Some Unintended Impacts of Green Logistics Policies in Urban Areas

Thursday – May 6, 2010
4:00 - 5:00 pm

Refreshments available at 3:30 pm

Abstract: In recent years, various “green” logistics policies have been deployed to reduce the negative externalities of freight transportation. Such policies have often been justified by studies which conclude beneficial environmental impacts. However these studies have often been incomplete, leaving significant questions about the direction that policies should take in the future. Two policies are found to be pervasive in implementations around the world. Those aimed at reducing the number of road freight trips through an increase in loads and those aimed at lowering the number of peak-hour truck trips.

Heavy freight vehicles cause most of the damage incurred by pavements. The supply chain associated with pavement maintenance and construction releases significant pollutant emissions, raising the question of whether increased vehicle weights may cause unintended environmental consequences. We present case examples with estimated emissions resulting from shifts in load consolidation and increased maximum weight. These examples indicate that increased load factors in freight movement can cause significant increases in emissions of certain pollutants.

The atmospheric boundary layer is generally more stable during the night than the day. Consequently, shifting logistics operations to the night may increase the 24 hour average concentrations of diesel exhaust pollutants in many locations. We present case examples of this phenomenon, which provide concentration estimates after temporal redistributions of daily logistics operations. Congestion is considered through examples that show the effects on traffic speeds of shifting vehicle trips and the subsequent effect on emissions factors and pollutant concentrations. A new tool is presented, which can be used to assess whether an off peak policy would be damaging in different contexts. This tool is used to depict various regimes in which unintended environmental impacts can occur.

Bio: Samer Madanat is the Xenel Distinguished Professor in the Department of Civil & Environmental Engineering, and the Director of the Institute of Transportation Studies at the University of California at Berkeley. He received a B.Sc. in Civil Engineering from the University of Jordan in 1986, and a M.S and Ph.D. in Transportation Systems from MIT in 1988 and 1991 respectively.

His research and teaching interests are in the area of Transportation Infrastructure Management, with an emphasis on modeling facility performance and the development of optimal management policies under uncertainty. He has published extensively in refereed archival journals and conference proceedings. In 2000, he received the Science and Technology grant from the University of California Office of the President, an award given annually to one faculty member in the UC system. Since 2001, he has served as the Editor-in-Chief of the ASCE Journal of Infrastructure Systems. Several of his former students are faculty members at universities in the US and abroad.