

CHAPTER VI - FINANCE AND IMPLEMENTATION





OVERVIEW

Given the important role that transportation plays in determining the quality of life and economic success of the region, it is important that the policies and actions of the LRTP Update be advanced.

A major component of insuring that the recommendations of the LRTP Update are advanced is the development of a finance plan to allocate reasonably expected revenues.

Anticipated Revenue Projections

Title 23 of the U.S. Code of Federal Regulations governing MPOs requires the LRTP to "include a financial plan that demonstrates the consistency of proposed transportation investments with already available and projected sources of revenue." The requirement further states that "the estimated revenue by existing revenue source (local, state, federal, and private) available for transportation projects shall be determined..." and "all cost and revenue projections shall be based on the data reflecting the existing situation and historical trends."

The passage of SAFETEA-LU resulted in a significant increase in federal funding for transportation across the nation. Projections of future anticipated federal formula funds were developed based on the amounts authorized in SAFETEA-LU as the defined "existing situation" referenced in Title 23 with respect to anticipated federal revenues.

These projections represent a conservative amount of federal formula funding that can be reasonably expected over the next 20 years based on past funding levels. In addition, State Dedicated Funds (SDF) were incorporated into the analysis based on historical trends. Combined, federal formula funds and SDF (including the amount used to match federal formula funds) comprise the vast majority of revenues available to maintain and operate the federal-aid transportation system in the region.

Non-federal transit revenues were not included in the analysis other than for matching federal funds. Given that FTA funds can only be used for capital expenses (with limited exceptions), non-federal monies above

those needed to match federal funds are anticipated to be used for operating expenses.

How the projections were developed

GTC analyzed the *2005-2010 TIP*, as originally adopted, and the estimates of federal formula funds used to develop the *2007-2012 TIP* to serve as the basis for developing the projections. The percent change of federal formula funds to New York State between TEA-21 and SAFETEA-LU was determined and a minimal graduated reduction in this amount of change was applied to the anticipated amounts to the region in future reauthorizations to account for New York's slower rate of population growth than other states. The revenue projections by federal formula fund source were then aggregated to reflect anticipated year of expenditure dollars.

In addition, there are projects in the TIP that utilize federal discretionary funds, however, GTC staff did not include these funds in the projections because they cannot be reasonably expected to recur at past levels on a consistent basis in the future. For those projects that include both formula and discretionary federal funds, only the formula funds were included in the development of the projections of future anticipated federal formula funds. Any funds received through discretionary programs will have a positive impact on revenue to the region, but cannot be considered anticipated revenues for the purposes of the LRTP Update.

Because the receipt of most federal funds for transportation investments require a minimum 20 percent non-federal match, this minimum was used to determine the non-federal amount of funding to ensure that the anticipated revenue projections would be conservative and therefore "reasonable". This 20 percent match was subtracted from the projections of SDF and the remainder is considered non-federal funds available for maintenance and operation of the federal-aid system.

None of the TIPs developed by GTC have included any private sources of matching funds. Accordingly, no private funds are projected to be available during the 20 years covered by the LRTP Update.



How the TIP-eligible costs were developed

The TIP-eligible costs were developed through methodologies similar for each category but unique for each mode. The TIP-eligible costs are a conservative estimate of the total transportation needs of the region. A synopsis of the methodologies used to develop the TIP-eligible costs follows:

- * Preservation - primarily TIP proposals (funded and unfunded) with adjustments made in Bicycle & Pedestrian for costs associated with preserving and maintaining an increased number of multi-use trails as more are developed over the 20-year period covered by the LRTP Update
- * Operation - a combination of TIP proposals (funded and unfunded) and estimated costs provided as part of the recommendations included in the plan, study, or report from which they were taken
- * Expansion - primarily estimated costs provided as part of the recommendations included in the plan, study, or report from which the recommendation was taken

A reasonableness check was performed on the TIP-eligible costs developed for the proposed recommendations based on *New York State Metropolitan Planning Organizations Long-Term Funding Needs Study* (August 2003) and the previous LRTP (December 2004), indicating that the TIP-eligible costs developed for the LRTP Update are a reasonable measure of the alternatives needed to meet the region's minimum transportation needs.

In some instances, a specific proposed recommendation had a cost assigned to it that is not included in the TIP-eligible cost for that category. An example is the Amtrak Station improvements (Action P.15.). The costs associated with these types of recommendations are not considered TIP-eligible and are noted as such.

Per FHWA and FTA guidance, a four percent annual inflation rate was applied to the current year costs to reflect year of expenditure dollars for 2007 and beyond – for both highway and transit improvements. This inflation rate was compared to the most recent (April 2007) American Road and Transportation Builders Association Highway Construction

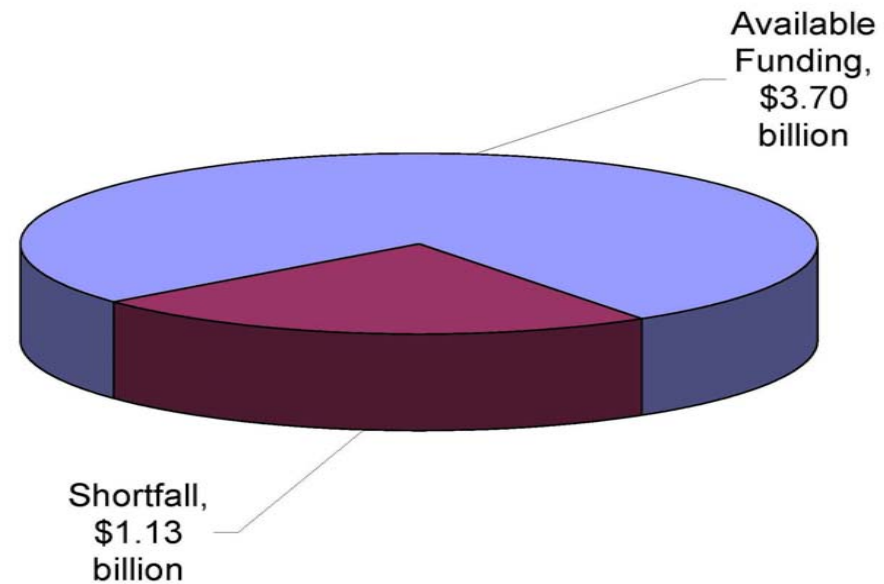
Producer Prices, which also calculated long-term trend growth at four percent per year.

THE SHORTFALL

While TIP-eligible funding costs for transportation needs across all modes (as represented by the policies and actions included in the LRTP Update) amount to approximately \$4.82 billion in escalated dollars through 2027, GTC can reasonably anticipate approximately \$3.70 billion in federal formula fund revenues to be available for funding the proposed recommendations.

As presented in Exhibit 15, the shortfall is the difference between the costs of the policies and actions and the anticipated revenue projections and conservatively totals approximately \$1.13 billion (or 23.4 percent) over the 20 years covered by the LRTP.

Exhibit 15 - **FUNDING SHORTFALL**

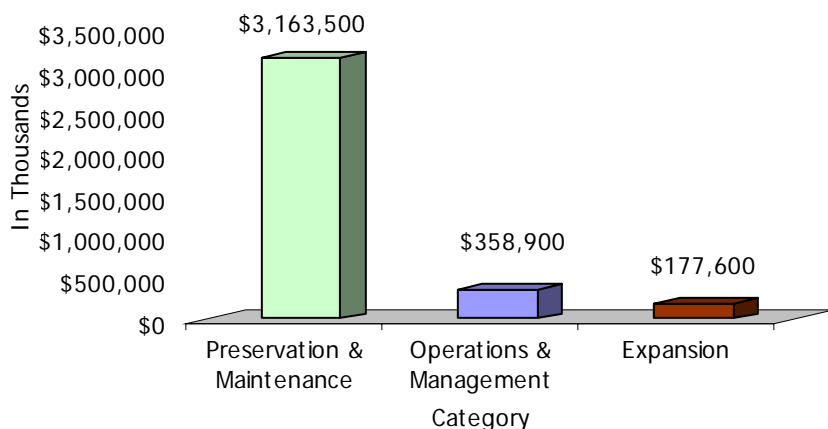




Allocation of Revenue Projections

The projected funding for the duration of the plan - \$3.70 billion in future year or escalated dollars - is allocated to modes and categories at the same levels that it is in the *2007-2012 TIP*. This is representative as it accounts for the region's increased emphasis on management and operations of the existing system with expansion primarily limited to the public transportation, bicycle, and pedestrian networks. Exhibit 16 presents the projected funding allocations to the categories using these past distribution levels.

Exhibit 16 - **FUNDING ALLOCATION BY CATEGORY**



STATE ENERGY PLAN

Pursuant to the New York State Energy Plan, GTC staff undertook an analysis of the impact of the *2007-2012 TIP* on the emission of five pollutants and on energy usage. The results of this analysis were used to project emissions and energy use over the period covered by this LRTP Update. Emissions analysis was done for the following pollutants:

1. Volatile Organic Compounds (VOC)
2. Nitrogen Oxides (NOx)
3. Carbon Monoxide (CO)
4. Greenhouse gas - Carbon Dioxide (CO₂)
5. Particulate Matter (PM)

Energy usage was calculated for two "types" of energy:

1. Direct Energy - the energy consumed by vehicles using a transportation facility
2. Indirect Energy - the energy consumed to construct a transportation facility

Analysis Methodology

The analysis was based on guidance received from NYSDOT Environmental Analysis Bureau. The analysis was done for the Rochester TMA, the area covered by the GTC Travel Demand Model.

Projections of emissions and energy use for the LRTP Update were based on the assumption that future TIPs developed during the period covered by this LRTP Update will have similar mixes of projects to those found in the *2007-2012 TIP* because the allocation of funding by category will be essentially the same.

GTC staff updated the future year (2027) GTC Travel Demand Model to include all of the "model-able" regionally significant projects in the *2005-2010 TIP* (this became the "No-Build" scenario for the analysis). The model-able projects that are new to the *2007-2012 TIP* were then added to the No-Build scenario (thereby creating the "Build" scenario for the analysis). A comparison of the output from the two model scenarios shows the impact of the projects new to the *2007-2012 TIP*.

VOC, NOx, and CO were analyzed by applying Emission Factors (i.e., grams emitted, per mile, of each pollutant based on vehicle speed and roadway functional classification) to the output from the two model scenarios.



Direct energy was calculated by applying Fuel Consumption Rates (i.e., gallons of fuel used, for three vehicle classes, based on speed) to the output from the two model scenarios. Indirect energy was calculated by applying Construction Energy Factors (i.e., energy consumed, per lane-mile, for specific types of roadway and bridge improvements) to the output from the Build scenario.

Direct and indirect greenhouse gas (CO₂) emissions were calculated based on the results of the direct and indirect energy calculations. Direct greenhouse gas emissions were calculated by multiplying the total direct energy impacts (by vehicle class) for each of the two model scenarios by Carbon Emission Coefficients (i.e., carbon emitted during fuel consumption, for gasoline and diesel fuels). Indirect greenhouse gas emissions were calculated by multiplying the total indirect energy impact of the Build scenario by the Carbon Emission Coefficient for diesel fuel.

Particulate matter emissions (i.e., PM-2.5 and PM-10; the number specifies the maximum size, in microns, of the particles) were analyzed qualitatively. This analysis consisted of a consideration of the potential impacts of project types (e.g., transit replacement and roadway reconstruction projects) from the TIP on the emission of particulate matter.

Qualitative analysis was also undertaken for those projects new to the *2007-2012 TIP* that were not model-able. This analysis consisted of a consideration of the potential impacts of these projects on emission levels and energy usage.

The impact of carpooling on travel in the TMA was determined by estimating the number of work trip-related carpool passengers and calculating how many vehicle miles of travel would be added to the TMA roadways if each of these carpool passengers drove their own car.

Analysis Results

The results of the quantitative analyses demonstrate that the projects new to the *2007-2012 TIP* will decrease the emissions of VOC, NO_x, CO, CO₂, and the amount of direct energy consumed, albeit by small amounts. It is expected that the projects in the TIPs to be developed during the period covered by the LRTP Update will continue to decrease the emissions of VOC, NO_x, CO, CO₂, and the amount of direct energy consumed by small amounts.

The qualitative analyses suggest that the Public Transportation, Bicycle & Pedestrian, Intelligent Transportation Systems, and Other projects new to the *2007-2012 TIP* will bring about additional decreases in emissions and direct energy usage. A second qualitative analysis suggests that the projects new to the *2007-2012 TIP* should result in a decrease in transit-based particulate matter emissions, no increase in these emissions related to highway vehicle miles of travel, and minimal construction-related particulate matter emissions.

Finally, continued funding of the region's Rideshare program, which supports carpooling efforts, should help reduce the number of automobile trips (and the emissions and direct energy consumption associated with these trips).

Exhibit 17 on the next page presents the projected changes in emissions and energy usage resulting from the implementation of the LRTP Update (i.e., build versus no-build).



Exhibit 17 - Projected Daily Emissions and Energy Use Changes Resulting from the LRTP

Scenario	Air Pollution Emissions			Energy		Greenhouse Gas (CO ₂) Emissions	
	VOC (grams)	NOx (grams)	CO (grams)	Direct (BTUs)	Indirect * (BTUs)	Direct (tons)	Indirect * (tons)
Change	-3,170.46	-4,223.81	-189,056.36	-74,124,412.27	383,371,600,000	-1.57	8,344.10
% Change	-0.057%	-0.075%	-0.079%	-0.046%	--	-0.046%	--

* The intent of the indirect energy and greenhouse gas calculations was to measure the impact of the construction of the projects new to the 2007-2012 TIP. The indirect energy used in the 2027 No-Build scenario is zero (as is the greenhouse gas emissions arising from the indirect energy used); therefore it is not possible to compute the percentage difference between the two scenarios.