

Draft of April 19

**Long Range Regional Transportation Plans:
A Comparative Analysis**

Introduction

As the Capital District Transportation Committee develops its New Visions 2030 plan, it is helpful to compare the current (New Visions 2021) plan to those in other metropolitan areas.

Several questions arise regarding the “reach” of CDTC’s plan: Is CDTC being too conservative with regard to system expansion and enhancement? Do other MPOs expect to accomplish more over the next 20-25 years? Are their plans realistic regarding funding? How does rapid population growth affect the need for major transportation expansion? Do other metropolitan areas anticipate keeping pace with growing travel demand?

To gain some insight into these issues, the CDTC staff has examined the long range regional transportation plans of fourteen metropolitan areas (including the Capital District). Several are only slightly larger than the Capital District (Raleigh-Durham, Tucson, Nashville, Austin, Buffalo, Portland, and Columbus). The group also includes larger areas of varying growth rates: Baltimore, Pittsburgh, San Diego, Phoenix, Seattle, and Atlanta. About half of the regions contain state capitals (Atlanta, Austin, Columbus, Raleigh, Phoenix). A handful of additional areas were examined, but could not be included in the list due to deficiencies in the documentation of the long range plans.

Analysis

The budgetary feasibility and the degree of system expansion and enhancement of each MPO’s plan were examined through a cursory review of the MPO’s regional transportation plan document. One danger in such an examination emerges from the differing definitions and practices used by MPOs in formulating and presenting their regional plans. Plan horizons vary, ranging from 2021 to 2030. Treatment of unfunded needs varies. Explicit documentation of system preservation needs is present in some plans, not in others. Only the Capital District’s plan includes intermodal elements (port, airport, rail stations). Additionally, transit operating expenses are shown in only a handful of plans.

To minimize inconsistencies among the plans, a “lowest common denominator” of system elements was identified. This resulted in a comparative analysis with a focus exclusively on system expansion and enhancement, and a near-exclusive focus on *capital* expenses. The following rules describe the calculation of the budgetary values for system expansion and enhancement.

1. The costs for intermodal elements *are not* included.
2. Rehabilitation, replacement in kind and routine maintenance costs *are not* included.
3. Base and incremental transit operating costs *are not* included.
4. Base and incremental highway operations costs, including Intelligent Transportation System (ITS) operations, *are not* included.
5. Highway widening, intersection improvements and highway construction costs *are* included.
6. Capital costs of ITS initiatives *are* included.
7. The annual costs of Travel Demand Management (TDM), smart growth, Transit Oriented Design (TDM) and other initiatives *are* included.

Regarding fiscal constraint for the long range plan, the analysis examines each plan based on the presentation of fiscal constraint made by the MPO. That is, if the MPO states something to the effect of, “The fiscally constrained plan totals \$3.5 B over twenty years, but there is another \$1.5 B in needs for which there are no funds and these projects will likely wait,” then the plan is considered to total \$3.5 B. On the other hand, some MPOs state something more like, “The long range plan totals \$5 B, of which \$3.5 B will be supported by existing sources and the balance by new revenues expected to be provided in coming years.” In this case, the analysis treats the plan as a \$5 B plan. Many of the MPOs in the latter group point to a history of special state funding programs or federal earmarks that the MPO expects to be repeated in coming years.

This self-definition reflects the assertion of each MPO that the official plan reflects “reasonably expected revenues”, as required by federal rules.

Fact sheets summarizing each of the fourteen plans are included in the appendix to this report.

Findings

The following findings are evident from the examination of the fourteen MPO plans.

1. System expansion plans in growing areas are very substantial and expensive.

Table 1 presents the gist of the data, presented in terms of regional size and growth, relative to the annual budget for system enhancement and expansion. As is seen in Table 1, all metro areas expecting to witness growth of 30,000 new residents per year or greater have annual system expansion budgets of at least \$325,000,000. Two metropolitan areas experiencing rapid growth have adopted plans calling for between \$1.0 B and \$1.65 B annually in system expansion.

The content of long range plans in growing areas includes extensive highway widening and new highway construction. Most but not all plans include rail transit construction as well. Management and operations initiatives, ITS and TDM are often (but not always) identified as a major component of the plans, but if enumerated the budgets are generally at a scale well below that of the highway construction program.

In many metro areas, basic system preservation commands little attention. For instance, out of Atlanta’s \$40 B fiscal plan, \$5 B goes to highway system preservation and \$8 B covers the cost of continuing current levels of transit service. The \$27 B balance is split between highway expansion (\$12.7 B) transit expansion (\$9.8 B) and transit service expansion (\$3 B). Bike/ped projects, TDM, planning, operations and management initiatives and other system enhancements account for 4% of the expansion budget. Nashville’s project list includes only \$210 M out of \$3.9 B for highway and bridge rehab and bus replacement projects. The remainder goes for system expansion. In contrast, 2/3 of Buffalo’s capital budget is for system preservation.

The differences among MPOs regarding treatment of system preservation reflect several factors. First, in rapidly growing areas, many facilities are targeted for expansion when (or before) reconstruction is needed. Thus, essential reconstruction activity shows up as part of the system expansion budget. As a result, the calculated cost per year for system expansion is not a perfect representation of the pace of system *improvement*. In a region such as the Capital District, pedestrian improvements, signal upgrades, landscaping and driveway consolidation and occasional traffic channelization takes place in the context of system preservation. Thus in the Capital District and Buffalo particularly, the values in Table 1 significantly understate the pace of system improvement.

Second, in many metro areas the MPO is the forum solely for determining priorities for system expansion. Routine rehab and replacement projects are assumed to be the responsibility of the owning entity and the budget for these activities does not appear on the MPO’s TIP or Plan.

**Table 1
Long Range Regional Transportation Plan Budgets**

	Current Population (thousands)	Future population (thousands)	additional population added per year (thousands, annual percentage)		Cost per year for system expansion (\$ M)
Albany	780	832	3	0.33	\$42
Atlanta	3,699	4,814	45	1.21	1,045
Austin	1,015	2,071	38	3.72	328
Baltimore	2,471	2,741	11	0.44	218
Buffalo	1,170	1,252	3	0.28	63
Columbus	1,226	1,645	17	1.37	134
Nashville	1,098	1,471	15	1.36	148
Phoenix	3,097	6,140	101	3.28	467
Pittsburgh	2,561	2,687	4	0.16	420
Portland	1,172	1,667	25	2.11	213
Raleigh-Durham	830	1,534	28	3.39	180
San Diego	2,814	3,855	35	1.23	872
Seattle	3,215	4,536	44	1.37	1,650
Tucson	891	1,400	20	2.29	120

Population is the plan’s base year population for the self-defined metropolitan area. Albany’s population includes the four-county Capital District minus the town of Moreau. Annual percentage increase is simple ratio of annual average absolute growth divided by current population.

2. Major expansion plans rely on substantial revenue programs beyond federal aid.

The expansion cost per capita of some of these regional plans is daunting and requires significant new revenue. This revenue cannot be assumed to be derived primarily from the new activity, but must come in large part from existing residents. Tax increment financing, use of developer mitigation fees and similar funding schemes to place the burden of system expansion primarily on new residents or new activity is a relatively minor component of the various plans. As a result, the annual cost per resident (calculated at the eventual future population size) for system expansion runs as high as *seven times that represented in CDTC's New Visions 2021 plan*.

To get a handle on the fiscal reach of MPO plans, it is helpful to view the expansion plans in relationship to the size of the federal transportation program. A reasonable estimate for current federal transportation aid to metropolitan areas (summed over all highway and transit programs) is between \$100 and \$150 per capita annually. CDTC's current 2003-08 TIP totals \$590 M, of which 80% or \$472 M (\$94 M per year) is federal funding. This value equates to \$121 per capita, which may be considered fairly typical. CDTC confirmed in the original New Visions plan that the Capital District's share of contributions to federal sources used for transportation programs roughly matched its funding allocations; a background document at the Seattle MPO's web site provided comparable per capita data.

All metro areas expect and receive some degree of discretionary or earmarked funds as part of the \$100 - \$150 per capita value. In practice, these earmarks do not significantly change the per capita amount. For instance, CDTC's TIP includes \$30 M in assumed earmarks, nearly \$8 of the \$121 per capita annual value. Even a one-time federal commitment to something as large as a \$1 B rail project in a metro area of three million people increases the total federal funding by only about \$13 per capita per year over 25 years.

From this perspective, a system expansion plan that calls for an additional \$50, \$100 or \$200 per capita per year is quite aggressive. Table 2 presents the per capita expansion budgets of the various MPO plans. Given the \$100 to \$150 per capita annual federal funding estimate (which must to some degree cover system rehabilitation and replacement as well as expansion), any expansion budget requiring much beyond \$100 per capita must be seen as one predicated on substantial expansion resources beyond the federal program.¹

¹ The Capital District's and Buffalo's plans represent a commitment of approximately \$50 per capita per year to system expansion. This is fairly aggressive, given the need in these areas for substantial reconstruction. Nashville, on the other hand, commits nearly its whole program to expansion – and achieves a \$100 per capita per year expansion value. Any value much beyond \$100 assumes significant sources of revenue beyond typical levels of state taxes, local tax options and federal aid.

Table 2
Regional Transportation Plan
Expansion Budgets
“Fiscal Reach”

	Future Population (thousands)	Cost per year per capita for expansion
Albany	832	\$50
Atlanta	4,814	217
Austin	2,071	158
Baltimore	2,741	79
Buffalo	1,252	51
Columbus	1,645	81
Nashville	1,471	100
Phoenix	6,140	76
Pittsburgh	2,687	156
Portland	1,667	128
Raleigh-Durham	1,534	117
San Diego	3,855	226
Seattle	4,536	364
Tucson	1,400	85

Blue represents the most affordable expansion plans, at \$100 per capita or less. Orange represents \$100 - \$200 per capita per year. Red represents the most expensive plans, at \$200 or greater per capita per year.

The expansion budgets have a cost “reach” far beyond \$100 per capita per year in many but not all of the growing areas. Three areas – San Diego, Seattle and Atlanta – have expansion budgets exceeding \$200 per capita per year. Whether such ambitious plans are realistic is a matter of opinion. Consider the following assumption made as part of “reasonably expected revenue” forecasts:

- Seattle assumes that the public will support a 93% increase in transportation taxes and fees (in real terms).
- San Diego assumes that normal growth in federal and state gasoline taxes will equal 35 cents over the next 29 years (in real terms) and assumes that its *share* of the federal transit program will increase by 50% over time.
- Pittsburgh assumes that the federal government will select the Pittsburgh example as a \$5 B demonstration of MagLev technology and assumes \$500 M in Congressional highway earmarks.
- Atlanta assumes a 68% federal funding increase (in real terms) over 25 years.
- Federal “New Starts” funding is assumed available for rail construction in most metro areas. San Diego counts on two New Starts projects; Pittsburgh counts on three (in addition to the MagLev project).

3. Most rapidly growing areas expect to lose ground in terms of overall system quality and performance, despite significant system expansion.

Performance of the planned transportation systems is assessed in many ways by the various MPOs. One common denominator among performance assessments is the level of highway congestion, particularly peak hour highway congestion.

Most MPOs show a slight to significant decline in highway performance despite significant highway and transit expansions. For some metro areas, the affordable plan will offer little help in restraining the decline in system performance. Consider the following:

- In Tucson, travel under severe congestion is expected to increase from 6% in 2000 to 33% in 2025 despite \$3 B in highway expansion.
- In Nashville, vehicle delay per driver is expected to quadruple between 1998 and 2025 despite \$3 B in highway expansion.
- In Columbus, future peak hour traffic in LOS E or F conditions is projected to increase from 22% of all travel in 2000 to 40% in 2025, despite \$2.4 B in highway expansion.
- In Phoenix, person-hours of travel per capita in 2025 will be 80% higher than current conditions, despite \$8.1 B in highway expansion and \$3.3 B in bus and rail expansion.
- In Raleigh-Durham, the plan indicates that the \$4.1 B expansion plan falls \$10 B short of what would be needed to maintain levels of congestion while expanding modal choice.
- In Portland, transit mode share would double while the number of hours of vehicle congestion quadruples – under the \$10 B preferred plan. No indication of performance is provided for the affordable \$4.3 B plan.
- In Atlanta, even a \$12.7 B highway expansion plan and \$9.7 B in new transit capital is insufficient to prevent peak hour congestion from increasing modestly from 28% of all travel in the base year to 33% in 2025.

Of the fourteen MPOs evaluated, only three presented a forecast that clearly showed expectations for a slight improvement in highway performance while simultaneously extending transit coverage and increasing transit ridership: San Diego, Seattle and Pittsburgh. This performance improvement comes at a steep price. San Diego and Seattle represent the most significant amounts of highway expansion (Seattle plans \$35.5 B and San Diego \$16 B in highway expansion alone). Pittsburgh embraces over \$5 B in highway expansion (at a benefit-cost ratio of only 1.2) and over \$5 B in transit expansion (for only an 11% increase in ridership.) These three metro areas also have among the most optimistic revenue assumptions.

When normalized against expected growth in travel demand, a slightly different picture emerges. Table 3 displays the average annual budget for capital expansion per unit of new travel demand. In these terms, the Capital District's pace of its planned expansion budget is in the middle of the pack and exceeds that for Austin, Buffalo, Columbus, Nashville, Phoenix, Raleigh and Tucson. Pittsburgh's ambitious program, in the context of its modest growth expectations, puts it at the top of the list in terms of expansion budget per unit of new demand.

**Table 3
Long Range Regional Transportation Plan Budgets
“Enhancement Reach”**

Annual Average Budget					
	New Demand (thousands)*	Transit Expansion per new demand	Highway Expansion per new demand	Cost/yr Non-traditional per new demand	Total Expansion per new demand
Albany	130	\$42	\$146	\$137	\$325
Atlanta	1,485	286	374	44	704
Austin	1,158	90	193	0	283
Baltimore	517	121	245	55	421
Buffalo	199	75	175	68	318
Columbus	542	62	180	4	247
Nashville	483	14	260	32	306
Phoenix	3,353	39	97	3	139
Pittsburgh	382	541	558	0	1,099
Portland	612	134	175	39	348
Raleigh-Durham	787	52	167	10	229
San Diego	1,322	222	416	22	659
Seattle	1,643	240	720	45	1,005
Tucson	598	1	190	9	200

*New demand is presented in “equivalent persons” – that is each 100 existing residents are assumed to generate new demand equivalent to 10 new residents.

“Non traditional” expansion investment contains supplemental ITS, TDM, growth management, bike and pedestrian, goods movement and planning activities above and beyond those contained in transit or highway expansion projects.

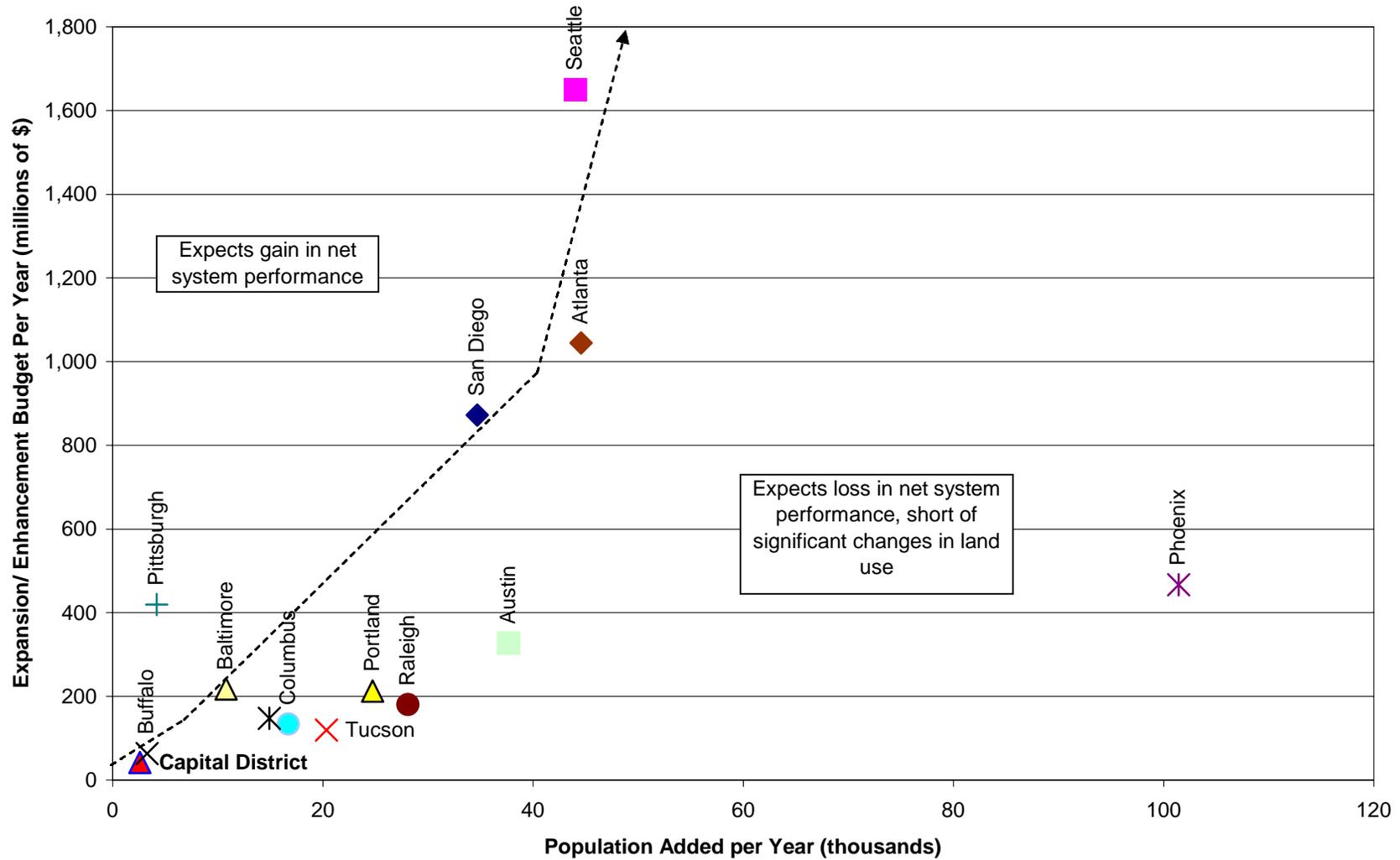
Blue represents values below \$100 per unit of new demand per year of transit expansion, highway expansion or non-traditional expansion. Orange represents \$100 - \$200; red represents \$200 or greater.

For total system expansion, blue represents values below \$300 per unit of new demand per year of transit expansion, highway expansion or non-traditional expansion. Orange represents \$300 - \$600; red represents \$200 or greater.

Demand growth is estimated by adding the new population to 10% of existing population. That is, it is assumed that the *additional* travel demand produced by 100 existing residents is equivalent to the *total* demand produced by 10 new residents. A no-growth area would still require some degree of system expansion or enhancement to accommodate growth in demand from existing residents.

The relationship between raw population growth and scale of system expansion is shown in Figure 1. Given that only Seattle, San Diego and Pittsburgh state expectations for highway system performance improvement in their documents, a dotted line is shown in the figure representing an approximate threshold between gain and loss in highway performance. The shape of the curve shows an increasingly-steep incline to the required investment levels as population growth increases.

Fig 1. Long Range Regional Transportation Plan Expansion/ Enhancement Budget



In Figure 1, slow growth areas such as the Capital District and Buffalo show a modest gap between expansion funding “need” and funding commitment. The most rapid growth area, Phoenix, stands as an outlier falling farthest short of “need”.

Alternatively, Figure 2 represents the relationship between fiscal reach and enhancement reach, using demand growth in lieu of population growth as a measure of “need”. Metro areas appearing in the right side of the figure are spending considerable sums on expensive expansion plans. More cautious metro areas appear to the left side of the graph.

Metro areas in the upper portion of Figure 2 are aggressive in the amount of enhancement or expansion they plan, relative to expected growth. They are the areas most likely to experience positive system benefits. Those metro areas toward the bottom of the graph are spending relatively less on expansion per new unit of demand. While exact performance is not being measured in this method, these areas are the most likely to experience performance decline over time. *No region spending less than \$600 per capita per year of expansion or enhancement forecasts a clear improvement in performance over time.*

The combination of the two factors makes for an interesting display. Pittsburgh stands out as having the greatest combination of *near*-affordability (a fiscal reach of \$156 per capita per year is much more affordable than many other plans) and enhancement (a substantial \$1,100 in enhancement investments per year per new unit of demand). In contrast, Austin has a plan that has a similar fiscal reach (\$158 per capita per year) but provides only \$283 per year in system expansion per unit of new demand.

4. CDTC’s’ New Visions 2021 plan represents a reasonable budgetary and enhancement “reach”, but system performance would be challenged by rapid growth.

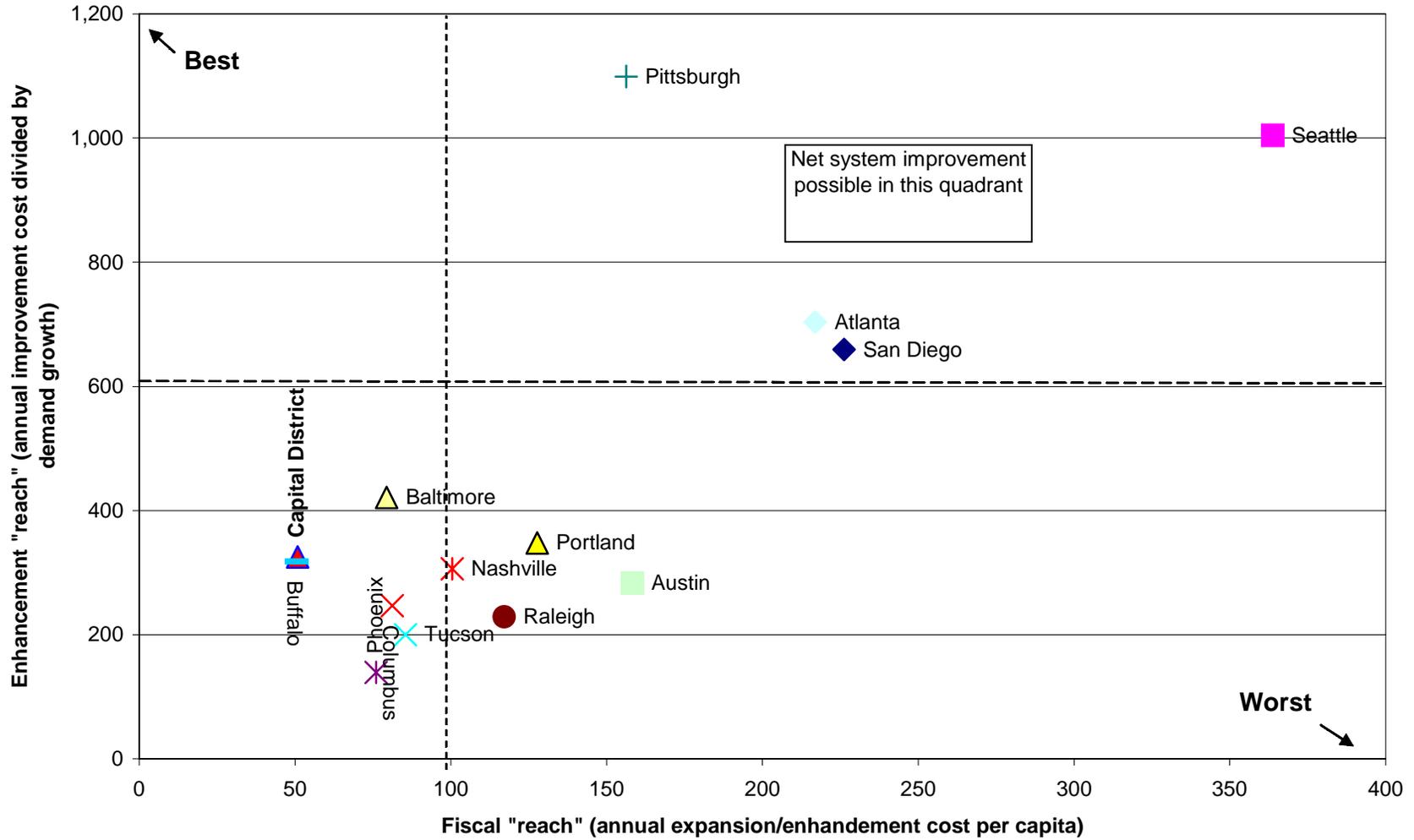
CDTC’s New Visions 2021 plan puts 92% of available resources into system operations, maintenance, preservation and facility and service improvement and into intermodal facilities. The plan is cautious regarding major highway expansion, and commits to progressive bus-oriented transit projects (Bus Rapid Transit) while reserving rail for further consideration. Through this approach, the plan expects to achieve steady improvements in pavement and bridge conditions, bike and pedestrian accommodations and street/ streetscape design while enhancing traffic operations and traveler information and redesigning transit service delivery.

Judged solely on the basis of the capital costs of system expansion, CDTC’s plan is (along with Buffalo’s), the most affordable at \$50 per capita per year – requiring resources roughly equivalent to half of the federal funding available to the region and a fraction of that required for many of the other plans. At the same time, the investment provides \$324 of expansion investment per year per unit of new demand, a value in the middle of the pack.

Fig. 2. Long Range Regional Transportation Plan "Reach"

demand growth = add'l residents + 0.1 * current residents

per capita cost based on future year residential population



Much of CDTC's expansion and enhancement budget is "enhancement" rather than expansion, and CDTC's ITS capital investment, TDM and planning levels rank at the top of the list.² If CDTC were to pursue a plan of a nature more similar to those of the other MPOs in the analysis, the gross thresholds identified in this comparative study would suggest that a doubling of the annual expansion budget to \$100 per capita and to over \$600 per unit of new demand would be sufficient to allow CDTC to claim overall highway and transit system benefits over the planning period. Another way of stating this point is to say that, at current growth levels, a modest \$50 per capita per year increase in revenues would provide for a big improvement in highway or transit quality or both. This contrasts with Seattle's ambitions to increase transportation funding by several times that amount to achieve a net gain in performance. At current resources, CDTC's adopted plan calls for serious pursuit of improved community structure and site plans to allow net performance improvement without such significant transportation investment.

"What If" Growth Scenario

Clearly, a shift in the pace of growth from the current 2,500 – 3,000 new residents per year to a 10,000 - 15,000 person per year or higher pace would overwhelm the modest system expansion plans contained in CDTC's New Visions 2021 plan. In such a growth scenario, the Capital District would be faced with the very difficult challenges of (1) identifying the appropriate transportation expansion projects; (2) implementing these in a mature area that has witnessed little physical change over the past generation; and (3) finding the resources to fund the expansions.

Should regional growth shift to even the modest growth rate anticipated by Baltimore or Columbus and should CDTC follow suit with a system expansion plan to assure net improvement in performance, the Capital District would be left looking for an additional \$3.5 B to \$5 B over the next 20 years, or \$150 M to \$250 M additional per year – equivalent to doubling or tripling the federal funding to the region.

Table 4 displays the funding requirements in a "what if" scenario in which the region witnesses growth of 10,000 more persons per year (growth of nearly 13,000 persons or 1.6 percent per year), using the thresholds for clear system enhancement from Figures 1 and 2.

² CDTC may rank at the top of the scale for investment in "non-traditional" initiatives, but the true scale of ITS or bike/ped improvements would need to reflect work incorporated into highway or transit project budgets. CDTC is simply more explicit in committing to non-traditional initiatives *above and beyond* that accomplished in the context of rehab or expansion projects.

Table 4
Fiscal Implications on the CDTC Long Range Expansion Budget for the
“What If” Growth Scenario
and Funding Thresholds from Figures 1 and 2

	Total 20-year Expansion Budget (millions of \$)	Expansion Budget per year (millions of \$)	Total expansion per new demand [enhancement reach from Table 3] (\$)	Cost per year per capita for expansion (fiscal reach from Table 2) (\$)
To achieve Figure 1 threshold (fall above the dotted line)	5,400	269	816	261
To achieve Figure 2 threshold (\$600 per year per new demand)	3,960	198	600	192

Additional Resources for Enhancing the Existing Plan or Dealing with the “What If” Growth Scenario

Regarding resources, CDTC’s existing plan is challenged by the erosion of state funding levels from those assumed in the New Visions 2021 document. The New Visions 2021 plan assumed passage of the 2000 Transportation Bond or provision of an equivalent amount of new state revenues through another source. This has not occurred. The New Visions 2021 plan also assumed growth in federal funding at 1% per year in real terms. Given the escalation of project costs experienced in recent years in the Capital District, it is unlikely that the TEA-21 Reauthorization will achieve even CDTC’s modest assumptions.³

Thus, the availability of even the \$50 per capita per year for system expansion committed in the New Visions 2021 plan is uncertain at present as project costs rise and pressures build to delay system expansion projects and scale back major reconstruction projects to allow federal aid to support more routine maintenance work. Finding *another* \$50 per capita to provide clear system enhancement at current growth levels is problematic.

If sustaining the current \$50 per capita level is challenging and finding another \$50 per capita difficult, then the values in Table 4 represent another order of magnitude entirely. To reach the threshold from Figure 1, a total of \$261 per capita per year is required – an increase of \$211 over current commitments. To reach the less-demanding threshold from Figure 2, the total expansion budget is \$192 per capita annually – an increase of \$142 per capita over current commitments.

³ The Senate’s SAFETEA reauthorization would provide a 19% increase in federal highway aid to New York over six years – an increase of slightly less than 3% per year. The House’s TEA-LU version would offer less. Neither would keep up with national estimates of cost escalation; the Capital District’s recent experience with limited competition in the highway bidding indicates that local inflation is greater than average.

Finding non-federal sources of funds of that scale, through additional dedicated sales taxes, additional fuel taxes or state bonding, would appear to be particularly challenging given New York's current tax climate. The math is quite easy: gasoline taxes would produce roughly \$4M per year for the Capital District per cent added to the current tax; sales taxes would produce roughly \$100 M per year for the Capital District per cent added to the current tax.⁴ However, increasing State tax structures and local option tax structures in the Capital District by even a modest amount would run up against the already-high local tax burden, which statewide averages 40% higher than the next-highest state.⁵

⁴ Enhancing the existing plan by doubling the expansion budget would thus require the equivalent of a 10-cent gasoline tax surcharge or a 0.4-cent sales tax surcharge (assuming all the other New Visions 2021 funding sources are in place.) Meeting the fiscal challenge of a growth scenario would require the equivalent of a 55-cent gasoline tax surcharge or a 2.2-cent sales tax surcharge (to pass the Figure 1 threshold) or the equivalent of a 40-cent gasoline tax surcharge or a 1.5-cent sales tax surcharge (to pass the Figure 2 threshold).

⁵ *Governing* magazine (February 2003) ranks New York the highest-taxed state in terms of combined state and local revenues as a percent of personal income (14.1%). Yet only 45.6% of total state and local revenues are levied at the state level, the lowest share of any state. These two facts combine to produce the unpublished statistic that local tax burden in New York is far and away the highest in the nation, *exceeding the local tax burden of the number two state, Colorado, by over 40%*.

Appendix

Fact Sheets on MPO Long Range Plans

Metro Area:	Albany, New York																																		
MPO and source:	The Capital District is the MPO for the Albany and Saratoga Springs Urbanized areas and the surrounding rural areas. Information for comparison purposes comes from <i>New Visions 2021 (2000)</i> .																																		
Metro Area Growth:	<p>The Capital District Regional Planning Commission forecasts a growth from a base of 794,300 in 2000 to 845,900 in 2020. CDTC's plan covers a slightly smaller area (excluding the town of Moreau in Saratoga County for which transportation programming occurs in the Glens Falls MPO.) The CDTC planning area has a base population of 780,000 and a future population of 830,000, which equates to a growth of 2,600 persons per year.</p>																																		
<p>System Expansion and Enhancement Plans:</p> <p>CDTC's plan has the most comprehensive budget of any of the MPOs examined. The budget includes costs for intermodal facilities as well as routine operations and maintenance on all roads and highways.</p> <p>From CDTC's 17-category budget, only 10 categories represent capital expansion or enhancement initiatives for which the other MPOs have similar information. (Additional ITS operational expenses are not shown below, due to the lack of comparable information in other MPOs' plans.)</p> <p>CDTC's plan includes the construction of approximately 100 lane-miles of highway widenings and relocations, split between congestion relief (such as Balltown Road) and economic development or community compatibility (such as the Elm Street truck route or the I-90 Exit 8 connector).</p> <p>The balance of CDTC's program is committed to system preservation, improved pavement and bridge physical conditions and designs, and highway and transit operations – a total of \$9.2 B over 20 years.</p> <p>CDTC's plan identifies \$132 M per year for system improvement. The majority of this investment is dedicated to enhancing existing facilities and the condition of the system, as well as improved operational efficiency. Limiting CDTC's budgetary values to just the 10 capital expansion categories comparable to other MPOs' plans reduces the improvement budget to just \$42 M per year. This provides for the following commitments over a 20-year horizon:</p> <table border="0" data-bbox="370 1297 1328 1640"> <tr> <td style="padding-left: 40px;">Transit capital enhancement/expansion</td> <td style="text-align: right;">\$110 M</td> <td style="text-align: right;">(\$6 M/yr)</td> </tr> <tr> <td style="padding-left: 40px;">ITS infrastructure expansion</td> <td style="text-align: right;">154 M</td> <td style="text-align: right;">(8 M/yr)</td> </tr> <tr> <td style="padding-left: 40px;">CMS-based highway capacity expansion</td> <td style="text-align: right;">206 M</td> <td style="text-align: right;">(10 M/yr)</td> </tr> <tr> <td style="padding-left: 40px;">Economic and community highway exp.</td> <td style="text-align: right;">174 M</td> <td style="text-align: right;">(8 M/yr)</td> </tr> <tr> <td style="padding-left: 40px;">Supplemental goods movement actions</td> <td style="text-align: right;">74 M</td> <td style="text-align: right;">(4 M/yr)</td> </tr> <tr> <td style="padding-left: 40px;">Supplemental bike/ped projects</td> <td style="text-align: right;">46 M</td> <td style="text-align: right;">(2 M/yr)</td> </tr> <tr> <td style="padding-left: 40px;">Supplemental access management projects</td> <td style="text-align: right;">10 M</td> <td style="text-align: right;">(0.5 M/yr)</td> </tr> <tr> <td style="padding-left: 40px;">Supplemental safety projects</td> <td style="text-align: right;">40 M</td> <td style="text-align: right;">(2 M/yr)</td> </tr> <tr> <td style="padding-left: 40px;">TDM activities</td> <td style="text-align: right;">28 M</td> <td style="text-align: right;">(1 M/yr)</td> </tr> <tr> <td style="padding-left: 40px;">Additional planning effort</td> <td style="text-align: right;">4 M</td> <td></td> </tr> <tr> <td style="padding-left: 20px;">Total expansion and enhancement</td> <td style="text-align: right;">\$844 M</td> <td style="text-align: right;">(\$42 M/yr)</td> </tr> </table>			Transit capital enhancement/expansion	\$110 M	(\$6 M/yr)	ITS infrastructure expansion	154 M	(8 M/yr)	CMS-based highway capacity expansion	206 M	(10 M/yr)	Economic and community highway exp.	174 M	(8 M/yr)	Supplemental goods movement actions	74 M	(4 M/yr)	Supplemental bike/ped projects	46 M	(2 M/yr)	Supplemental access management projects	10 M	(0.5 M/yr)	Supplemental safety projects	40 M	(2 M/yr)	TDM activities	28 M	(1 M/yr)	Additional planning effort	4 M		Total expansion and enhancement	\$844 M	(\$42 M/yr)
Transit capital enhancement/expansion	\$110 M	(\$6 M/yr)																																	
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Expected Performance:	Some reduction in peak hour highway mobility (that is, increase in congestion and travel times) is anticipated. Overall net positive system performance can be achieved only if significant success is achieved through improved land use planning and community design.																																		
Fund Sources:	No new or unusual funding sources are assumed																																		

Metro Area:	Atlanta, Georgia
MPO and source:	The Atlanta Regional Commission (ARC) is the joint MPO / comprehensive planning agency in Atlanta. An additional entity, the Georgia Regional Transportation Authority (GRTA) has been superimposed on top of the MPO, Georgia DOT and local governments and given substantial funding and decision authority. The MPO's plan incorporates resource assumptions regarding GRTA sources. Information on the long range regional transportation plan is obtained from <i>Transportation Solutions for a New Century (2002 Update)</i> .
Metro Area Growth:	The region's population is expected to grow from a base year population of 3,699,000 to a 2025 forecast of 4,814,000. "Since 2000, the 10-county Atlanta region has added an average of nearly 80,000 people annually, or nearly a quarter million in three years, despite a national recession and a slumping regional economy," says Bart Lewis, ARC's research chief, in a January 2004 press release.

System Expansion and Enhancement Plans:

Atlanta's plan is explicit regarding roadway and transit projects. In contrast to many MPOs, the incremental cost of transit operations is well documented. The financial plan lists elements for a 23-year period (2003-2025): Roadway preservation is identified at \$5 B and transit operating costs at \$8.9 B over the planning period.

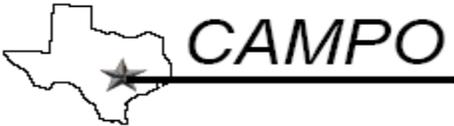


"Other projects" includes ITS, TDM and other initiatives

ARC's plan includes no funds for routine transit capital replacement, only "preventive maintenance" within the transit budget. Deducting transit operation costs and system preservation costs for transit entries leaves the following budget for system expansion and enhancement:

Roadway preservation and expansion	\$9,117 M	(\$396 M/yr)
HOV construction	3,641 M	(158 M/yr)
MARTA capital expansion	5,025 M	(218 M/yr)
Other transit system expansion	4,754 M	(207 M/yr)
Bicycle / Pedestrian	440 M	(19 M/yr)
Other Projects	1,052 M	(46 M/yr)
Total Expansion / Enhancement	\$24,029 M	(\$1,045 M/yr)

Expected Performance:	As with other MPOs, ARC purports that the plan will increase options, improve land use – transportation integration and improve air quality. Highway travel conditions will decline slightly, with average speeds in the peak dropping and the percentage of PM peak hour travel in LOS E-F congestion (as one indicator) increasing from 28% of all travel in the base year to 33% in 2025.
Fund Sources:	In addition to assumptions of growth in federal funding (2.1% per year compounded, in real terms), Atlanta's plan reflects state law that directs highway funding streams to projects other than transit operation support and match to federal aid. This provides, along with special GRTA funding, substantial state funding of about \$343 M per year. Local and MARTA funds from general revenues and local-option sales tax is another \$200 M per year. An additional state bond will provide \$100 M per year.

Metro Area:	Austin, Texas																		
MPO and source:	The Capital Area Metropolitan Planning Organization (CAMPO) is the MPO for the Austin area. Its long range regional transportation plan information is contained in <i>CAMPO 2025 Transportation Plan (2000)</i> .																		
Metro Area Growth:	<div style="display: flex; justify-content: space-between; align-items: center;"> <div style="width: 60%;"> <p>Austin has experienced rapid growth and is forecasting continued growth. Base year 1997 population is listed at 1,015,000 and 2025 forecasts at 2,071,000 for an annual growth of 37,700 persons.</p> </div> <div style="width: 35%; text-align: center;">  </div> </div>																		
System Expansion and Enhancement Plans:																			
<p>CAMPO has its financial plan well documented. The capital cost of the plan is listed as follows, over a 25-year horizon. Transit expansion includes 52 miles of light rail transit or busways, including a 20-mile phase 1 rail construction. (System ridership has increased by 100% in less than 10 years to 29 million riders annually.) Additionally, the budget includes CAMPO's portion of the cost of a San Antonio to Austin commuter rail project.</p> <p>Road budgets are for system expansion only. The cost of system preservation is not included in the plan.</p> <p>While the budget numbers are exclusively capital in nature, a portion of the transit capital budget included is clearly for replacement of existing vehicles. Making an assumption that one-third of the bus capital budget is for vehicle replacement leaves the following budget for system expansion and enhancement:</p> <table style="width: 100%; margin-left: 40px;"> <tr> <td style="width: 50%;">Transit</td> <td style="width: 25%; text-align: right;">\$2,439 M</td> <td style="width: 25%; text-align: right;">(\$98 M/yr)</td> </tr> <tr> <td>Commuter Rail</td> <td style="text-align: right;">172 M</td> <td style="text-align: right;">(7 M/yr)</td> </tr> <tr> <td>State Roads</td> <td style="text-align: right;">2,204 M</td> <td style="text-align: right;">(88M/yr)</td> </tr> <tr> <td>Toll Roads</td> <td style="text-align: right;">1,992 M</td> <td style="text-align: right;">(80 M/yr)</td> </tr> <tr> <td>Local Roads</td> <td style="text-align: right;">1,387 M</td> <td style="text-align: right;">(55 M/yr)</td> </tr> <tr> <td>Total Expansion / Enhancement</td> <td style="text-align: right;">\$8,194 M</td> <td style="text-align: right;">(\$328 M/yr)</td> </tr> </table>		Transit	\$2,439 M	(\$98 M/yr)	Commuter Rail	172 M	(7 M/yr)	State Roads	2,204 M	(88M/yr)	Toll Roads	1,992 M	(80 M/yr)	Local Roads	1,387 M	(55 M/yr)	Total Expansion / Enhancement	\$8,194 M	(\$328 M/yr)
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System Performance:	CAMPO's plan includes no evaluation of system performance.																		
Fund Sources:	Sales tax revenue is a significant source of transit capital and operating funds. Toll roads are funded with private funding.																		

Metro Area:	Baltimore, Maryland																														
MPO and source:	Baltimore's long range regional transportation plan is maintained by the Baltimore Regional Transportation Board (BRTB), the MPO affiliated with the Baltimore Regional Council (BRC) comprehensive planning agency. The reference document is the <i>2001 Baltimore Regional Transportation Plan</i> , which uses a planning horizon of 2025.																														
Metro Area Growth:	Growth in the region is expected to increase population from 2.471 M in 2000 to 2.741 M in 2025, according to the plan, an increase of 10,800 per year.																														
System Expansion and Enhancement Plans:																															
<p>The Baltimore plan includes estimates for system operations, system preservation and system expansion. Transit capital expansion includes construction of three new light rail lines. The plan identifies system preservation at \$5.8 B, and highway and transit operations at \$10 B over the planning horizon.</p>																															
																															
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Expected Performance:	Highway travel speeds decrease and congestion is higher in 2025 despite the investments. Total vehicle hours of delay is forecast to double and the percentage of travel occurring in congestion is expected to increase from 29% of all travel in 2000 to 37% of all travel in 2025.																														
Fund Sources:	No new or unusual funding sources are assumed																														

Metro Area:	Buffalo, New York																														
MPO and source:	The Greater Buffalo / Niagara Regional Transportation Council (GBNRTC) is the independent MPO for Erie and Niagara counties.																														
Metro Area Growth:	GBNRTC states that it expects 3% total population growth over the plan horizon. Given 2000 Census figures totaling 1,172,000 for Erie and Niagara counties, this growth rate equates to approximately 82,000 persons or 3,300 per year.																														
System Expansion and Enhancement Plans:																															
<p>Transit system expansion focuses on the airport corridor and the Tonawanda – Niagara Falls corridor, but both rail and bus options remain open in each corridor. The major highway capacity initiative is widening I-90 from 6 to 8 lanes. For comparative purposes, system expansion/ enhancement is considered to include all elements in the list below. System Maintenance is estimated in the plan to cost \$3.1 B, or about 2/3 of the total budget.</p> <p>The plan's expansion budget is presented as follows:</p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 60%;">Transit Improvements</td> <td style="width: 20%; text-align: right;">\$371 M</td> <td style="width: 20%; text-align: right;">(\$15 M/yr)</td> </tr> <tr> <td>Capacity / Mobility</td> <td style="text-align: right;">355 M</td> <td style="text-align: right;">(14 M/yr)</td> </tr> <tr> <td>Economic Development</td> <td style="text-align: right;">345 M</td> <td style="text-align: right;">(14 M/yr)</td> </tr> <tr> <td>Intersection Improvements</td> <td style="text-align: right;">72 M</td> <td style="text-align: right;">(3 M/yr)</td> </tr> <tr> <td>Safety</td> <td style="text-align: right;">72 M</td> <td style="text-align: right;">(3 M/yr)</td> </tr> <tr> <td>Technology</td> <td style="text-align: right;">62 M</td> <td style="text-align: right;">(2 M/yr)</td> </tr> <tr> <td>Quality of Life</td> <td style="text-align: right;">41 M</td> <td style="text-align: right;">(2 M/yr)</td> </tr> <tr> <td>Bicycle / Pedestrian</td> <td style="text-align: right;">21</td> <td style="text-align: right;">(1 M/yr)</td> </tr> <tr> <td>CMAQ actions</td> <td style="text-align: right;">244 M</td> <td style="text-align: right;">(10 M/yr)</td> </tr> <tr> <td>Total Expansion / Enhancement</td> <td style="text-align: right;">\$1,582 M</td> <td style="text-align: right;">(\$63 M/yr)</td> </tr> </table>		Transit Improvements	\$371 M	(\$15 M/yr)	Capacity / Mobility	355 M	(14 M/yr)	Economic Development	345 M	(14 M/yr)	Intersection Improvements	72 M	(3 M/yr)	Safety	72 M	(3 M/yr)	Technology	62 M	(2 M/yr)	Quality of Life	41 M	(2 M/yr)	Bicycle / Pedestrian	21	(1 M/yr)	CMAQ actions	244 M	(10 M/yr)	Total Expansion / Enhancement	\$1,582 M	(\$63 M/yr)
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Expected Performance:	GBNRTC presents information in terms of the plan's benefits relative to the 2025 null. No information is provided regarding the comparison of 2025 plan performance to the 2000 base conditions, except for increased transit ridership and improved air quality.																														
Fund Sources:	No new or unusual funding sources are assumed.																														

NEW VISIONS 2030
LONG RANGE REGIONAL TRANSPORTATION PLAN
Comparative Analysis

Metro Area:	Columbus, Ohio												
MPO and source:	The Mid-Ohio Regional Planning Commission (MORPC) is the MPO for the Columbus area. Information on its long range regional transportation plan is found in its <i>2025 Transportation Plan</i> .												
Metro Area Growth:	Population is expected to increase from 1,226,000 in 2000 to 1,645,000 by 2025, an increase of 16,800 per year.												
System Expansion and Enhancement Plans:													
<p>MORPC identifies a cost of \$79.8 M per year to “operate and maintain roads”. The plan is quite sober regarding funding expected for system expansion but is able to include a funded project expansion total of \$3,339,000, with an estimate of \$1,500,000 in unfunded needs. Details of the financial plan are presented in complex and somewhat contradictory tables.</p> <p>Transit expansion includes \$382 M for 200 additional buses and transit centers and \$435 M for the North Corridor Light Rail Line. The overall transit capital plan shown in the financial document exceeds \$2 B, of which about \$1.1 B appears to be expansion, but not all of this is shown in the MPO’s \$3.3 B funded plan total.</p> <p>There is no summary table in the plan document that identifies the committed projects by type. However, the appendix includes a 25-page listing of all funded highway expansion and intersection improvement projects. From that list, the following summary can be derived (recognizing that the transit capital piece may be understated):</p> <table style="margin-left: auto; margin-right: auto;"> <tr> <td style="text-align: right;">Highway expansion</td> <td style="text-align: right;">\$2,438 M</td> <td style="text-align: right;">(\$98 M/yr)</td> </tr> <tr> <td style="text-align: right;">Transit capital expansion</td> <td style="text-align: right;">841 M</td> <td style="text-align: right;">(\$34 M/yr)</td> </tr> <tr> <td style="text-align: right;">ITS</td> <td style="text-align: right;">60 M</td> <td style="text-align: right;">(2 M/yr)</td> </tr> <tr> <td style="text-align: right;">Total Expansion / Enhancement</td> <td style="text-align: right;">\$3,339 M</td> <td style="text-align: right;">(\$134 M/yr)</td> </tr> </table>		Highway expansion	\$2,438 M	(\$98 M/yr)	Transit capital expansion	841 M	(\$34 M/yr)	ITS	60 M	(2 M/yr)	Total Expansion / Enhancement	\$3,339 M	(\$134 M/yr)
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Total Expansion / Enhancement	\$3,339 M	(\$134 M/yr)											
Expected Performance:	MORPC states that, due to the shortfall of funds, system performance improvements cannot be achieved relative to the base conditions. Future peak hour traffic in LOS E or F conditions is projected to increase from 22% of all travel in 2000 to 40% in 2025, even after the planned highway and transit expansions are completed.												
Fund Sources:	No new fund sources are anticipated. The funded plan counts on continuation of current federal and state funding programs. Existing programs include a dedicated ¼ cent sales tax for transit, expected to increase to ½ cent; state gas taxes; a bond program through the Ohio Public Works Commissions to help local governments expand infrastructure; and a supplemental one-cent gas tax on top of traditional gas taxes for a “Local TIP” – system improvement and expansion on local roads. Ohio dedicates 6 cents of the gas tax to localities, along with a \$20-\$45 annual vehicle license fee. The \$3.3 B funding total in the plan counts on a large portion of local funds (\$832 M).												



Metro Area:	Nashville, Tennessee																		
MPO and source:	The Nashville Area Metropolitan Planning Organization (NAMPO) is the MPO for the Nashville area. Its long range regional transportation plan information is contained in <i>2025 Nashville Area Long Range Regional Transportation Plan (2002 Reaffirmation)</i> .																		
Metro Area Growth:	<p>Nashville has experienced a 25% growth from 1990 to 2000. Continued growth from the 2000 population of 1,100,000 to a 2025 population of 1,400,000 is expected, averaging 14,900 persons per year.</p> 																		
<p>System Expansion and Enhancement Plans:</p> <p>Nashville's planned system expansion totals are obtained from the adopted plan's project list by summing individual projects by category. Nashville plans to construct HOV lanes on a number of the area's Interstate highways and widen many others. Highway rehab and transit bus replacement projects in the plan total only \$210 M out of a \$3.9 B 25-year total. Transit expansion plans are modest in early years, but assume construction of commuter rail and "rapid transit" (bus or rail) in the later years of the plan. ITS is emphasized in the plan and grouped in the plan's financial summary with bike/ped and other non-traditional investments. The financial summary for system expansion is as follows:</p> <table border="0" style="width: 100%; margin-left: 40px;"> <tr> <td style="width: 50%;">Highway expansion</td> <td style="width: 20%; text-align: right;">\$2,560 M</td> <td style="width: 30%; text-align: right;">(\$102 M/yr)</td> </tr> <tr> <td>HOV lane construction</td> <td style="text-align: right;">316 M</td> <td style="text-align: right;">(\$13 M/yr)</td> </tr> <tr> <td>Local road expansion</td> <td style="text-align: right;">260 M</td> <td style="text-align: right;">(\$10 M/yr)</td> </tr> <tr> <td>Transit bus, rail expansion</td> <td style="text-align: right;">171 M</td> <td style="text-align: right;">(7 M/yr)</td> </tr> <tr> <td>TSM (ITS, TDM, Bike/ped)</td> <td style="text-align: right;">387 M</td> <td style="text-align: right;">(15 M/yr)</td> </tr> <tr> <td>Total Expansion / Enhancement</td> <td style="text-align: right;">\$3,694 M</td> <td style="text-align: right;">(\$148 M/yr)</td> </tr> </table>		Highway expansion	\$2,560 M	(\$102 M/yr)	HOV lane construction	316 M	(\$13 M/yr)	Local road expansion	260 M	(\$10 M/yr)	Transit bus, rail expansion	171 M	(7 M/yr)	TSM (ITS, TDM, Bike/ped)	387 M	(15 M/yr)	Total Expansion / Enhancement	\$3,694 M	(\$148 M/yr)
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System Performance:	NAMPO's plan indicates that vehicle delay per driver will quadruple from 1998 to 2025, even with the planned system investments. Much of the deterioration is forecast to occur by 2006, with delays increasing only slightly between 2006 and 2025 due to widenings and the impact of HOV lanes reducing the number of drive-alone trips.																		
Fund Sources:	No significant increases in revenues are assumed or proposed. There is no dedicated source of funds for transit. Localities receive 37% of the 20-cent state gas tax.																		

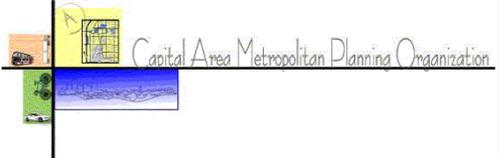
Metro Area:	Phoenix, Arizona																					
MPO and source:	Phoenix's long range regional transportation plan is maintained by the Maricopa Association of Governments (MAG), which is the MPO and comprehensive planning agency. Information on the plan is obtained from the <i>Regional Transportation Plan (2003)</i> .																					
Metro Area Growth:	Growth in the region is expected to be the greatest of any of the regions examined in the comparative analysis. On the heels of a 950,000 increase in population over the 1990-2000 period, MAG expects an increase in population from 3,097,000 in 2000 to 5,740,000 in 2025, an increase of 105,700 per year.																					
System Expansion and Enhancement Plans:																						
<p>The MAG plan includes significant highway expansion and transit expansion. The plan includes construction of 490 lane miles of new highways, 530 lane miles of general purpose highway widenings and 300 lane miles of new HOV lanes. It also includes construction of a 57.5 mile Light Rail Transit system. The financial plan does not distinguish between capacity and replacement for bus-related capital; figures below assume that 2/3 of the bus capital listed in the document is for system expansion.</p>  <p>The financial summary of the funded plan is as follows:</p> <table style="margin-left: auto; margin-right: auto;"> <tr> <td style="text-align: left;">New Highways</td> <td style="text-align: right;">\$3,700 M</td> <td style="text-align: right;">(\$148 M/yr)</td> </tr> <tr> <td style="text-align: left;">Highway Widenings</td> <td style="text-align: right;">\$4,400 M</td> <td style="text-align: right;">(176 M/yr)</td> </tr> <tr> <td style="text-align: left;">Light Rail Transit Capital Expansion</td> <td style="text-align: right;">2,328 M</td> <td style="text-align: right;">(78 M/yr)</td> </tr> <tr> <td style="text-align: left;">Bus Capital Expansion</td> <td style="text-align: right;">969 M</td> <td style="text-align: right;">(39 M/yr)</td> </tr> <tr> <td style="text-align: left;">Bicycle / Pedestrian</td> <td style="text-align: right;">132 M</td> <td style="text-align: right;">(5 M/yr)</td> </tr> <tr> <td style="text-align: left;">Other (planning, air quality)</td> <td style="text-align: right;">144 M</td> <td style="text-align: right;">(6 M/yr)</td> </tr> <tr> <td style="text-align: left;">Total Expansion / Enhancement</td> <td style="text-align: right;">\$11,673 M</td> <td style="text-align: right;">(\$467 M/yr)</td> </tr> </table>		New Highways	\$3,700 M	(\$148 M/yr)	Highway Widenings	\$4,400 M	(176 M/yr)	Light Rail Transit Capital Expansion	2,328 M	(78 M/yr)	Bus Capital Expansion	969 M	(39 M/yr)	Bicycle / Pedestrian	132 M	(5 M/yr)	Other (planning, air quality)	144 M	(6 M/yr)	Total Expansion / Enhancement	\$11,673 M	(\$467 M/yr)
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Expected Performance:	Very little information is provided on system performance comparisons between the future conditions under the plan and current conditions. Most comparisons are made between the future null and future plan networks. A rare comparison documented in the text indicates that, "with the nearly doubling of population and resulting congestion expected during the planning period... the person-hours of travel per capita during the PM peak period, while still 80 percent higher than existing conditions, will be 29 percent lower [under the plan] than the base [null] network." Transit ridership is expected to double, with about 1/4 of all riders on express bus/BRT/LRT.																					
Fund Sources:	No new funding sources are assumed other than an assumed 50% federal "New Starts" participation in the LRT construction. Funding streams assume continuation of a one-half cent sales tax for transportation.																					

Metro Area:	Pittsburgh, Pennsylvania																			
MPO and source:	The Southwestern Pennsylvania Commission is the Metropolitan Planning Organization and comprehensive planning agency for the Pittsburgh region. Its regional transportation plan is <i>The 2030 Transportation and Development Plan for Southwestern Pennsylvania (2003)</i> .																			
Metro Area Growth:	<p>Pittsburgh is in the unusual situation of losing population as a region, while consuming considerable land in suburban development. SPC's forecasts show a continuing loss in population for the majority of the forecast period, while projecting a rebound due to economic investments to show a net increase by 2030. By 2030, SPC is optimistic that the region will grow by 126,000 to 2,687,000 for an annual growth of 4,200 persons.</p>																			
System Expansion and Enhancement Plans:																				
<p>The Pittsburgh regional plan is particularly focused on economic development and represents substantial capacity investment not so much to accommodate growth as to stimulate it. The plan purports to be a "significant advance for the region in prioritizing investments" by investing in growth corridors and seeking to assure continued viability of existing centers. Within the financially constrained plan (Available Resources Element), key economic development aspects include construction of the Mon/Fayette Expressway and Southern Beltway and a High Speed MagLev initiative. The 54-mile MagLev project is considered part of the financially constrained plan, as funding "from other sources" is assumed to be available. (The MagLev would connect the airport to downtown in eight minutes as part of the corridor.) Transit capital plans also include two light rail lines in the near future and two other high profile transit corridors in the future.</p> <p>Expansion and enhancement elements of the plan are summarized simply in the document:</p> <table style="margin-left: auto; margin-right: auto;"> <tr> <td>New highway capacity projects</td> <td style="text-align: right;">\$1,700 M</td> <td style="text-align: right;">(\$57 M/yr)</td> </tr> <tr> <td>Highway capacity upgrade projects</td> <td style="text-align: right;">1,500 M</td> <td style="text-align: right;">(50 M/yr)</td> </tr> <tr> <td>Pennsylvania Turnpike capacity⁶</td> <td style="text-align: right;">3,200 M</td> <td style="text-align: right;">(107 M/yr)</td> </tr> <tr> <td>New transit capacity</td> <td style="text-align: right;">2,800 M</td> <td style="text-align: right;">(93 M/yr)</td> </tr> <tr> <td>High Speed MagLev</td> <td style="text-align: right;">3,400 M</td> <td style="text-align: right;">(113 M/yr)</td> </tr> <tr> <td>Total Expansion and Enhancement</td> <td style="text-align: right;">\$12,600 M</td> <td style="text-align: right;">(\$420 M/yr)</td> </tr> </table>			New highway capacity projects	\$1,700 M	(\$57 M/yr)	Highway capacity upgrade projects	1,500 M	(50 M/yr)	Pennsylvania Turnpike capacity ⁶	3,200 M	(107 M/yr)	New transit capacity	2,800 M	(93 M/yr)	High Speed MagLev	3,400 M	(113 M/yr)	Total Expansion and Enhancement	\$12,600 M	(\$420 M/yr)
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<div style="display: flex; align-items: flex-start;">  <p>The plan also shows a "Future Revenues Element" that identifies projects that could benefit the region if more money were available. Included in this unfunded part of the plan are an additional \$1.9 B for additional highway expansion and an additional \$950 M for transit capacity expansion.</p> </div>																				
System Performance:	<p>SPC forecasts that overall travel conditions will be improved with the investments planned. Delay per trip will be reduced slightly and transit access improved. Highway capacity investment is estimated to return a B/C ratio of 1.2. Transit ridership will increase by 25,000 trips per day, or 11%. (Mode share to transit drops slightly from existing 2004 levels of about 3%.)</p>																			
Fund Sources:	<p>There are a number of bold assumptions in the financial element of the plan. First the MagLev system is assumed to be a federal MagLev demonstration project. Congressional earmarks are assumed to total over \$500 M; bonding of over \$2 B is assumed for the two expressways; and new capacity funding (federal and state) for transit is assumed to continue to be available at the historic levels of about \$100 M per year.</p>																			

⁶ The Pennsylvania Turnpike Commission has the responsibility for the Mon-Fayette and Southern Beltway projects. The Available Resource Element shows \$1.5 B in available funding and indicates that a strategy is in place to secure the remainder of the funding.

Metro Area:	Portland, Oregon																															
MPO and source:	Portland's long range regional transportation plan is maintained by METRO, the only elected regional government in the US. Some information on the plan is obtained from the <i>2004 Regional Transportation Plan Amendment</i> . Other information is in the 2002 plan, with a 2020 horizon. The horizon year is now 2025.																															
Metro Area Growth:	Growth in the region is expected to increase population from 1,172,000 in 2000 to 1,667,000 in 2020, an increase of 204,800 per year.																															
System Expansion and Enhancement Plans:																																
<p>METRO operates with significant comprehensive planning and metropolitan service delivery authority and responsibility. It also maintains an official growth boundary for the region and relates its transportation plan explicitly to growth zones. METRO's regional transportation plan documents focus almost exclusively on a Preferred System Plan totaling over \$10 B in expansion or enhancement projects. The Preferred System Plan would add 140 lane miles of expressway, 600 lane miles of arterials and 52 miles of light rail line.</p>																																
<p>However, the Preferred System Plan does not meet fiscal constraint requirements as there is no plan in place to address its fiscal requirements nor are any assumptions made (as is the case in Seattle, for instance) that new sources will be found. The official plan is the fiscally constrained plan listing only \$4.5 B in specific projects.</p>																																
<p>The funded plan is as follows:⁷</p>																																
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<p>The METRO plan places nearly all its emphasis on investment in city and regional centers; town centers and main streets; and port and industrial areas.</p>																																
Expected Performance:	<p>METRO provides performance information in the plan documents only for the Preferred System Plan. Under this \$10 B plan, transit's mode share is expected to double to over 7% of all trips by 2020, while highway performance drops. Vehicle hours of congestion is expected to quadruple.</p> <p>There is no information provided on the much smaller fiscally-constrained plan. The implication is that transit mode share would grow less and congestion would increase more sharply than under the Preferred System Plan.</p>																															
Fund Sources:	<p>No new or unusual funding sources are assumed. Current fund sources include a portion of the state gas tax, local gas taxes of one to three cents per gallon, and a payroll tax in the transit district of 0.6 percent</p>																															

⁷ The financial summary was obtained by summing individual project costs over each of the plan thirteen project types. Bridge rehab (\$216 B) is not included above. Bike, pedestrian and bike/ped categories are combined. Arterial and boulevard categories are combined.

Metro Area:	Raleigh-Durham, North Carolina																		
MPO and source:	The Research Triangle's plan is maintained by the Capital Area Metropolitan Planning Organization (CAMPO). Information is obtained from its <i>Transportation Plan 2025 (2002)</i> .																		
Metro Area Growth:	Rapid growth in the transportation planning area is anticipated. The plan indicates a population growth from 830,000 in 2000 to 1,534,000 in 2025 for an increase of 28,200 persons per year.																		
System Expansion and Enhancement Plans:																			
<p>The CAMPO plan is sketchy regarding the details. It identifies a \$6.95 B 23-year plan, which exceeds the baseline (no expansion beyond the current TIP) at \$3.29 B in scale. Separately, it lists \$3.013 B in highway expansions and endorses a \$770 M commuter rail plan. Piecing the information gives the following as the budget representation most consistent with those of other MPO's.⁸</p> <div style="text-align: right; margin-right: 100px;">  </div> <table style="width: 100%; margin-top: 20px;"> <tr> <td style="width: 50%;">Roadway Capacity</td> <td style="width: 25%; text-align: right;">\$3,013 M</td> <td style="width: 25%; text-align: right;">(\$131 M/yr)</td> </tr> <tr> <td>Commuter Rail</td> <td style="text-align: right;">770 M</td> <td style="text-align: right;">(33 M/yr)</td> </tr> <tr> <td>Other Transit Capital Expansion</td> <td style="text-align: right;">166 M</td> <td style="text-align: right;">(4 M/yr)</td> </tr> <tr> <td>Bicycle / Pedestrian</td> <td style="text-align: right;">90 M</td> <td style="text-align: right;">(4 M/yr)</td> </tr> <tr> <td>Other (TDM, ITS)</td> <td style="text-align: right;">96 M</td> <td style="text-align: right;">(4 M/yr)</td> </tr> <tr> <td>Total Expansion / Enhancement</td> <td style="text-align: right;">\$4,162 M</td> <td style="text-align: right;">(\$181 M/yr)</td> </tr> </table> <p>The plan identifies a commitment to construction of 63 freeway lane miles and 1,000 additional arterial lane miles. CAMPO has also endorsed the findings of the Regional Transportation Alliance of the Greater Raleigh Chamber of Commerce that finds that an additional \$10.1 B is needed to maintain current levels of congestion and increase travel options. CAMPO signed onto that finding after the mayors of the major cities approved it through the Alliance.</p>		Roadway Capacity	\$3,013 M	(\$131 M/yr)	Commuter Rail	770 M	(33 M/yr)	Other Transit Capital Expansion	166 M	(4 M/yr)	Bicycle / Pedestrian	90 M	(4 M/yr)	Other (TDM, ITS)	96 M	(4 M/yr)	Total Expansion / Enhancement	\$4,162 M	(\$181 M/yr)
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Expected Performance:	CAMPO provides no performance information. The endorsement of the Alliance's call for an additional \$10.1 B in funding to prevent performance deterioration is an indication of expectations of inadequate performance under the committed plan.																		
Fund Sources:	No new or unusual funding sources are assumed, other than an assumption of FTA "New Starts" funding to help with the rail project.																		

⁸ "Other Transit Capital Expansion" was estimated. The revenue table identifies \$707 M in transit capital resources, without including FTA New Starts funds. Adding New Starts funds (at 50% of \$770 M) brings the total to \$1,092 B. Assuming that approximately half of the non-rail amount (\$161 M of \$322 M) is for bus system expansion provides the value for the estimate.

Metro Area:	San Diego, California																														
MPO and source:	Sand Diego's long range regional transportation plan is maintained by the San Diego Association of Governments (SANDAG), which is the MPO and comprehensive planning agency. Information on the plan is obtained from the <i>Mobility 2030</i> .																														
Metro Area Growth:	Growth in the region is expected to increase population from 2,814,000 in 2000 to 3,855,000 in 2030, an increase of 34,700 per year.																														
System Expansion and Enhancement Plans:																															
<p>The SANDAG plan is very explicit regarding the elements of the plan. SANDAG's reasonably-expected revenues plan totals \$42 B over 29 years (2002-2030). Expansion and enhancement aspects are identified below. (There is no summary of aggregate miles of highway or rail construction and the project lists do not include length from which to calculate the scale.)</p> <div style="text-align: right;">  </div> <p>The financial summary of the funded plan is as follows:</p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 60%;">Managed /HOV Facilities</td> <td style="width: 20%; text-align: right;">\$7,450 M</td> <td style="width: 20%; text-align: right;">(\$257 M/yr)</td> </tr> <tr> <td>Highway Completion /Widening</td> <td style="text-align: right;">3,580 M</td> <td style="text-align: right;">(123 M/yr)</td> </tr> <tr> <td>New (local) regionally-significant arterials</td> <td style="text-align: right;">500 M</td> <td style="text-align: right;">(17 M/yr)</td> </tr> <tr> <td>Other (local) streets and highways</td> <td style="text-align: right;">4,430 M</td> <td style="text-align: right;">(153 M/yr)</td> </tr> <tr> <td>Major Transit Rail/Transitway construction</td> <td style="text-align: right;">8,500 M</td> <td style="text-align: right;">(293 M/yr)</td> </tr> <tr> <td>Bicycle / Pedestrian</td> <td style="text-align: right;">230 M</td> <td style="text-align: right;">(8 M/yr)</td> </tr> <tr> <td>Smart Growth Incentive</td> <td style="text-align: right;">25 M</td> <td style="text-align: right;">(1 M/yr)</td> </tr> <tr> <td>TSM/ITS</td> <td style="text-align: right;">440 M</td> <td style="text-align: right;">(15 M/yr)</td> </tr> <tr> <td>TDM</td> <td style="text-align: right;">135 M</td> <td style="text-align: right;">(5 M/yr)</td> </tr> <tr> <td>Total Expansion / Enhancement</td> <td style="text-align: right;">\$25,290 M</td> <td style="text-align: right;">(\$872 M/yr)</td> </tr> </table>		Managed /HOV Facilities	\$7,450 M	(\$257 M/yr)	Highway Completion /Widening	3,580 M	(123 M/yr)	New (local) regionally-significant arterials	500 M	(17 M/yr)	Other (local) streets and highways	4,430 M	(153 M/yr)	Major Transit Rail/Transitway construction	8,500 M	(293 M/yr)	Bicycle / Pedestrian	230 M	(8 M/yr)	Smart Growth Incentive	25 M	(1 M/yr)	TSM/ITS	440 M	(15 M/yr)	TDM	135 M	(5 M/yr)	Total Expansion / Enhancement	\$25,290 M	(\$872 M/yr)
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Expected Performance:	SANDAG includes documentation of a thorough set of traditional performance measures applied to preliminary network concepts (not the official plan). Future performance can be assumed to fall between the performance of the "revenue constrained" and "mobility" networks tested. Based on the performance information, SANDAG expects that the percentage of travel occurring in congestion to remain steady or drop slightly while work trip mode share to modes other than drive alone to increase from 22% in 2000 to 24-26% in 2030.																														
Fund Sources:	No new funding sources are assumed. A one-half-cent <i>TransNet</i> sales tax, split by thirds to highways, transit and local streets, is expected to continue. Additionally a one-quarter-cent Transportation Development Act sales tax for transportation is expected to continue, along with steady growth in federal and state funds. A steady, slow increase in federal and state gas taxes is assumed (35 cents per gallon over 29 years), as is New Starts funds for two projects, a 50% increase in San Diego's share of the national federal transit budget and about \$40 M annually in Congressional earmarks.																														

Metro Area:	Seattle, Washington																											
MPO and source:	Seattle's long range regional transportation plan is maintained by the Puget Sound Regional Council (PSRC). The reference document is <i>Destination 2030</i> .																											
Metro Area Growth:	Growth in the region is expected to increase population from 3.215 M in 2000 to 4.576 M in 2030, according to the plan, an increase of 44,000 per year.																											
System Expansion and Enhancement Plans:																												
<p>The Puget Sound plan represents a significant commitment to system expansion and a clear commitment to substantial revenue enhancement. Within its definition of reasonably-expected revenues, PSRC commits to a 93% increase in per capita annual transportation taxes and fees to support a \$105 B expansion, maintenance and operations plan (including \$49.5 B in expansion alone). The assumption that such significant funding increases are reasonable is based on the recommended funding strategies of the state's Blue Ribbon Commission on Transportation. The plan calls for 425 lane miles of HOV lanes and approximately 1,600 lane miles of other expressway and arterial widening. It also calls for over 800 miles of paths and 1,200 miles of bike lanes on streets. The plan includes commuter rail expansion, light rail and monorail expansion and implementation of the FAST freight corridor.</p> 																												
The financial summary for system expansion is as follows:																												
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The plan notes that, if extracted from other budgets, the total TDM expenditure would be \$1.5 B over 30 years and the total bike/ped expenditure would be \$3.4 B.																												
Expected Performance:	Puget Sound indicates that current revenue levels would support a plan that would fail the region, with HOV speeds dropping to 16 mph and freeway speeds to 20 mph in the peak period. Under the ambitious expansion plan, speeds on general purpose freeway lanes would nearly hold constant, and average vehicle delay per household would increase by only 12%. With 80% more local transit service, mode share to transit would increase from a base of 3% to a future level of 5% of all person trips.																											
Fund Sources:	The plan counts on implementation of a number of funding initiatives, including expanding existing statewide programs by \$20 B; expanding local option sales taxes, vmt charges, license fees and sales taxes on fuel by \$11.8 B; \$2 B additional in transit sales tax authority; \$6.6 B in a "High Capacity Transit" Financial Plan or new federal grants; and \$2.5 B in additional transit, ferry and vanpool operating revenues.																											

Metro Area:	Tucson, Arizona																		
MPO and source:	Tucson's long range regional transportation plan is maintained by the Pima Association of Governments (PAG), which is the MPO and comprehensive planning agency. Information on the plan is obtained from the <i>2025 Regional Transportation Plan Amendment (2004)</i> .																		
Metro Area Growth:	Growth in the region is expected to increase population from 891,000 in 2000 to 1,400,000 in 2025, an increase of 20,400 per year.																		
<p>System Expansion and Enhancement Plans:</p> <p>The PAG plan distinguishes between capacity and non-capacity improvements. It also identifies operations and maintenance expenses and isolates additional O&M expenses from ongoing activities. System enhancement in the funded plan has little reliance on transit expansion, and no plans for rail construction. Unfunded capacity projects total \$2.6 B and include rail at \$872 M; however, the unfunded needs are not considered part of the official PAG long range plan.</p>  <p>The financial summary of the funded plan is as follows:</p> <table style="margin-left: auto; margin-right: auto;"> <tr> <td>Roadway Capacity</td> <td style="text-align: right;">\$2,802 M</td> <td style="text-align: right;">(\$112 M/yr)</td> </tr> <tr> <td>Transit Capital Expansion</td> <td style="text-align: right;">8 M</td> <td style="text-align: right;">(63 M/yr)</td> </tr> <tr> <td>ITS (capital and operating)</td> <td style="text-align: right;">88 M</td> <td style="text-align: right;">(4 M/yr)</td> </tr> <tr> <td>Bicycle / Pedestrian</td> <td style="text-align: right;">51 M</td> <td style="text-align: right;">(2 M/yr)</td> </tr> <tr> <td>Other Capacity (unspecified)</td> <td style="text-align: right;">41 M</td> <td style="text-align: right;">(2 M/yr)</td> </tr> <tr> <td>Total Expansion / Enhancement</td> <td style="text-align: right;">\$2,990 M</td> <td style="text-align: right;">(\$120 M/yr)</td> </tr> </table>  <p>For purposes of the comparative analysis, highway system expansion is estimated at a \$2.843 B 25-year total (the first and last entries above). Non-traditional investment is \$92 M (bike/ped and ITS).</p>		Roadway Capacity	\$2,802 M	(\$112 M/yr)	Transit Capital Expansion	8 M	(63 M/yr)	ITS (capital and operating)	88 M	(4 M/yr)	Bicycle / Pedestrian	51 M	(2 M/yr)	Other Capacity (unspecified)	41 M	(2 M/yr)	Total Expansion / Enhancement	\$2,990 M	(\$120 M/yr)
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Expected Performance:	Travel under severe congestion is expected to increase from about 6% in 2000 to 33% in 2025. PAG states that "this is a direct result of the anticipated increase in VMT with inadequate growth in the PAG regional roadway system." Daily time spent in travel per person is expected to increase 39% by 2025, despite system improvements.																		
Fund Sources:	No new or unusual funding sources are assumed.																		