

Memorandum

To: Robert Cáliz, Los Angeles County Metropolitan Transportation Authority

From: Robert D. Spencer, Urban Economics
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Date: June 18, 2012 (UPDATED - prior memorandum dated May 15, 2012)

Subject: Draft Preliminary Economic Impact Analysis of the Proposed Congestion Mitigation Fee Program – South Bay Cities Sub-region

This memorandum provides an explanation of the economic impact modeling completed by Cambridge Systematics, Inc. to evaluate the proposed Congestion Mitigation Fee Program. The memorandum first provides a general explanation of the modeling tool used for this analysis. Following this discussion is a presentation of the specific assumptions, findings, and conclusions regarding the regional economic impacts of the Congestion Mitigation Fee Program described in the Preliminary Nexus Study for the South Bay Cities sub-region (dated June 2012).

This memorandum has been updated to reflect changes in the economic analysis inputs. Subsequent to the initial analysis we conducted similar analyses for other sub-regions and identified a pattern of unreasonable results related to variances in vehicle travel estimates from the countywide travel demand model used to provide inputs for this analysis. Consequently we constrained the travel demand model estimates to changes in travel within the South Bay Cities sub-region only, and not changes in countywide travel as had been used in the prior analysis. In addition, the benefit – cost estimate has been removed because it is not able to provide a comprehensive measure of benefits and cost given the limitations of the travel demand and economic impact modeling. Many of the projects such as intersection improvements and signal synchronization occur at too fine a geographic level to use MTA's travel demand model. The alternative modeling approach used to estimate the direct impacts of congestion reduction for these types of projects is unable to estimate induced travel (see the Preliminary Nexus Study for more explanation).¹ Induced travel is a major economic benefit of congestion reduction. In addition, the economic modeling tool is unable to estimate indirect costs associated with increased accidents, vehicle maintenance, and environmental impacts caused by the increased travel that occurs when congestion is reduced. The net effect of these limitations probably understates the economic benefits of the Congestion Mitigation Fee Program described in this memorandum so the results provided here should be considered conservative.

Economic Impact Modeling For Los Angeles County

Cambridge Systematics, Inc. used the latest version of TranSight (version 3.3.1) from Regional Economic Models, Inc. (REMI) and licensed to the Los Angeles County

¹ See also Cambridge Systematics, *Congestion Mitigation Fee Nexus Analysis Methodology, Technical Memorandum*, prepared for the Los Angeles County Metropolitan Transportation Authority, July 2011.

Metropolitan Transportation Authority (MTA) to evaluate the impact of the proposed Congestion Mitigation Fee Program. Local, regional, and state agencies nationwide use tailored versions of this model for regional forecasting and policy analysis. In addition to the MTA, public agencies in Southern California that use this model include the Southern California Association of Governments, the South Coast Air Quality Management District, and Los Angeles World Airports.

All REMI models are based on standard input-output analysis derived from inter-industry economic transactions. The REMI model used for the proposed Congestion Mitigation Fee Program is based on the latest economic data available for the economic structure of Los Angeles County across 70 industry sectors. This approach enables the model to evaluate how changes in costs or productivity in each industry sector ripple through the Los Angeles County economy. The REMI model also has a general equilibrium component that balances the relative competitiveness of Los Angeles County against the national economy. For example, if traffic congestion is reduced the REMI model will evaluate to what degree productivity gains in Los Angeles County will attract jobs from the rest of the nation.

Evaluating Economic Impacts of a Proposed Congestion Mitigation Fee Program

The proposed Congestion Mitigation Fee Program would directly impact the Los Angeles County economy in the following ways:

- ◆ **Positive impacts** would be generated by transportation improvement projects funded by the Congestion Mitigation Fee Program through reduced congestion, improved economic productivity, and increased infrastructure spending.
- ◆ **Negative impacts** would be generated by a new Congestion Mitigation Fee paid by developers and builders in the Los Angeles County real estate industry to fund these projects.

The specific benefit of the TranSight model from REMI is that it directly integrates: (1) the transportation system data derived from travel demand modeling; and (2) transportation project costs and funding data into the Los Angeles County economic impact analysis described in the prior section. The TranSight model represents the spatial dimension of the Los Angeles County economy. Transportation costs and accessibility are important economic determinants of interregional trade, affecting the productivity of industry clusters by improving labor market access and goods and service delivery. Furthermore, infrastructure spending on transportation projects benefits the Los Angeles County economy increasing activity in the construction industry and related sectors.

Inputs to the TranSight model are based on the results of the draft preliminary nexus studies completed for each sub-region in Los Angeles County by the Cambridge Systematics, Inc. team for MTA. Transportation system inputs were derived from the output of the two models used for the nexus study: (1) the MTA's travel demand model; and (2) the Congestion Mitigation Fee Analysis Tool developed by Cambridge Systematics, Inc. specifically for the Congestion Mitigation Fee Program. The transportation improvement costs and funding inputs were provided by the local jurisdictions participating in each sub-regional nexus analysis. The technical analysis that led to these results is described in more detail in each sub-region's draft preliminary nexus study.

Model Scenarios, Inputs, and Outputs

The TranSight model evaluates the impact of Congestion Mitigation Fee Program by comparing changes between (1) a base case scenario for the Los Angeles County economy without the Congestion Mitigation Fee Program; and (2) an alternative case for the County with the Congestion Mitigation Fee Program in place. Results are expressed in terms of the difference in economic activity caused by the Congestion Mitigation Program.

The analysis was conducted for a 20-year planning horizon consistent with the draft preliminary nexus study. All inputs are derived solely from the draft preliminary nexus study for the sub-region being analyzed and are limited to changes in travel and transportation improvement spending within the sub-region associated the Program. Outputs are expressed for the entire Los Angeles County because the model's economic input data does not allow disaggregation to the sub-region level. Key transportation-related inputs derived from the sub-region draft preliminary nexus analysis include:

- ◆ Change in **commuting costs for workers** are based on changes in total trips, vehicle miles traveled, vehicle hours of travel, and average trip length for private automobiles.
- ◆ Changes in **accessibility costs for firms** are based on changes in total trips, vehicle miles traveled, vehicle hours of travel, and average rate of deliveries for commercial vehicles in Los Angeles County.
- ◆ Changes in **transportation costs for firms** are based on vehicle miles traveled, vehicle hours of travel, and average travel speed for commercial vehicles in Los Angeles County.

The trip data includes changes in Los Angeles County trips from and to the other five counties in the region.

The transportation project cost and funding data based on the draft preliminary nexus study is input to the model in the following way:

- ◆ Changes in **transportation construction spending** are based on the share of total project costs funded by the Congestion Mitigation Fee Program, divided into 20 equal annual increments for the 20-year planning horizon.²
- ◆ Changes in **construction industry costs** are based on the amount of the Congestion Mitigation Fee Program, divided into 20 equal annual increments for the 20-year planning horizon.

Changes in transportation construction spending are equal to changes in construction industry costs because they are both related to the proposed amount of the Congestion Mitigation Fee Program.

As explained in the draft preliminary nexus studies, transportation system impacts could not be quantified for certain types of projects such as transit enhancements, bicycle, and pedestrian projects. The economic analysis includes transportation and project cost and funding inputs only for those projects with quantified system impacts. The consultant team

²The share of total costs funded from other sources would occur under both the base case and the alternative scenario so no increase in construction spending is associated with that share of project funding.

is developing approaches to estimate impacts from these other types of projects and will include them in updates to the economic impact analysis.

Model outputs reflecting economic activity in Los Angeles County are expressed as:

- ◆ Changes in **total employment** for all industries and separately for the construction industry.
- ◆ Changes in **economic output/business sales** for all industries.
- ◆ Changes in **real disposable personal income** for all residents.

Model output expresses the benefit to the Los Angeles County economy from reduced congestion and increased infrastructure spending net of the costs to the real estate development industry associated with the proposed Congestion Mitigation Fee.

The approach described above incorporates the total congestion reduction benefits from projects included in the Congestion Mitigation Fee Program. Thus the effect of leveraging other funding by the Congestion Mitigation Fee Program is included as a benefit in terms of congestion reduction from the associated capital projects. This approach assumes that in the absence of the Congestion Mitigation Fee Program these other funding sources would be used to maintain and operate existing facilities or add capacity to remedy existing deficiencies and not be used to mitigate the impacts of new development. This approach is reasonable given that the large majority of this other funding is generated by the existing population (e.g., sales and gas taxes) and would be used to benefit the existing population. Nevertheless, the model input associated with increased transportation construction spending is limited to the Congestion Mitigation Fee Program funding only and excludes leveraged funding because leveraged funds would still generate construction activity in the absence of the Congestion Mitigation Fee Program.

South Bay Cities Economic Impact Model Results

Based on the draft preliminary nexus study completed for the South Bay Cities sub-region, the TranSight model was used to evaluate the economic impacts on Los Angeles County using the approach described above. The key inputs are summarized in Figures 1 and 2. The projects proposed by the South Bay Cities jurisdictions are estimated to reduce the increase in vehicle hours of delay (VHD) over the next 20 years by 38 percent. This estimate is lower than shown in the South Bay Cities Preliminary Nexus Study (December 2011) due to corrections to project inputs and assumptions used to estimate VHD reductions.

These projects are estimated to cost a total of \$408 million with \$284 million funded by the proposed Congestion Mitigation Fee. A range of other revenue sources for transportation projects would fund the remainder.

Figure 1: South Bay Cities Sub-region Annual Vehicle Hours of Delay (VHD)

2010 (Existing)	2030 (No Build)	2030 (With Projects)	2010 – 2030 (No Build)	2010 – 2030 (With Projects)	VHD Reduction Benefit	
					Amount	Percent
<i>a</i>	<i>b</i>	<i>c</i>	<i>d = b - a</i>	<i>e = c - a</i>	<i>f = d - e</i>	<i>g = f / d</i>
3,356,000	10,709,000	7,930,000	7,352,000	4,573,000	2,779,000	38%

Note: The analysis excludes freeway impacts because much of the freeway traffic is inter-regional and the projects submitted by jurisdictions are focused on the regional arterial system.

Figure 2: Congestion Mitigation Fee Program Funding and Project Costs: South Bay Cities Sub-region

Project Type	Number of Projects	Total Cost	Other Funding	Unfunded
Capacity	72	\$324,885,000	\$105,325,000	\$219,560,000
Intersection Improvement	46	\$36,745,000	\$6,101,000	\$30,644,000
System Operations	18	\$47,051,000	\$12,899,000	\$34,152,000
Grade Separation	-	\$-	\$-	\$-
Subtotal	136	\$408,681,000	\$124,325,000	\$284,356,000
20-Year Average		\$20,434,000	\$6,216,000	\$14,218,000

The results of the economic impact analysis indicate that congestion reduction and construction spending associated with these projects would benefit Los Angeles County more than the added cost of the proposed Congestion Mitigation Fee Program. At the end of the 20-year planning horizon there would be 14,200 more jobs countywide, an increase of 0.19 percent over the base case scenario. One component of this total increase would be 1,300 more construction industry jobs, an increase of 0.38 percent in this industry category. The investment of \$409 million in congestion mitigation projects would generate additional economic output countywide of \$2.4 billion, an increase of 0.18 percent. Disposable personal income countywide would be \$0.8 billion higher, an increase of 0.14 percent. These results are summarized in Figure 3 below.

Figure 3: Economic Impact of Proposed Congestion Mitigation Fee Program: South Bay Cities Sub-region

	Total Change	Percent Change
Employment – All Industries	14,200	0.19%
Employment – Construction	1,300	0.38%
Economic Output (Real 2005 \$ billions)	\$2.409	0.18%
Real Disposable Personal Income (Real 2005 \$ billions)	\$0.764	0.14%