

National Capital Region Transportation Planning Board

777 North Capitol Street, N.E., Suite 300, Washington, D.C. 20002-4290 (202) 962-3310 Fax: (202) 962-3202 TDD: (202) 962-3213

MEMORANDUM

TO: Planning Directors Technical Advisory Committee

FROM: Ronald F. Kirby
Director, Department of
Transportation Planning

SUBJECT: New Scenarios and the Development of the CLRP Aspirations Scenario

DATE: May 16, 2008

New Scenarios

At its September 19, 2007 meeting, the TPB established the Scenario Study Task Force to provide policy-level stewardship for the continuation of the Scenario Study and related TPB activities, including consideration of opportunities for the integration of study findings into TPB planning processes and initiatives. The task force has moved forward with two new scenarios to be developed that are intended to achieve results that would not only be informative and compelling for public audiences but also useful as a tool in the regional planning process, particularly the prioritization of transportation investment. The first scenario will be a “CLRP Aspirations” Scenario, which will serve as a vision for the 2010 long range transportation plan update. The second scenario will be a “What Would It Take?” Scenario, which will set specific mobile-source CO₂ emissions reduction targets and then examine how these goals can be achieved through different combinations of interventions, including some that are not normally reflected in the TPB travel demand modeling process.

The two new scenarios are part of an effort to expand the Regional Mobility and Accessibility Study, which began with five alternative land use and transportation scenarios:

- Higher Household Growth in Region
- More Households in Inner Areas
- More Jobs in Outer Areas
- Region Undivided
- Transit-Oriented Development

These scenarios were constructed and analyzed according to a set of principles that will also be reflected in the new scenarios. The first principle was to bring people closer to their jobs, thereby reducing their commuting distance. The second was to focus on creating a balance between the number of workers and the number of employment opportunities available in the region. The third was for land use shifts to push the boundaries of current zoning and

comprehensive plan restrictions, while insuring that any changes remained feasible. Lastly, land use changes were to be supported by high quality transportation infrastructure.

These previous scenarios were developed in conjunction with the Planning Directors Technical Advisory Committee (PDTAC), and the active involvement of the TPB Citizens Advisory Committee, which will continue into this new effort.

Developing the CLRP Aspirations Scenario

The first of the two new scenario study activities is the development of the CLRP Aspirations Scenario. The intent of this exercise is to provide a realistic, but ambitious vision for the long range transportation plan. It will draw from the strategies explored in the previously studied scenarios, including the variably priced lanes scenarios, and other possible strategies.

This scenario will adhere to two primary criteria intended to root the transportation and land use decisions in financial and political reality. The first is that land use shifts should be able to realistically accommodate proposed densities while maintaining the existing or planned neighborhood character so that it can be considered for possible inclusion in the Cooperative Forecasts. The second is that transportation projects proposed for development under this scenario should be financially within reach, by assuming realistic funding sources. Possible funding sources include local and/or regional tax revenues, financial contributions from developers and increased land values around transit stations, revenue streams from pricing selected facilities, and new federal funding available for transit or possibly metropolitan areas through climate change legislation and federal transportation legislation reauthorization.

The CLRP Aspirations Scenario will intentionally be designed to reflect the current procedures of the CLRP, such as the same representations of travel behavior used in the current TPB travel demand model and the same procedural guidelines required for federal air quality conformity analysis. This preserves the possibility that the CLRP Aspirations Scenario could eventually serve as a de facto ‘unconstrained’ regional long-range transportation plan, following regional dialogue and outreach about the study findings.

Proposed Measures of Effectiveness

The CLRP aspirations scenario is intended to make marked improvements in transportation system efficiency, equity and environmental quality and thus will be measured for its effectiveness across a variety of parameters. These measures of effectiveness are intended to structure the scenario around the common guiding principles adopted in the 1998 TPB Vision, and to provide a basis for analysis of the scenario during and after development.

The first set of measures is to assess the scenario for a variety of environmental impacts. The proposed environmental measures include air quality analysis, which adheres to current CLRP procedures and can serve as a proxy for various health concerns; water quality analysis, such as examination of storm water runoff from increased impervious surfaces; and general adherence to stay away zones and highly sensitive areas, which can address issues of land conservation.

These broad measures can serve as proxies for a variety of other environmental issues that contribute to overall environmental quality.

The second set of measures addresses issues concerning mode choice and travel patterns. These measures reflect analysis currently done for the CLRP, but can be expanded for this scenario. For instance, to assess the efficiency of the region's transportation systems under expected improved conditions in the scenario, lane miles of congestion and transit congestion can serve as simple measures. An additional measure affecting system efficiency is the availability and use of alternative modal choices. The latter can be addressed directly through transit, bicycle and walk shares of trips. The former can be addressed through a measure of accessibility to jobs and housing by highways, transit, and walk-access transit. Accessibility can also serve to address environmental justice concerns by assessing access to jobs by different modes and by demographic group.

Possible Strategies

There are several strategies that can be employed to achieve the goals implicit in the measures of effectiveness and to meet the targeted goal of creating highly accessible and highly developed areas. Broad strategies include concentrating development in activity clusters and around new and underutilized transit stations in order to promote non-greenfield development, capitalize on planned and existing transit infrastructure and to encourage geographically balanced development. Transit strategies include implementing high-quality transit services on varying geographic levels, such as circulator systems for intra-cluster travel and larger enhancements to the regional (rail and bus) transit networks with an emphasis on currently underserved areas. Lastly, in order to promote a more efficient transportation network and to raise revenue for transit projects, another strategy could be to implement regional tolling networks to manage freeway congestion. New revenues from the tolling networks could possibly address public concern regarding the availability of funding for high quality transit projects.

Working within these broad strategies, scenario development activities could include mining the original scenarios for information about which transportation projects and land-use shifts produce the most "bang for the buck." This includes sensitivity analysis at both the regional and local scales, demonstrating that while the original scenarios may have seemingly modest regional impact, they can have a large impact on predicted travel behavior in small areas where concentrated land use and transit accommodation converge. This sensitivity analysis can also serve to address public concern about our ability to implement a regional strategy of concentrated development without causing negative impacts at the local level.

The 'menu' of transportation projects and land use strategies

These strategies will draw from the 'menu' of transportation projects and land use strategies compiled from past scenario studies and public input. The five previously mentioned original scenarios, each of which took a different approach to land-use shifts and complementary transportation investments, along with the two recently completed variably priced lanes scenarios, provide an excellent starting point for constructing the new scenario.

In addition to these previous scenarios are a host of other sources of information, such as results of the Scenario Study outreach program conducted by TPB staff in 2006 and 2007. This outreach effort yielded several ideas from the public for projects or approaches not included in the original scenarios. For instance, many outreach participants cited a need for more circumferential transportation infrastructure, especially transit. While the original scenarios included some circumferential links, more possibilities could be studied. Other members of the public highlighted specific rights-of-way they consider to be underutilized as possibilities for added transportation capacity.

In addition to the feedback summary report, the recommendations by the TPB CAC on next steps and additional scenario considerations is a valuable source of ideas for overall approaches that may differ from the strategies used in developing the original scenarios. Other TPB committees such as the Regional Bus Subcommittee can also provide valuable input on priority projects, such as BRT networks.

Progression of Development Steps

The “CLRP Aspirations” scenario will be developed with a progression of different land use and transportation layers. It will first begin with appropriate land use changes based on past scenarios and then impose supportive transportation investments based on the new land use decisions. The third step will include an assessment of transportation system inefficiencies, such as severe congestion, and examine the possibility of variably priced road networks to alleviate congestion and fund transit alternatives.

The first step in developing the land use aspect of the scenario is to evaluate the land use shifts that occurred in the past five land use/transportation scenarios. In the previous scenarios, specific TAZs were identified as “receiving” zones based on proximity to transit or location within an activity cluster. These receiving zones represented areas where post-2010 growth would primarily be directed. All other zones were designated as “donor” zones from which projected growth could be shifted to a “receiving” zone. In each of the past scenarios, the receiving zones were assigned varying levels of growth, the maximum of which will be used to determine the “shifting opportunity” for each receiving zone. For instance, if a particular zone received household and/or employment shifts in multiple scenarios, the maximum positive shift will be used for consideration. Determining this shift cannot be a uniform process because of the differences between the Round 6.4 forecast used for the five previous scenarios and the current Round 7.1 forecast. Therefore, there are three possible outcomes in this analysis:

1. In zones where the Round 7.1 forecast is higher than the Round 6.4 forecast, but below the maximum scenario total, the “shifting opportunity” would be equal to the difference between the scenario total and the Round 7.1 forecast total
2. In zones where the Round 7.1 forecast is lower than the Round 6.4 forecast, the maximum addition of households and/or employment from the previous scenario will be applied to the Round 7.1 forecast
3. In zones where the Round 7.1 total is higher than the maximum scenario total, no “shifting opportunities” are assigned

Based on this assessment of the potential for each designated receiving zone to absorb new growth, the projected growth forecasts for 2010-2030 from Round 7.1 have been assigned to the receiving zones.

Please refer to the spreadsheet for each individual jurisdiction (available here: http://www.mwcog.org/planning/committee/committee/documents.asp?COMMITTEE_ID=35), which shows the “shifting opportunity” and correlating new growth assignment for each zone based on household forecasts, employment forecasts and growth assignments from each of the past five scenarios for each TAZ.

The next step after reviewing the new growth assignments for each receiving zone is to examine the region for new activity centers based on new concentrations of jobs and housing. This analysis will assist in the later transportation stage of scenario development, particularly in the planning of new transit lines to connect activity clusters and in the determination of the most efficient and beneficial variably priced lane network. Another part of this process is to possibly propose higher densities and thus new activity centers around transit stations currently located outside of activity centers.

Developing the “What Would It Take?” Scenario

The second new scenario differs significantly from the first scenario and provides the flexibility to assess strategies and assumptions beyond those used to date. Rather than building a new scenario and then testing its performance against the 2030 baseline, the “What Would It Take?” Scenario will begin with one or more performance objectives and determine the different scales and combinations of interventions necessary to achieve those objectives. The scenario will be designed to facilitate regional dialogue with the public and among decision-makers about the steps necessary to implement a desired regional future, in a way that moves beyond the typical constraints of the TPB analysis process.

The first step in developing this scenario is to identify the performance objectives. While there are many possible goals, beginning with a single carbon dioxide (CO₂) emissions reduction goal provides several broad-reaching benefits. For instance, many strategies that specifically seek to reduce CO₂ emissions also provide ancillary transportation, environmental, health and possible economic benefits, such as reduced congestion and reduced fuel consumption.

The second step is to determine the menu of interventions can serve to meet a CO₂ reduction goal from transportation sources. The possible interventions available to the transportation sector are typically grouped into three possible areas: fuel efficiency, greenhouse gas emissions from fuel, and reductions in vehicle travel. Specific interventions include stricter CAFE standards, biofuels, more fuel efficient vehicle technology (electric or fuel cell engine technology), changes in prices for travel, changes in individual behavior, congestion, and changes in land use patterns.

The resulting product of this “What Would It Take?” exercise would be an array of “sliders” representing the variables discussed above. The scale for each “slider” would run from a minimum represented by the 2030 baseline, to a maximum represented by what it would take to

reach the 2030 emissions reduction goal through a change *in that variable alone*, if possible. It is unlikely that one intervention alone could reach the goal, as is evidenced by the CAFE standards. Therefore, the ultimate contribution of this study is to assess the different combinations of changes in the variables that would achieve the reduction goal. These combinations could then be assessed for their financial, administrative, and technological feasibility and prioritized according to their short-, medium- and long-term costs and benefits.

This scenario could serve as a guide for the region in identifying low-hanging fruit for mobile-source CO₂ emissions reductions and prioritizing strategies with varying degrees of cost and benefit across varying implementation timeframes.