



METROPOLITAN
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COMMISSION

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Memorandum

TO: Partnership TAC

DATE: August 13, 2007

FR: Lisa Klein, MTC and Christy Riviere, ABAG

W. I.

RE: Transportation 2035 Vision: Land Use and Pricing Sensitivity Analysis

In July 2007, MTC Planning Committee authorized staff to proceed with a performance-based approach to developing the Transportation 2035 Vision, as described in the previous agenda item. The approach calls for applying sensitivity tests to each of the investment scenarios to understand how land use and pricing policy measures could help the region achieve the performance targets. Staff hypothesize that such policy measures will be needed along with system investments to reach the aggressive, state-directed performance targets to (1) reduce congestion, (2) reduce vehicle miles traveled, (3) reduce carbon dioxide and particulate matter emissions, and (4) address equity.

MTC plans to run three rounds of sensitivity tests:

- Land use
- Pricing
- Combined land use and pricing with increased fuel efficiency

In each round, MTC will apply the test to each of the three investment alternatives and measure progress toward the four performance targets. MTC will apply the tests by changing assumptions in the regional travel demand model. Some additional metrics such as trips by mode, average trip distance, and speed or travel time may also be reported for context.

While ABAG has made considerable progress in defining the land use sensitivity test, MTC staff is still in the early stages of defining the pricing test and combined test. As evident from the descriptions below, MTC staff still is considering our technical and methodological options.

It is important to note the tests are intended to illustrate the level of impact land use, pricing and combined approaches could have on performance. The tests are not designed to evaluate different, specific approaches or intensities under land use or under pricing. Thus, while we will not test \$5/gallon gas compared to \$10/gallon gas or gas taxes compared to transit fare discounts, we will be able to understand whether aggressive land use, pricing or combined measures can substantially move the region toward each of the targets.

Land Use Sensitivity Test

The land use sensitivity test will show how a more aggressive policy-based land use affects the performance of the three transportation investment scenarios. ABAG staff is deriving an alternative land use forecast (year 2035) that goes beyond the policy-based Projections 2007 series in targeting growth in existing communities and near transit. The alternative land use will be first and foremost a policy forecast, as opposed to a purely market-driven outcome.

For the land use sensitivity test, ABAG will use a set of weighed factors (as shown in Table 1) to allocate employment and household growth to local jurisdictions.

Table 1: Growth Allocation Factors

Factor	Weights Used for Alternative Land Use	Weights Used for RHNA* (for comparison)
Household Growth Allocation Factors		
Existing Employment	50.0%	22.5%
Existing Employment near Transit	25.0 %	na
Employment Growth near Transit	25.0%	5.0%
Job Growth Allocation Factors		
Existing Households	50.0%	na
Existing Households near Transit	25.0%	na
Household Growth near Transit	30.0%	5.0%

* RHNA stands for Regional Housing Needs Allocation

The effect is to shift regional growth to existing employment and housing centers, areas projected to have employment growth (under Projections 2007) and areas with existing and planned transit.

MTC staff will use the alternative land use forecast for all three transportation scenarios. ABAG staff will qualitatively assess the fit between the alternative land use forecast and each of the three transportation scenarios.

Pricing Sensitivity Test

The pricing sensitivity test will show how cost affects travel behavior. The test will include some combination of the following:

- Increase the cost of driving on a per-mile basis to represent a carbon tax or tax on vehicle miles traveled.
- Increase the cost of driving on freeways during the peak period to ways to represent congestion-based pricing on a region-wide or corridor-wide basis.
- Increase the cost of parking. This could include increases to existing charges assumed for parking in downtown areas and new charges for parking in suburban areas.

MTC staff is consulting with technical experts and reviewing our prior work as well as other studies to determine how to combine these approaches and settle on appropriate increases and decreases for the test. Results from a recent MTC sensitivity test of gas prices are shown in Table 2. These suggest that doubling gas prices would reduce vehicle miles traveled and fuel consumption only relatively modestly. One can conclude the pricing test should include a combination of measures.

MTC staff recognizes that affordability for low-income travelers is a significant concern when contemplating increases in travel costs. As a result, we plan to allow for discount or rebate programs for eligible low-income households, much as utility companies have “lifeline” programs.

Table 2: Impact of Doubling Gas Prices and Increasing Fuel Efficiency on Travel and Fuel Consumption

Scenario (Year 2020)	Gas Price (2006\$)	Fuel Efficiency (mi/gal)	Vehicle Trips (vs baseline)	VMT (vs baseline)	Total Fuel Consumption (vs baseline)
Baseline	\$2.62	22.48	20,320,500	182,636m	8,124,408
Euro-scale gas prices	\$5.64	22.48	19,740,400 (-2.8%)	179,298m (-1.8%)	7,975,894 (-1.8%)
Increased fuel efficiency by 18%	\$2.62	26.53	20,418,100 (0.5%)	183,192m (0.3%)	6,905,089 (-15%)
Euro-scale gas prices and increased fuel efficiency	\$5.64	26.53	19,929,500 (-1.9%)	180,460m (-1.2%)	6,802,145 (-16%)

Source: MTC, September 2006

Combined Sensitivity Test

This round of tests would combine the land use and pricing sensitivity assumptions from the previous rounds. In an effort to pull out all the stops, we would also assume increases in fuel efficiency based on faster replacement of the region’s vehicle fleet. In the same analysis mentioned above and summarized in Table 2, MTC considered the impact of increased fuel efficiency. The analysis found increases in fuel efficiency could significantly reduce fuel consumption, which would be directly correlated with carbon dioxide emissions, though not particulate matter emissions.

Next Steps

MTC staff will conduct the sensitivity analyses in the second half of September and early October. We are aiming to have results from all three rounds in time to inform discussion at the October 26 MTC/ABAG fall forum.