

**JOINT MEETING  
SULTAN CITY COUNCIL AND PLANNING BOARD  
AGENDA ITEM COVER SHEET**

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ITEM NO: D-1

DATE: October 25, 2007

SUBJECT: Reducing Levels-of-Service for Transportation, Parks and Police Land Use, Levels-of-Service and Capital Facility Planning

CONTACT PERSON: Deborah Knight, City Administrator

ISSUE:

The issue before the City Council and the Planning Board is a discussion, with input from members of the Sultan community, of proposed reductions to transportation, parks and police levels-of-service (LOS) in the City of Sultan Comprehensive Plan (Revised August 2007).

**STAFF RECOMMENDATION:**

1. Review the connection between the City's proposed Future Land Use, proposed levels-of-service for Transportation, Parks, and Police, and the proposed Capital Facilities Plan (CFP).
2. Seek input from members of the Sultan community on the proposed **reductions** to levels-of-service.
3. Direct staff to areas of concern or interest.

**SUMMARY:**

Proposed Reductions to Adopted Levels of Service

In the Revised August 2007 Plan, the City is proposing to reduce levels of service:

- Transportation LOS would be reduced from LOS B (fairly free flowing) to LOS D (stable flow with acceptable delay)
- Parks LOS would be reduced from 42.6 acres/1000 residents to 1.5 acres/1000 residents
- Police LOS would be changed from 2.6 commissioned officers per 1,000 residents to an LOS based on police facilities needed to serve the community. For example, the 1994 Plan based police LOS on the number of police vehicles.

The Sultan Comprehensive Plan (Plan) – Revised August 2007 is the foundation for this discussion. Hard and digital copies of the Plan are available upon request at City Hall. Copies for viewing are available at the Sultan Library. The Plan is available on the City's website at [http://www.ci.sultan.wa.us/council/community\\_development/](http://www.ci.sultan.wa.us/council/community_development/)

This discussion is based primarily on the following chapters and pages of the Plan (Revised August 2007):

- Land Use – Chapter II, pages 13-16 and the future land use map
- Transportation LOS – Chapter V, pages 41, 45, 57, 71-72, and 82
- Parks and Recreation LOS – Chapter VII, pages 106-109, and 112
- Police LOS – Chapter VIII, pages 132-133
- Capital Facilities – Chapter VIII
  - concurrency – pages 119-120;
  - transportation – pages 131-132;
  - parks and recreation – page 132
  - funding strategy – pages 140-147

The Level-of-Service chapter in the 2004 Comprehensive Plan is included as **Attachment A** to provide a summary of the City's adopted LOS.

City staff encourage reading the 2004 Comprehensive Plan and the Revised August 2007 Comprehensive Plan to best understand the connection between land use, levels-of-service and the capital facilities element of the plan.

The following discussion also draws from materials provided by Municipal Research ([www.mrsc.org](http://www.mrsc.org)):

1. An article written by Pat Dugan titled *The Capital Facilities Balancing Act* (**Attachment B**). This article was posted on the Municipal Research Page in the October 2007 *Planning Advisor*.
2. A publication titled *Level of Service Standards – Measures for Maintaining the Quality of Community Life* published by Municipal Research in 1994. Portions of this publication are available in **Attachment C**.

## BACKGROUND:

### Growth Management Act

The City is required under the State Growth Management Act (GMA) to plan for growth over a 20-year planning horizon. The Comprehensive Plan represents the community's policy plan to guide decision making for where growth should occur (downtown vs. suburbs), how much growth should be allowed (population allocations), and the level-of-

service the community wants to support (transportation, parks, police, water, sewer, etc.).

Local comprehensive plans must include the following elements: land use, housing, capital facilities, utilities, transportation, and, for counties, a rural element. Shoreline master program policies are also an element of local comprehensive plans.

### Sultan's Comprehensive Plan

The original Sultan GMA Comprehensive Plan was adopted in 1994 and planned through the year 2015. The update adopted 2004 will carry the community forward through 2025.

The City is in the process of updating its Comprehensive Plan as a result of a number of Petitions for Review filed with the Growth Management Hearings Board. The three regional Growth Management Hearings Boards resolve disputes concerning comprehensive plans and development regulations adopted under the GMA. The Governor has the authority to impose sanctions on cities, counties, and state agencies that do not comply with the GMA, as determined by a hearings board.

Copies of the Petitions for Review and the Final Decisions and Orders from the Central Puget Sound Growth Management Hearings Board that have been filed against the City of Sultan are available on line at [www.gmhb.wa.gov/central/decisions/index.html](http://www.gmhb.wa.gov/central/decisions/index.html).

The Revised August 2007 Plan addresses issues raised by the Growth Management Hearings Board including:

1. Review, Update and Amend Appendix B: Level of Service (LOS) for Transportation, Parks, Police, Water and Wastewater
2. Update and Amend as needed Transportation Element of Comprehensive Plan and adopt Annual TIP
3. Amend and Update Capital Facilities Element of Comprehensive Plan; Amend and Update City's Capital Facilities Plan
4. Update Map Folio to the Comprehensive Plan Consistent with Changes

### Capital Facilities Balancing Act

One of the goals of the Growth Management Act is to ensure that urban communities, such as Sultan, can provide services such as transportation, parks, water, sewer and storm water to new development and populations.

### Connection between Land Use and Levels-of-Service

This requires communities to think about what types of new development are wanted (commercial, retail, single-family residential, multi-family residential, industrial, etc.), and

what types of infrastructure (streets, parks, schools, water and sewer systems) are needed to service the type of new development a community wants. This is described as the connection between land use and level-of-service.

The land use plan (**See Revised August 2007 Plan Chapter II – Land Use pages 9-24 for more details**) describes what type and amount of new development allowed in a community – commercial, industrial, retail, single-family residential, multi-family residential, agriculture, etc. Each type of development requires different types and amounts of infrastructure. The more retail you have the more traffic. The more single-family or multi-family residential the more active sports parks may be needed.

The more people living, working, shopping, playing or visiting a community, the more public facilities are needed. Cutting back on the amount of planned growth usually reduces the amount of services needed. The flip side is that less growth usually means less revenue in the form of new taxes and impact fees.

Washington's Growth Management Act establishes the following goal for communities:

*"ensure that those public facilities and services necessary to support development shall be adequate to serve that development at the time the development is available for occupancy and use without decreasing current levels below locally established standards"*

### Level of Service Standards

The GMA requires LOS standards for all arterial roads and transit routes. LOS standards are not specifically required for other facilities. However, they are needed to complete the required steps in preparing the capital facilities element of the comprehensive plan. Communities must establish capacities and forecast future needs for all facilities covered in the capital facilities plan.

The Level-of-Service chapter in the 2004 Comprehensive Plan is included as **Attachment A** to provide a summary of the City's adopted LOS.

The publication titled *Level of Service Standards – Measures for Maintaining the Quality of Community Life* published by Municipal Research in 1994 (Portions of this publication are available in **Attachment C**). States, *"The GMA allows local communities the flexibility to establish levels of service standards which meet local needs and expectations. Level of service standards serve multiple purposes:*

- 1. Provide a benchmark for evaluating deficiencies in existing neighborhoods*
- 2. Define new public facilities and services needed to support new development*
- 3. Provide a basis for assuring that existing services are maintained as new development is served.*

Level of service standards are measures of the amount (and/or quality) of the public facility which must be provided to meet that community's basic needs and expectations.

For example, the amount of parks currently needed in a community may be determined by comparing the ratio of existing parks per 1000 population to the community's desired level of parks relative to its population. The gap between the two is the needed park acreage. As the community grows in population, the requirement is to maintain the ratio.

In Sultan, the adopted level-of-service for parks, recreation and open space acreage is 42.6/acre per 1000. Meaning that the City must acquire 42.6 acres of park land for every 1000 people. This far exceeds the national average of 1.5 acres per 1000 people and impacts the amount of money that must be spent to acquire and develop park properties. As the population grows from 4,500 people today to the 2025 target of 11,119 this means the City must acquire approximately 281 acres of land to meet its adopted level of service (6.6 thousand people x 42.6 acres). At \$240,000/acre the proposed investment is \$67 million dollars (\$240,000 x 281).

The entire Sultan UGA is 3,236 acres, an additional 281 set aside for parks plus existing park acreage of 136 acres represents 12.8% of the entire Sultan area set aside for parks.

**In summary, the higher the adopted level of service the more money is needed to achieve the goal.**

Some funding to maintain levels of service is available through developer impact fees – such as transportation impact fees and park impact fees. Impact fees are paid by all development including commercial, retail and residential.

The higher the impact fees the more difficult it is for new development to enter the "market place". The GMA discourages communities from artificially increasing impact fees to dampen new development. There must be a "nexus" between the impact fee and the cost of meeting the community's adopted LOS.

### Connection between Levels-of-Service and the Capital Facilities Plan

The next piece of the puzzle is to determine how the community will pay for the infrastructure needed to serve new development. This is the connection between levels-of-service and the Capital Facilities Plan.

Pat Dugan writes in his article *The Capital Facilities Balancing Act* (**Attachment B**):

*"One of the most important, yet least understood, parts of the Comprehensive Plan is the capital facilities plan (CFP) or element and its relationship to the land use plan. In*

*adopting the land use plan the local government makes a commitment that the land use intensities and pattern of uses is appropriate for the community...the capital facilities plan should address how that commitment should, or could, be supported by necessary facilities. The plan should then, in turn, address how those facilities will be financed."*

Mr. Dugan goes on to say:

*"Land use and public financing are interrelated. Planning for more development in the land use plan requires more public facilities and services. These services and facilities require financing. At the same time, more development generates revenue to finance those facilities and services. Development of public facilities can also affect the relationships since adding infrastructure, such as new transportation facilities, can attract new development. A comprehensive plan should balance these relationships to assure that the land use commitment made in the plan can be financially sustained over time. The plan can achieve this balance by:*

- 1. Adjusting the amount, location, or timing of the land development (demand side);*
- 2. Adjusting the amount of public facilities and services or the **level of service (LOS)** (emphasis added) provided by those facilities and services (supply side);*
- 3. Adjusting the amount of financing available*

## DISCUSSION:

### Sultan's Future Land Use Map

Throughout the Revised August 2007 Plan there is a discussion of groundwater, drainage, flooding, storm water run-off and other elements (chapters) of the Plan as required under the Growth Management Act. These, along with traffic, water, sewer and other community services are all related to land use.

The future land use map for the City seeks to balance the existing land use designations against the projected population and economic growth to ensure that there will be sufficient lands to accommodate growth through 2025.

Population projections are important to planning for future public service needs such as roads, parks, schools, utility services and social services. **Snohomish County Tomorrow expects the current Sultan urban growth area (UGA) will eventually support a population of 11,119 at build-out in 2025.** The UGA includes areas outside the current City limits that are identified for future annexation.

As the population grows over the next 20 years to its projected total of 11,119 (by 2025), the density of development will need to increase, both the single-family residential neighborhoods (3-4 dwellings per acre); and multiple family areas (8 units per acre and more).

Land use directly impacts the community's future growth, transportation and public facility needs. The future land use map proposes long-range general use of property for the next 20 years. The total UGA contains 3,236 acres of which:

- 64% is devoted to residential
- 8% to manufacturing, utilities, retail, services, and institutional land uses
- 27% to agriculture, forest, undeveloped, vacant and water
- 1% unknown

These percentages are relatively the same as the current land use.

**See Revised August 2007 Plan Chapter II – Land Use (pages 9-24) for more details**

#### Levels of Service and Cost

The Level-of-Service chapter in the 2004 Comprehensive Plan is included as **Attachment A** to provide a summary of the City's adopted LOS.

#### **Parks**

As discussed earlier in this report, the adopted level-of-service for parks, recreation and open space acreage is 42.6/acres per 1000. Meaning that the City must acquire 42.6 acres of park land for every 1000 people. This far exceeds the national average of 1.5 acres per 1000 people and impacts the amount of money that must be spent to acquire and develop park properties.

As the population grows from 4,500 people today to the 2025 target of 11,119 this means the City must acquire approximately 281 acres of land to meet its adopted level of service (6.6 thousand people x 42.6 acres). At \$240,000/acre the proposed investment is **\$67 million dollars** (\$240,000 x 281).

The entire Sultan UGA is 3,236 acres, an additional 281 set aside for parks plus existing park acreage of 136 acres represents 12.8% of the entire Sultan area set aside for parks.

**(See Revised August 2007 Plan Chapter VII – Parks, pages 101-118)**

The same discussion holds true for transportation and police.

## Transportation

Transportation level of service (**See Revised August 2007 Plan Chapter V – Transportation, pages 39-82**) is a measure of the quality of service provided by the transportation system. Transportation LOS helps provide an understanding of the performance of the transportation system; it also establishes the basis for comparison between roadways, and helps guide the prioritization of improvements.

An *LOS Concurrency Report (Attachment D)* was prepared by the City's traffic engineering consultant as a part of the Revised August 2007 Plan. These materials were presented to the Planning Board and City Council during discussion of the Transportation Element.

Evaluating the LOS on the arterial street system is typically described in terms of traffic congestion, which is measured as vehicle delay – or how long you wait. The resulting LOS is usually given a letter ranking from A-F where:

- LOS A-B means fairly free flowing travel conditions or little delay
- LOS C-D means stable flow with acceptable delay
- LOS E and F mean severe congestion with low travel speeds and unacceptable delay.

The Sultan adopted Transportation LOS for local streets is LOS B meaning that the City is required to maintain fairly free flowing travel conditions with little delay during the AM and PM peak travel periods.

This standard represents the lowest operating level for a given street or intersection allowed during the peak hour period measured against the planned traffic capacity. This means that during the peak hour, the City expects that between 60 to 70% of the available street capacity will be used with no noticeable delay in travel times. A 2007 traffic study demonstrates the 2007 traffic LOS on City arterial roadways is very good during the PM peak hours. However US 2 is very congested during this time.

Sultan's traffic LOS standard is unusually high compared to City's across the State. A comparison of adopted traffic level of service standards from neighboring and similar size cities is shown below:

<b>City</b>	<b>2006 Population</b>	<b>Adopted Traffic LOS Standard</b>
Sultan	4,440	B
Monroe	16,170	D
Snohomish	8,920	D
Skykomish	210	C
Fife	6,100	D
Yelm	4,600	C/D with F at some intersections
Sequim	5,000	D
North Bend	4,700	D
Sumner	9,000	D with some F
Lake Stevens	9,650	C/D
Woodinville	10,350	E
New Castle	9,200	D with some E
WSDOT	On US-2 through Sultan	D

The traffic forecasts reveal that traffic volumes within the UGA will increase a projected land use development under the City's adopted land use plan is realized, particularly in the plateau area. The majority of the forecasted traffic increase can be attributed to intra-city travel between the plateau area and the historic area of the City, and increasing regional travel between Sultan and other communities.

The traffic model shows that without additional roadway connections between the plateau and downtown, traffic volumes on Sultan Basin Road and Rice Road will increase substantially. The model indicates that Sultan Basin Road, north of US 2 will likely fall to LOS E/F by 2025 without additional capacity (e.g. widening Sultan Basin Road to 4 lanes) or additional connectivity (e.g. new roadways connecting the plateau to downtown)

Again, the trade-off is clear. Adding 6,619 people by the year 2025 requires adding additional roadways to serve new development.

Maintaining an transportation LOS B will require building new roadway systems or increasing the capacity (e.g. adding lanes to the existing system).

When new public streets are constructed, everyone has access to them. Public tax dollars will be used to pay for the "public's share" of whatever transportation concurrency solution is adopted. That's what state law requires. This means that if the City as a community decides to expand streets to provide for constantly free-flowing traffic during the rush hour, then residents should expect to pay higher taxes to support and maintain that choice.

Wider streets would mean more public right-of-way dedicated to asphalt and concrete impervious surfaces, more real estate purchases for storm water detention, including

the possible purchase of yards, homes or commercial buildings for additional right-of-way. Wide streets would also require that more tax dollars be dedicated for maintenance and repair, which in the long-run may not reduce peak hour traffic congestion. The end result would simply be wider streets, constructed at greater public cost, that are not very heavily used during the non-peak hours.

The cost of wider streets is not only measured in dollars. Wide streets make pedestrian crossings much more challenging, especially for school children, physically-challenged individuals, and seniors. Wider streets would change the look and feel of neighborhood areas and reduce the already limited supply of urban land, limiting infill opportunities.

## **Police**

The police department is currently staffed with 6 full-time commissioned officers. The City is in the process of hiring a police chief. The 2008 budget includes 6 full-time commissioned officers plus a police chief (total 7 commissioned officers).

The adopted LOS for police is 2.6 officers per 1,000 residents. The current LOS is approximately 1.3 (6 officers/4.5 thousand residents). With the addition of the Chief the LOS increases to approximately 1.5 (7 officers/4.5 thousand residents).

By comparison, the average number of officers per 1,000 residents is 1.7 officers in Washington State cities between 50,000 and 100,000 populations, and 2.1 officers per 1,000 on a national basis.

An analysis of police department LOS done for the 2004 Comprehensive Plan calculated the cost per officer at approximately \$110,878 including personnel, training, and equipment costs. **Attachment E**

The cost to meet the LOS requirement of 2.6 officers is  $2.6 \times 110,878 = 288,282$  or \$288 per 1,000 residents. With an average household size of 2.7 persons each household would need to contribute \$778 for police services.

Currently, the City collects an average of \$340 in property taxes from each household. So each household would need to pay an additional \$438 dollars in property taxes to fund the police department.

At 2.6 officers x 4.5 residents = 11.7 officers x 110,878 = \$1,297,272 police department budget. The total General Fund budget for 2008 is estimated at \$1.9 million. So, the police department would take 63% of the City's General Fund budget.

The Growth Management Act does not require the City to adopt an LOS based on numbers of officers. This is an operation policy and should be decided by the community as a part of the annual budget process.

The publication *Level of Service Standards* offers a number of LOS alternatives for police including response times, staffing levels, police work load analysis, and crime rates. A majority of Washington cities focus their comprehensive plan LOS on police facilities.

### Capital Facilities Plan

The Capital Facilities Plan is where the "rubber meets the road" in planning. The CFP is based on the population, land use, and level of service assumptions. The Capital Facilities Plan (CFP) outlines the City's strategy for serving residents and businesses with public services and facilities. Under the GMA, a six year capital facilities plan is required to assess the needs of the community and determine how to provide appropriate facilities to meet adopted levels of service. **(See Revised August 2007 Plan Chapter VIII – Capital Facilities, pages 118-158)**

A capital facility is any publicly owned structure or physical facility. Services are not considered a capital facility (e.g. numbers of commissioned officers). A capital facilities plan must contain an inventory of existing facility needs and a plan for financing, including a reassessment strategy to address potential funding or service short-falls.

Meaning, the City must change its future land use plan or lower levels of service to balance its capital facilities plant to a level where the jurisdiction can afford to provide services.

The City of Sultan must review proposed development applications against adopted levels of service standards. Development can only be approved if the proposed development does not lower the existing LOS below the adopted LOS in the comprehensive plan.

Pat Dugan notes, "No comprehensive plan can be carried out unless the supporting infrastructure can be financed." He goes on to say,

*"The capital facilities element should address how well the community will be able to live with the financial obligation to support that commitment [between land use and LOS]. The ability to balance between the land use commitment in the comprehensive plan and the community's ability to support it financially can be improved:*

- *By planning the amount, location and timing of new development with an eye toward the ability to finance growth in different locations at different times;*
- *By considering the levels of service that are needed to serve new development; and*
- *By understanding the fiscal capacity of the community and the tools available to finance needed facilities and services.*

## Financing the CFP

There are a number of revenue sources to finance the City's capital investments. **These are separate sources of revenues from property taxes and sales taxes use to support the General Fund.**

The table below illustrates the funding sources and proposed expenses for the 2008 Capital Budget.

2008 Funding Source	2008 Beginning Balance	Anticipated 2008 Revenues	2008 Total
Real Estate Excise Tax 1	\$162,500	\$62,500	\$225,000
Real Estate Excise Tax 2	\$162,500	\$62,500	\$225,000
Transportation Impact Fees	\$652,000	\$56,947	\$708,947
Park Impact Fees	\$153,739	\$105,865	\$259,604
Sewer System Imp.	\$27,318	\$167,456	\$194,744
Water Utility Reserve	\$1,124,500	\$162,847	\$1,287,347
Surface Water Utility	\$0	\$50,000	\$50,000
Grants	\$1,250,000	\$1,603,914	\$2,853,914
Loans (PWTF)	\$500,000	\$0	\$500,000
Private Contributions	\$0	\$10,000	\$10,000
Developer Contributions (Twin Rivers RR crossing)	\$0	\$10,000	\$10,000
Special Parks Fund (Treasurer's Trust)	\$138,217	\$0	\$138,217
<b>Total revenues</b>	<b>\$4,170,774</b>	<b>\$2,272,029</b>	<b>\$6,442,803</b>
Total 2008 proposed construction expenses			<\$3,443,473>
Transfer Debt Service			<625,000>
<b>2009 Ending Balance</b>			<b>\$2,374,330</b>

It is important to recognize that the majority of the 2009 ending balance is grant funds (\$1.4 million). The City may need to initiate other funding mechanisms such as Local Improvement Districts (LIDs) to fund transportation, water, sewer and storm water facilities.

The question for the Council and the community is what level of service can you afford? Both the adopted level of service for parks (42.6 acres) and transportation (LOS B) and police (2.6 offers/1,000 residents) require a public investment that may be beyond the financial means of the City.

## ANALYSIS:

The City Council is seeking feedback from the community on a proposal to reduce levels of service for transportation, parks and police. Specifically, the Revised August 2007 Plan is proposing level of service reductions for:

- Transportation LOS would be reduced from LOS B (fairly free flowing) to LOS D (stable flow with acceptable delay)
- Parks LOS would be reduced from 42.6 acres/1000 residents to 1.5 acres/1000 residents
- Police LOS would be changed from 2.6 commissioned officers per 1,000 residents to an LOS based on police facilities needed to serve the community. For example, the 1994 Plan based police LOS on the number of police vehicles.

Future land use, levels of service and capital facilities plans are interrelated. In adopting the land use plan the City is making a commitment that the land use intensities and pattern of uses is appropriate for the community. The levels of service adopted by the community set the standard that must be met as new development occurs and the population increases. The capital facilities plan identifies how the facilities will be funded over the planning period.

A decision to keep the current LOS may mean changing the future land use, phasing growth to certain areas of the City or reprioritizing other City services.

## RECOMMENDATION:

1. Review the connection between the City's proposed Future Land Use, proposed levels-of-service for Transportation, Parks, and Police, and the proposed Capital Facilities Plan (CFP).
2. Seek input from members of the Sultan community on the proposed **reductions** to levels-of-service.
3. Direct staff to areas of concern or interest.

## ATTACHMENTS

Attachment A – 2004 Comprehensive Plan LOS

Attachment B - *The Capital Facilities Balancing Act*

Attachment C - *Level of Service Standards – Measures for Maintaining the Quality of Community Life*

Attachment D – *LOS Concurrency Report*

Attachment E – Police LOS analysis

## Appendix B: Level of service (LOS)

The following level of service (LOS) calculations are based on the inventory, assessments, and projections described in the 20 February 2003 Draft Environmental Impact Statement for the Comprehensive Plan Update modified as follows by the Planning Commission's urban growth area boundary recommendations of 2 September 2003:

**Alternative 1: Low growth scenario for residential growth** - including incorporation of some properties on the north boundary, and

**Alternative 2: Moderate growth scenario for economic development** - including incorporation of some properties on the east boundary.

### Transportation LOS

Measurement unit	1994 Plan	Exist LOS	Prpsd LOS	Existing Condition	20-year Rqmnt	20-year Deficit	Action required
<b>SR-2 intersections</b>							
Sultan Basin Road/323rd	B	A E-F north	B	Not channeled	Realign	Underway	
Cascade View Drive	B	A	B				
Rice Road/339th	B	A C-E north	B				TIP
<b>SR-2 roadway corridors</b>							
West of Sultan Basin Rd/323 <sup>rd</sup>		E		Not channeled	Controlled access		WSDOT
West of Cascade View Drive		D-E		Not channeled	Controlled access		WSDOT
<b>Local streets</b>							
	B	A	B	Repair, upgrades needed	Signals, roadway, sidewalks	See TIP	TIP
<b>Transit service – Community Transit minute intervals between buses</b>							
Route 720 – Everett		30-60 min	30-60 min	3 stops	Rice Road stop	Rice Road stop	CT plan
Route 727 – Boeing		30 min	30 min	2 stops	Rice Road stop	Rice Road stop	CT plan

LOS calculations – David Hamlin Associates in association with Berryman & Henigar, Industrial Park Master Plan/SEIS August 2001.

### Facility/services LOS

Measurement unit	1994 Plan	Exist LOS	Prpsd LOS	Existing Supply	20-year Rqmnt	20-year Deficit	Action required
<b>Police officers – ratio per 1,000 population (1)</b>							
Uniform officer	a	2.6	2.6	10	29	19	EOC plan
<b>Firefighters – ratio per 1,000 population (2)</b>							
Firefighter/EMT	b	0.5	0.5	2	6	4	EOC plan
<b>School students – ratio per dwelling unit</b>							
Students k-12		0.603	0.603	1,675	2,676	1,001	SSD CFP
<b>Water storage – gallons (3)</b>							
DOH at connection Equalization @ +15% Fire flow +360,000 gal	160 c	230	230	2,490,000	1,380,740	(1,109,260)	Surplus
<b>Water supply – gallons/equivalent residential unit (ERU)(4)</b>							
DOH gallons/ERU	800	800	800	3,800,000	3,550,400	(249,560)	Surplus
<b>Wastewater treatment – gallons/day/capita (gpd)</b>							
Gallons/day/capita	100	100	100	720,000	1,111,900	391,900	TP addn
<b>Solid waste – net tons disposed/capita/year (5)</b>							
Net tons/capita/year		0.299	0.299	Na	3,325	Na	
<b>Library – square feet/person (6)</b>							
Square feet/person	d	0.63	0.63	8,000	7,005	(995)	Surplus

**City admin/public works facilities – square feet/person**

Square feet/person	1.50 e	6.26	6.26	23,850	69,605	45,755	Fcity plan
<b>Natural gas – Btu/household/year (7)</b>							
Btu/hshld/yr		1,000	1,000	Na	4,438,000	Na	
<b>Electricity – kV use/resident or employee/extreme peak (8)</b>							
Residents		1.91	1.91	Na	21,237	Na	
Employees		2.59	2.59	Na	9,223	Na	
<b>Parks, recreation, and open space – acres/1,000 residents (9)</b>							
Acres	5.0 f	42.6	42.6	162.4	473.7	311.3	Park plan

- (1) Uniformed officers – does not include civilian or non-uniform staff.
- (2) Full-time staff - does not include 30 volunteer and 2 part-time support staff.
- (3) Based on DOH analysis of 1,510 connections. Plus fire flow at 3,000 gallons/minute for 120 minutes or 360,000 gallons.
- (4) DOH standard for gallons per equivalent residential unit (ERU) for maximum day demand (MDD). Supply inventory based on proposed inter-tie with Everett's Pipeline #5.
- (5) Based on Snohomish County average of 0.827 gross tons disposed less 0.528 tons recycled per year per capita.
- (6) American Library Association standard for branch facilities (is actually 0.60/person).
- (7) Puget Sound Energy (PSE) standard for service area.
- (8) Puget Sound Energy (PSE) standard for service area.
- (9) Based on composite acreage of city, school district, county, and private facilities.

**1994 Comprehensive Plan LOS notes**

- (a) Does not have standard for police officers – standard used was 2 vehicles/1,000 population.
- (b) Does not have standard for firefighters – standard used was 1 fire engine/3,000 population.
- (c) Also includes minimum fire flow of 1,000-2,500 gallons per minute.
- (d) Library standard expressed in 2.1 books/person.
- (e) City offices only – does not include Public Works facilities.
- (f) Standard based on city acreage only – not including open space. Inventory includes open space that is currently owned and accessible to public.

**Park facilities LOS – ratio fields, courts, miles, each per 1,000 persons**

Measurement unit	1994 Plan	Exist LOS**	Prpsd LOS	Existing Supply*	20-year Rqmnt***	20-year Deficit	Action required
Softball field	0.31	0.26		1	3	2	Park plan
Baseball field – lighted	0.07	0.26		1	1	0	Park plan
Baseball field–not light	0.20	1.05		4	2	(2)	Park plan
Soccer field	0.24	0.79		3	3	0	Park plan
Football field	0.18	0.79		3	2	(1)	Park plan
Multipurpose court	0.25	0.26		1	3	2	Park plan
Basketball court	0.85	0.52		2	10	8	Park plan
Tennis court	0.85	0.00		0	10	10	Park plan
Volleyball court	0.20	0.26		1	2	1	Park plan
Bike trail – miles	0.50	0.05		0.20	5.6	5.4	Park plan
Jogging trail – miles	0.50	0.07		0.25	5.6	5.35	Park plan
Hiking trail – miles	0.50	0.18		0.70	5.6	4.9	Park plan
Outdoor pool – each	0.04	0.26		1	0.4	(0.6)	Park plan

Source: National Park & Recreation Association (NRPA) 1984.

\* Existing supply includes city, school district, and private providers within UGA. Fields total includes 5 multipurpose softball, baseball, soccer, and football field combinations. Swimming pool is located at VOA park site of unknown dimension.

\*\* Existing LOS is based on current estimated population of 3,814 residents.

\*\*\* 20-year requirement based on extrapolation of 1994 Plan ratio for estimated population build-out of 11,119 persons.

# The Capital Facilities Balancing Act

October 2007

By Pat Dugan

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## Introduction

Of its many promises, the Growth Management Act (GMA) sought to assure Washingtonians that new development could be effectively served by appropriate public services and facilities if that growth was better anticipated and managed. Many people also hoped that planning under GMA would reduce the costs of providing those public services and public facilities. How well these goals are achieved depends on how well GMA comprehensive plans integrate and balance land use plans with plans for supporting facilities, and the financial capacity of jurisdictions to pay for needed facilities and services.

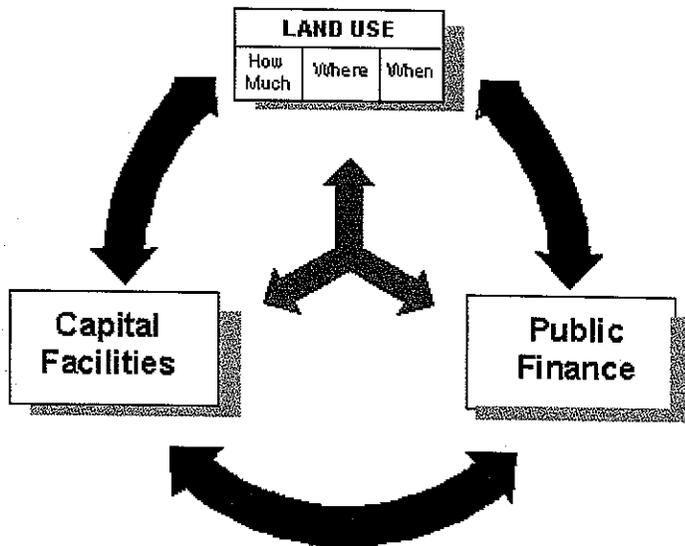
One of the most important, yet least understood, parts of a comprehensive plan is the capital facilities plan (CFP) or element and its relationship to the land use plan. In adopting the land use plan the local government makes a commitment that the land use intensities and pattern of uses is appropriate for the community (I will refer to this as the land use "commitment" of the plan). The capital facility plan should address how that commitment should, or could, be supported by necessary facilities. The plan should then, in turn, address how those facilities will be financed.

In this edition of the *Planning Advisor*, I will explore the relationship between the land use commitment and the CFP and how a balance might be achieved between the land use commitment and the community's ability to finance the public services and facilities needed to sustain that commitment.

Integrating finance with land use planning requires some caution. I've heard it said that there are two significant pitfalls to incorporating finance into the GMA planning process. The first pitfall is to involve the finance director in the planning process since the pessimism and cautiousness of the typical finance director will

tend to dampen and constrain the “dreaming” about the future essential to a good visioning process. The second pitfall is to not involve the finance director because the plan may then become fiscally unrealistic and difficult to implement. When considering the role of financial planning in comprehensive planning, one always needs to remember that it is a question of how to balance “thinking creatively” about the future while simultaneously being concerned about how to pay for that future.

### Land Use and Financing Relationships



Land use and public financing are interrelated, as illustrated on the adjacent diagram. Planning for more development in the land use plan requires more public facilities and services. These services and facilities require financing. At the same time, more development generates revenue to finance those facilities and services. Development of public facilities can also affect these relationships since adding infrastructure, such as new transportation facilities, can attract new development. A comprehensive plan should balance these relationships to assure that the land use commitment made in the plan can be financially sustained over time. The plan can achieve this balance by:

- Adjusting the amount, location, or timing of the land development (demand side);
- Adjusting the amount of public facilities and services or the level of service (LOS) provided by those facilities and services (supply side); or by

- Adjusting the amount of financing available.

Since these actions are interrelated, balancing between them can become complex. For example, while additional revenue can be generated by economic development, the additional demand from new development for more facilities and services needs to be taken into account.

### **Adjusting the Land Use Commitment**

The opportunity for development established in the land use plan represents the “demand” side of the balance. The amount, location, and timing of this development (or the “land use commitment”) will drive how much money will be required to finance the facilities needed to support that commitment.

The impact of the planned amount of growth on the demand for public facilities and services seems self-evident. The more people residing, working, shopping, playing, or visiting in the community, the more public services and facilities that will be needed. Reducing the amount of growth planned usually reduces the amount of services needed. However, reducing the amount of growth will also reduce the amount of revenue that will be available through taxes from new development.

A great deal of growth management literature also recognizes the importance of *where* new development locates. One of the most influential growth management publications was *The Costs of Sprawl*, which found that higher density development is less costly to serve than low density sprawl. Similarly, it is not hard to demonstrate that locating new development where there is infrastructure capacity in place is less costly than locating the same amount of development in an area that must be served by new facilities.

The least recognized part of the demand side of the balance is that *when* new development occurs also significantly affects the ability to finance supporting facilities. Since more revenue is generated over several years than in a few years, usually it is much easier to finance new facilities to support that growth if the development is spread out over several years rather than occurring all at once.

The *timing* of development is often closely linked to its location. Trying to support a lot of development, all at once, in several locations, takes far more resources (needed sooner) than directing development to a few, appropriate locations where facilities can be efficiently provided. For example, extending or improving water, sewer and street facilities out to one location may efficiently serve four hundred new housing units in that location, but locating those same four hundred units in four batches of one hundred units each in widely different locations would require more costly extension or upgrading of those facilities in order to reach four different locations at the same time.

Since the timing of development has a very strong influence on the ability of the jurisdiction to finance facilities, many people advocate "phasing" of development in different areas at different times in order to effectively manage costs.

### **Adjusting the Supply of Facilities and Services**

The manner in which new development is served impacts the costs of those services, thereby affecting the balance between the land use plan and the ability to financially support it.

A basic concept in capital facilities planning is level of service (LOS). While LOS can be measured in many ways (park acres per capita, response times for emergency vehicles, sophisticated measures of traffic congestion, gallons of water capacity per equivalent residential unit, and so on), the concept boils down to a question of how much facility or service is necessary to be "adequate" to support a given amount of development? Sometimes there are fairly objective ways to answer this question, such as in the case of how much water pressure is needed to provide adequate fire suppression. Most often, however, the answer is more subjective: is five acres of parks per thousand population adequate or should it be ten? The cost of providing parks to new development would double if the answer is the latter rather than the former. How much congestion can the community tolerate? Is transportation level of service "C" really necessary or can we get by with LOS "D" or even "E," especially if we must tax ourselves heavily in order to maintain "C"?

While the quality of services provided is an important aspect of a community's quality of life, maintaining a high level of service can be costly in a rapidly growing community. Some of the most important decisions in a planning process can be whether to raise taxes or manage growth differently in order to maintain a desired level of service.

### **Adjusting the Amount of Financing Available**

The ultimate determinant on the supply side of the balance is how much can the jurisdiction afford?

No comprehensive plan can be carried out unless the supporting infrastructure can be financed. This reality should compel jurisdictions to make an accurate assessment of their financial capacities and limitations. While this is potentially a complex task, it should involve several basic questions:

- **Evaluating Financial Capacity:** How much wealth does the community have? How much assessed value or sales tax volume is there? What are per capita incomes? What is the jurisdiction's debt capacity? Does the jurisdiction have capital reserves and how much are they?
- **Understanding Tax Effort:** How effectively is the jurisdiction accessing (or how much is it straining) its financial capacity to provide ongoing services? What are the property tax rates and are all available taxing authorities being utilized? How much of the debt capacity has been used? How willing is the community to support being taxed for new services? Are some tax revenues reserved for growth related capital?
- **Analyzing Trends:** What are the revenue and expenditure trends? Are revenues keeping up with the expenditures, and why or why not? How well has the jurisdiction competed for grants? What has the jurisdiction's bond issue experience been? What facilities in the community might be supported by voter approval and what types of facilities could not be supported in tax levy?
- **Understanding Basic Financing Tools:** How can debt be effectively used to finance facilities? Are there tax authorities not being used and who would pay the tax under each of those authorities? How can more financing be contributed by developers using various developer finance tools (such as impact fees, local improvement districts, developer agreements, mitigation payments, etc.)? How much revenue can be generated by all of the various tools?

Answering these questions should provide an understanding of how well the community can respond to the needs identified in its plan. This understanding

can become the basis of the financial strategy that should be the heart of the capital facilities plan.

While some financial management training might be needed to fully understand and interpret the answers to those questions, a planner working with the finance staff can often develop basic insights.

### **Understanding the Community**

In achieving the balance between the land use commitment in a comprehensive plan and the community's ability to finance the needed services and facilities, it is important to recognize that "one size" does not "fit all" in capital facilities planning. For example, the needs and capacities of a rapidly urbanizing suburb on the edge of a metropolitan region are very different from the needs and capacities of a small, rural community.

Financing issues associated with an older "inner-ring" suburb will be very different from those of a newly developing "outer-ring" suburb. The outer ring suburb will probably need to develop strategies to finance new facilities that open undeveloped areas for development. The inner ring suburb, in contrast, may need to develop very different strategies to finance retrofitting facilities to support infill. Similarly, while the capital facilities plan of a rapidly growing suburb may involve complex issues requiring sophisticated techniques and a range of financial measures, the plan of the small, "built out" community can be quite uncomplicated and relatively easy to afford for the community.

The effectiveness of various financing tools will frequently vary between communities. Impact fees can be very effective in circumstances where they complement other revenue sources, but in other circumstances, these fees may not generate enough money to actually do something. Similarly, Local Improvement Districts (LIDs) might be very effective in developing an undeveloped area, but be very difficult to do in infill situations.

### **Conclusion**

The land use commitment of the comprehensive plan is a commitment that the local government and its residents will need to live with over the life of the plan.

The capital facility element should address how well the community will be able to "live with" the financial obligation to support that commitment.

The ability to balance between the land use commitment in the comprehensive plan and the community's ability to support it financially can be improved:

- By planning the amount, location and timing of new development with an eye toward the ability to finance that growth in different locations at different times;
- By considering the levels of service that are needed to serve new development; and
- By understanding the fiscal capacity of the community and the tools available to finance needed facilities and services.

Balancing land use decisions with financial strategies to fund the supporting infrastructure is growth management. If we achieve a sustainable balance, we should find it easier to ensure that needed public facilities can be provided at the time of development and at lower costs than without this planning. If we do not achieve this balance, we cannot be successful in providing the benefits many people hoped would be provided from the Growth Management Act.

Attachment C

# Level of Service Standards

Measures for Maintaining  
the Quality of Community  
Life

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## Preface

It is no easy matter to develop level of service (LOS) standards which will deliver quality services in tight budgetary times. *Level of Service Standards: Measures for Maintaining the Quality of Community Life* offers help with this challenging task. The publication surveys innovative approaches to LOS standards, focusing on transportation and parks standards. It also covers schools, fire protection, police, sewer, water, stormwater, solid waste, library and administrative facilities. The publication emphasizes approaches which support overall community goals and growth management efforts. Most Washington communities face similar problems of disappearing funding sources combined with increased service demands. We think it will be useful to communities engaged in capital facility planning, whether or not they must plan under GMA.

Many people both within and outside of MRSC have contributed to this publication. Susan C. Enger, A.I.C.P., our Planning Consultant, researched and wrote this report. From our staff, Roy H. Peterson, Public Works Consultant and Carol Tobin, Research Librarian, reviewed the manuscript and provided suggestions on content and organization. Lois Weed, Library Assistant, meticulously proofread the draft. Donita Mowers of our word processing staff, patiently designed and prepared the report for publication.

We are particularly grateful to experts from a variety of agencies outside of MRSC who reviewed the manuscript and offered suggestions for its improvement: Linda Cowan, Superintendent for curriculum and Instruction, Auburn School District; John Fischbach, City Manager, Vancouver, Washington; Kristiana Johnson and Wanda Lauderdale, Senior Transportation Planners, King County; Heather McCartney, Special Projects Manager, Bellevue Parks Department; and Tom Noguchi, Plan/Program Director, Bellevue Transportation Department. We also thank the many Washington communities who provided encouragement and fine examples for inclusion in this publication.



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Municipal Research & Services Center of Washington

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## Introduction

A major factor in the quality of community life is the quality of the community's facilities, services and amenities. That quality is threatened in some Washington communities by growth which outpaces the communities' abilities to provide important facilities and services. In other communities, quality of life has been threatened when a community's major economic base is lost or diminished. At the same time, some traditional funding sources for maintaining community facilities and services are disappearing. Business as usual is no longer enough if community quality is to be maintained. Communities need to plan for the funding and provision of community facilities in advance of development. They should also plan for the ongoing maintenance of facilities and, in some cases, for bringing substandard or missing facilities up to standard.

Washington's Growth Management Act (GMA) establishes the following goal for communities:

"ensure that those public facilities and services necessary to support development shall be adequate to serve that development at the time the development is available for occupancy and use without decreasing current levels below locally established standards (RCW 36.70A.020 (12))."

The Washington Administrative Code provides further definition of this goal: "Concurrency means that *adequate* public facilities are *available* when the impacts of development occur." "Adequate Public Facilities' means facilities which have the capacity to serve development without decreasing levels of service below locally established minimums." "Available public facilities' means that facilities or services are in place or that a financial commitment is in place to provide the facilities or services within a specified time." (WAC 365-195-210 (2), (3), & (4).) Not all Washington communities are bound by these GMA provisions. Even so, most face similar problems of disappearing funding sources combined with increased service demands. As a result, most communities will benefit from a re-examination of their capital facility planning approach and adequacy standards.

This guidebook focuses on measuring the adequacy of facilities and services. To address the above goal, local communities will need to identify which public facilities and services are important to community quality. They must also define what constitutes "adequate" provision of community facilities and services. To determine adequacy, local communities will need to develop yardsticks or standards to measure whether adequate provisions have been made for facilities and services. Level of service (LOS) standards are measures of the amount (and/or quality) of the public facility which must be provided to meet that community's basic needs and expectations. Level of service measures are typically expressed as ratios of facility capacity to demand by existing and projected future users. For instance, the amount of parks currently needed in a particular community may be determined by comparing the ratio of existing park acres per 1000 population to the community's desired level of parks relative to population. The gap between the two ratios is the currently needed park acreage. As the community grows in population, the objective will be to provide enough additional acreage to maintain the community's desired ratio of park acres to 1000 population. The GMA directly requires LOS standards for all arterials and transit routes. LOS standards are not specifically discussed relative to other facilities. However, they are needed to complete the required steps in preparing the capital facilities plan element. Communities must estimate capacities and forecast future needs for all facilities covered in

## Level of Service Standards

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the capital facilities plan. LOS standards are also desirable for all facilities and services for the reasons stated below. The GMA allows local communities the flexibility to establish level of service standards which meet local needs and expectations.

Level of service standards serve multiple purposes:

- They provide a benchmark for evaluating service deficiencies in existing neighborhoods.
- They also define what new public facilities and services will be needed to support new development.
- They provide a basis for assuring that existing services are maintained as new development is served.
- They provide a benchmark for monitoring progress toward meeting growth management and public service goals.
- They can alert public officials to opportunities for improved efficiency and savings.
- They can and should move beyond quantitative measures and provide measures for the quality of facilities and services provided.
- They provide an opportunity for neighboring jurisdictions to coordinate LOS standards to assure consistency.

This handbook suggests some principles to guide local communities in establishing LOS standards. It briefly reviews and expands on steps suggested by the Department of Community Development (DCD) for establishing standards. It generally discusses and provides examples of LOS standards for major facilities and services. It explores, in greater depth, approaches and issues in setting service standards for two very important types of community facilities—transportation and parks/recreation/open space facilities. We have chosen to focus on transportation LOS standards because (1) they are specifically required by GMA, (2) they can be particularly complex, and (3) transportation facilities are particularly influential in shaping growth. The misapplication of transportation LOS standards can have effects which are counterproductive relative to growth management objectives. This guidebook also focuses on parks, recreation and open space standards because MRSC has received numerous questions about them. It is clear from these contacts that local communities consider park/recreation/open space facilities to be particularly important in shaping community quality of life.

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Issues in Establishing Level of  
Service Standards

## Issues in Establishing Level of Service Standards

LOS standards are of little value if they do not deliver the desired results. The process of developing standards which address real needs requires careful consideration of a host of complex issues. As you review sections on LOS standards for various types of facilities, the following issues should be recognized and addressed:

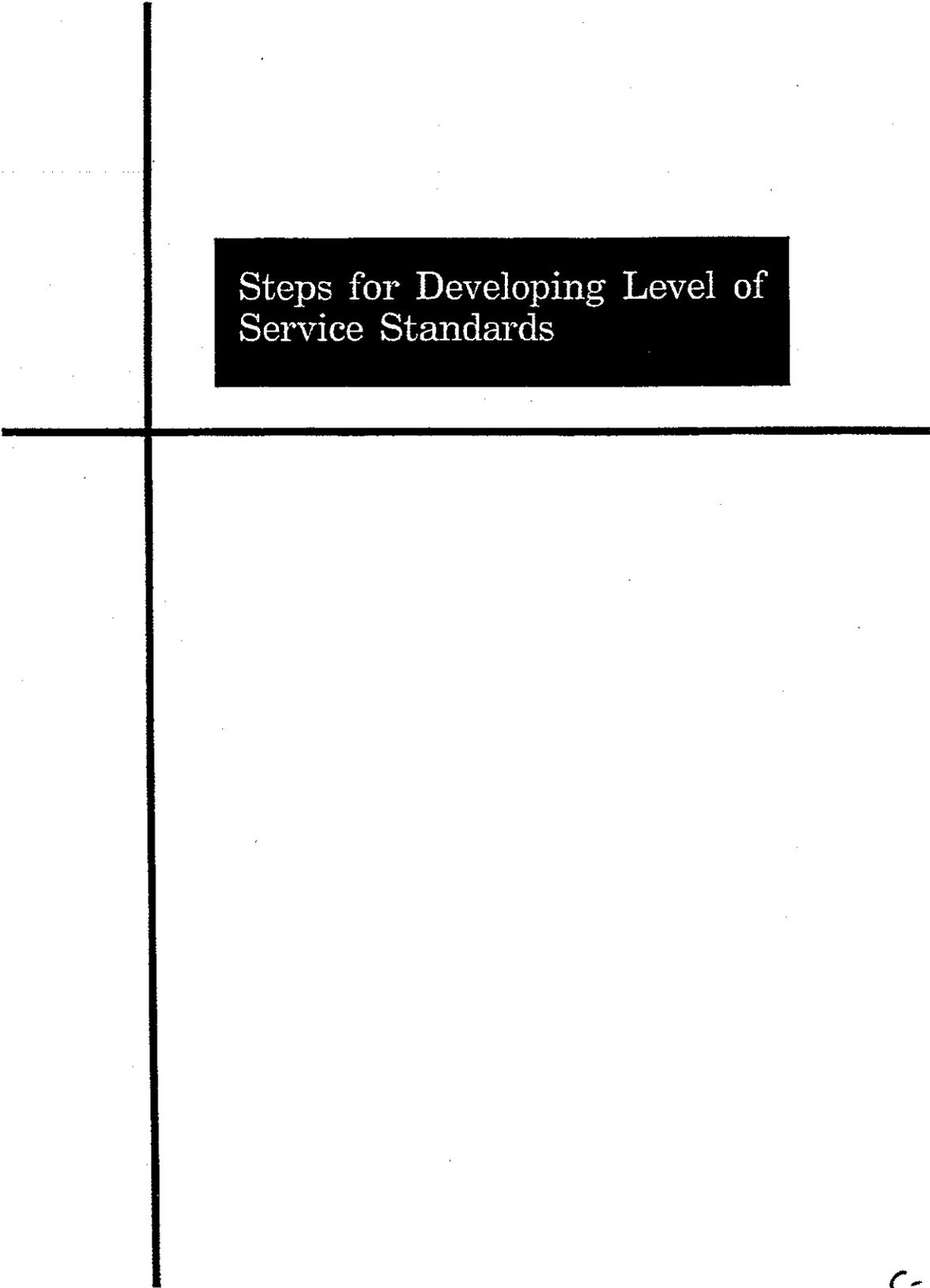
- **How can we develop LOS standards which get us what we want?** Many typical LOS standards focus on the level of resources which should be applied to provide a service. For instance, a standard may state that x fire fighters should be provided per 1000 population. They do not directly measure whether these resources are producing the desired results. A more results-oriented standard might instead use a reduction in the rate of fire occurrences as a measure of success. More thought may be needed about how resources applied relate to results achieved. In addition, acres of park land may not always translate into space which will be used and enjoyed by residents. We may need to think more about "how good" rather than simply focus on "how much."
- **To what extent are state and national standards appropriate as local LOS standards?** Simply adopting the standards recommended by technical experts does not guarantee that community facilities will be adequate for a given community. This manual will cite a number of state and national standards as well as local examples of standards. Such standards provide a useful starting point, a source of ideas, and a basis for comparison. To the extent that a community approximates the "average" community such standards may provide an approximate measure of local needs. However, every community is unique, with unique needs. In addition, professional organizations can have a vested interest in standards which further employment for its membership. As a result, communities will be best served by standards which they derive or adjust based on a careful study of local needs.
- **To what extent are we willing to pay for higher standards?** Local communities need to be cognizant of the costs of achieving and maintaining a given LOS standard. In recent times, local government is increasingly asked to do more with less. This may require that communities set priorities and make choices about which facilities merit higher standards. It may also require that service providers within every area of service become more efficient and effective at how they do their job.
- **To what extent can we find alternatives to investing more dollars in expensive public facilities? What LOS standards can we find to measure the effectiveness of public service provision?** (1) It may be possible to avoid or delay the need for new facilities if we can reduce the demand for them (and still maintain quality service). Reducing the number of vehicle trips generated by development, reducing water consumption through conservation, and reducing impervious surfaces can reduce the need for road, water and stormwater facilities. (2) More compact land use patterns can reduce the costs of delivering many services if shorter sewer lines and fewer fire stations are required to deliver the same LOS, for instance. (3) LOS standards could focus on measuring results of programs which **prevent** crime or human-caused fires (education programs, those programs which address root causes such as poverty, etc.).

## Level of Service Standards

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- **To what extent is cooperation between departments and between jurisdictions necessary to meet LOS standards?** For instance, can any level of police force staffing significantly reduce crime if other departments don't develop supporting programs to eliminate root sources of crime? Many studies indicate that educational programs, job training and other programs which combat the debilitating effects of poverty may be more effective investments. Similarly, can we really address transportation in isolation without considering interjurisdictional traffic impacts? These concepts will be discussed further in later sections.
- **How can we assure that setting achievable minimum standards will not encourage mediocrity rather than excellence?** Communities may choose to set standards which fall short of loftier goals to assure the standards are achievable. In some cases, minimum and maximum standards may be helpful. For instance, a minimum level of transit ridership is needed to support transit. However, ridership which greatly exceeds capacity will turn off riders. In addition, bonuses can be considered to encourage achieving higher levels of performance.

Steps for Developing Level of  
Service Standards



## Parks/Open Space/Recreation Facility Standards

### Traditional Standards

As noted in the introduction, Washington communities closely associate park and recreation facilities and open spaces with the quality of life in their communities. Washington communities have also shown an active interest in protecting natural resources. The state's resources remain essentially intact relative to many other parts of the country. Washington communities often set relatively high standards for themselves to secure the open spaces which they so value. The standards, in fact, are frequently higher than they have been able to achieve.

Park planners have long employed LOS standards to assess the need for park and recreation facilities. Many communities have adopted standards based on National Recreation and Park Association's (NRPA) guidelines. The NRPA, a professional organization serving park planners, managers and researchers, issued standards in 1934 which are essentially the ones in use today. As a result, the standards from a variety of communities of different sizes and circumstances across the nation can bear a striking resemblance to each other.

The NRPA standards reflected "what seemed to be right" based on the experience and recommendations of a group of professionals rather than on systematic research (city of Edmonds, 1993). Even so, the NRPA "yellow book"—*Recreation, Park and Open Space Standards and Guidelines* (last revised 1983) has been a bible for park professionals.

At the heart of the NRPA standards are the park space standards widely adopted by cities across the country. The yellow book recommends a total of 6.25 to 10.5 acres of open space per 1000 population. NRPA also suggests a classification system for parks. The various levels of parks, such as neighborhood or community parks, vary in size and service area depending on their classification. The NRPA has also developed facility development standards as a guideline for the number of facilities needed per quantity of people.

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**Level of Service Standards**

NRPA Standards for Park Acreage					
Component	Use	Service Area	Desirable Size	Acres/1,000 Population	Desirable Size Characteristics
Mini-park	Specialized facilities that serve a concentrated or limited population or specific group, such as tots or senior citizens.	Less than 1/4 miles radius	1 acre or less	0.25 to 0.5 A	With neighborhoods and in close proximity to apartment complexes, townhouse development or housing for the elderly.
Neighborhood Park or Playground	Area for intense recreational activities, such as field games, crafts, playground apparatus areas, skating, picnicking, wading pools, etc.	1/4 to 1/2 mile radius to serve a population up to 5,000 (a neighborhood)	15+ acres	1.0 to 2.0 A	Suited for intense development. Easily accessible to neighborhood population (geographically centered for safe walking and biking access). May be developed as a school park facility.
Community Park	Area of diverse environmental quality. May include areas suited for intense recreation facilities, such as athletic complexes, large swimming pools. May be an area of natural quality for outdoor recreation, such as walking, viewing, sitting, picnicking. May be any combination of the above, depending upon site suitability and community need.	1 to 2 mile radius (several neighborhoods)	25+ acres	5.0 to 8.0 A	May include natural features, such as water bodies and areas suited for intense development. Easily accessible to neighborhood served.
Total Close-to-Home Space = 6.25 - 10.5 A/1,000					

Several other types of standards are common. Many communities require a percentage of land area in a proposed subdivision to be dedicated for parks and/or open space. A number of cities and counties in Washington require between five and fifteen percent of a residential subdivision to be dedicated for recreation and open space. Lacey requires a ten percent of land area dedication for commercial and residential developments except multifamily development. A twenty percent dedication is required for multifamily development. See Lacey's requirements for open space in residential developments in a following section. These dedication requirements often do not assure that the set aside land will be useable for intended purposes. A percentage of land area requirement is a more indirect measure of a subdivision's impact on a community's park needs than the standards above, but is simple to calculate and administer. Requirements for 30 to 50 percent of land area retained in open space are becoming common in clustered residential developments.

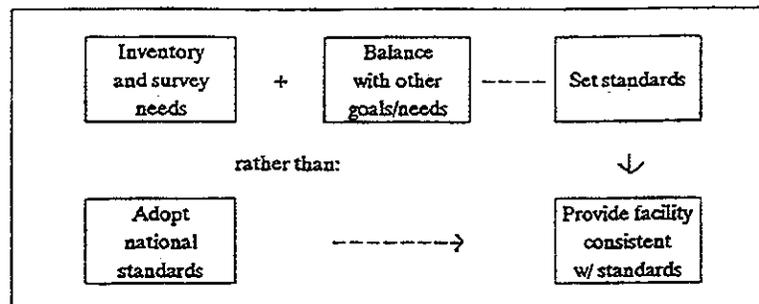
## Level of Service Standards

Some communities use mathematical models which project to what extent people will participate in different recreational activities (participation rates). The participation rates are then translated into space and facility needs.

Although widely accepted in the past, there is increased recognition that national-based standards may not be getting communities what they really want. A growing school of park and recreation planners argue that these standards (1) emphasize "how much" rather than "how good," (2) reflect past desires and expectations rather than today's needs, (3) do not recognize the unique conditions, resources and needs of different communities and cultural groups, and (4) often are unrealistic and difficult to implement. Setting **minimum** standards to accomplish a loftier set of **desired** goals may backfire. Although they may help to raise the current standards of the "lowest common denominator" communities, they may lead to underachievement in more ambitious communities. Recognizing some of these shortcomings, an NRPA task force is studying its standards for potential revision.

Although national-based standards may not equally meet the needs of all communities, most planners would agree that they can serve a useful purpose. As James Krohe points out, "There's nothing wrong with rational standards, which clearly are an improvement over the allocation of park space on the basis of political favoritism" (1990). Standards are used to justify the need for additional park acquisition and development in areas that are inadequately served. National-based standards, which are legitimized by a national organization, may be even more persuasive to elected officials. They may lead to a more equitable distribution of park resources by identifying the inadequately served neighborhoods. They provide guidance, whether developing a system-wide plan or planning for a specific site or facility. Most standards are simple and straight forward to apply. Further study is not required. To some extent, they can substitute for specialized expertise in the many communities which lack park planners. They provide a yardstick for measuring the performance or effectiveness of a recreation site or facility.

As James Krohe points out, the problem arises when communities try to substitute standards for good planning (Krohe, 1990). The mislabeled NRPA "standards" should be viewed as rough guidelines for communities rather than absolutes. How can we reconcile the beneficial uses of standards with the problems inherent in using standards? The answer for most communities is to reverse the traditional place which standards have held in the process. The traditional standard approach is to assume that a national standard expresses a community need. To assure that standards serve the needs of the community, they should be the product of a process to determine community needs rather than the starting point. They should be derived from local studies of needs rather taken as a given.



**Standards should be the product of a process to determine needs, rather than the starting point.**

## Level of Service Standards

### Criteria for Park Standards

Park/recreation standards are more likely to serve the needs of a community if they meet certain criteria. Kevin Ashner, a planner from the greater Miami park system, correctly argues that the true measure of a good standard is "the level of customer satisfaction" (Krohe, 1990). Seymour Gold (1980), widely recognized for his contribution to parks research, suggests the following criteria for good standards:

- **Relevance.** They should reflect the needs and lifestyles of today's residents.
- **People Orientation.** They should reflect the unique needs and preferences of people in the area being served.
- **Performance Standards.** They should provide a basis for measuring achievement of community objectives. They should measure the quality of recreation service rather than simply the quantity.
- **Feasibility.** They should be attainable within a reasonable timeframe and with available funding sources.
- **Practicality.** They should be simple to understand and apply. They should be based on sound planning principles, information and a credible development process. They should also be flexible enough to handle unanticipated situations and rapidly changing needs.

In addition, the criteria for all LOS standards presented earlier in this manual also apply.

### Measures for Today's Needs

The NRPA standards were shaped in the early part of this century. Although they have been adjusted along the way, they were designed for communities very different from today's communities. Changing demographics, work and commute patterns, technology and public values are accompanied by changes in lifestyle, recreational interests and community issues. These changes call for a reconsideration of local standards to assure they are relevant to current needs and values. The NRPA standards are currently under review for possible revision.

#### *Changing Demographics*

- Perhaps the most significant trend affecting park planning is the aging of the baby-boomers. During the next 10 years, the Census Bureau foresees a significant increase in the 45 to 54 year old age group nation-wide. This group will be in their pre-retirement years with time and financial resources at a peak. In less than 20 years, the leading edge of the baby-boomers will begin to turn 65. By 2030, the over 65 age group will represent 22 percent of the country's population compared to 12 percent in 1988 (*Park Futures*, Portland, 1991). Although they are aging, the baby-boomers may be healthier and will remain active longer than past generations of elderly. The pre-retirement and the active retired seniors are likely to increase the demand on recreational facilities and services. Counties which traditionally attract retirement age persons such as Island, Jefferson, Clallam, San Juan, Thurston and Mason will

## Transportation Service Standards

Developing transportation standards can be a particularly challenging task. Measuring the adequacy of facilities and services is a relatively straightforward task for some types of facilities. For instance, sewer systems have a finite capacity. It is relatively clear when the sewer system is "full." Capacity and adequacy of the transportation system is not so easily measured. It is more than simply a question of whether we can fit another car on the road. Facility design, signalization, weather conditions, and the driving habits of motorist affect travel speed, safety and roadway capacity in addition to the total amount of pavement provided.

To fully measure transportation adequacy, travel speed, safety, comfort, convenience and other factors affecting travel enjoyment should be considered. As communities focus increasingly on quality of life issues, these factors become more important in measuring transportation system adequacy.

In addition to road capacity, the capacity of transit, pedestrian and other non-motorized modes of transportation should be considered. They all contribute to the overall capacity of the transportation system to move goods and people.

Transportation adequacy is both a technical and a public policy question. Measuring transportation adequacy also involves a judgment call about what level of congestion and delay is acceptable to community residents relative to the cost of reducing the congestion. Transportation standards have always varied from community to community. A standard which is tolerable in one community may not be in another. As Joseph Savage points out, within an urban area, a driver may accept stop-and-go traffic on downtown streets while becoming irate when unable to maintain a steady 35 miles an hour speed on suburban arterials (Savage, 1993).

### PERSONAL CHOICE WHAT ARE YOU WILLING TO DO?

29%	31%	20%	13%	7%
<u>22</u>	<u>23</u>	<u>15</u>	<u>10</u>	<u>5</u>



I am willing to drive significantly less even though transit, rideshare and walking alternatives may be less convenient than my car.

**PRO**

- I believe that a larger share of trips via bus, rideshare, walking is essential to community mobility
- I want less air pollution, traffic and energy use
- I want less land consumed by streets and parking lots
- We can not and should not try to meet endless auto demand—too costly and impacts too severe

I do not plan to change my driving habits under any foreseeable circumstances; no alternative will ever be as good as the automobile.

**PRO**

- I already have made a fixed investment in my car
- It's the city's job to meet whatever demand is out there
- If I change it just makes it easier for somebody else to drive
- Car is proven preference in this country

**Transportation Adequacy is Both a Technical and a Public Policy Issue**

## Level of Service Standards

### Traditional Approaches to Roadway Level of Service

Communities planning under GMA must establish level of service standards for arterial (major) streets. A variety of methodologies have been developed for evaluating street/road capacity and level of service. Each approach has its advantages and disadvantages. Perhaps the major tradeoff in choosing a method is between the complexity and the precision of the different methods, as noted in the DCD guidebook, *Your Community's Transportation System: A Transportation Element Guidebook* (June 1993). Obtaining greater precision may involve a complexity which requires a greater level of effort and technical expertise. Traditional approaches for measuring roadway LOS include:

- **Critical Movement Summation (CMS).** This method sums up the traffic volumes for conflicting movements occurring at an intersection. The data requirements are less onerous than for the HCM Signalized Intersection Method. It provides a quick capacity estimate and is relatively easy to use. The *Transportation Research Board Circular 212* is basically an expanded version of CMS with altered LOS ranges which make it easier to show inadequacy. It considers factors such as turning movement volumes, lane geometry, signal phasing and timing to calculate intersection level of service.
- **1985 Highway Capacity Manual (HCM) Signalized Intersection Method.** Rather than consider traffic volumes, this method estimates average minutes of delay per vehicle to evaluate intersection level of service. It is widely used in Washington State. It may be better applied to traffic engineering and individual development review needs rather than long-term system planning.
- **Travel Time and Delay along Roadway Segments.** The HCM also includes methods for estimating roadway segment LOS performance. The methods measure arterial travel time or delay. The focus on travel speed for urban arterials rather than intersection capacities recognizes that traffic operation improvements and physical improvements can yield substantial improvements in traffic flow. The HCM methods have been developed for traffic engineering application where very accurate LOS estimates are required and where detailed input data is available.

The HCM also describes a method based on field observations of travel time and delay studies within a corridor. It requires a vehicle equipped with a special instrument which repeatedly travels the corridor during peak traffic hours. As might be expected, it is time and labor intensive but does capture actual conditions and driver perceptions of traffic conditions.

- **Florida Department of Transportation (FDOT) LOS Maximum Service Volumes Method.** Florida has developed generalized tables establishing LOS thresholds for roads of a given type and number of lanes. The approach measures the level of service of roadway sections (larger stretches of roadway than segments). The tables show maximum volumes relative to capacity corresponding to each level of service for different roadway types. The tables are a further refinement of the 1985 *Highway Capacity Manual* approach. The Florida method is described in *Florida's Level of Service Standards and Guidelines Manual for Planning*. The manual and supporting computer programs are tailored for use in growth management planning, although also based on Florida conditions. It may be less useful for short term

development review needs. The approach was designed to be easy to use with readily obtainable data. Data requirements include facility type, number of lanes, divided/undivided roadway, number of signals per mile, area type and one-way/two-way operation.

Traditional measures of transportation adequacy were developed for traffic engineering purposes to improve performance at specific intersections and along specific road segments. They continue to be useful for gauging when improvements are needed on many highways or freeways outside of urban areas. They may be appropriate measures for some smaller rural communities in Washington. However, traditional measures have generally not proved useful for measuring system-wide adequacy or projecting long-range transportation system needs. The choice of an effective LOS approach becomes particularly challenging for transportation system improvements in and around urban areas. In choosing a transportation LOS standard approach, communities should consider how adequacy measures will work with other service standards and land use measures to accomplish overall community goals.

#### Arterial Levels of Service

*Level-of-service A* describes primarily free flow operations at average travel speeds usually about 90 percent of the free flow speed for the arterial class. Vehicles are completely unimpeded in their ability to maneuver within the traffic stream. Stopped delay at signalized intersections is minimal.

*Level-of-service B* represents reasonably unimpeded operations at average travel speeds usually about 70 percent of the free flow speed for the arterial class. The ability to maneuver within the traffic stream is only slightly restricted and stopped delays are not bothersome. Drivers are not generally subjected to appreciable tension.

*Level-of-service C* represents stable operations. However, ability to maneuver and change lanes in midblock locations may be more restricted than in LOS B, and longer queues and/or adverse signal coordination may contribute to lower average travel speeds of about 50 percent of the average free flow speed for the arterial class. Motorists will experience an appreciable tension while driving.

*Level-of-service D* borders on a range on which small increases in flow may cause substantial increases in approach delay and, hence, decreases in arterial speed. This may be due to adverse signal progression, inappropriate signal timing, high volumes, or some combination of these. Average travel speeds are about 40 percent of free flow speed.

*Level-of-service E* is characterized by significant approach delays and average travel speeds of one-third the free flow speed or lower. Such operations are caused by some combination of adverse progression, high signal density, extensive queuing at critical intersections, and inappropriate signal timing.

*Level-of-service F* characterizes arterial flow at extremely low speeds below one-third to one-quarter of the free flow speed. Intersection congestion is likely at critical signalized locations, with high approach delays resulting. Adverse progression is frequently a contributor to this condition.

### The Need for New and Improved Standards

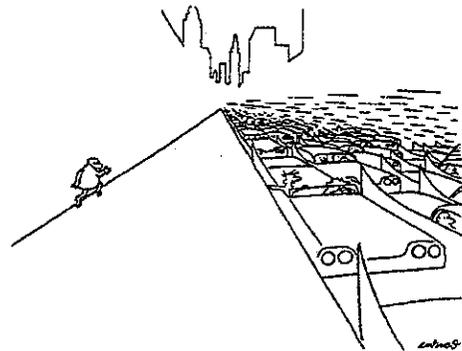
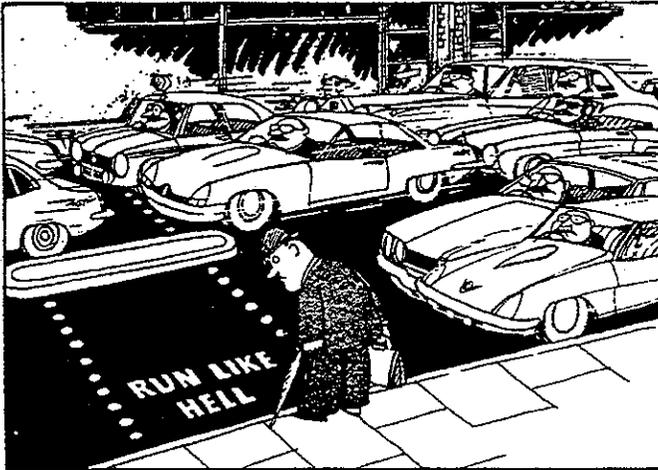
Many communities are finding that their current approach to transportation adequacy standards have not produced the desired results. They have not ended roadway congestion.

## Level of Service Standards

Too often, they have failed to produce a balanced transportation system which meets the full range of community needs and expectations. In many communities, they have been applied in a manner which has contributed to sprawl land use patterns at the expense of urban centers. The GMA mandates coordination of land use, transportation and capital facility planning—they should work in concert to achieve community goals. As a result, many communities are finding a need to refine, supplement or even replace traditional measures. Communities are encountering the following types of problems in measuring adequacy and applying standards:

- **Exempted projects add up to congestion.** Traditional standards, as typically applied, have focused on measuring vehicle traffic volumes, travel time and delay at individual intersections and along road segments. Decisions about adequacy tend to be made on a project-by-project basis. New development is often allowed as long as it doesn't put roadway congestion over the level which a community has defined as intolerable. Small projects making "insignificant" contributions to traffic may be allowed to proceed. At some point, these piecemeal approvals will add up to a congested roadway. This site-by-site application of standards doesn't handle the cumulative impacts of development. It may result in all roads operating at barely tolerable levels.
- **Other forms of transportation can contribute to overall mobility.** Many communities have not recognized the potential contribution of transportation modes such as transit or non-motorized travel in their standard setting. Most have not developed sophisticated standards which measure progress in transportation demand management (TDM) measures such as rideshare or parking disincentive programs. These other modes and programs can effectively increase overall transportation capacity without increases in road capacity.
- **Tough road adequacy standards in congested urban areas may actually contribute to suburban sprawl, conflicting with GMA goals.** Adding new road capacity in existing developed areas can be cost-prohibitive. As John DeGrove, former head of Florida's Department of Community Affairs, notes, tough concurrency requirements and level-of-service standards can "drive(s) development out into the countryside because that's where roads have capacity" (Koenig, 1990). This may occur even though other types of facilities in these areas are lacking. At the same time, construction may be halted in congested urban areas even though targeted for growth. The ultimate irony is that the resulting spread out development generates a higher rate of vehicle travel, compounding the problem. Tough, inflexible standards may also prevent or delay the construction of desired projects such as schools or senior housing.
- **Local jurisdictions may have difficulty maintaining their own high standards.** If a community sets uniformly high road adequacy standards aimed at new development, the standards may come back to haunt the community. It may be difficult and costly for local jurisdictions to remedy deficiencies in existing areas, if held to the same standards. It may also be difficult to maintain these standards.
- **Many communities have not coordinated their LOS standards with neighboring jurisdictions.** The lack of coordination has made it difficult to adequately project the impacts of through traffic generated outside a jurisdiction. Development in adjacent jurisdictions can produce congestion and perhaps result in shutting down desired growth in a neighboring jurisdiction.

- **Improvement schedules for state facilities may not be well-matched with local land use objectives.** The State Department of Transportation's (WSDOT) mission is focused on the needs of the long distance driver. This may tend to frustrate local objectives which seek to focus development in centers. In the past, local jurisdictions had not control over improvements on state highways or other state facilities. The newly enacted Senate House Bill 1928 requires that regional transportation planning organizations (RTPO) establish LOS standards for all state highways and ferry routes. This legislation provides a new opportunity to coordinate land use planning and state facility planning. However, it may be a two-edged sword. If a high LOS standard is established and the state doesn't have the resources to meet the standard, the facilities may remain unimproved. The local jurisdiction, in turn, may have to deny desired development. Close cooperation between local jurisdiction, WSDOT and the RTPO will be important to avoid unexpected surprises.



### **Traditional Transportation Measures Have Focused on Automobile Movement**

To address the shortcomings of traditional measures, communities are experimenting with a number of new approaches to measure roadway level of service. Many are also experimenting with ways to measure the contribution of other transportation modes, such as transit or bicycles. Following an overview description of traditional approaches, this guide will discuss some exciting new directions in transportation LOS measurement.

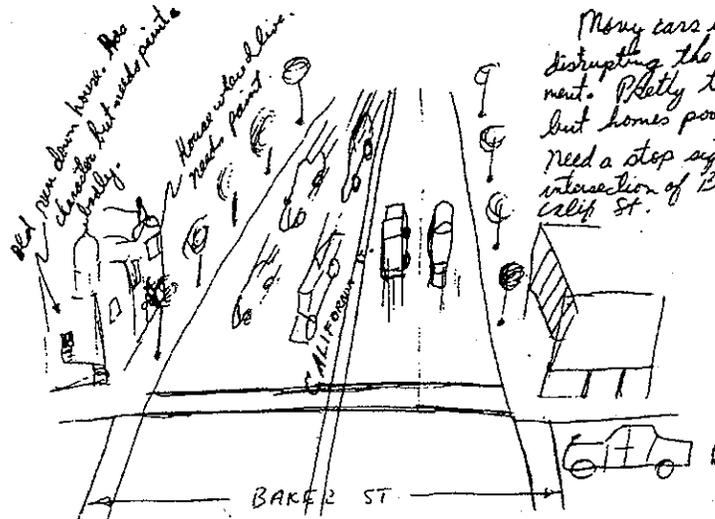
### **Emerging Approaches and Refinements to Roadway LOS Measures**

The HCM recognizes that roadway level of service measures should consider "such factors as speed and travel time, freedom to maneuver, traffic interruptions, comfort, convenience and safety." However, in implementing its level of service concept, vehicle speed emerges as the primary indicator of performance. As Reid Ewing observes, this emphasis on vehicle speed as the primary performance measure can have negative consequences for growth management. In catering to high travel speed, we promote greater vehicle miles travelled. "Able to drive faster, motorists drive farther." (In fact, between 1983 and 1990 VMT in the United States grew more than six times as fast as population). The ability to travel faster in and around urban areas encourages urban sprawl on the fringe. It makes close-in urban infill areas which have congested roads and low travel speeds look less attractive. It contributes to commercial strips along arterials where over-sized business signage vies for

## Level of Service Standards

the attention of rapidly passing motorists (Ewing, 1992). To address this concern and those described in the preceding section, some communities are exploring and using alternative LOS measurement approaches. Several of these alternative LOS measures and methodologies described below are:

1. Aggregated roadway LOS
2. The vehicle-miles of travel measure
3. Flexible LOS standard approaches
4. Composite multimodal mobility measure and
5. Differential LOS standards



**Able to Drive Faster, Motorists Drive Farther**

### ***Aggregated Roadway LOS***

A number of communities are finding alternatives to individual intersection and roadway segment level-of-service measures for transportation planning purposes. Instead, these communities are recognizing that people have alternate paths through transportation networks. They are looking at level-of-service standards averaged across entire corridors or broader geographic zones as better measures of system performance. This is significant for several reasons:

1. It provides greater flexibility for development along some congested road segments within designated growth areas while maintaining the overall performance of the system. Stringent LOS standards can serve as de facto moratoriums in the vicinity of congested intersections or roadway segments. This may be counterproductive recognizing that congestion is not unlikely in dense, target growth areas. As noted earlier, motorists may be more tolerant of congestion within urban centers. Traditional measures also do not recognize the contribution of alternative transportation options, such as transit or bike routes, within urban centers.
2. From a growth management perspective, it provides a better performance measure of how the system as a whole is functioning rather than focusing on stand-alone intersections. A commuter's trip is made up of a series of links and intersections.

The motorists may perceive the overall commute experience as tolerable if the trip as a whole is smooth. It is more useful for long-range planning of the transportation system. The average LOS approach may result in better allocation of resources when focusing on system-wide needs rather than improvements needed as a result of impending development proposals.

Communities have taken several different approaches to aggregated LOS. One approach is to sum all the traffic volumes and capacities in one area or along a corridor and establish the LOS for the whole corridor or area. Pierce County has applied this approach to major corridors. Bellevue, Snohomish County and others are considering using averages of travel speeds along an arterial or at selected intersections to establish an average LOS. Some communities specify a percentage of roads within an area that must be at or above a particular LOS. These methods may best reflect the overall experience of the motorist. The approach can be adapted to consider the availability of other travel modes.

The drawback of this approach is that there is a tendency to overstate the corridor capacity when there is a severe bottleneck or the alternative paths are less desirable. Bellevue staff have several other suggestions to consider in using an aggregated LOS approach. For the measure to be useful, the boundaries and intersections where a given LOS applies, must accurately reflect real land use relationships and commute patterns. Also, the area average by design neglects individual intersection performance. Some absolute limit of degradation may be needed at the intersection level to maintain a viable route (City of Bellevue, 1992).

#### *The Vehicle-Miles-of-Travel Measure*

Some communities are finding "vehicle-miles-of-travel (VMT) to be a better measure of development impacts on road adequacy. VMT is calculated by multiplying the volume on a roadway segment (or the amount of traffic a particular site generates) by the length of road traveled:

$$\text{Site Trip Generation} \times \text{Average Trip Length} = \text{Site VMT impact}$$

By itself, it does not measure roadway congestion, since the capacity of a road is not included. It can be adjusted to reflect congestion by dividing VMT by the segment capacity to produce a volume/capacity ratio.

It may be a better measure for growth management purposes because:

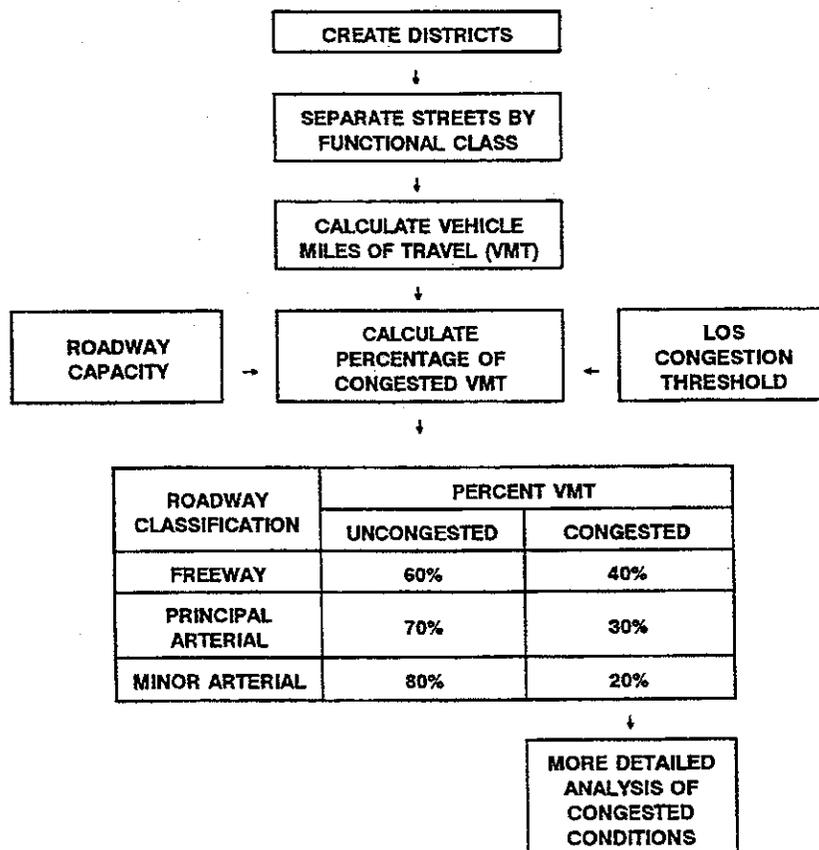
- It considers the length of trips as well as the amount of traffic generated by a project. As a result, developments further removed from urban centers will be measured as having greater impacts.
- It measures impacts of all development in a proportional manner rather than ignoring the cumulative effects of smaller projects. It provides a finer measure of the impacts of small developments which may not be picked up by a vehicles per hour measure.
- By its very nature, it rewards strategies which reduce vehicle trips generated such as transportation demand management programs or mixed use development.
- It can be used to measure area-wide performance for long-range planning purposes. HCM measures which are designed for traffic operations analysis at the intersection

## Level of Service Standards

level may be more difficult to apply to long-range planning. For area-wide planning, the VMT data for any set of roads can be simply added together for an area-wide VMT measure of usage. It can be divided by area-wide capacity for an area-wide average volume/capacity ratio. Rather than focus on intersection improvements, the VMT approach facilitates a broader look at where and how to best provide improvements which will offset a project's impacts. At the same time, it can measure each development's proportionate share of the improvement costs.

- The VMT concept can be adjusted to give credit for transit, ridesharing and high-occupancy vehicle lanes by including occupancy factors (Michael R. Birdsall & Associates, 1993).

Thurston County is an example of a Washington community which is developing measures for VMT reduction. The county will continue to use traditional roadway LOS methodologies to evaluate detailed intersection and roadway deficiencies. However, the county is developing a VMT approach to allow a more systematic assessment of corridor, subarea and regional roadway conditions for long-range planning purposes (JHK & Associates, 1993).



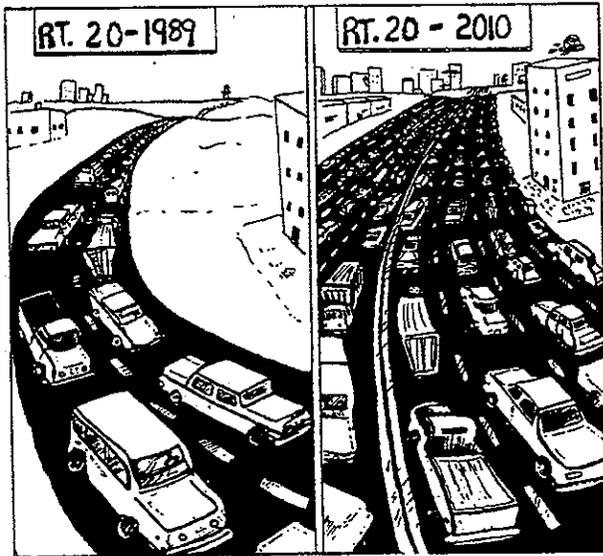
### A Proposed VMT-Based Methodology for Thurston County

*Flexible LOS Standards*

Other communities are seeking greater flexibility in their level-of-service standards which would allow some desirable development in congested areas. For instance, Concord, California, has the flexibility to approve projects with significant social or economic values which outweigh their traffic impacts. These beneficial projects might include schools, senior housing or recreation centers. Others, such as San Jose, California, exempt "intersections which serve a project but are under the control of another jurisdiction or the state (Dowling). Summit County, Utah, has distinguished two different types of service level standards: (1) those which are specified for capital improvements planning purposes and (2) those that provide a basis for project denial. A project will be denied if it doesn't meet transportation standards but not if adequate library facilities are not available (Summit County, Utah, 1993).

*Composite Multimodal Mobility Measures*

Many communities have switched their focus to moving people and goods instead of focusing solely on moving vehicles. They are recognizing that building more roads or lanes alone will never solve traffic congestion problems. There is greater recognition of the "if you build it, they will come" principle. Repeatedly, communities have found that new roads fill up to the point of congestion as fast as they can be built.



**If You Build It, They Will Come**

As a result, many communities are paying increased attention to the contribution of alternative modes of travel, such as transit, pedestrian or bicycle facilities, for meeting transportation needs. They are considering the combined performance of all modes of transportation to determine transportation adequacy. As Reid Ewing observes, "what gets measured gets done"(Ewing, 1992).

In other words, if these alternative modes are to get serious attention and funding, workable standards are needed to provide targets for performance. Otherwise, road improvements will continue to get priority attention. (Standards for transit and non-motorized transportation will be described in the next section.)

## Level of Service Standards

King County is developing a combined index for measuring adequacy called the Transportation Adequacy Measure (TAM). Early drafts of the TAM consider transit, non-motorized alternatives (such as pedestrian and bicycle facilities) and programs to reduce demand on, or increase effective capacity of, existing roads. The transportation adequacy measure (TAM) process begins with a measurement of traffic volume to roadway capacity to measure average congestion in each of the county's traffic zones. Earlier versions of the measure were adjusted or weighted with an "accessibility factor" which was based on trip length. The accessibility factor reflected and was intended to implement county policies encouraging shorter trip lengths, compact development and closer proximity between jobs and housing. The accessibility factor has been dropped in the current version of TAM in favor of an indirect but less complex approach to rewarding shorter trip length. The county will permit a higher volume/capacity ratio and lower LOS standard in urban activity centers and transit-oriented areas than in out-oriented, rural or resource areas. The TAM is further adjusted to account for transit by excluding segments of the transportation system having HOV facilities from the LOS evaluation. The rationale for this approach is that buses stuck in traffic together with automobiles will not improve overall LOS. When HOV lanes or exclusive bus routes are provided, they make a significant contribution to overall transportation LOS. As long as HOV facilities are operating at an acceptable LOS, travelers have a reasonable alternative to congestion. The county has also explored more complex measures for non-motorized facilities as described in a later section.

In the interim, the county will emphasize programming non-motorized projects for each transportation need identified in the transportation element.

Thurston County is exploring a measure to evaluate proposed projects against specific LOS requirements for roadways and checklists for alternate modes. The county will move toward combining modal measures as it gains experience with more quantitative measures of alternate mode actions (JHK & Associates for Thurston Regional Planning Council, 1993).

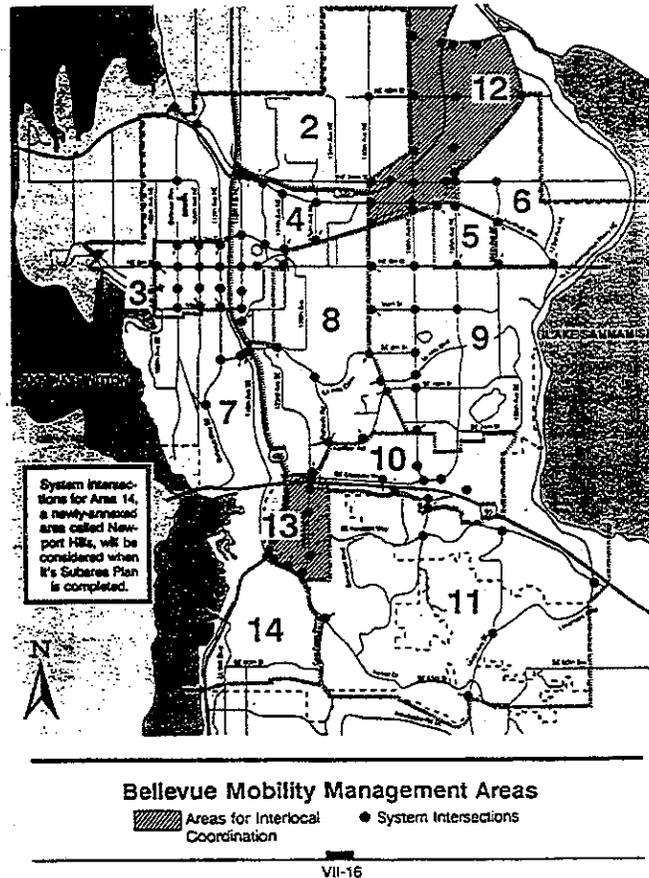
Such combined measures should reinforce efforts to address traffic congestion problems using a multi-pronged, multi-modal approach. In addition, they are more supportive of growth management programs which combat sprawl. They can be designed to allow a lower standard for roadway capacity in developed urban areas where streets are often congested. In urban areas, frequent transit service or other measures provide a compensating increase in overall capacity. By giving credit for the contribution of alternative modes, growth can be encouraged to fill in existing developed areas. Growth may otherwise be pushed to the urban fringe where roads are less congested and standards are easier and less costly to meet. Applying strict roadway standards within denser urban areas can then be counterproductive.

### *Differential LOS Standards*

Washington communities are also varying LOS standards in different types of areas to reinforce different growth management objectives. King County's LOS proposal specifies lower arterial standards, tolerating more congestion, in urban centers. A uniformly high LOS standard penalizes development in dense urban areas where congestion is greater and roadway LOS standards are more difficult to meet. Instead, the high standard may push development out into the urban fringe where it will be easier and less costly to meet those standards. Bellevue has recently reviewed its Traffic Standards Code which applied a strict LOS standard throughout the city. The city has changed direction because its studies indicate that the code may seriously hamper the city's efforts to encourage housing and

## Level of Service Standards

densities which can support transit downtown. The code, in general, appears to hamper beneficial development within the city. The city has drafted policies which would apply different standards within different "mobility management areas" to support planned land use patterns (Andresen and Murphy, 1992).



Montgomery County MD determines LOS standards for 27 subareas based on each subarea's availability of alternatives to the automobile. The availability of alternatives information is used to develop an index to determine whether the area can accept more development and tolerate higher traffic congestion. The alternatives considered include:

- Frequency of bus and rail service,
- Percentage of jobs and houses within walking distance of public transit,
- Ratios of sidewalks and bicycle paths to roads,
- Number of park-and-ride and secured bike-and-ride spaces at transit stops,
- Non-SOV mode shares for home-based work trips to and from the subarea (Replogle, 1992).

## Level of Service Standards

Many other communities within Washington are similarly experimenting with the differential standards. Snohomish County, for instance, has service levels ranging from C to F. They also recently added two new levels, F1 and F2, to apply to cases where congestion lasts longer than the one-hour peak which is typical for level F.

In summary, applying a lower standard in urban areas than in suburban and rural areas, supports efforts to encourage infill development and discourage sprawl. The varying roadway standards can be justified because alternate modes, possible in denser urban centers, can accommodate some of the transportation needs.

### *Measurements Which Support Other Human Needs*

The above measures still fail to address other human needs related to transportation such as comfort, convenience, safety, quality of the trip experience, freedom from pollution and so forth. Most communities have some types of standards to address these issues. However, as some neo-traditional planners suggest, we may be designing roads more to make cars happy than people happy. In designing roads for high speed travel, we may be sacrificing pedestrian comfort and safety, air quality, streetscape aesthetics and other features important to a community's quality of life. Neo-traditional planners suggest that we instead return to designing streets for all users, not just automobiles. Standards in neo-traditional developments emphasize reducing automobile dependence and minimizing travel distances even though travel speeds may be slower. Narrower street widths and buffering between pedestrians and automobiles are employed to provide a more comfortable pedestrian environment, for instance.

## Non-Motorized Standards

There is an increasing recognition that getting people out of their automobiles is an important strategy for reducing automobile congestion. As a result, bicycle and pedestrian facilities are regaining credibility as a viable alternative form of transportation. This is particularly true within urban areas where uses are close together and trips will be shorter. (Pedestrian and bicycle usage is greatest for trips of between one and five miles, according to the a CH2M Hill report). Traffic engineers and planners have long used LOS standards to evaluate how well arterial streets are performing. These LOS standards provide a clear benchmark for when additional improvements are needed to the transportation system. LOS standards for bicycle and pedestrian transportation adequacy have not been so clearly articulated. The *Highway Capacity Manual* briefly covers bicycles, but focuses on how bicycles affect automobile movements at intersections rather than defining what constitutes quality LOS for bicycle users. Where LOS standards have been used, they tend to be qualitative rather than quantitative measures. Recall Reid Ewing's observation in an earlier section that "what gets measured, gets done." Bicycle and pedestrian facilities will tend to take a back seat to those that serve automobiles unless more operational measures can be employed.

Bothell is focusing on providing an adequate quantity of bicycle facilities. Bothell's analysis indicates that the existing mileage of bicycle facilities per capita is .23 miles per 1000 population. If bicycle facilities were built on virtually all arterials and were 100 percent completed within 20 years, a standard of 1.1 miles per 1000 population would result. The latter standard would be particularly difficult to finance. Somewhere in between lies the

**Level of Service Standards**

appropriate standard. Bothell apparently will rely on expressed public perception of needed facilities, reflected in their capital improvements program, to establish its LOS. The LOS standard can then be used to determine requirements as individual developments are reviewed.

***Bicycle LOS Standards***

Several communities, including Thurston County, are developing checklists to elevate the attention non-motorized facilities receive. The checklist may consist of measures that would encourage bicycle or pedestrian transportation. For instance, the provision of bicycle paths or lanes of specified minimum widths, continuous routes, support facilities such as showers, storage lockers and secure parking areas and supportive forms of land use (such as mixed use development) may earn points toward achieving adequate service levels. A development proposal would have to earn points or meet a certain number of total conditions to meet the non-motorized standard. In addition, Thurston County incorporates the vehicle-miles-of-travel measure for vehicle trips. Providing pedestrian and bicycle facilities can reduce projected VMT thus helping to meet the LOS for adequate roadway provision.

NON MOTORIZED LOS CHECK LIST					
Action	Mode Split Tool	Subarea/Region	Corridor	Facility	Site
<b>Facilities</b>					
Integrated Sidewalks Provided			X	X	X
Sidewalks Connected			X	X	X
Bike Lanes Provided			X	X	X
Percent of Network with Facilities %		X	X		
- Bicycle					
- Pedestrian					
Bicycle Parking (lockers)					X
Showers at Buildings					X
Pedestrian Street Crossings (at-grade; separated)				X	X
Driveways Consolidated				X	X
<b>Implementation</b>					
Non motorized Facilities Programmed on CIP		X	X	X	
Programs Committed to Maintain Facilities		X			
<b>Policies</b>					
Adopted Non motorized Plan		X			
<b>Streetscape Design</b>					
Provide Convenient Shelters, Benches, Fountains, etc.				X	X
Define Pedestrian/Bike Zone				X	X
Provide Illumination				X	X
<b>Land Use</b>					
Mixed-Use Developments					X
Ground Floor Retail					X
Reduce Distances Between Land Uses			X	X	X
<b>Activities En-Route</b>					
Provide Pedestrian Transit Info Centers				X	X
Create Views and Focal Points				X	X
Provide Activities Along Sidewalks				X	X
* Directly Measurable Using Mode Split Tool o Indirectly Measurable Using Mode Split Tool					

Level of Service Standards

King County is exploring a very promising approach pioneered by Florida transportation planner Bruce Epperson. Epperson built on a bicycle safety measure first proposed by an Auburn University graduate student (Jeff Davis). The "Davis Bicycle Safety Index" is a mathematical model which relates bicycle safety (along road segments) to vehicle traffic speed, per lane vehicle traffic volume, width of outside traffic lane, pavement conditions and location factors. Pavement factors include points assessed for poor pavement or surface conditions such as potholes, drainage grates or railroad crossings. Location factors are points assessed for other hazardous conditions such as limited sight distance and cross traffic. Location factors also include points for factors contributing to safety such as raised center medians (which restrict cross traffic) and paved shoulders. He also developed a formula for evaluating intersection performance which considered traffic volume, cross street volume, type of signalization, and geometric factors (type of turning lanes, number of through lanes, restricted sight distance, substandard curb return radii). He then combined the road segment and intersection ratings for a combined bicycle safety index rating. Although his index was not entirely successful at predicting bicycle accidents, he did identify critical factors that affect bicycle user comfort, convenience and perception of safety.

Broward County and Hollywood, Florida, tested modified versions of the Davis road segment index developed by Bruce Epperson. The modified indexes placed greater weight on segments where narrow lane widths and high traffic vehicle speeds occurred simultaneously. Both jurisdictions eliminated the intersection index and the averaging of road segments into an overall rating for the road. Instead, they tracked the individual ratings for road segments. The revised index placed greater emphasis on measuring overall condition rather than predicting accident locations. The Epperson-Davis roadway condition index is represented by this formula:

**Epperson-Davis Roadway Condition Index**

$$RCI = \left[ \frac{ADT}{L} * 3100 \right] + \left[ \frac{S}{30} + \left[ \frac{S}{30} * \left( \frac{14-W}{2} \right) \right] \right] + PF + LF$$

RCI = Road Condition Index	W = Width of Outside Lane (ft)
ADT = Average Daily Traffic	PF = Pavement Factor*
L = Number of Travel Lanes	LF = Location Factor*
S = Speed Limit (MPH)	

\* See Appendix D for pavement and location factor values used in Hollywood, Florida.

Several difficulties still remain with the index. High level of bicycle use is not accounted for by the measure and may affect results. The level of experience of the cyclists also may affect results.

Dade County, Florida, slightly modified the formula by applying weights to the pavement and roadway factors (which lowered their relative contribution) and simplifying the points for rating these factors. The importance of the pavement and location factors was lowered after interviewing a cross-section of cyclists. The general finding was that these factors made a bad road worse but were not as critical as lane width and traffic volume. The modified Dade County formula follows:

**Dade County Version of the Roadway Condition Index**

$$RCI = [(ADT/L * 3100)] + [(S/30)] + [((S/30) * ((14-W)/2))] * 1 + (.03 * PF) + (.02 * LF)$$

<p><b>Pavement Factors (Weight: .03)</b></p> <p>Excellent pavement surface = 0          Good pavement surface = 1          Fair pavement surface = 2          Poor pavement surface = 3</p>	<p><b>Location Factors (Weight: .02)</b></p> <p>No cross-traffic generation = 0          Little cross-traffic = 1          Moderate cross-traffic = 2          Heavy cross-traffic = 3</p>
---	--

*Evaluation Tools*

<p>0-3    Excellent          3-4    Good</p>	<p>4-5    Fair          5+    Poor</p>
--	--

The basic theoretical model has promise. However, it needs further testing and calibration with empirical data as well as the perception of cyclists. It also does not directly measure other aspects of quality of service such as travel time for the bicyclist and continuity of the route and the presence of support facilities.

The Washington Department of Transportation (WSDOT) has prepared design guidelines for bicycle facilities. WSDOT's guidelines are dependent on terrain and type of bike path:

**Design Speeds**

Conditions	Min. Design Speed (MPH)
Open country (level or undulating): separate bike path in urban areas	20
Long down-grades (steeper than 4% and longer than 500 feet)	30

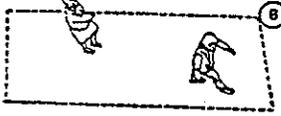
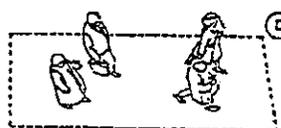
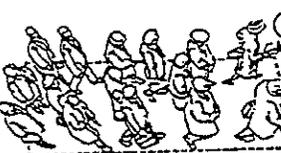
***Pedestrian LOS Standards.***

Pedestrian LOS, similar to bicycle LOS, has traditionally received less attention than automobile LOS. Thurston County's checklist, described and illustrated above, also addresses pedestrian LOS. The checklist considers pedestrian quality factors such as provision of continuous, connected sidewalk routes, defined street crossings, buffered pedestrian zones, pedestrian level lighting, sidewalk amenities and points of interest or activity. The checklist would be applied similarly to the approach used with the bicycle checklist described above.

The *Highway Capacity Manual* includes a methodology for measuring sidewalk adequacy. This methodology uses sidewalk density (number of square feet per pedestrian) which influences speed and convenience of movement to measure LOS. A community could apply

## Level of Service Standards

its highest LOS to be met on residential sidewalks, an intermediate LOS on arterial and collector streets and a lower LOS in retail business areas. The HCM density LOS is illustrated on the following page.

<p><b>LEVEL OF SERVICE A</b></p> <p><b>Pedestrian Space:</b> <math>\geq 130</math> sq ft/ped <b>Flow Rate:</b> <math>\leq 2</math> ped/min/ft</p> <p>At walkway LOS A, pedestrians basically move in desired paths without altering their movements in response to other pedestrians. Walking speeds are freely selected, and conflicts between pedestrians are unlikely.</p>	
<p><b>LEVEL OF SERVICE B</b></p> <p><b>Pedestrian Space:</b> <math>\geq 40</math> sq ft/ped <b>Flow Rate:</b> <math>\leq 7</math> ped/min/ft</p> <p>At LOS B, sufficient area is provided to allow pedestrians to freely select walking speeds, to bypass other pedestrians, and to avoid crossing conflicts with others. At this level, pedestrians begin to be aware of other pedestrians, and to respond to their presence in the selection of walking path.</p>	
<p><b>LEVEL OF SERVICE C</b></p> <p><b>Pedestrian Space:</b> <math>\geq 24</math> sq ft/ped <b>Flow Rate:</b> <math>\leq 10</math> ped/min/ft</p> <p>At LOS C, sufficient space is available to select normal walking speeds, and to bypass other pedestrians in primarily unidirectional streams. Where reverse-direction or crossing movements exist, minor conflicts will occur, and speeds and volume will be somewhat lower.</p>	
<p><b>LEVEL OF SERVICE D</b></p> <p><b>Pedestrian Space:</b> <math>\geq 15</math> sq ft/ped <b>Flow Rate:</b> <math>\leq 15</math> ped/min/ft</p> <p>At LOS D, freedom to select individual walking speed and to bypass other pedestrians is restricted. Where crossing or reverse-flow movements exist, the probability of conflict is high, and its avoidance requires frequent changes in speed and position. The LOS provides reasonably fluid flow; however, considerable friction and interaction between pedestrians is likely to occur.</p>	
<p><b>LEVEL OF SERVICE E</b></p> <p><b>Pedestrian Space:</b> <math>\geq 6</math> sq ft/ped <b>Flow Rate:</b> <math>\leq 25</math> ped/min/ft</p> <p>At LOS E, virtually all pedestrians would have their normal walking speed restricted, requiring frequent adjustment of gait. At the lower range of this LOS, forward movement is possible only by "shuffling." Insufficient space is provided for passing of slower pedestrians. Cross- or reverse-flow movements are possible only with extreme difficulties. Design volumes approach the limit of walkway capacity, with resulting stoppages and interruptions to flow.</p>	
<p><b>LEVEL OF SERVICE F</b></p> <p><b>Pedestrian Space:</b> <math>\leq 6</math> sq ft/ped <b>Flow Rate:</b> variable</p> <p>At LOS F, all walking speeds are severely restricted, and forward progress is made only by "shuffling." There is frequent, unavoidable contact with other pedestrians. Cross- and reverse-flow movements are virtually impossible. Flow is sporadic and unstable. Space is more characteristic of queued pedestrians than of moving pedestrian streams.</p>	

### Sidewalk LOS Based on Density

Sidewalk density may be particularly an issue in downtown areas of a populous central city. In such cities, density LOS standards can signal when wider sidewalks are needed to reduce congestion. For most parts of most communities density is not the main issue. The real need is generally for measures which assure a continuous, safe, direct system of sidewalks providing for travel between residences and centers of activity. They are particularly important along arterials and collectors and along frequently-used school routes. The HCM methodology, again, primarily addresses density and speed of travel.

John Fruin, in his book *Pedestrian Planning and Design*, notes a number of other attributes that facilitate walking. These include:

## Level of Service Standards

1. Safety, including physical separation of pedestrians from vehicle movements and provisions for pedestrians where they must cross roadways.
2. Security, including lighting and clear lines of sight.
3. Continuity, including a complete network linking residences with employment, shopping and recreation areas.
4. Convenience, including the ability to link to other modes, the ability to get (directly) to where you want to go (along barrier-free paths), and minimal delays.
5. System coherence, including integration of the facilities into the total urban setting, easily comprehensible, logical routes and appropriate signing.
6. Comfort and attractiveness, including appropriate weather protection and opportunities to rest. (Krzeminski, 1988).

LOS standards are needed which address some of these types of attributes.

The influence of land use patterns toward supporting pedestrian facilities should also be noted. While most trips of 0.1 mile are made on foot, the percentage of trips made by walking drops off substantially between 0.2 and 0.4 mile. The graph below illustrates this relationship. Pedestrian activity is greater within compact concentric patterns. For instance, in a 3 million square feet land area in the form of a concentric ring with a 1000 ft. radius, 50 percent of the trips would be walk trips. The same size area in a linear form (500 by 6000 sq. ft.) the capture rate for walk trips would be only 35 percent (Smith, S.A., et al, 1987). Because of the attraction between different land uses, mixed use development stimulates greater pedestrian activity as illustrated below. As an example, the Florida Department of Transportation suggests building a greater number of smaller elementary schools accommodating 300 to 400 students. The arrangement may better allow students to walk to nearby schools in their neighborhoods rather than require transportation.

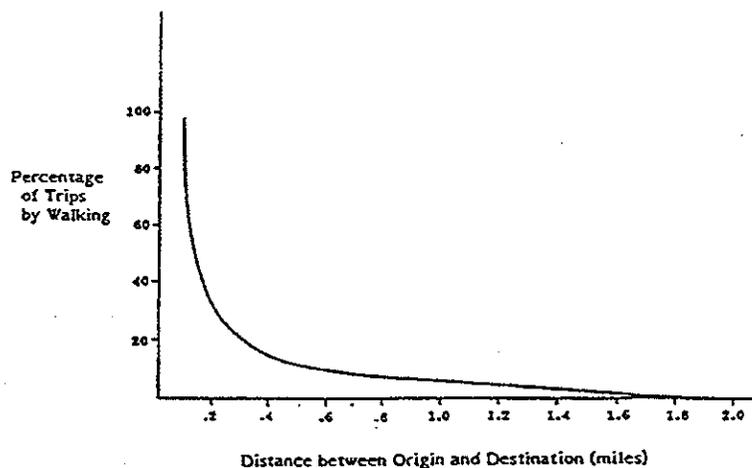


Figure 21. Percentage of midday trips by the walk made from an office building in a suburban activity center. (Source: Surveys at office building in Tysons Corner, Va.)

## Pedestrian-Oriented Development Can Increase Pedestrian Travel

Level of Service Standards

**Transit LOS Standards**

All communities planning under GMA must establish transit LOS standards. In the past, transit service standards have generally been set by individual transit providers, often separate entities apart from local government. Service standards tend to vary from place to place. They have also tended to be less readily quantifiable than roadway LOS standards.

There are several different categories of transit LOS standards commonly used. The two main categories of standards are supply side or demand side standards. Supply standards measure quantities of transit service supplied to an area. Common supply side measures include:

1. Amount of support facilities provided. Support facilities such as shelters, and park-and-ride lots contribute to user comfort and convenience and theoretically stimulate usage of the transit system.
2. Frequency standards (transit vehicle headways) which specify the expected time between successive bus/transit vehicle arrivals at stops along a transit route. In high density centers buses may arrive every five to ten minutes during peak hours. Headways (time between buses) of 30 to 90 minutes may be more achievable in suburban areas.
3. Access standards which specify where a route is located relative to population. For instance, such standards may state that x percent of the areas population shall be within 1/4 mile of a transit route.

King County's (Metro's) "Proposed Level of Service Guidelines for Allocating Service" illustrate supply side standards.

SERVICE GUIDELINES FOR CENTERS						
LAND USE DEFINITIONS						
SERVICE CONDITIONS	EMPLOYMENT DENSITY	POPULATION DENSITY	TRANSIT SERVICE ORIENTATION FROM URBAN RESIDENTIAL AREAS. (SEE TABLE 2: RESIDENTIAL STANDARDS)	TRANSIT FACILITY	HCT - REGIONAL SERVICE FREQUENCY (Rail or bus) (Minimum)	TLOS BETWEEN CENTERS BUS-ONLY SYSTEM MOST ROUTES: (Minimum)
URBAN CENTERS	> 15,000 in .5 mile of transit center or station. > 50 emplys gross acre	>15 D.U. (G.S.Q. acres)	Transit Service oriented as feeder system from surrounding urban residential areas	One or two rapid transit stations in urban core (1), transit center or station.	Peak 15 minutes or better Off Peak 30 minutes or better	Weekday Peak 30 min. or better Off Peak 60 min. or better  Augment with express service.
MANUFACTURING CENTERS (As defined by LU-47)	>15,000 & sufficient densities		Transit service designed to meet employee commute periods	Rapid transit station if LU-41 to 47. Transit center or hub if non-HCT but emp. densities.	Same as above if on HCT line. See orientation in Non-HCT.	Note: HCT system and service levels are contingent upon available financing.
ACTIVITY AREAS	Locally determined	Locally determined	Transit service oriented as feeder system from surrounding urban residential areas (see local service)	Rapid transit station, transit center, station or service hub.	Same as above if on HCT line	

## LOS Standards for Other Important Public Facilities and Services

Local jurisdictions will be choosing to establish service standards for many other types of public facilities. This section will present an overview summary of current standard practice and note issues related to service standards for these facilities.

### LOS Standards for Schools

Good schools are closely associated with the quality of life in Washington communities. Yet, recent national reports have documented a precipitous drop in U.S. student performance on standardized tests compared to students in other countries.

Schools, and the decisions which affect the quality of public education services, are not directly under the control of cities, towns and counties. School districts have the authority and responsibility to set standards for public schools.

However, it is increasingly clear that the decisions of schools and local governments affect each other. It should be equally clear that school districts and local cities and towns benefit from working together to achieve their respective objectives. School location does impact growth patterns and service costs. The quality of the education is a major factor in business relocation decisions. As a result, a good education system can enhance local economic conditions and the ability of its citizens to find rewarding jobs. Targeted education programs have helped address root causes of poverty, crime and other societal problems in some communities. Local government parks departments and schools often mutually benefit from joint development and use of school property for school and community recreation purposes.

Local government does have jurisdiction over land use and infrastructure decisions which affect school district operations. For a variety of reasons, traditional school funding sources are falling short of the demand for new school facilities. As a result, school districts are showing increased interest in impact fees which may be assessed through local government permit processes. Impact fees authorized under GMA may only be spent on improvements which are incorporated in the local government's capital facilities plan. Although school districts remain primarily responsible for school adequacy standards, local government has a growing interest in and influence over local school standards.

Standards which have been used to measure school adequacy include: (1) adequate building space related to student population, (2) site size for different types of schools, (3) student/teacher ratios which have been related to student performance and (4) school location (accessibility relative to population). These standards only indirectly measure of the adequacy of education services. However, they are commonly-used standards which both affect education adequacy and the land use interests of local government.

#### *State Standards—Building Space*

The State Board of Education has adopted space allowance and site size standards for different levels of schools. These standards are intended for the purpose of allocating state funding assistance for funding school building construction. Representatives from the state superintendent's office caution that they are not necessarily appropriate standards to

**Level of Service Standards**

measure school facility adequacy. Even so, because state funding covers only the amount of building construction allowed by the standards, they do influence local standard setting. Some communities do use these as adequacy standards, although many school district officials argue that they do not reflect the real needs of today's schools. They may particularly neglect the need for facilities beyond standard classrooms such as computer work space. Space standards specified in WAC 180-27-035 are as follows:

Space Allowance for State Matching Purposes	
Grade or Area	Maximum Matchable Area Per Student
Grades kindergarten through six*	80 square feet
Grades seven and eight	110 square feet
Grades nine through twelve	120 square feet
Classrooms for handicapped	140 square feet
*Kindergarten students are counted at 50 percent of the actual head count enrollments on October 1.	

In addition, state standards allow matching funding for 140 square feet of Vocational-Technical Institute space per full-time equivalent student and for 140 square feet of skill center space per one-half enrolled student.

State Space Allowance for Districts with Senior High Schools with Fewer than 400 Students	
Student Headcount Grades 9-12	Maximum Matchable Area Per Facility
0-100	37,000 square feet
101-200	42,000 square feet
201-300	48,000 square feet
301 or more	52,000 square feet

**Local Building Space Standards**

Many Washington school districts defer to state standards because they must be used in determining state funding. However, some cities and school districts have specified standards which better reflect their goals. For instance, the Olympia School District has established the following standard:

Olympia School District Building Space Standards		
School Level	Square Feet per Student	Students per New School
Elementary Schools	105	462
Middle Schools	115	600
High Schools	140	1200

Olympia's standard may be closer to national averages. According to Terry Michaelson, from the state Office of the Superintendent of Public Instruction, the national average for elementary schools is between 100 and 105 square feet per student. Communities in some other states do specify higher standards than typical Washington standards, for instance, Ann Arundel, Maryland uses 112 sq. ft., 144 sq. ft. and 150 sq. ft. for elementary, junior and senior high schools respectively (Nicholas, 1988).

**State Standard—Site Size**

The State Superintendent of Public Instruction may accept a school site if it meets site size standards specified in WAC 180-26-020. The minimum acceptable school site acreage is "five usable acres and one additional usable acre for each one hundred students or portion thereof of projected maximum enrollment plus an additional five usable acres if the school contains any grade above grade six."

**Examples of Other Site Size Standards**

The classic handbook *Urban Planning and Design Criteria* (Dechiara and Koppelman, 1982) suggests a somewhat higher standard:

Dechiara and Koppelman Site Size Standards	
School Level	Site Acreage
Elementary	12-14
Junior High	24-26
Senior High	40-42

Although less applicable in dense urban areas, site acreage for many Washington schools fall within this range. A case can be made for less acreage while still accommodating adequate building site area and area for recreational fields. This is particularly true if land is used efficiently through use of multistory buildings and programs which reduce the need for parking area.

**Local Class Size Standards**

The average number of students per class or per teacher (also referred to as student-teacher ratios) is often used as a measure of the quality of educational services. Studies have shown a relationship between class size and student performance. The following table provides examples of standards from several Washington communities:

**Level of Service Standards**

Class Size Standards—Sample Districts				
School District—No. of Students per Teacher				
Grade Level	Des Moines	Bothell	Bainbridge	Kent*
Kindergarten	23.5		22.0	26.0
Grades 1-3	24.0	24.5	22-23	26.0
Grades 4-6	26.5	24.5	27.0	29.0
Junior High	28.0	22.6	29.0	29.0
Senior High	28.5	22.3	29.0	31.0
Special Ed./Learning Center		12-14		10-15
Vocational Ed.		24.0		

\* Although these are Kent's current standards, they are seeking to lower the student-teacher ratio to an unspecified level.

Staff to student ratios tend to vary with the size of Washington jurisdictions as indicated in the following tables:

**Basic Education Staffing Ratios  
Actual 1988-89**

District Size (FTE Stdts.)	Pupil/Certificated Staff Ratio	Pupil/Certificated Instr. Staff Ratio/1	Pupil/Classified Staff Ratio
20,000+	18.5	20.0	43.8
10,000-19,000	19.0	20.5	52.1
5,000-9,999	19.2	20.7	54.9
2,000-4,999	19.0	20.6	56.9
1,000-1,999	18.9	20.5	59.1
500-999	17.5	19.1	55.9
300-499	15.6	17.3	51.5
100-299	12.3	13.8	37.3
Under 100	6.3	9.2	23.3
All Districts	18.7	20.2	52.3

1/ Includes teachers, library media specialists, counselors, occupational therapists, social workers, communication disorder specialists, psychologists, nurses, physical therapist, reading resource specialists and other support personnel.

Source: Report T-165B, School Business Services Division, Superintendent of Public Instruction, 1990.

## Level of Service Standards

Note that certified staff are those staff who are required to be certified by the state Office of the Superintendent of Public Instruction. Certified staff consists of administrators, teachers, and special services personnel (e.g., librarians, counselors, reading specialists and other support personnel). Classified staff consist of secretaries and custodians.

### *Location Standards*

Some communities are also adopting standards to assure that schools are in accessible locations relative to where students live. They are also concerned that schools are well-related to activity centers and major arterials and transit routes. *Urban Planning and Design Standards* (Dechiara and Koppelman, 1982) offers the following standards for school location:

Desirable and Maximum Distance between Residences and School	
Grade Level	Radius
Kindergarten	1/8 - 1/4 mile
Elementary	1/4 - 1/2 mile
Junior High	1/2 - 3/4 mile
Senior High	3/4 - 1 mile
(Low density rural areas generally require bus transport.)	

### *School LOS Issues*

Although these examples of standards may provide a starting point, there are a variety of issues which should be considered in developing LOS policy and standards:

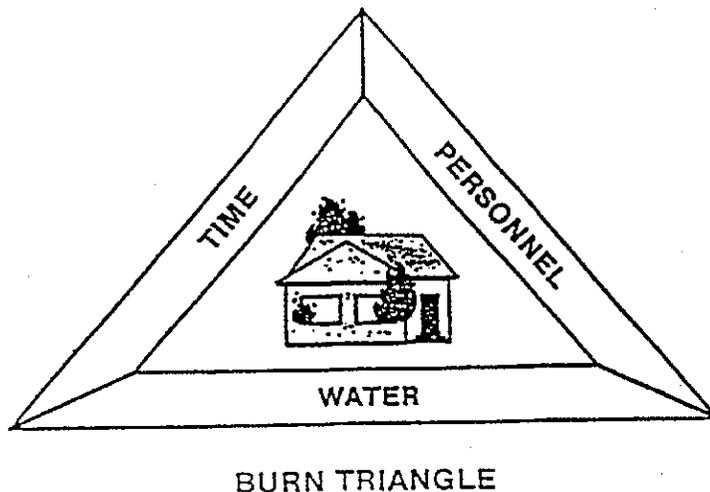
- Recognizing that schools can affect residential location decisions, traffic patterns and infrastructure demand, should local government take a more proactive role in school location decisions? For instance, should schools be directed to centrally located activity centers where infrastructure is available? Should more resources be provided to schools in inner city neighborhoods to attract better housing development? Should local government work with schools to reduce student single occupancy vehicle trips (vehicle trips with no passenger in addition to the driver)? What types of programs could reduce vehicle trips and parking without shifting student parking to surrounding residential streets?
- To what extent do relocatable (temporary, portable) classrooms serve as adequate space? For instance, Calvert County, Maryland officials recognize their value toward increasing a school's temporary capacity. They also observe that "many relocatables tend to overburden a school's non-classroom facilities, such as media centers, cafeterias, music rooms" and others (Calvert County, Maryland, Resolution No. 9-88)
- To what extent should state standards be augmented with higher local standards? Are we willing to pay for these higher standards through impact fees and other measures? How can local government work with school districts to establish mutually beneficial standards for educational services? How can local government and schools benefit from joint use facilities such as recreation and library facilities?

## Level of Service Standards

- To what extent is building square footage or class size an appropriate measure of the quality of educational services? They are measures of what is put into producing the educational service without directly measuring the quality of the service resulting from these inputs. Local government clearly has a role in ensuring adequate, suitable land area for schools. What alternate types of standards more directly measure resulting quality? Is the relationship between the resources put into education and the resulting quality of education adequately understood? What is the appropriate role of local government in influencing these effectiveness standards? Appendix G includes results-oriented measures for school education programs.
- How can cities work with school districts to meet the needs of an increasingly diverse population?

## **Fire LOS Standards**

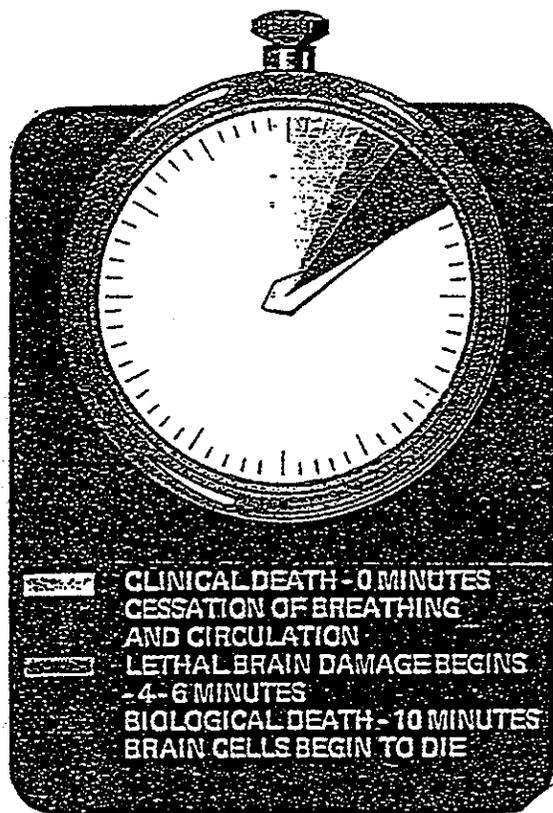
Fire districts and local communities typically rely on three general types of standards to measure fire service performance. They parallel three types of resources that are considered essential for successful fire protection programs—time, personnel and water. The following figure from the city of Kirkland's *Fire Protection Master Plan* (1991) illustrates these interrelated components or resources.



### ***Response Time and Station Location***

A quick response time is critical in the case of fire fighting. Research indicates that a room fire can progress from its ignition to flashover (simultaneous ignition of the room and all contents) in six to nine minutes (ICMA, 1987). In other words, it will be much more difficult to contain a fire after six to nine minutes. Response time is also critical to

successfully respond to emergency medical calls. As the following graph from the city of Kent Fire Department illustrates, brain damage will occur from lack of oxygen after four to six minutes. A victim's recovery chances are greatly reduced after that time. One of the main factors in providing quick response time is the location of fire stations and equipment readily accessible to areas which must be protected.



**A Victim's Recovery Chances Are Greatly Reduced After 4-6 Minutes**

The National Fire Protection Association recommends that an engine company be located within two miles of residential areas. It should be located within one and one-half miles of commercial areas and within one mile of buildings that require a 5,000 gallon per minute fire flow. The following table illustrates the relationship between station location, staffing and response time.

## Level of Service Standards

Fire Flow Required	Total Suppression Personnel Required	Personnel Required to Respond Within a Time (min.)									
		2.5	3.0	3.5	5.0	6.5	7.5	9.0	10.0	11.5	12.5
250	3				3*				3		
500	6				6*				6		
750	9				6*				9		
1,000	12				6*				12		
1,500	15				6*				15		
2,000	18			6	12	18					
2,500	21			6	12	21					
3,000	24			6	12	18	24				
3,500	27			6	12	18	27				
4,000	30			6	12	18		30			
4,500	33			6	12	18		33			
5,000	36		6	12	18	24		36			
5,500	42		6	12	18	24		42			
6,000	48		6	12	18	24			48		
6,500	54		6	12	18	24			54		
7,000	60		6	18				30	60		
7,500	66		6	18				30		66	
8,000	72		6	18				30		72	
9,000	84	6	12	24	30				42	84	
10,000	102	6	12	24	30					48	102
11,000	120	6	12	24	30						120
12,000	132	6	12	24	30						132

\*Increase to 10 minutes if buildings are one and two-family dwellings with an average separation 100 feet.

### Relationship Between Station Location, Staffing and Response Time

The Washington State Association of Fire Chiefs recommends an average response time of five to six minutes. Note that response time standards usually measure the time from when a dispatch call is first received to the time of arrival of the first fire fighting company. In other words, it includes processing time by alarm dispatchers and firefighter reaction time. The above table reports only the portion of the response time spent on the road (travel time). The following table provides several examples of local fire department/district response times (from receipt of call to arrival on the scene).

Average Response Time—Sample Washington Communities				
Federal Way	Bainbridge	Olympia	Wenatchee Urban Area	Kirkland
5 min. ave. emergency	5.08 min.	6.5 min. to 95% of pop.	6 min.	5 min. to 70% of pop.*
* Kirkland long term target—5 min. 90% of pop.				

Some communities in other areas specify longer response times in more outlying areas. For instance, Boulder, Colorado, has adopted an 8 minute response within its annexation area outside the city. Sprinkler requirements help keep fires from getting out of hand with the longer response times.

## Transportation Concurrency and Traffic Levels Of Service (LOS)

### - A Briefing Paper Prepared for the City of Sultan Planning Board

#### What is Transportation Concurrency?

Transportation Concurrency is a policy tool used to ensure that adequate transportation facilities and services are in place at the time of new development approval, or that the community has made adequate provisions to address transportation impacts from development. Transportation concurrency links a communities land use plans with their transportation and capital improvement plans, providing a tool for managing growth in the community.

Sultan's transportation concurrency ordinance (SMC 16.108) is a requirement of the Washington State growth Management Act (RCW 36,70A.070 (6) (b)).

#### What are Transportation Level of Service (LOS) Standards?

"LOS" is the standard of operating performance that the local government identifies as appropriate for a service system. As a tool, LOS standards can be applied to all public service systems; e.g., municipal water systems, sewer collection and processing systems, students per classroom, acres of park land per unit of population, etc. GMA requires the use of LOS for transportation systems.

To determine traffic LOS, the actual volume of traffic is compared to the roadway's capacity to carry that volume (i.e., volume over capacity, or V/C). For any volume of traffic, the LOS is a function of roadway functional classification and physical characteristics including, width and number of travel lanes; shoulder widths; types of intersections (signals/stop signs) etc.

The City can apply Levels of Service for its public roads ranging from "A" (free-flow traffic without delays), through "F" (congestion and gridlock). Level "D" represents an efficient flow of traffic without excessive delays related to volume and congestion. Below is a description of level of service:

Level A - free flow, low volumes and densities, high speeds. Drivers can maintain their desired speeds with little or no delay and are unaffected by other vehicles. At LOS A, 0-60% of available transportation capacity is utilized. A 3 mile auto trip on arterials with a 35 mph posted speed would take approximately 6 minutes.

Level B - reasonably free flow, operating speeds beginning to be restricted somewhat by traffic conditions. Drivers still have reasonable freedom to select their speeds. At LOS B, 60-70% of available transportation capacity is utilized. The same 3 mile trip would take approximately 7 minutes to drive.

Level C - speeds remain near free flow speed, but freedom to maneuver is noticeably restricted. At LOS C, 70-80% of available transportation capacity is utilized. The same 3 mile trip would take approximately 9 minutes.

Level D - speed begins to decline with increasing volume. Freedom to maneuver is limited and level of comfort afforded the driver is less. At LOS D, 80-90% of available transportation capacity is utilized. The same 3 mile trip would take approximately 11 minutes.

Level E - unstable flow, with volume at or near capacity. Freedom to maneuver is extremely limited and level of comfort afforded the driver is poor. At LOS E, 90-100% of available transportation capacity is utilized. The same 3 mile trip would take approximately 15 minutes.

Level F - breakdown in traffic flow. Both speeds and volume can drop to very low levels. At LOS F, the system has utilized over 100% of available transportation capacity. A 3-mile trip could take over 20 minutes and be quite irritating.

What is Sultan's Traffic LOS Standard?

The City's current traffic LOS standard is "B" as adopted in the existing Sultan Comprehensive Plan Transportation Element. This standard represents the lowest operating level for a given street or intersection allowed during the peak hour period measured against the planned traffic capacity. This means that during the peak hour, we expect that between 60 to 70% of the available street capacity will be used with no noticeable delay in travel times.

Sultan's traffic LOS standard is unusually high compared to City's across the State. A comparison of adopted traffic level of service standards from neighboring and similar size cities is shown in **Table 1**.

City	2006 Population	Adopted Traffic LOS Standard
Sultan	4,440	B
Monroe	16,170	D
Snohomish	8,920	D
Skykomish	210	C
Fife	6,100	D
Yelm	4,600	C/D with F at some intersections
Sequim	5,000	D
North Bend	4,700	D
Sumner	9,000	D with some F
Lake Stevens	9,650	C/D
Woodinville	10,350	E
New Castle	9,200	D with some E
WSDOT	On US-2 through Sultan	D

How are Transportation Concurrency and LOS Standards Applied?

Before the City can approve an application for development, a determination must be made that traffic generated by the proposed development will not create a condition where the LOS standard for the roadway system is exceeded, or that the City or developer will be able to make traffic improvements to ensure compliance with the LOS standard of B. In short, if a proposed development is likely to exceed the established LOS standard, the development cannot be approved.

### Isn't Transportation Concurrency Supposed to Stop Growth?

No. Unfortunately there are quite a few misunderstandings about transportation concurrency. Specifically, it is often misunderstood to be a way to stop both new development and new people from coming into a community. State law, the Washington State Administrative Code (WAC) 365-195-510 Concurrency (3) (b) specifically states "Levels of service should be set to reflect realistic expectations consistent with the achievement of growth aims. Setting such levels too high could, under some regulatory strategies, result in no growth. As a deliberate policy, this would be contrary to the act."

The State Growth Management Act (GMA) requires cities and counties to define balance in achieving 14 major goal statements. The GMA provides general framework legislation, but leaves the detail up to cities and counties to balance competing interests while managing (not stopping) growth and development. Transportation concurrency is just one of the policy tools that local planners can use to help manage a community's growth in a responsible manner.

### The LOS Should Reflect The Projected Demands Of The Future Land Use Map

GMA requires that transportation LOS standards be adopted within the Transportation Element, and that the traffic volumes and flows generated from the realization of the land uses and densities of the future Land Use Map be supported within that LOS standard. Jurisdictions must show in the Transportation Element how they intend to fund and construct the capital projects necessary to maintain the LOS as the land uses and densities on the Future Land Use Map become a reality on the ground.

### If LOS Cannot Be Maintained, What Options are Available?

If the LOS cannot be maintained in the face of increasing demands, the land uses and densities on the Future Land Use Map of the comprehensive plan must be revisited to assess whether they are realistic in light of the ability to capitalize the construction of improvements needed to serve them at the designated LOS. Alternative to amending land uses or densities would be to develop strategies to encourage less driving such as better transit service and transportation demand management (TDM) strategies (see page 6). Communities can also consider revising their LOS standards.

### There Are Consequences Associated With the Selected LOS Standard?

Designating an appropriate LOS standard is of fundamental importance for numerous reasons, including the following:

- Inherent to the selection of an LOS standard is an understanding of qualitative values. For example, for drivers there will be a rate of traffic flow experienced by the driver, who depending upon how efficiently he/she moves along the road, will be either pleased or irritated. Whereas, for residents or businesses occupying the lands adjacent to the roadway, there will be a quality of living and/or working environment influenced largely by the volume of traffic and its rate of flow.
- The selection of an LOS requires financial commitments; e.g., designating a section of roadway which serves a growth area with a LOS of "A" for qualitative reasons (e.g., to

protect a residential environment), will require a greater expenditure of capital funds over time, than would a LOS of "C" or "D".

- Selecting and maintaining a LOS requires citizens and decision-makers to deliberate over land use, and design considerations. For example, selecting a LOS standard on a travel corridor designated as a major arterial requires design considerations such as the number of lanes, width of intersections and traffic control type (signals, stop signs). Land use considerations include maximum land use densities and types of land uses.

#### What are the Costs to City Taxpayers?

When new public streets are constructed, everyone has access to them. Public tax dollars will be used to pay for the "public's share" of whatever transportation concurrency solution is adopted. That's what state law requires. This means that if the City as a community decides to expand streets to provide for constantly free-flowing traffic during the rush hour, then residents should expect to pay higher taxes to support and maintain that choice.

Wider streets would mean more public right-of-way dedicated to asphalt and concrete impervious surfaces, more real estate purchases for storm water detention, including the possible purchase of yards, homes or commercial buildings for additional right-of-way. Wide streets would also require that more tax dollars be dedicated for maintenance and repair, which in the long-run may not reduce peak hour traffic congestion. The end result would simply be wider streets, constructed at greater public cost, that are not very heavily used during the non-peak hours.

The cost of wider streets is not only measured in dollars. Wide streets make pedestrian crossings much more challenging, especially for school children, physically-challenged individuals, and seniors. Wider streets would change the look and feel of neighborhood areas and reduce the already limited supply of urban land, limiting infill opportunities.

#### Is Sultan's LOS Standard of B a Realistic Standard for Managing Planned Growth and Development?

In 2004, the City updated its Comprehensive Plan creating a vision for development of the community. The vision describes a more densely populated urban community with additional opportunities for housing and employment growth. Based on the City's 2025 land use plan, the City would grow to a population of 11,119 and an employment level of 2000 workers. This vision was articulated in the adopted goals, policy objectives and comprehensive plan Future Land Use Map and zoning which became the foundation of the Sultan Comprehensive Plan. The City is now faced with making this land use vision a reality.

To support the City's land use vision, the Transportation Element envisions a transportation system emphasizing completion of an arterial grid to provide ways for people to travel within the City while reducing reliance on US-2. The transportation vision also includes completion of pedestrian, bicycle, and upgraded transit service as well as TDM strategies to help reduce the reliance on the single occupant vehicle.

Recently, as part of the Transportation Element revisions project, traffic forecasts and LOS analysis based on the City's 2025 Future Land Use Map were completed. The traffic forecasts and subsequent LOS analysis reveals that the City's LOS "B" standard with its 60-70% use of transportation system capacity may not be attainable on all City streets during the PM peak hour even with the implementation of recommended improvements to transit service, enhanced nonmotorized facilities and TDM strategies.

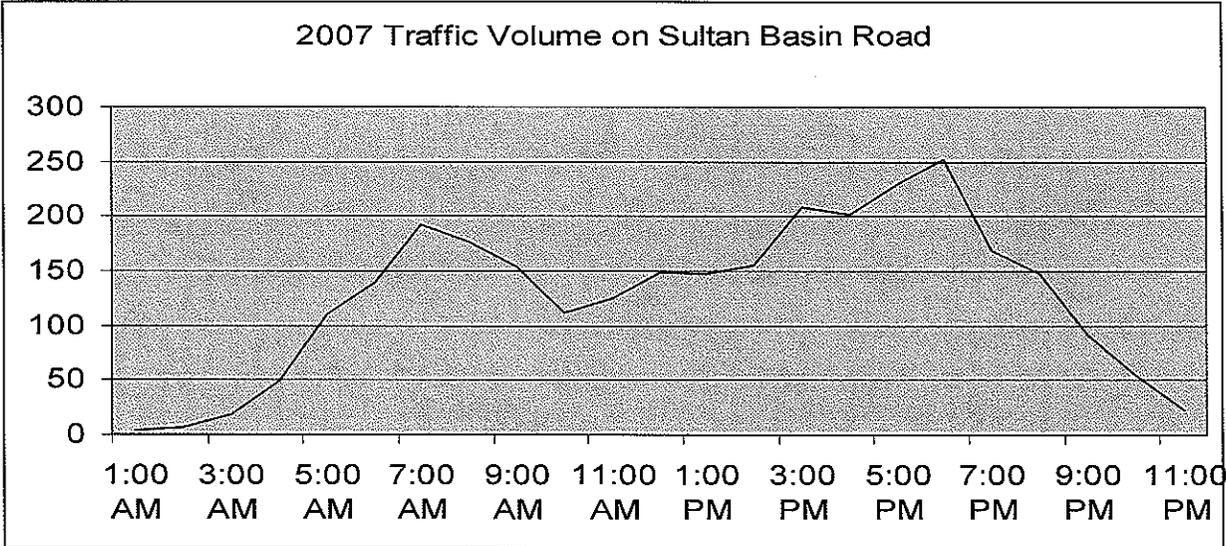
In order to maintain LOS "B" during the PM peak hour, additional traffic lanes would be needed on most major City streets, and intersections would need to be widened and signalized across the City. This may be too costly and disruptive to the community and the environment. With the exception of the afternoon (PM) commute rush hour, the City's street system will work well in the future with modest improvements including:

- ✓ Building a connecting east/west arterial to provide for traffic circulation outside of US-2,
- ✓ Reconstructing rural roadways to urban design standards,
- ✓ Selected arterial two-way-left-turn-lane widening, and
- ✓ Providing facilities to providing safe nonmotorized travel.

However, during the afternoon PM peak hour, traffic level of service is forecasted to fall to LOS C or D on segments of the arterial system. Maps of 2025 forecasted traffic volumes, resulting PM peak hour LOS, recommended street improvements and nonmotorized projects are included in your packet.

In other words, the transportation concurrency debate is all about the perception of convenience of driving during one hour of the day and the types of sacrifices people are willing to make. During the rest of the day, traffic volumes are much lower. **Figure 1** demonstrates actual 2007 traffic volume throughout the day on Sultan Basin Rd.

**Figure 1**



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A more efficient use of the City's transportation investments would be to allow a lower LOS standard to be applied during the peak hour, similar to what your neighboring cities and cities of comparable size are using as their concurrency standard (see Table 1).

#### Why can't developers pay for all these costs?

Developers pay significant fees for traffic impacts caused by their new projects. For instance, developers are required to meet City street design standards, SEPA mitigation review for traffic safety impacts, pay traffic impact fee charges, and provide transportation concurrency evaluations and improvements.

These requirements result in street improvements, new traffic signals, sidewalks, bike lanes, curbs, gutters, storm water retention facilities, and other transportation improvements. However, we must remember that each of us has added to the growth of a community and that each of us contributes to traffic congestion every time we drive an automobile. There is a public share for new transportation facilities because everyone will use and benefit from them, not just the new residents of the development project.

#### Transportation Demand Management (TDM)

New capital projects are not the only way to expand the capacity of an arterial system. Additional capacity can be obtained through "transportation demand management" strategies. Such strategies often, but not always, include incentives and/or disincentives.

Examples of TDM strategies recommended in the City's Transportation Element include:

- staggered work shifts at employment sites which diffuse peak traffic volume over a longer time period, which "decongests" the peak hour;
- the addition or extension of a bus routes, which may entice some commuters to leave their car at home or at a park and ride lot;
- Expand, improve and site additional park and ride lots;
- Ridesharing incentives such as paying commuters to carpool or vanpool;
- charging for parking at the work site; and
- Promoting public awareness programs that encourage TDM strategies.

All these strategies serve to either "spread" peak traffic demand over a greater number of hours, or increase the overall "vehicle occupancy rate." Both outcomes improve the V/C ratio and traffic LOS. As part of the revisions to the Transportation Element, we would like you to revisit and consider which of these TDM strategies could be implemented within the City to help offset the growth of traffic.

D.6

LEVEL OF SERVICE ANALYSIS  
POLICE DEPARTMENT

1994 Comprehensive Plan Level Of Service (LOS) 2 Vehicles / 1,000 population

2004 Comprehensive Plan Level of Service (LOS) 2.6 Officers / 1,000 population

2003 (EIS) Existing Officers	20 year Requirement	20 year deficit
10	29	19
2005 Existing Officers	2005 Requirement (4225 pop)	Current deficit
9	10.98	1.98

Cost per officer \$110,878.00 includes personnel, training and equipment costs.

Cost to meet LOS requirement of 2.6 officers \$ 288,282.80. or \$288.28/capita.

Average household size of 2.7 X \$288.28 equals \$778.36 / lot or household unit.

142.5 units provides funding for one officer.

**16.108.060 Standards for concurrency.**

The city of Sultan shall review applications for development, and a development approval will be issued only if the proposed development does not lower the existing level of service (LOS) of public facilities and services below the adopted LOS in the comprehensive plan. A project shall be deemed concurrent if one of the following standards is met:

A. The necessary public facilities and services are in place at the time the development approval is issued; or

B. The development permit is issued subject to the condition that the necessary public facilities and services will be in place concurrent with the impacts of development; or

C. The necessary public facilities and services are guaranteed in an enforceable development agreement to be in place concurrent with the development. "Concurrent with the development" shall mean that improvements or strategy are in place at the time of the development or that a financial commitment is in place to complete

the improvements or strategies within six years of the time of the development. (Ord. 630 § 2[16.12.060], 1995)

**16.108.120 Concurrency determination – Police protection.**

A. The city of Sultan will provide level of service (LOS) information as set forth in the city of Sultan comprehensive plan.

B. If the LOS information indicates that the proposed project would not result in a LOS failure, the concurrency determination would be that adequate facility capacity at acceptable LOSs was available at the date of application or inquiry.

C. If the LOS information indicates that the proposed project would result in a LOS failure, the concurrency determination would be that adequate facility capacity at acceptable levels of service was not available at the date of application or inquiry. (Ord. 630 § 2[16.12.120], 1995)