

DEFINING TMZ FOR CONCURRENCY ANALYSIS IN CITY OF VANCOUVER



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Southwest Washington Regional Transportation Council

INTRODUCTION



This presentation includes:

- Growth management act (GMA) in Washington.
- Transportation concurrency requirements.
- Methodologies for concurrency analysis.
- Transportation management zone (TMZ).
- **EMME/2 APPLICATION IN DEFINING TMZ.**
- More tasks and issues in the concurrency analysis procedures.

GROWTH MANAGEMENT ACT IN WASHINGTON



- Passed by WA legislature (1990).
- Establishing a local comprehensive planning process.
- Planning public facilities & services to accommodate the growth.
- Planning multi-modal transportation system
- Protecting environment.
- Encouraging citizen participation and intergovernmental coordination.

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TRANSPORTATION ELEMENT OF THE COMPREHENSIVE PLAN



- Land use assumption
- Level of service standards (LOS)
- Inventory of existing services & facilities
- Current and future deficiencies
- Analysis of financing
- Reassessment and concurrency
- Action strategy
- Intergovernmental coordination

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CONCURRENCY REQUIREMENTS



- Transportation improvements or strategies at the time of development (public transit improvements, carpool programs, TDM, TSM, etc.).
- Financial commitment to complete improvements and strategies within 6 years.
- Local jurisdictions adopt and enforce concurrency ordinances.
- Prohibit development approval if the development causes the level of service to decline below the adopted standards.
- Development approval if the transportation improvements and strategies are made concurrent with development.

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PRINCIPAL COMPONENTS OF CONCURRENCY MANAGEMENT SYSTEM (CMS)



- Identification of facilities and services to be monitored.
- Definition of LOS, other conditions and exemptions
- Identification of the point in approval process after the concurrency test.
- Capacity accounting procedures.
- Responsibilities of applicant and reviewer.
- Provision for reservation of capacity.
- Vested rights determination procedures.
- Provision for revising process.

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ELEMENTS IN CONCURRENCE MANAGEMENT PROGRAM FOR CITY OF VANCOUVER



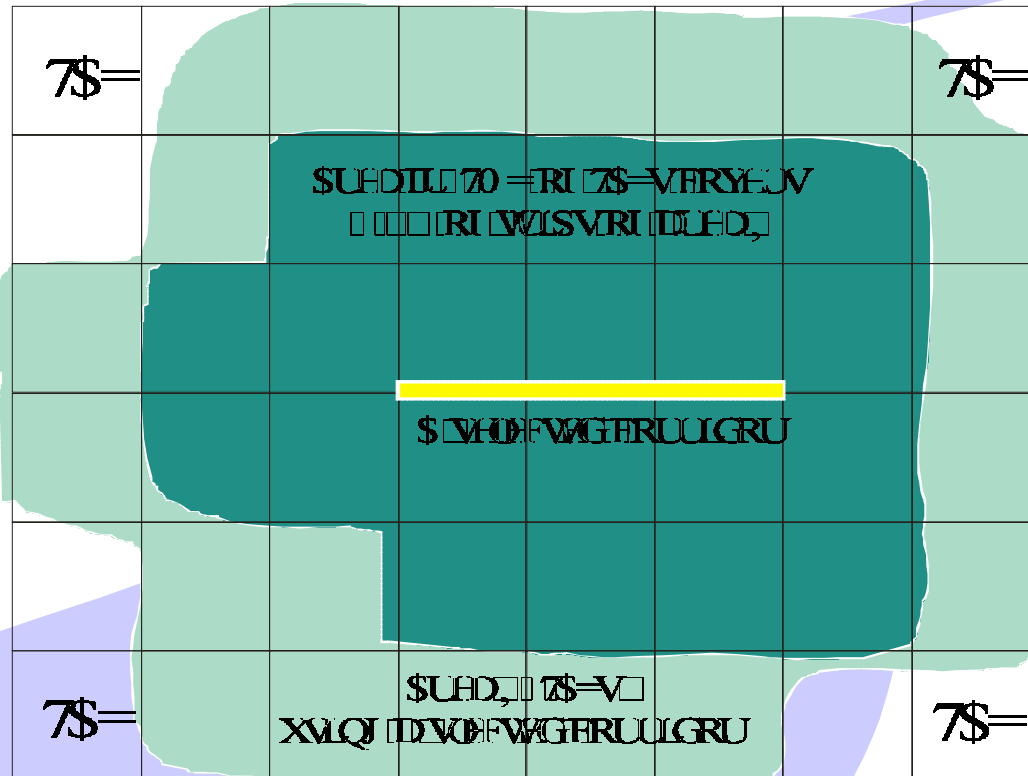
- LOS to be measured in travel time on basis of corridor level, not intersection level.
- Transportation Management Zone (TMZ) and TMZ corridor to be monitored against LOS standards.
- Capacity to be monitored and managed based on TMZ and TMZ corridors.
- Annual review of LOS standards through planning commission hearing.
- Intersection performance to be counted on basis of “Congestion Allowance Standard” & “Critical Intersection Performance Standard”.

TRANSPORTATION MANAGEMENT SYSTEM (TMZ)



- A discrete geographic area related to a particular major transportation corridor (TMZ corridor).
- A group of TAZs, whose trips are 85% of total trips using a particular TMZ corridor.
- LOS standards: travel time at peak hour traffic along TMZ corridor.
- The concurrency manual: the technical aspects of the concurrency ordinance to be separated from the legal and procedural framework of the ordinance.

TMZ & CORRIDOR



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EMME/2 APPLICATION IN DEFINING TMZ (I)



- PM peak hour select link assignments (mf01).
- Save additional demand matrix (mf02).
- Destination vector of additional demand matrix (md01).
- Initial threshold value: mean value of vector.
- Flag TAZs with a value greater than threshold (md02: value=1).
- Flag cells of mf02 with flag vector (md02).
- Flag cells of mf02 with transposed flag vector (mf03).
- Estimate the sum (ms01) of flagged cells in mf02 (mf02 x mf03).
- Estimate percentage out of total sum of additional demand trips (ms01/mf02).

EMME/2 APPLICATION IN DEFINING TMZ (II)



- EMME/2 macros was built with a loop by INRO staffs
- The current macro runs 10 iterations.
- Satisfactory level may be reached much earlier than 10 iterations.
- By including or excluding one more TAZ, the captured percentage may be much lower or higher. (Ex. 75% captured by 9 TAZs and 86% captured by 10 TAZs, then 10 TAZs are selected due to the 85% criteria.)
- Data display with EMME/2 View & Arcview.

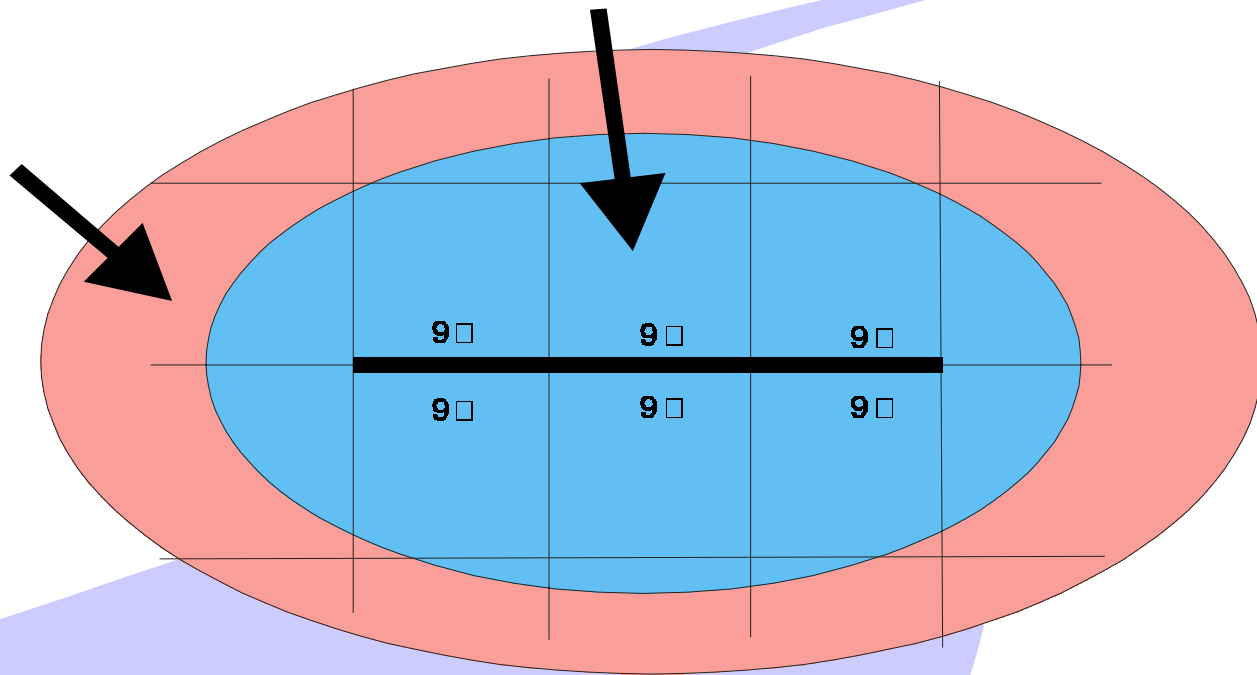
MORE TASKS AND ISSUES IN CONCURRENCY ANALYSIS PROCEDURES



- Define the LOS standards for TMZ corridors in mean speed or traverse time.
- Estimate available TMZ capacity in trips at the standard LOS.
- Estimate TMZ trips annually at the current level including previously approved development.
- Announce the annual available TMZ trips.
- Trips generated by any new development will be checked with the TMZ capacity, if exceeds the available TMZ trips at LOS standard or not.

TMZ TRIPS = Mean Speed (I)

RTC



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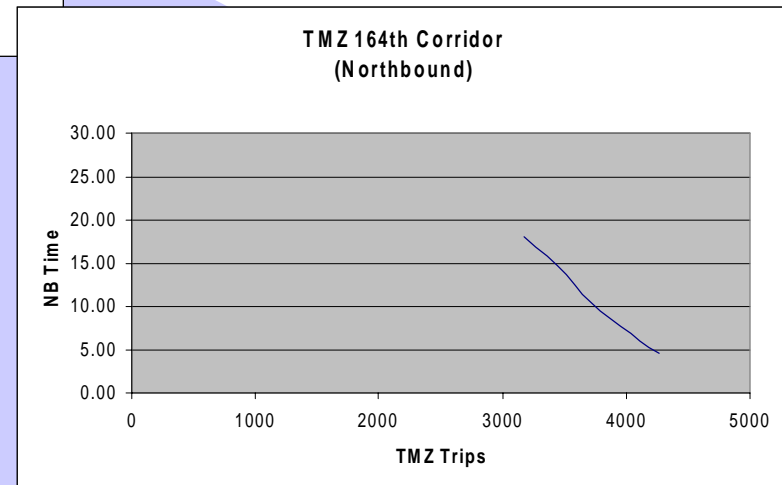
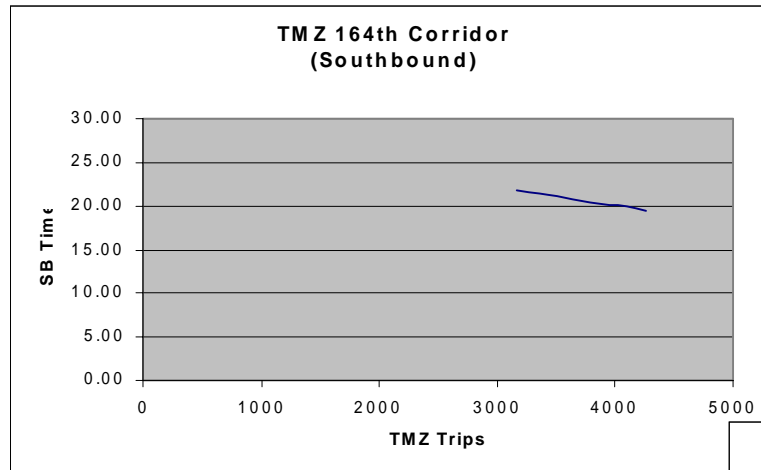
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TMZ TRIPS = Mean Speed (II)



- Traffic volumes: EMME/2 peak hour volumes
- Mean travel time:
 - EMME/2 link time
 - Measured time
- Intersection delay:
 - Estimated delay by HCM methodology
 - Measured intersection delay
- Traverse time:
 - Running time + delay
 - Function of volumes
- TMZ trips = Traverse time (or Mean speed)

TMZ TRIPS = Mean Speed (III)



- 1996 - 2003 PM Peak
- TMZ trips = Mean speed

RECOMMENDATIONS



- Reduce the gap of data between traffic engineering and transportation planning.
 - Develop an intermediate framework or new paradigm.
 - Integrate transportation planning software and traffic simulation programs.
- Using methodology and technology to measure valid and reliable speed and travel time in the annual corridor evaluation.
 - Data collection standard (volume, speed, density, etc.)
 - Video image processing technology
 - Integrated data processing (lead to ITS)
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