

Practical and Affordable Implementation

Criteria 17: Implementation of the growth option is affordable to the public and all affected levels of government.

Descriptor 17a: Costs of the various public facilities (physical and social infrastructure) are reasonable

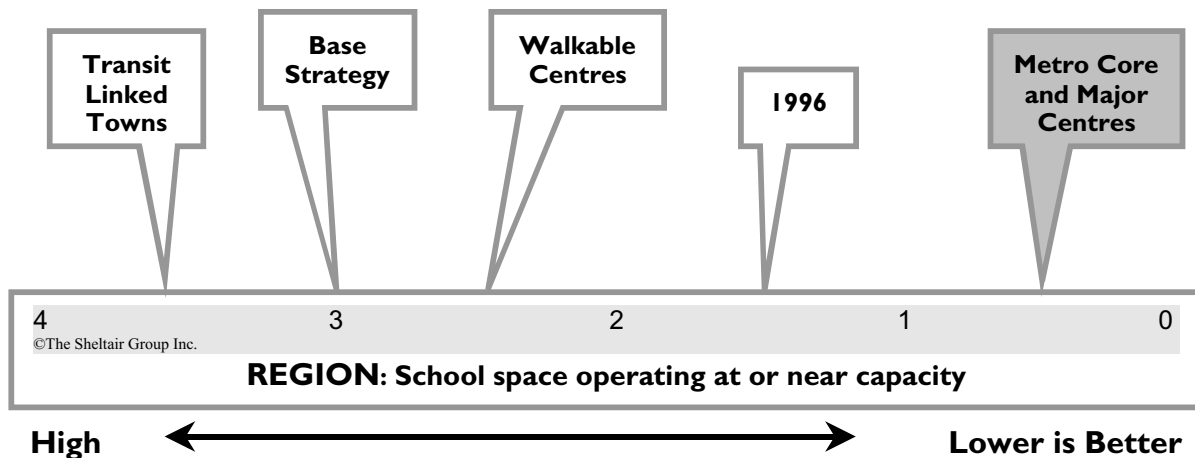
Measure: Costs of school space

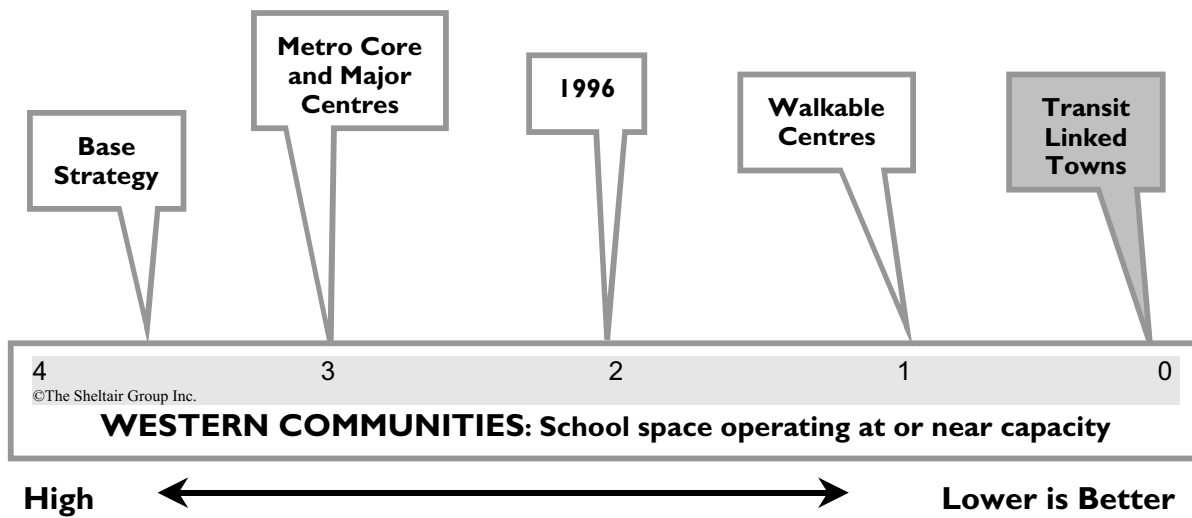
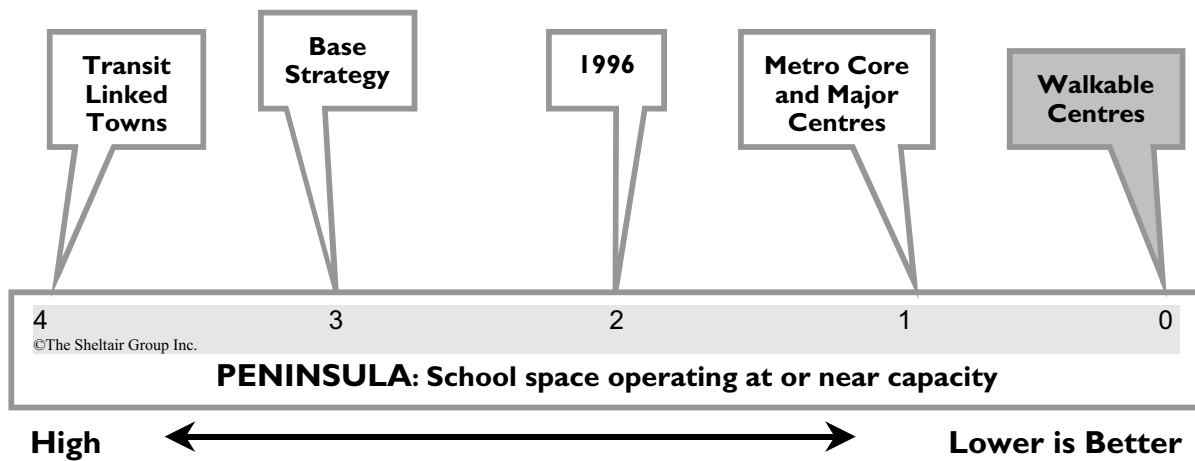
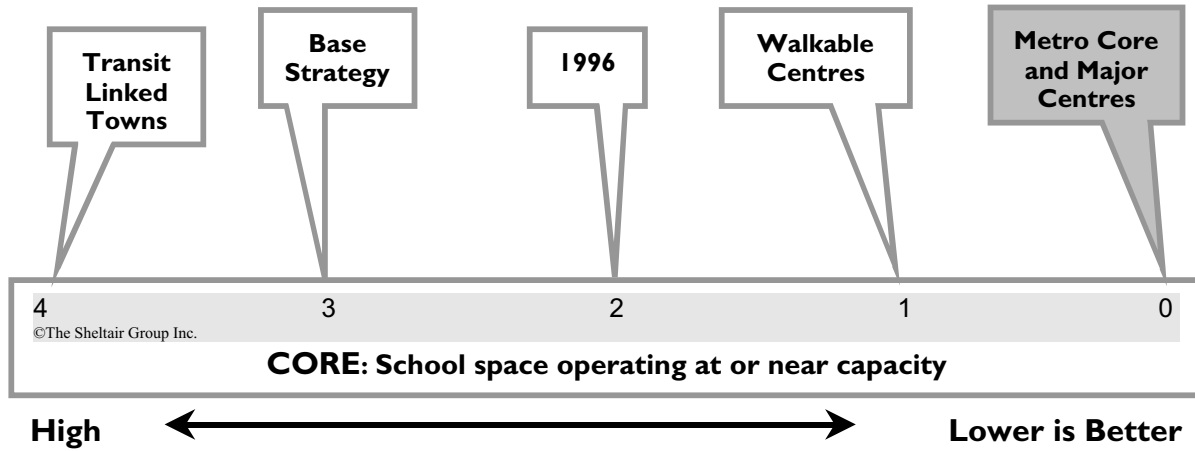
Quantitative Indicator: School space that operates at or near capacity – #39 on Figure 5

Meaning: Lower is better

Commentary:

This indicator shows a value for optimum use of existing school space of 0 based on an analysis of projected school age population forecasts used by the three school districts in the regional growth strategy area and discussions with facilities planners in each of these districts. Relative values of 1 to 4 are given for each of the options. The ability of agencies to provide community social services should not be significantly different among the four options. Some large-scale services, such as health care services to an aging population, may be more economical to provide in a larger urban core area as described in Metro Core and Major Centres option. Also, existing social institutions (schools and hospitals) are concentrated in the core area. A strategy that maximizes the use of existing social institutions will be more economical to implement.





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Descriptor 17a: Costs of the various public facilities (physical and social infrastructure) are reasonable

Measure: Cost of provision of additional road space

Quantitative Indicator: Cost of lane-km of new road and lane-km with volume/capacity ratio over 1.0 plus new interchanges – **#10 on Figure 5**

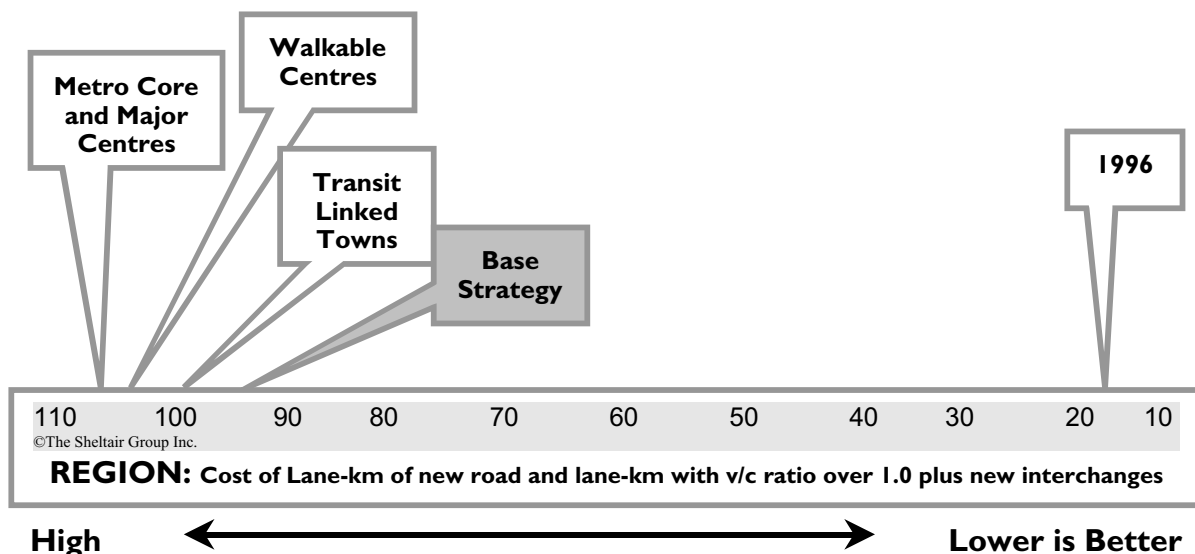
Meaning: Lower is better

Commentary:

As outlined in Descriptor 2a, the long-term requirements for additional road space were identified based on current long-term plans and on other highly congested sections of roadway warranting consideration for improvements. Total provisions incorporated 42 lane-kilometres of new roadway in the Western Communities with all options – other long-term improvements total between 94 and 108 lane-kilometres – as well as new interchanges provided at Trans Canada Hwy / Admirals and at Pat Bay Hwy / Sayward.

A rough estimate of the capital costs required to develop the roadway system and address these heavily congested links was prepared assuming: a) an allowance of \$20 million to cover construction of highway interchanges assumed in all options; b) costs of \$800,000 per lane km for the 42 km of new road in the Western Community common to all options; and c) \$800,000 per lane km to address congestion issues on the most heavily congested portion of the roadway network. The analysis shows that roadway capital in the order of \$95 to \$107 million is required during the plan period. The differences among options are very minor totalling about \$11.2 million over the period.

It is not intended to indicate that the new roadway improvement program will actually be implemented, but rather to illustrate differences between options. The Base Strategy shows some advantage over the other options because of the congestion issues discussed under Descriptor 2a.



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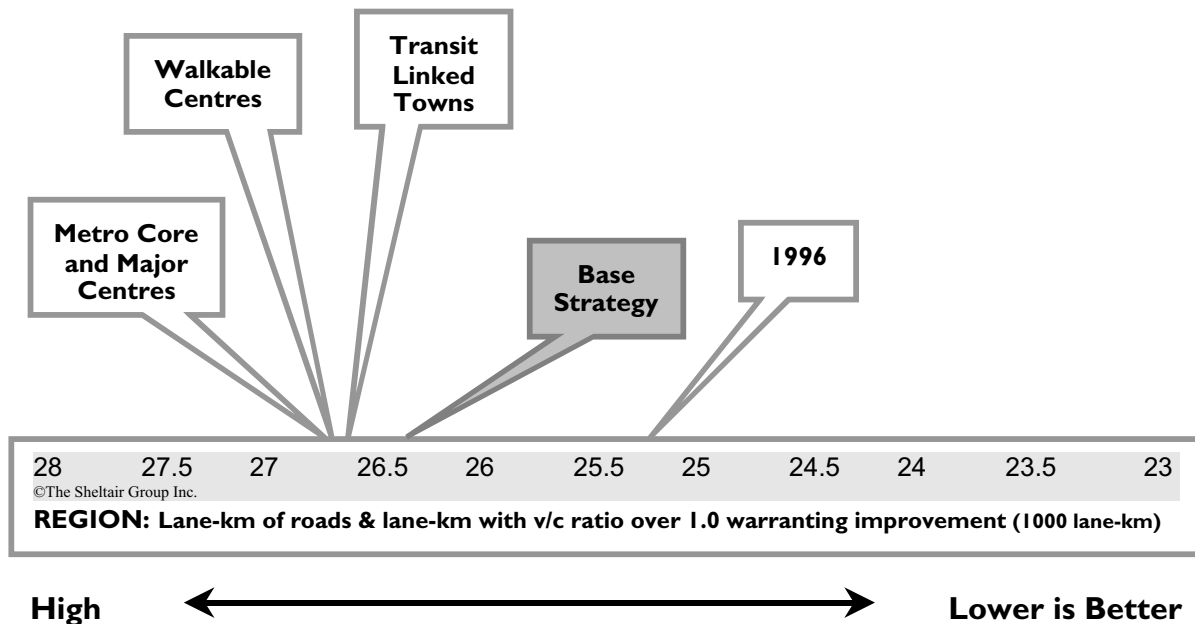
Measure: Annual maintenance costs for total regional road space

Quantitative Indicator: Lane-km of existing and new roads and lane-km with v/c ratio over 1.0 warranting improvement – #11 on Figure 5

Meaning: Lower is better

Commentary:

Maintenance will be required for 2500 lane-kilometres of existing roads plus 42 lane-kilometres of new roadway to be constructed in the Western Communities. Additional other long-term improvements total between 94 and 108 lane-kilometres depending on the option. The total inventory of road space to be maintained is virtually the same with all the options so that differences in maintenance costs are insignificant.



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Descriptor 17a: Costs of the various public facilities (physical and social infrastructure) are reasonable

Measure: Cost of provision of regional transit services

Quantitative Indicator: Annual transit system costs (millions of dollars) – #12 on Figure 5

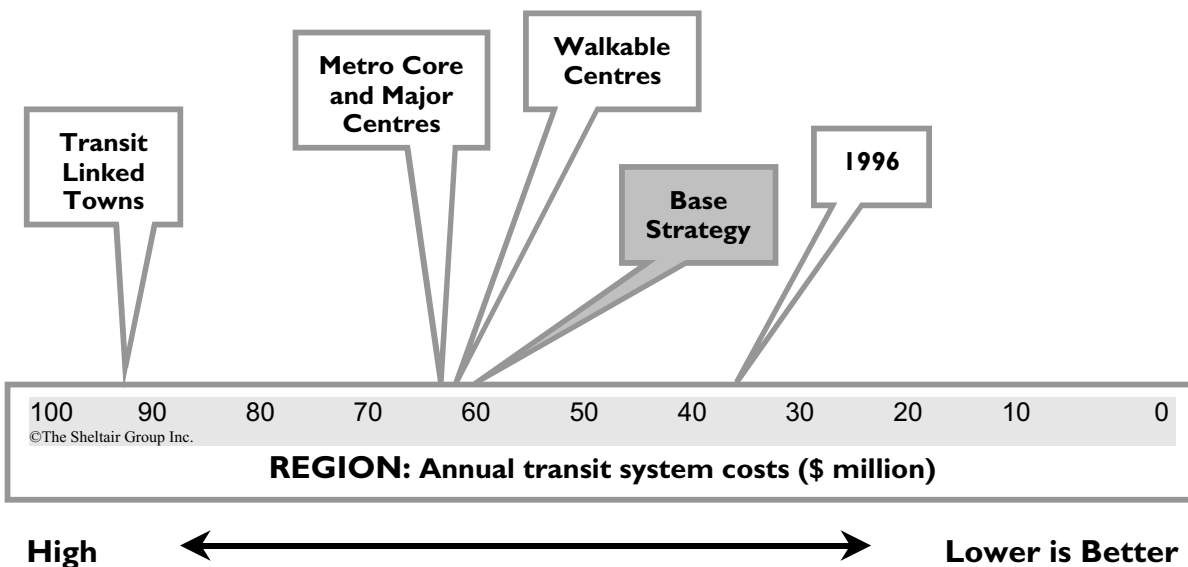
Meaning: Lower is better

Commentary:

For bus services, costs are calculated (including operating costs and debt service) according to projected bus fleet size for peak hour service – additional capital and operating costs for LRT raise annual costs at 2026 levels by about 50%. For the regional transportation model assessments, the numbers of buses in service during the peak hour rise from 180 in 1996 to about 300 in 2026. The service structure is the same for all bus-based options with very small variations due to slightly different route demand and capacity levels.

For review of transit service requirements and costs, BC Transit provided current annual system costs in terms of debt service charges and general operating costs. The transportation model gives estimates of the growth from 1996 to 2026 levels in the numbers of buses allocated to peak hour service. For all options except Transit Linked Towns, future total annual transit system costs were expanded in constant dollars in direct proportion to the projected numbers of buses in peak hour service.

For Transit Linked Towns option, the somewhat smaller numbers of buses in the peak hour fleet reduced future annual costs for the bus operations, but the extra LRT costs had to be included. The ND Lea report from 1996 on the LRT Implementation Strategy was used to provide capital costs estimated at \$290 million (translated into debt charges at a 10% per annum rate) together with LRT operating costs at \$8.3 million.



Examination of the effectiveness of the transit service provisions to support the growth options is beyond the scope of this project. The main differences between strategies relate to the Transit Linked Towns option with the LRT system introduced where it may be noted that the additional public annual costs in this descriptor of \$31 million can be compared with annual savings to all automobile and transit travellers in the region in the next descriptor of about \$8 million as compared to the Base Strategy. Because the Transit Linked Towns option has a different demographic distribution, the specific region-wide travel benefits attributable directly to LRT cannot be directly identified in the current assessment. More closely focussed model runs and supplementary analyses are required regarding LRT, including the important issue of stronger support for LRT through greater future densities in station areas.

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Descriptor 17b: Costs to consumers are considered (e.g. total costs of transport, including private vehicles, congestion costs)

Measure: Total personal travel costs in the region

Quantitative Indicator: Annual regional travel costs per capita (\$ thousand) – #23 on Figure 5

Meaning: Lower is better

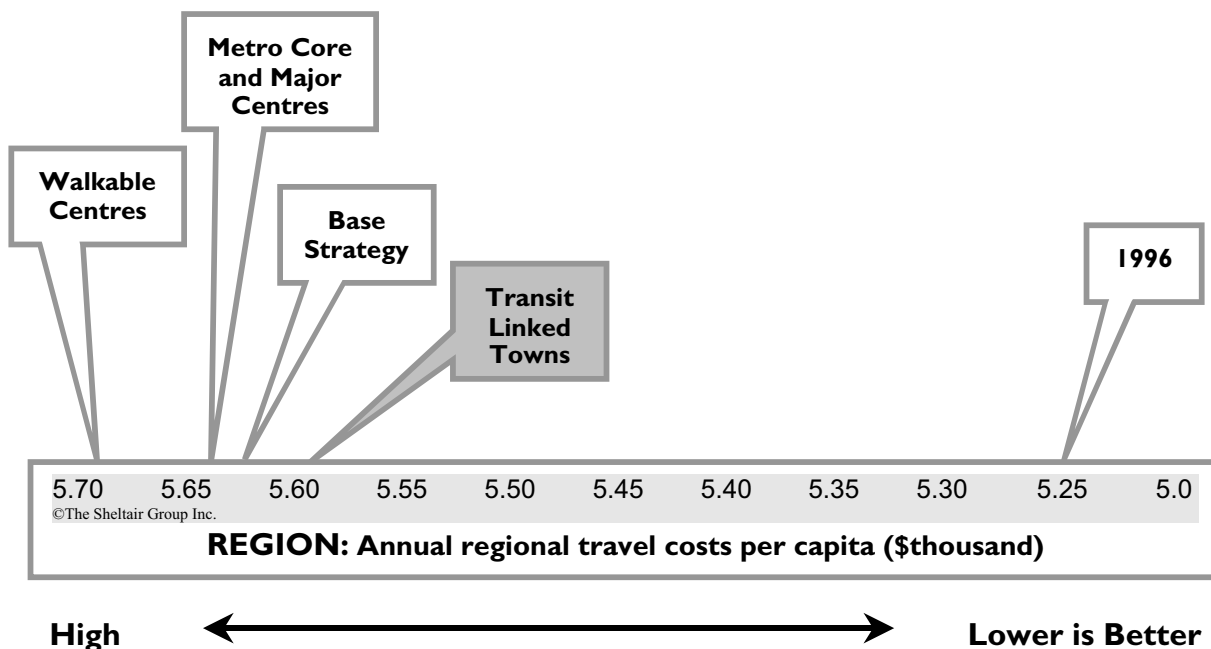
Commentary:

Regional statistics on automobiles show vehicle ownership in 1996 at about 205,000, which represents about 0.65 autos per capita in the region. From the total regional travel estimates in the model, expanded to annual levels, it is calculated that the average vehicle travelled just over 9,000 kilometres within the region in 1996. With retention of vehicle ownership at the same per capita level in the future the average travel distance in the region is expected to rise to about 9,500 kilometres by 2026. Cost increases over 1996 are due to travel distance increases together with additional time costs due to reduced travel speeds.

The following assumptions were taken into account in developing the annual regional travel costs per capita for the four options:

- Auto operating costs are based on BCAA fixed costs and per kilometres rates;
- Transit fares remain constant in 1996 dollars, including the LRT service; and
- Travel time values are \$6 per hour.

BCAA statistics show current auto operating fixed costs at \$5,600 per annum with variable costs at 9.5 cents per kilometre. These rates were applied to the future regional auto fleet and to the total annual vehicle kilometres of travel to identify annual regional vehicle operating costs.



For personal time costs for auto drivers and passengers, a nominal \$6 per hour was used to cover all travel including the commuter, business and leisure travel components. This rate was applied to the total annual hours of auto travel in the region.

Finally transit passenger fares and time costs were applied to total annual transit kilometres and hours of travel, based on expansions of the model statistics. It was assumed for the modelling and for the annual cost estimates that fare levels would remain at 1996 levels in constant dollars, including transit operations with the LRT system.

All personal travel costs by auto and by transit were consolidated and documented as an overall per capita cost by dividing the total annual costs for each option by the regional population. The results show a small variation among the options of \$5,600 to \$5,680, with the Transit Linked Towns option having the lowest cost per capita.