMT estimates for current conditions. The basic concept is to set policy goals relating to acceptable levels of VMT. VMT targets recognize the regional realities of travel and attempt to implement programs to reduce VMT over a large area, rather than at a specific intersection. Targets also encourages a region-wide agreement to reduce peak period SOV travel, and allows cities to channel development into the areas predicted in their comprehensive plans to have transportation choices. Each jurisdiction would employ a variety of TDM, transit, non-motorized, or parking fee measures to attain the VMT reduction target. Periodic calculation of VMT levels would be used to determine if additional traffic control measures were needed or if development needed to be curtailed.