

# Incorporating Twenty-Four Hour Volume Analysis into Transportation Planning Process

**Project Description:** Assessment of transportation improvement alternatives is traditionally based on the peak hour traffic that is generally proportioned from the projected annual average daily traffic (AADT) using traditional parameters, i.e., K-factor and D-factor. With the growth of traffic in large urbanized areas and the emergence of the phenomenon known as peak-spreading, it is increasingly becoming obvious that transportation planning for future years need to take into account the expected 24-hour distribution of traffic. There are a number of advantages of using 24-hour approach of determining future performance including the quantification of the levels of expected congestion throughout the day instead of during the traditional peak hours only.

This research will conduct a detailed analysis of existing patterns of hourly variation of volumes and develop realistic and usable models to predict future distribution of hourly volumes using significant regressor variables related to roadway geometrics and econometric factors that influence trip making particularly during congested conditions. While the TTMS data provides hourly volume variation, collection of origin-destination data will be important in developing the necessary link and network-based analysis tools. The research will concentrate on urban and large urbanized areas that are expected to experience significant peak spreading in the future.

**Recommended Researchers:** FAMU-FSU College of Engineering - Ren Moses, Ph.D., P.E.

**Project duration:** 18 months.

**Project cost:** \$170,000

**Request for Research Funding for FY 2014-15**

<b>Requesting Office</b>	Systems Planning Central Office	<b>Priority 2</b>	<b>2 of 5</b> (projects may not have the same ranking-no ties)
<b>Proposed Title</b>	<b>Incorporating Twenty-Four Hour Volume Analysis into Transportation Planning Process</b>		
<b>Justification</b>	The peak spreading phenomenon is calling into question the continued analysis of transportation improvement alternatives during the peak hour only. Current FDOT operational and modeling procedures do not have the capability to analyze future performance and measures of effectiveness on 24-hour basis. The development of 24-hour traffic models will assist FDOT Systems Planning Office in better quantification of project need and expected performance.		
<b>Impact</b>	The impact of determining system performance based on 24-hour variation of traffic is that those projects that would create congestion relief in the majority of hours of the day (even if peak hour operations are somewhat constrained) will be highly prioritized.		
<b>Affected Offices</b>	All district planning offices, with usefulness in preliminary engineering and environmental. Would be applicable throughout USA also.		
<b>Existing Work</b>	The Systems Planning Office is currently sponsoring project titled, "Twenty-Four Hour Peaking Relationship to Level of Service and Other Measures of Effectiveness," Project No. BDK83. TWO 977-01. The results of this project will be incorporated into the proposed project. To the best of our knowledge, 24-hour volume predicting models are not available anywhere in the US. FDOT will be a trendsetter in this area.		
<b>Implementation Requirements</b>	Archived data of traffic volumes will be used in determining current 24-hour volume variations while social-economic profile data from American Community Survey, land-use, and MPOs will be used to develop 24-hour predictive models.		
<b>Funding Request</b>	\$170,000	<b>Anticipated Duration</b>	18 months
<b>Project Manager</b>	Gary Sokolow/FDOT Dr. Ren Moses FAMU/FSU	<b>Contracting Method</b>	Direct contract with university. Dr. Moses is a proven leader in the use of our traffic data bases to analyze performance.
<b>Urgency</b>	Score 1	The peak spreading phenomenon coupled with the growth of large urban centers in Florida is calling for a paradigm shift in project planning and analysis by moving away peak hour only analysis to 24-hour analysis.	
<b>Financial Benefit</b>	Score 1	It is anticipated that the use of 24-hour models in project planning, programming, and execution will favor those projects that provide congestion relief for most of the day thus reducing transportation costs to the society.	
<b>Implementability</b>	Score 1-	The 24-hour models developed can be easily incorporated into the current Systems Planning processes through look-up tables and software reprogramming.	