National Data on Traffic Congestion Delay Released

Data Obtained from GPS-Equipped Vehicles; L.A. Tops U.S. and Western European Cities for Worst Traffic

On March 8, INRIX released its fourth annual INRIX National Traffic Scorecard, a comprehensive analysis that shows traffic congestion and longer commute times returning to America’s roads. Traffic congestion increased nationwide for 11 consecutive months in 2010, with drivers experiencing increased congestion nearly every hour of the day, according to the Scorecard. In fact, 70 of the top 100 most populated cities in the U.S. are experiencing increases in congestion.

By analyzing traffic on major highways in the nation’s 100 largest metropolitan areas in 2010, INRIX found the top 10 most congested U.S. cities:

- Los Angeles, California
- New York, New York
- Chicago, Illinois
- Washington, D.C.
- Dallas, Texas
- San Francisco, California
- Houston, Texas
- Boston, Massachusetts
- Philadelphia, Pennsylvania
- Seattle, Washington

These cities account for more than half of U.S. traffic congestion. Nine of the top 10 cities experienced modest increases in traffic congestion in 2010; Chicago is the lone exception. Of these cities, New York, San Francisco and Philadelphia experienced increases of almost 20 percent attributable to rebounds in the technology, healthcare, manufacturing, freight movement and services sectors that are the backbone of these local economies. In comparing U.S. and European cities, Los Angeles’ freeway system is more congested than that of any other city in the U.S., U.K., France, Germany, Belgium or the Netherlands.

Bikes-Only Lanes Separated from Traffic Cut Injury Risk by 28%

Researchers Believe AASHTO Bicycle Guidelines Should Be Changed

The relative risk of injury for cyclists using bicycle tracks that are physically separated from street traffic is 28 percent lower than that of cyclists pedaling alongside motor vehicles on parallel and comparable roads, according to a new study.

Anne Lusk led a team of researchers who compared bicyclist injury rates on cycle tracks to that of cyclists riding alongside traffic in the street. Cycle tracks are physically separated cycle-exclusive paths along roads. The researchers conducted the study in Montreal, a city which has a network of cycle tracks in use for more than 20 years. Lusk, a research associate in the Department of Nutrition at the Harvard School of Public Health, has a
Survey Finds Untapped Commuter Demand for Carpooling

Consumers Are Motivated to Carpool for Time or Money Savings

Avego, a global provider of transportation software, says that there is significant untapped commuter demand for carpooling based on the results of its recent consumer survey. More than three-quarters of those surveyed are interested in carpooling, the firm reported.

The findings come at a critical time for America’s transportation authorities, as new data from INRIX’s National Traffic Scorecard and the Texas Transportation Institute’s recent Urban Mobility Report detail the massive amounts of time and money wasted by traffic congestion.

“Despite the gradual decline in carpooling in America in the last 30 years, interest in carpooling remains phenomenally high,” said Sean O'Sullivan, Avego managing director. “If technology and policy can combine to offer the right mix of time and money savings to potential carpoolers, millions of Americans can play their part in reducing the huge costs of traffic congestion and infrastructure.”

The Avego survey revealed the key factors that motivate commuters to carpool: time and money. Seventy-seven percent of consumers surveyed said they are interested in carpooling. Of those, 60 percent are motivated to carpool by the potential to save time commuting, and 69 percent are motivated by the potential to save money.

For those consumers who would consider carpooling, 66 percent would carpool for $30 or less in savings per week.

The survey, in which 106 U.S. residents responded, was conducted during late February. According to Avego spokeswoman Lauren Connelly, respondents were recruited to answer survey questions via email lists and social media. All U.S. residents who responded were included in the survey results.

When asked the primary reason they like to drive to work, 37 percent of respondents indicated they like to control when they leave, while 19 percent chose driving because it is more convenient than other options.

The survey found that carpooling is attractive to urban, rural and suburban dwellers. Seventy-seven percent of survey respondents who identified themselves as rural or suburban and 76 percent of those who identified themselves as urban dwellers indicated they would be interested in carpooling. Urbanites were most motivated by the potential to save time, while rural/suburban residents were most motivated by the potential to save money.

James Corless, executive director of Transportation for America, a national campaign to reform and improve our transportation system, said, “This survey demonstrates that Americans are motivated to try carpooling if they can save time and money on their commute. Carpooling is an effective way to lower the amounts households and businesses spend on transportation, while reducing the nation’s dependence on foreign oil.”

According to the U.S. Census Bureau, nearly twice as many people in the United States carpool currently as take public transit.
Urban Bikeway Design Guide Available


The authors try to provide substantive guidance for cities seeking to improve bicycle transportation in places where competing demands for the use of the right of way present unique challenges. The guide includes treatments for bike lanes, cycle tracks, intersections, signals, and signs and markings. It also provides a master reference matrix that includes numerous variations of these treatments.

The guide offers three levels of guidance for each treatment:

- **Required** - elements where there is a strong consensus that the treatment cannot be implemented without compromise.
- **Recommended** - elements for which there is a strong consensus of added value.
- **Optional** - elements that vary across cities and may add value depending on the situation.

The authors encourage engineering judgment in all cases to ensure that the application makes sense for the context of each treatment, given the complexities of urban streets.

The NACTO guide website notes that most of these treatments are not directly referenced in the current versions of the AASHTO Guide to Bikeway Facilities or the Manual on Uniform Traffic Control Devices (MUTCD), but that the Federal Highway Administration recently posted information regarding approval status of various bicycle related treatments not covered in the MUTCD. All of the NACTO Urban Bikeway Design Guide treatments are in use internationally and in many U.S. cities.

The aim of the Urban Bikeway Design Guide is to provide cities with state-of-the-practice solutions to help create complete streets that are safe and enjoyable for bicyclists. The guide’s authors conducted an extensive worldwide literature search. They worked with a panel of urban bikeway planning professionals from NACTO member cities, as well as traffic engineers, planners, and academics experienced in urban bikeway applications. NACTO member cities are Atlanta, Baltimore, Boston, Chicago, Detroit, Houston, Los Angeles, Minneapolis, New York, Philadelphia, Phoenix, Portland, San Francisco, Seattle, and Washington, D.C.

For more information, the Urban Bikeway Design Guide can be found at [http://nacto.org/cities-for-cycling/design-guide/](http://nacto.org/cities-for-cycling/design-guide/).

---

**Survey Finds Untapped Commuter Demand for Carpooling**

The survey data suggests America’s carpooling rate could be seven times higher than it is now.

Founded in 2007, Avego is a global provider of software, hardware and professional services for improving the efficiency of passenger transportation. Led by a multinational team of transport experts, Avego is a multinational company with offices in the United States (Washington, Silicon Valley and San Diego), Ireland (Kinsale and Dublin) and China (Dalian and Shenzhen). Avego’s customers include cities, governments and public transport operators in the United States, China and the UK, as well as individual consumers and private transport operators. Avego is the only ridesharing application that matches drivers and riders in real time as they travel. In September 2008, Avego Shared Transport was awarded the ITS America Smart Solutions Spotlight award in April 2010. As part of its Shared Transport product suite, Avego also provides a real-time vanpool management system, which is being deployed by VPSI, the world’s largest vanpool service provider.

In October 2008, Avego released its Futurefleet™ product, an end-to-end real-time management system for bus and coach operators. The GPS-enabled Futurefleet Mobile Data Terminal can be installed in a fleet of vehicles in days, Avego says. Operators can use a web interface to track vehicles in real time, access real-time reports and manage stops, routes, schedules and ticket pricing.

Avego is currently in a real-time ridesharing pilot project on SR-520 in Seattle, WA, and it plans to launch similar pilots in five more U.S. cities by the end of 2011. Visit [http://go520.avego.com](http://go520.avego.com) and [www.avego.com](http://www.avego.com) or contact Lauren Connelly at lconnelly@schwartzcomm for more information.

Real-time rideshare information can be provided on a smartphone to increase carpooling. (Photo: Courtesy of Avego)
Express Buses to Use Shoulders on I-55 in Chicago

Reduce Travel Times, Traffic Congestion

Express buses on the Stevenson Expressway (Interstate Highway 55) between downtown Chicago and Plainfield will begin a test of “bus-on-shoulder” service in late 2011, according to the Illinois DOT (IDOT).

The I-55 Bus-On-Shoulder test will be a two-year demonstration project, said IDOT spokesman Guy Tridgell. Tridgell told UTM that its purpose is to determine whether using the highway shoulder for transit can improve transit service quality while maintaining the traditional functions of the shoulder and improving overall traffic safety. The benefits of using the shoulder for transit are expected to be:

- reduced variability of travel time,
- travel time savings, and
- a demonstration of a new shared-use strategy to increase the capacity of the existing transportation system.

Regional Transportation Authority (RTA) spokesman William Lenski said the buses will have access to the inside (left) shoulder in highway segments that are safe for operations (minimum 12-foot wide shoulder), minimum continuous shoulder length of 5,000 feet (about one mile), minimal shoulder cross slopes (not greater than 3-4 percent or variation from adjacent highway lanes) and marked with signage.

The inside left shoulder was selected in order to minimize conflicts with ramps and interchanges, Tridgell said. There is only one exit ramp conflict on the left shoulder. If the buses are riding on the shoulder in a particular designated shoulder segment, they will be required to merge back into the regular traffic well before the exit ramps.

The demonstration program puts time-of-day/day-of-week restrictions, traffic flow/congestion restrictions and vehicle-type restrictions on bus use of shoulders. The buses are authorized to use the northbound shoulder between 5 and 9 a.m. and the southbound shoulder between 3 and 7 p.m., Monday through Friday. The shoulder only can be used when general traffic is moving less than 35 mph, and the maximum speed of the buses driving on the shoulder is 35 mph. Also, while using the designated shoulders, the bus shall not exceed the speed of general traffic by more than 15 mph. For instance, Tridgell explained, if the speed of general traffic is 10 mph, the maximum speed of the buses driving on the shoulders is 25 mph. If general traffic is at a halt, the maximum speed of the buses is 15 mph. Finally, only buses engaged in public transportation and authorized by the Illinois Department of Transportation will be allowed to utilize the designated shoulders.

Tridgell noted that there may be times when all of the required conditions are met, but the shoulder is unavailable because it is closed for snow storage, road work, law enforcement needs or vehicle breakdowns. He stressed that “the shoulder is still a shoulder with all of the normal functions of a traditional shoulder.” If the designated shoulder is obstructed in any way, such as with a disabled vehicle, the bus driver must merge back into the mainline traffic to avoid the obstruction.

The IDOT spokesman pointed out that, currently, the Illinois Vehicle Code does not allow vehicles, including transit buses, to drive on the shoulder except under limited conditions such as emergencies. Since Interstate 55 is under the jurisdiction of the Illinois Department of Transportation, its Office of Chief Counsel has drafted legislation to permit authorized transit buses to use designated shoulders along I-55. The legislation will be introduced in the 2011 Spring Session of the Illinois General Assembly. The RTA spokesman added that an IDOT resurfacing project scheduled for late spring 2011 will allow for the installation of surface markings and rumble stripes without incurring project specific costs, keeping the cost of the demonstration project low.

Asked if the bus-only shoulder lanes in Minneapolis were the model for what is planned in Chicago, Tridgell said, “The operating rules are patterned on those of Minneapolis. However, there are some key differences and adjustments to reflect local conditions and preferences. For the I-55 demonstration, the minimum shoulder width is 12 feet. In Minneapolis, the minimum is 10 feet, with 12 feet desired. Also, most Bus-On-Shoulder operations in Minneapolis use the right shoulder. The I-55 demonstration will use the left shoulder. A peer comparison among six metropolitan areas who successfully implemented Bus-On-Shoulder operations was con-
NDRC Project Names 15 Metro Areas with Top Transportation Policies and Practices

Large, Medium and Small Metro Areas Included

The Natural Resources Defense Council’s Smarter Cities project has released a transportation study identifying 15 metropolitan regions with the nation’s leading transportation policies and practices. The study, created in collaboration with the Center for Neighborhood Technology (CNT), compares and profiles U.S. regions based on public transit availability, use and cost; household automobile ownership and use; and innovative, sustainable transportation programs.

The 15 metro regions identified as ‘Smarter Cities’ for transportation include:

- Seven large regions (greater than 1 million people): Boston, MA; Chicago, IL; Philadelphia, PA; Portland, OR; New York, NY; San Francisco, CA; and Washington D.C.
- Four medium regions (250,000-1 million people): Boulder-Longmont, Colorado; Honolulu, Hawaii; Jersey City, New Jersey; and New Haven, Connecticut.
- Four small regions (less than 250,000 people): Champaign-Urbana, Illinois; Bremerton, Washington; Lincoln, Nebraska; and Yolo, California.

The transportation study is the second to be released by NRDC’s Smarter Cities project, which aims to inspire cities, municipalities and regions nationwide by recognizing and profiling what leading metropolitan regions are doing to make themselves more efficient, sustainable, and livable. The data underlying the 15 cities’ transportation profiles was drawn from the U.S. Census and CNT’s H+T Affordability Index (htindex.cnt.org) that quantifies household transportation costs by location.

“By and large, ‘location efficient’ places—with essential services that are nearby or accessible by many transportation modes—lower transportation costs for residents,” said Scott Bernstein, president of CNT.

“Cities and regions that foster compact, walkable, transit-rich communities can reduce reliance on automobiles and help lower at least one expense for households struggling to get by in the current economy.”

Highlights from the study include:

- About 98% of Jersey City, New Jersey residents live within a half mile of public transit access; only 60% of own or have access to a car.
- In downtown Boston, around 65 percent of trips during peak hours are non-motorized due, in large part, to the city’s Complete Streets initiative, launched in 2009, to create streets that integrate pedestrians, cyclists and public transit with motorists.
- Philadelphia has selectively expanded the city’s public transit system in certain neighborhoods to increase residents’ access to fresh food.
- Boulder has built paved pathways along Boulder Creek that allow walkers and bikers to travel up to 52 miles without ever having to cross traffic.
- Washington DC’s Capital Bikeshare program has made more than 1,100 bikes available for pick up at solar-powered docking stations throughout DC and Arlington County.
- Smarter Cities is an NRDC project that aims to be an online resource for and about cities striving to make themselves “smarter” - more efficient, sustainable, equitable and livable.

The Natural Resources Defense Council (NRDC) is an international nonprofit environmental organization with more than 1.3 million members that works to protect the world’s natural resources, public health, and the environment. Founded in 1970, the NRDC has offices in New York City, Washington, D.C., Los Angeles, San Francisco, Chicago, Livingston, Montana, and Beijing, China.

Founded in 1978, CNT is a Chicago-based think-and-do tank that works nationally to advance urban sustainability by researching, inventing and testing strategies for using resources more efficiently and equitably. Its programs focus on climate, energy, natural resources, transportation, and community development.

For more information, visit www.nrdc.org or www.cnt.org. The full transportation study, with individual city profiles, is available at: http://smartercities.nrdc.org/topic/transporation/americas-smartest-regions-transportation.

Continued from Page 4

Express Buses to Use Shoulders on I-55 in Chicago

ducted. Those included the following: Minneapolis-St. Paul, San Diego, Atlanta, Columbus, Miami and Cincinnati. Throughout our study, all the areas surveyed made reference to Minneapolis-St. Paul’s operating procedures and practices making MNDOT the foremost authority in current Bus-On-Shoulder policy and operations.”


For more information, please visit http://www.dot.state.il.us/ and http://www.dot.state.mn.us/, or contact Guy Tridgell at guy.tridgell@illinois.gov or William Lenski at LenskiW@rtachicago.org.
National Data on Traffic Congestion Delay Released

Data Obtained from GPS-Equipped Vehicles; L.A. Tops U.S. and Western European Cities for Worst Traffic

U.S. Traffic Patterns & Worst Traffic Corridors

Americans traveling the nation’s worst traffic corridors experience up to 80 hours of delay annually on the afternoon commute alone. Over 500 miles of roads were congested 25 hours a week or more, nearly 200 of those miles were congested 40 hours a week or more – higher than any previous year.

The INRIX U.S. Scorecard also takes a micro look at traffic problems all across the country – zooming in on the total hours spent in traffic, worst day of the week for commuting and average speeds. Unique patterns evolving out of U.S. traffic congestion include:

Worst Traffic Day: Thursday
Worst Week Day Morning: Tuesday
Worst Evening Commute: Friday
Best Week Day for Traffic: Monday
Best Week Day Morning: Friday morning
Best Week Day Commuting Hour: Friday 6-7 AM

Best Week Day Afternoon: Monday

Of the 341 corridors of at least 3 miles long that experience heavy traffic congestion every day, the top ten worst U.S. traffic corridors are shown in the table below.

The Data

The Annual INRIX Traffic Scorecard is based on analysis of raw data from INRIX’s own historical traffic database generated by the company’s Smart Driver Network of more than 4 million vehicles traveling the roads everyday including taxis, airport shuttles, service delivery vans, long haul trucks as well as consumer vehicles and mobile devices. Each data report from these GPS-equipped vehicles and devices includes the speed, location and heading of a particular vehicle at a reported date and time. In creating the Scorecard, INRIX analyzes information for every road segment during every hour of the day to generate the most comprehensive and timely congestion analyses to date, covering the largest 100 metropolitan areas and the nation’s entire highway, interstate and limited access road network.

The INRIX National Traffic Scorecard is the first of its kind to rank and provide detailed information on the 100 most congested U.S. metropolitan areas and the 100 worst traffic bottlenecks. Additionally, INRIX provides transportation agencies in 47 states with services to allow them to monitor their road networks to improve real-time operations and network planning. For more information about traffic in your city or to see the complete National Traffic Scorecard, visit: http://inrix.com/scorecard and to view videos about the report go to http://YouTube.com/INRIXTraffic.

The INRIX report is available as a free download at http://inrix.com/scorecard/. For additional information, contact Jim Bak at (425) 284-3825 or by e-mail at jimb@inrix.com.

The Ten Most Congested Sections of Freeway in the U.S.

<table>
<thead>
<tr>
<th>Rank</th>
<th>Population (Rank)</th>
<th>Road(s)</th>
<th>From</th>
<th>To</th>
<th>Corridor Length (miles)</th>
<th>Free Flow Travel Time (minutes)</th>
<th>Worst Hour Travel Time (minutes)</th>
<th>Worst Hour (Day, Hour)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>New York (1)</td>
<td>I-95 SB (NE Thwy, Bruckner/Cross Bronx Expys)</td>
<td>CONNER ST/EXIT 13</td>
<td>HUDSON TER</td>
<td>11.3</td>
<td>13</td>
<td>63</td>
<td>F, 4-5pm</td>
</tr>
<tr>
<td>2</td>
<td>Los Angeles (2)/Riverside (14)</td>
<td>Riverside Fwy/CA-91 EB</td>
<td>CA-55/COSTA MESA FWY</td>
<td>MCKINLEY ST</td>
<td>20.7</td>
<td>20</td>
<td>81</td>
<td>F, 4-5pm</td>
</tr>
<tr>
<td>3</td>
<td>Los Angeles (2)</td>
<td>San Diego Fwy/I-405 NB</td>
<td>I-105/IMPERIAL HWY</td>
<td>GETTY CENTER DR</td>
<td>13.1</td>
<td>13</td>
<td>53</td>
<td>F, 4-5pm</td>
</tr>
<tr>
<td>4</td>
<td>Chicago (3)</td>
<td>I-90/I-94 EB (Kennedy/Dan Ryan Expys)</td>
<td>I-294/TRI STATE TOLLWAY</td>
<td>RUBLE ST/EXIT 52B</td>
<td>15.9</td>
<td>17</td>
<td>72</td>
<td>F, 5-6pm</td>
</tr>
<tr>
<td>5</td>
<td>Los Angeles (2)</td>
<td>Santa Monica Fwy/I-10 EB</td>
<td>CA-1/LINCOLN BLVD/EXIT 1B</td>
<td>ALAMEDA ST</td>
<td>14.9</td>
<td>14</td>
<td>49</td>
<td>Th, 6-7pm</td>
</tr>
<tr>
<td>6</td>
<td>New York (1)</td>
<td>Long Island Expwy/I-495 EB</td>
<td>MAURICE AVE/EXIT 18</td>
<td>MINEOLA AVE/WILLIS AVE/EXIT 37</td>
<td>16</td>
<td>16</td>
<td>53</td>
<td>F, 4-5pm</td>
</tr>
<tr>
<td>7</td>
<td>Los Angeles (2)</td>
<td>I-5 SB (Santa Ana/Golden St Fwys)</td>
<td>EAST CEASAR CHAVEZ AVE</td>
<td>VALLEY VIEW AVE</td>
<td>17.5</td>
<td>18</td>
<td>63</td>
<td>F, 5-6pm</td>
</tr>
<tr>
<td>8</td>
<td>New York (1)</td>
<td>I-278 WB (Brooklyn Queens/Gowanus Expy)</td>
<td>NY-25A/NORTHERN BLVD/EXIT 41</td>
<td>NY-27/PROSPECT EXPY/EXIT 24</td>
<td>10.2</td>
<td>12</td>
<td>45</td>
<td>Th, 5-6pm</td>
</tr>
<tr>
<td>9</td>
<td>Pittsburgh (22)</td>
<td>Penn Lincoln Pkwy/I-376 EB</td>
<td>LYDIA ST/EXIT 2</td>
<td>US-19 TK RT/PA-51/EXIT 5</td>
<td>3.4</td>
<td>4</td>
<td>24</td>
<td>W, 8-9am</td>
</tr>
</tbody>
</table>

Source: Inrix
Portland’s Innovative Bike Facilities Are Working, but Have Some Operational Problems

Confusion on the Use of Buffered Bike Lanes by Motorists and Pedestrian-Bike Conflicts On Cycle Track Are Some Problems

Portland State University researchers have found that two innovative bicycle facilities which were installed in 2009 in downtown Portland, OR are generally working well, but that there is still room for improvement in how they are used by cyclists, pedestrians and motorists.

The study, commissioned by the city of Portland Bureau of Transportation (PBT), is a comprehensive evaluation of how the two facilities, a cycle track and buffered bike lanes, are functioning on multiple levels. Both facilities were installed by the PBOT and both involved removing a motor vehicle lane by restriping.

The facilities were evaluated after they had been in place for approximately one year. The cycle track is a seven-foot bike lane separated from motor vehicle traffic by a row of parked cars and a painted three-foot pedestrian buffer, on SW Broadway from SW Clay to SW Jackson through the Portland State University campus. The buffered bike lanes are six-foot bike lanes with a two-foot painted buffer on either side separating them from motor vehicle traffic on eastbound SW Stark Street and westbound SW Oak Street from SW Naito Parkway to West Burnside.

The researchers conducted surveys of multiple user groups — motorists, cyclists, pedestrians — for each facility type. They also surveyed businesses near along the buffered bike lanes. Also, PBOT collected video data at intersections along each of the routes to understand the facilities’ impact on traffic flow, operations and user interactions.

Cycle Track Findings
The researchers’ findings for the cycle track were generally positive. More than 70% of cyclists that were surveyed expressed support for the cycle track, indicating that they felt their bike route was safer and easier with the cycle track. Motorists also generally expressed support for the cycle track, and generally disagreed with the sentiment that the cycle track made driving less convenient or that it takes longer to drive this section of SW Broadway now. However, motorists who never ride a bike were somewhat more likely to be pessimistic about the cycle track than motorists who do ride a bicycle. Motor vehicle delay is still low after removing one travel lane. An assessment of average motor vehicle control delay (for all vehicles) at signalized intersections on SW Broadway found an average delay per vehicle of two to seven seconds. This corresponds to a level of service (LOS) A.

However, several areas were identified that pose challenges. Cyclist understanding of and compliance with the traffic signals on SW Broadway could be improved. Cyclists are required to stop at red lights on SW Broadway even though there is no cross traffic from motorists for most of the cycle track. Compliance with traffic signals on this stretch of SW Broadway was found to be less than 60% both before and after the cycle track. Further, cyclist and pedestrian conflicts are high. Nearly a third of cyclists surveyed stated that they encounter pedestrians jaywalking across the cycle track 25% or more of the time. Both surveys and video analysis revealed that the issue of bicycle-pedestrian conflicts is a potential problem.

Also, the city of Portland has received multiple comments that the loss of curb access due to the cycle track — that is the loss of the option to park and/or drop-off on the curb on SW Broadway — presents a problem for persons with physical disabilities.

Buffered Bike Lane Findings
The findings for the buffered bike lanes were also generally positive. Video analysis shows that more cyclists are choosing to ride on SW Oak and SW Stark than previously. Surveys show that cyclists overwhelmingly agree that the streets are safer, easier and contribute to a better cycling environment in Portland.

However, the researchers found some areas of confusion for road users. Both cyclists and motorists expressed confusion over when or if motor vehicles were allowed to be in the buffered bike lane. Further, motorist actions when turning right are inconsistent — more than a third of right-turning motorists moved into the buffered bike lane to make the turn, while just more than half turned from the left motor vehicle lane.

Survey results show that motorists feel the buffered bike lanes have made driving on SW Stark and SW Oak more challenging. But nearly two out of every three respondents indicated that they like the additional separation between cars and bicycles provided by the buffered bike lanes. Businesses along the route were surveyed and indicated support for bicycle routes, but have concerns about loss of access for customers looking for parking and deliveries.

Analysis of the video data found that the average control delay per vehicle increased with the addition of the buffered bike lane, but is still LOS A or B at all peak times, with the exception of 5-5:30 p.m. when delays reach 22-35 seconds per vehicle (LOS C– approaching D).

For more information, the final report of the study is available for download at: http://www.ibpi.usp.pdx.edu/media/PSU%20Cycle%20Track%20BBL%20Report%20FINAL.pdf
Mathematical Model for Managing Bike Sharing Programs

Aims to Improve Ability to Plan for Supply, Demand

As the popularity of municipal bike sharing programs grows in cities around the world, certain logistical problems have become apparent. Sometimes users aren’t able to return a bike to the most convenient bike station because the station nearest their destination is already full. Other times, potential users are frustrated when convenient bike stations have a shortage of bikes. What is manager of a system of bicycle stations to do?

Dr. Tal Raviv and Professor Michal Tzur of Tel Aviv University’s Department of Industrial Engineering are trying to solve this problem by developing a mathematical model to lead to a software solution. They are creating mathematical models to predict which bike stations should be restocked or emptied of bikes and when that should happen.

Raviv told UTM that the main operational challenge faced by operators of bike sharing systems is what he calls the “Repositioning Problem,” that is, how bicycle should be moved among stations so as to meet the demand for bicycles and, even more importantly, for vacant lockers. Currently bike stations “are managed imperfectly, based on what the station managers see,” he said. “They use their best guesses to move bikes to different locations around the city.”

According to Raviv and Tzur, there are two distinct modes of operation with respect to this bicycle stocking problem. The first consists of bicycles being moved by users during off-peak hours and during the night. In this period, the number of bicycle moves is small and can be neglected. The second consists of users moving bicycles during rush hours, during which the state of the system is rapidly changing. They refer to problem of selecting optimal policy for the first mode as the “Static Repositioning Problem” and to the problem of selecting optimal policy for the second mode as the “Dynamic” one.

Raviv said that the mathematical models for bicycle sharing are based on hourly demand forecasts at each station (for both rents and returns). While their study is not focused on the forecasting issue, this data can be obtained based on actual transactions in the system using standard statistical methods.

Other required pieces of data that are:
- The travel times (for the repositioning trucks) between each pair of stations. These travel time may be time dependent (e.g., the trucks may move slower during rush hours).
- Expected loading and unloading time per bicycle. These times may be station dependent.

Asked how the mathematical model was developed, Raviv said “For the static mode, we have an integer program model that is capable of solving problems with 60 stations and two trucks to proven optimality very quickly. Larger systems can be approximated with some optimality gap or divided to quarters that are solved separately.” He added that they are currently working on a new model that will be capable of solving significantly larger systems at once in reasonable time.

For the dynamic problem, Raviv said, “We are experimenting now [with] the possibilities of solving the integer program, but due to the real-time nature of this problem and the need to solve it repeatedly in a very short time, we are planning to look into heuristic methods.”

According to Raviv, the model should help the operator of the bike sharing system in routing the repositioning trucks and deciding upon the number of bicycles that should be added or removed at each station.

In November 2010, Raviv and Tzur presented a paper on their work on the static problem at the INFORMS 2010 annual meeting in Austin, Texas. They are also working, in collaboration with the bike sharing system operator in Tel Aviv, and devising a model and algorithms toward the dynamic problem.

For more information, please see Raviv and Tzur’s working paper at http://dl.dropbox.com/u/717696/Home%20Page/Publications/index.html, or contact Dr. Raviv at talraviv@eng.tau.ac.il.
Los Angeles Selects Solar Powered Lights for City Bike Path

The city of Los Angeles has selected solar powered lights to illuminate a popular city bicycle path. The Carmanah EverGEN 1710 was selected since it offered what was required according to Kerney Marine, L.A. Bureau of Street Lighting senior engineering manager. “The systems put out light levels that meet the IES specified lighting requirements, and the integrated design with all the electronics, batteries, solar panels, and luminaire at the top of the pole makes the systems very theft resistant. We will be using a variety of different operating profiles along the entire stretch of the bike path to deliver the required light where and when needed, so people can continue to enjoy the space safely.”

The bike path was previously lit using traditional grid-powered AC HID fixtures. However, due to a reoccurring issue of copper theft, the trail was often left in the dark. Los Angeles city officials were concerned with providing lighting to ensure the security and usability of the bike path, but they did not want to have to continually replace stolen copper wire. Working together with local lighting agent, David Silverman & Associates, and Carmanah, the city discovered that solar powered lights were the ideal solution.

Marine told UTM that construction on this project is scheduled to begin March 2011 and be completed by the end of this calendar year. The bike path is about 3.5 to 4 miles wide along the west bank of the LA River from the 134 Freeway crossing over southerly to Fletcher Driver.

“Through our Solar Lighting Pilot program, we tested & evaluated several solar lighting fixtures at bus stops throughout the city and were pleased with the Carmanah fixture’s performance,” Marine added. He said that the city might use these lights on other bike paths in the future.

Ted Lattimore, CEO of Carmanah stated, “The city of Los Angeles is a leader in the deployment of energy efficient lighting technologies. They previously have demonstrated their commitment and leadership to energy efficiency by using hard-wired LED lights from such companies as BETA Led. With the installation of the EverGEN 1710 systems along the bike path, they are expanding their ‘lead-by-ex-ample’ behavior into the solar lighting realm.”

For more information, visit www.carmanah.com or contact Kerney Marine at kerney.marine@lacity.org.

United Kingdom Safety Partnership Finds Speed Cameras Reduce Traffic Fatalities

Significant Savings to Society

A road safety Partnership among jurisdictions in England including East Riding, Hull, and Lincolnshire, found continued reductions in traffic accidents, injuries and fatalities at speed camera sites.

The Partnership operates 77 speed camera sites that have been in operation for at least 6 years. The latest annual assessment reveals a downward trend in the number of injury collisions and of people killed and seriously injured at core safety camera sites. Over the past seven years there has been:

• 58% reduction in the number of killed or seriously injured,
• 42% reduction in the number of injury collisions
• 12% reduction in the 85th percentile speed
• 27% reduction in the number of vehicles exceeding the speed limit at camera sites.

The Partnership claims a saving of about $105 million to society when assuming a cost of $304,000 per person seriously injured. This is the cost to the emergency services, health services, loss of earnings and emotional costs to the person, family and friends.

Mick Harris, Safer Roads Humber partnership manager, said: “We have now been operating safety cameras at core locations for seven years. We are really pleased that reductions in casualties and collisions have been maintained over this time. However, there is still a minority of drivers who continue to speed at our sites and therefore we will continue to enforce the speed limit.”

The Partnership also administers speed awareness courses and other enforcement activities to reduce the casualties caused by hazardous road use.

Safer Roads Humber’s annual report gives summary details of the overall performance of core safety cameras for the region which includes casualty, collision, speed, detections and financial information.

For more information, please visit www.humbersidesafetycameras.com/further-information/reports-and-documents/

A speed camera installation in England.
Bikes-Only Lanes Separated from Traffic Cut Injury Risk by 28%

PhD. in architecture that included studies in environment and behavior, and in urban planning. The team also included Peter G. Furth, Patrick Morency, Luis F Miranda-Moreno, Walter C. Willett, and Jack T. Dennerlein.

Lusk said that she hopes the research will play a role in:
- making available more funding in the U.S. for cycle track research in order to better track bicycle/vehicle crashes,
- result in changes to the AASHTO guidelines,
- and allow pre- and post-testing of cycle tracks as designs evolve.”

Added Marc Jolicoeur, the research director with Velo Quebec: “More cycle tracks should be implemented. Better infrastructure for cyclists is the only effective way by which the level of cycling has been raised in cities around the world. Education and enforcement are important complements, but they are worthless without bicycle facilities.”

The researchers compared injury and crash rates for six cycle tracks in Montreal with one or two alternative street routes per track. They characterized the tracks and alternate streets (which lacked biking lanes) as posing similar “traffic dangers” to riders in terms of the type, number, and speed of cars on the road. All the cycle tracks featured two-way cycle traffic (going both with vehicular traffic and against it) on one side of the road, from which they were separated by raised pavement, parking lanes, and/or posts. Most of the alternate streets ran parallel to the cycle track roads, and came to the same end-point intersections as the tracks.

The researchers used local emergency response and police records to assess injury and crash occurrences between 2000 and 2008. Injury severity was not assessed.

The researchers found that:
- Overall 2.5 times as many cyclists rode on the cycle tracks as compared with the street routes without separated bike lanes.
- There were 8.5 injuries and 10.5 crashes per million-bicycle kilometers respectively on cycle tracks as compared to published injury rates ranging from 3.75 to 67 for bicycling on streets. The relative risk of injury on the cycle track was found to be 28% lower compared with bicycling in the reference streets.

The researchers concluded that cycle tracks lessen, or at least do not increase, crash and injury rates compared to bicycling in the street.

“Based on the lower relative safety risk, we think that the construction of cycle tracks should not be discouraged,” Lusk said. “Of course, intersections do have to be well-designed, ideally with red and green bicycle signals,” she added. “And even then, we’re not suggesting that cycle tracks have zero risk. But rigorous research does show that the difference in the accident rate is real.”

The study report, published in the February 9 issue of Injury Prevention, notes that the predominant bicycle facilities in The Netherlands and Denmark are cycle tracks. “Due to the separation from vehicles afforded by 29,000 km of cycle tracks in The Netherlands plus other initiatives,” the researchers state, “27% of Dutch trips are by bicycle, 55% are women, and the bicyclist injury rate is 0.14 injured/million km.” In contrast, they point out, “In the USA, 0.5% of commuters bicycle to work, only 24% of adult cyclists are women and the injury rate of bicyclists is at least 26 times greater than in The Netherlands.”

The researchers suggest that cycle track construction has been hampered in the United States by engineering guidance in the American Association of State Highway and Transportation Officials (AASHTO) Guide for the Development of Bicycle Facilities, which cautions against building two-way paths along, but physically separated from, a parallel road. AASHTO states that sidewalk bikeways are unsafe and implies the same about shared-use paths parallel to roads, the researchers said. Cycle tracks, which can be one or two-way and resemble shared-use paths are not mentioned in the AASHTO bike guide.

“I would hope that, as part of the next U.S. transportation re-authorization, each state would be encouraged to build at least ½ mile of cycle track,” Lusk said. “The engineers in each state department of transportation could then study the Dutch CROW design guidelines and determine how and where to best fit a cycle track. Citizens in each state would have the opportunity to try out a cycle track and decide if they would like more cycle tracks and where.”

The complete study report is available at http://injuryprevention.bmj.com/content/early/2011/02/02/ip.2010.028696.abstract. For more information, contact Anne Lusk at (617) 432-7076 or by e-mail at AnneLusk@hsph.harvard.edu.
New Book Assesses NTSB Report on I-35 Bridge Collapse, Finds It Flawed

Design Flaw as Cause of Collapse Disputed

The National Transportation Safety Board’s final report about the August 2007 I-35W Bridge collapse does not accurately present the causes of this disaster, according to the author of a new book.

In *Too Big to Fall: America’s Failing Infrastructure and the Way Forward* (University Press of New England: 2010), author Barry LePatner chronicles the problems that led to the I-35W catastrophe—poor bridge design, shoddy maintenance, ignored expert repair recommendations, and misallocated funding. He says that the NTSB report ignored a host of critical factors and “masked far more than it revealed about how the bridge was maintained, funded, and operated.”

The NTSB’s final report, which followed 15 months of investigation, attributed the bridge’s collapse to a simple design error—specifically, that certain gusset plates should have been an inch thick but instead were only half that thickness, contrary to the original design specification. According to LePatner, the NTSB’s findings virtually ignored 16 years of inspections by the Minnesota Department of Transportation (MN/DOT) that documented the steady decline of the bridge. Widespread evidence of corrosion for critical steel members, frozen bearings that locked the bridge in place, and cracks throughout the bridge and approach spans rendered the bridge’s condition “poor.”

In fact, a June 2006 inspection gave the bridge a sufficiency rating of 50 percent—which pursuant to federal standards is interpreted to mean that the bridge should be considered for replacement. But, he says, the NTSB report dismissed any connection between the bridge’s collapse and MN/DOT’s maintenance of the bridge.

On August 14, 2007, the Minnesota legislature appointed a joint committee to investigate the bridge collapse and the committee hired the law firm Gray Plant Mooty to produce its own report. This report on the bridge collapse pointed to various organizational weaknesses within MN/DOT that compromised the safety of the bridge: a poor flow of information; bad use of expert advice; and an organizational structure that impeded the maintenance process.

LePatner also suggests that the NTSB report, with its “errors of apparent neglect or omission as well of technical understanding,” was influenced by politics. The NTSB report wrongly placed blame on the engineers, LePatner said in a February press release. But, he added, it is likely that the inadequate flow of information within MN/DOT was actually related to the loss of engineering personnel.

The NTSB “failed to serve as a clearinghouse to alert all other state bridge operators about the lessons that should have been learned from the collapse of the I-35W Bridge,” LePatner said. There “are still 7,980 bridges in the nation that are both structurally deficient and fracture-critical, each of which is in danger of suffering the same fate as the I-35W Bridge.”

For more information about the book, visit [www.TooBigToFall.com](http://www.TooBigToFall.com). It is available at bookstores and from major online booksellers.

**Corrections**

(Vol. 25 Number 1)

1. The photo associated with the article “Automated Traffic Surveillance System Developed in Europe” on page 6 should have been attributed to the NY Joint Transportation Management Center.

2. The email address of Asha Weinstein Agrawal associated with the article “Low-Cost Survey Method for Walking, Cycling” on page 5 is incorrect. The correct email address is: asha.weinstein.agrawal@sjsu.edu.
City Not Liable for Malfunction of Discretionary “Roving Eye” Device at Pedestrian Crosswalk

In October 2002 a man was killed in a crosswalk, just four months after the then experimental technology of “roving eyes” had been installed at the intersection. At the time of the accident the device had been shut down due to a wiring problem and while parts were awaited.

Aurora Avenue North is a state highway and a major arterial through the city of Shoreline, Washington State. At the intersection of North 170th Street and Aurora Avenue North, the southbound and northbound lanes are separated by a median. The posted speed limit is 40 miles per hour (m.p.h.).

Before the accident, Washington State DOT and the City had made a number of improvements to enhance pedestrian safety at that intersection, based on a pedestrian safety study conducted in 1998. Both the City and the State had obtained federal funding to implement the identified recommendations. The City and State agreed to combine the federal grants, with the WSDOT assuming responsibility for the construction and installation of the pedestrian safety improvements, which included:

- Marking the crosswalk at North 170th Street
- Cutting a pedestrian refuge path through the median (raised and planted) at an angle so pedestrians can view oncoming traffic
- Siting advance yield bars 40 feet in advance of the designated pedestrian crosswalk
- Installing 2 X 3-1/2 Advance Yield for Pedestrian warning signs on both sides of the yield bar to the approaching drivers’ right and left
- Enhancing overhead lighting of the intersection and crosswalk
- Relocating transit stops
- Installing new sidewalks, curbs and gutters
- Installing overhead electronic LED animated roving-eyes warning signs for motorists and pedestrian-height signs

for pedestrians, and:

- Installing 4 x 4 pedestrian warning signs 300 feet in advance of each crosswalk, in both directions, with an amber beacon. These improvements were completed by June 2002.

Because the roving eyes device did not comply with the “Manual on Uniform Traffic Control Devices” (MUTCD) of the Federal Highway Administration (FHWA), WSDOT sought, and received, FHWA approval to use the device.

The accident report found that the accident was caused by the driver’s improper passing, her failure to yield to a pedestrian, and her inattention; the driver was charged with negligent driving in the second degree.

The pedestrian’s widow file suit against the driver, the WSDOT, the manufacturer of the roving eyes device, the manufacturer of the microwave sensors used in the roving eyes device, and the contractors who installed the roving eyes device.

WSDOT responded requesting summary judgment arguing that the intersection was reasonably safe for ordinary travel, the sole proximate cause of death was the driver’s inattentiveness, and the decision to install the improvements was a discretionary governmental decision. In support of this motion it presented testimony from an accident reconstruction expert, the regional traffic engineer, and independent experts from the University of North Carolina Highway Safety Research Center, and the city of Phoenix.

Collectively, their testimony showed:

- The brake lights of the three vehicles already stopped at the intersection had been on for a minimum of three seconds while the pedestrian was crossing;
- The vehicle was traveling at a speed of at least 36 m.p.h. and that when the pedestrian was struck, he was in the crosswalk which was clearly marked as a pedestrian crossing
- Driver failed to pay attention as she entered the intersection, ignored the reflective warning signs for the approaching crosswalk, and failed to notice three vehicles stopped in the next lane;
- While the roving eyes device increased the likelihood that motorists would yield to pedestrians, pedestrian use of the device was inconsistent, with only one third of pedestrians activating the roving eyes device before crossing;
- Installing the device was not mandatory.

Plaintiff argued that studies showed that the roving eyes device was successful in redirecting the attention of inattentive drivers; therefore, it was reasonable to infer that if it had been working it would have alerted the driver that a pedestrian was in the crosswalk and increased the likelihood that she would have yielded. She claimed that WSDOT should have activated the roving eyes system sooner and left the system operating for the designated crossing.

Finally she argued that driver inattention at the intersection was reasonably foreseeable, and that WSDOT and the City created a hazardous condition by turning off the device when it was not functioning properly.

The trial court found that use of the roving eyes device was a discretionary decision and failure to activate the device was not a proximate legal cause of the accident; it therefore granted WSDOT’s motion for summary judgment.

Appellant had not shown that failure by WSDOT to ensure the roving eyes device was properly functioning was a proximate cause of the accident. It deemed appellant’s claim that WSDOT should have activated the roving eyes device sooner or installed different technology, and the argument that the roving eyes device would have prevented the collision, to be based on speculation.
This Month’s Survey Results (Survey 1)

Outstanding Traffic Engineering Products

The Urban Transportation Monitor conducted a survey among traffic engineers at public agencies (cities, counties, state DOTs) to obtain their opinion on what they consider to be outstanding traffic engineering products that have appeared on the market within the last three years. The survey questionnaire specified that the products should “either be a significant improvement over what was available previously or they should be totally new and have made significant inroads in solving existing problems.”

A total of 9 products were nominated as outstanding products. The survey questionnaire also asked for the manufacturer of these products. The Urban Transportation Monitor contacted the manufacturers listed by the survey respondents to obtain additional information. The results of the survey are published here.

Summary of Outstanding Traffic Engineering Products That Appeared on the Market Within the Past 3 Years (new product or significant improvement to existing product)

<table>
<thead>
<tr>
<th>Type of Product</th>
<th>Name of Product</th>
<th>Name of Manufacturer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Traffic volume and speed data</td>
<td>SmartSensor HD</td>
<td>Wavetronix</td>
</tr>
<tr>
<td>Traffic intersection stop bar detection</td>
<td>SmartSensor Matrix</td>
<td>Wavetronix</td>
</tr>
<tr>
<td>Traffic intersection dilemma zone detection</td>
<td>SmartSensor Advance</td>
<td>Wavetronix</td>
</tr>
<tr>
<td>Traffic counts at intersection</td>
<td>Miovision</td>
<td>Miovision Technologies</td>
</tr>
<tr>
<td>Vehicle detection system</td>
<td>Sensys Networks VDS240 Wireless Vehicle Detection system</td>
<td>Sensys Networks</td>
</tr>
<tr>
<td>Long line striping in lower temperatures</td>
<td>Ennis Traffic Safety Solutions Wolverine</td>
<td>Ennis Traffic Solutions</td>
</tr>
<tr>
<td>Crosswalk warning beacon</td>
<td>Spot Devices SB435 High Performance Rectangular Rapid Flashing Beacon</td>
<td>Spot Devices</td>
</tr>
<tr>
<td>Advanced transportation management system software application</td>
<td>Econolite Centracs</td>
<td>Econolite</td>
</tr>
<tr>
<td>Adaptive traffic control software application</td>
<td>Siemens ACS Lite and Econolite ACS Lite</td>
<td>Siemens and Econolite</td>
</tr>
</tbody>
</table>
### Outstanding Traffic Engineering Products

<table>
<thead>
<tr>
<th>PRODUCT APPLICATION NAME OF PRODUCT</th>
<th>TRAFFIC VOLUME AND SPEED DATA</th>
<th>TRAFFIC INTERSECTION STOP BAR DETECTION</th>
<th>TRAFFIC INTERSECTION DILEMMA ZONE DETECTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>SmartSensor HD</td>
<td>SmartSensor HD</td>
<td>SmartSensor Matrix</td>
<td>SmartSensor Advance</td>
</tr>
<tr>
<td>(Photo: Courtesy of Wavetronix)</td>
<td>(Photo: Courtesy of Wavetronix)</td>
<td>(Photo: Courtesy of Wavetronix)</td>
<td></td>
</tr>
<tr>
<td>FUNCTION OF PRODUCT</td>
<td>Vehicle detector, speed detector</td>
<td>Detect presence of vehicle at intersection stop bar</td>
<td>Provides advance DILEMMA zone protection</td>
</tr>
<tr>
<td>REASON WHY THIS IS AN OUTSTANDING PRODUCT</td>
<td>Provides accurate vehicle and speed detection.</td>
<td>Accurately detects vehicles at the stop bar of a signalized intersection.</td>
<td>The back detection unit provides true DILEMMA zone protection by sensing vehicles speed, then adjusting the green time extension accordingly.</td>
</tr>
<tr>
<td>DESCRIPTION OF PRODUCT</td>
<td>The Wavetronix SmartSensor HD is the world's leading side-fire radar traffic detector. It offers the consistent accuracy of true high definition detection and is the only radar traffic detector capable of producing accurate per vehicle speeds. SmartSensor HD transmits its radar signal at 250 MHz, which is five times the bandwidth of other radar sensors in the market. The true high definition radar this produces greatly improves the sensor's accuracy. At low bandwidths, radar can confuse a single large vehicle with two vehicles traveling side by side; it can also blur the detection of one vehicle into the detection of another, resulting in a single inaccurate detection. In addition, SmartSensor HD contains two radar antennas separated by a small distance. Working together, these dual beams form a speed trap that measures the time it takes for a vehicle to pass from one beam to the next. These speed measurements are highly accurate, making SmartSensor HD the only radar traffic detector capable of producing accurate per vehicle speeds comparable to those generated by embedded technologies. The accuracy of SmartSensor HD has been proven in a number of studies conducted by third-party organizations at a variety of locations and under a variety of real-world conditions. In each study, SmartSensor HD was identified as one of the most consistently accurate radar-based devices, making it an invaluable part of intelligent transportation.</td>
<td>The award-winning SmartSensor Matrix has taken the intersection detection industry by storm. SmartSensor Matrix is the first ever multi-lane radar device designed specifically to accurately detect the presence of vehicles at the intersection stop bar. The sensor generates 16 separate radar beams in close proximity, creating a 90-degree field of view with a 100-foot radius; this matrix of radar creates a two-dimensional, high-contrast image that &quot;sees&quot; the approach and continuously tracks each vehicle as long as they remain within the field of view. Matrix detections have been shown to be highly accurate in all weather and lighting conditions, leading to more efficient control of the intersection. With SmartSensor Matrix, Wavetronix is entering a market segment that has been dominated by loops and video. Like video, radar is non-intrusive, so it eliminates many of the installation and maintenance problems associated with embedded devices. But unlike video, radar continues operating accurately in all weather; since radar transmits its own signal instead of relying on light from the sun or other sources, it is unaffected by lighting conditions; and radar does not need to be cleaned like a camera lens, so dirt and bugs, even accumulated snow, have no affect on the radar's detections. SmartSensor Matrix offers a level of performance that is gaining industry attention. In the past two years, there has been an explosion of Matrix deployments across the U.S., and in 2010, it was given the Best of ITS award for Best Innovative Product.</td>
<td>SmartSensor Advance has redefined dilemma zone detection, providing advance protection for vehicles that has resulted in safer, more efficient intersections. The dilemma zone is a time-based area approaching an intersection in which a driver must decide whether to stop or keep going when the light turns yellow. By extending the green light for vehicles detected in the dilemma zone, SmartSensor Advance helps prevent red-light running and rear-end or right angle collisions, the most common types of accidents at intersections. SmartSensor Advance continuously tracks the speed and range of individual vehicles to determine their estimated time of arrival at the stop bar. It also detects the size and location of gaps in traffic. With this information, the sensor can dynamically adjust dilemma zone protection for vehicles as far back as 500 feet. Perhaps SmartSensor Advance’s best feature is its ability to improve intersection safety without sacrificing efficiency. By dynamically matching protection to the ETA of individual vehicles, SmartSensor Advance creates more gap-out opportunities and prevents green extension for low-speed vehicles. Drivers spend less time waiting for a green light, and the reduction in accident delays results in more free-flowing traffic.</td>
</tr>
<tr>
<td>COST OF PRODUCT</td>
<td>Available upon request</td>
<td>Available upon request</td>
<td>Available upon request</td>
</tr>
<tr>
<td>MANUFACTURER(S)</td>
<td>Wavetronix</td>
<td>Wavetronix</td>
<td>Wavetronix</td>
</tr>
<tr>
<td>CONTACT PERSON(S)</td>
<td><a href="http://www.wavetronix.com">www.wavetronix.com</a> <a href="mailto:sales@wavetronix.com">sales@wavetronix.com</a></td>
<td><a href="http://www.wavetronix.com">www.wavetronix.com</a> <a href="mailto:sales@wavetronix.com">sales@wavetronix.com</a></td>
<td><a href="http://www.wavetronix.com">www.wavetronix.com</a> <a href="mailto:sales@wavetronix.com">sales@wavetronix.com</a></td>
</tr>
</tbody>
</table>
Outstanding Traffic Engineering Products (continued)

<table>
<thead>
<tr>
<th>WHERE PRODUCT IS APPLIED</th>
<th>TRAFFIC COUNTS AT INTERSECTION</th>
<th>VEHICLE DETECTION SYSTEM</th>
<th>LONG LINE STRIPING IN LOWER TEMPERATURES</th>
</tr>
</thead>
</table>

**FUNCTION OF PRODUCT**
- To perform turning movement traffic volume counts at intersections
- Measures traffic volume, speed, and density
- Road pavement long line striping

**REASON WHY THIS IS AN OUTSTANDING PRODUCT**
- Cost effective - The cost for processng an hour of video is typically less than the cost of manually counting an intersection for an hour. Decreases man-power and scheduling. You can use one person to count two intersections at once, as that one person can set up the camera at one intersection, go count another intersection, then come back to collect the camera.
- Minimal intrusion into pavement, minimal type for installation in the roadway, hopefully long term working capability and minimal maintenance required.
- In the Pacific Northwest, the long line striping season is short and often mornings are cool in the summer. This really limits time available to strip roads. This product not only makes for a more productive day in the summer, but --if conditions are right -- can extend the season further into the fall. Our productivity per day went from about 30 miles a day to around 50 once we began using the product.

**DESCRIPTION OF PRODUCT**
- Miovision's portable video data collection system provides a simple method for automating traffic data collection and generating detailed traffic data reports. Video is collected from the field with Miovision's portable Video Collection Unit, and then submitted to cloud-based TrafficDataOnline.com for processing, report generation and video/data management. Miovision demonstrates great versatility and simplicity by consolidating numerous traffic study types into one piece of equipment. Field set-up requires less than 10 minutes, and traffic data report generation is done in a few mouse clicks. TrafficDataOnline.com also doubles as an online database for Miovision and non-Miovision generated data, videos and user uploaded files - centralizing everything related to traffic data in one place and available for download.
- The system automates Turning Movement Counts, Roundabout Counts, ADT Counts, Gap Studies, and Trip Generation Studies, and will soon be launching ALPR studies, O-D Studies, Travel-Time Studies, Parking Studies, Red-Light Studies, Saturation Flow Studies, Queue Length Studies and Speed Studies.
- Using small, in-ground wireless sensors with an unprecedented 10+ year battery life-VDS240 accurately measures traffic volume, speed, and density. Installed in less than 10 minutes, sensors require no calibration or tuning, autonomously discovering the nearest VDS240 Access Point to form a time-synchronous wireless network. Mounted on existing infrastructure, AP's serve as gateways between sensors and the Internet. Sensys Networks IP-based server applications aggregate and manage data, while interfacing with third party ITS solutions, and traffic controllers. Unlike loops, VDS240 requires no trenching, and can be installed wherever detection is needed, regardless of pavement degradation. Unlike video, VDS240 performs flawlessly in all weather and lighting conditions. The DS240's universal platform enables its use in a wide range of detection applications including: Freeway traffic monitoring and operations Traffic signal control Adaptive/responsive traffic signal control Integrated Corridor Management (ICM) Arterial performance measurement Traveler information systems Red light and speed enforcement Light rail detection
- Wolverine® is an all-season low-temperature waterborne paint that can extend the pavement striping season and eliminate the need for hazardous solvent-based systems. Wolverine paint has been specifically formulated to provide excellent film formation and adhesion for surface temperatures as low as 35°F. This environmentally friendly waterborne paint has a minimum shelf-life of 12 months and a more user-friendly viscosity range at various temperatures.

**COST OF PRODUCT**
- Visit www.mivision.com/build-your-system for details
- Not available
- The cost per gallon ranges from $10-$12

**MANUFACTURER(S)**
- Miovision Technologies
- Sensys Networks
- Ennis Traffic Safety Solutions

**CONTACT PERSON(S)**
- Cam Davies, cdavies@mivision.com
- (877) 646-8476 ext. 221
- info@mivision.com
- Katherine Mertz at (510) 326-9796
- kmertz@sensysnetworks.com
- info@miovision.com
- Gregg Stengel
- (800) 331-8118, ext. 7384
- gstengel@eninstaff.com
### Outstanding Traffic Engineering Products (continued)

<table>
<thead>
<tr>
<th>WHERE PRODUCT IS APPLIED NAME OF PRODUCT</th>
<th>CROSSWALK WARNING BEACON</th>
<th>ADVANCED TRANSPORTATION MANAGEMENT SYSTEM (ATMS) SOFTWARE APPLICATION</th>
<th>ADAPTIVE TRAFFIC CONTROL SOFTWARE APPLICATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spot Devices SB435 High Performance Rectangular Rapid Flashing Beacon</td>
<td>Econolite Centracs</td>
<td>Siemens ACS Lite and Econolite ACS Lite</td>
<td></td>
</tr>
</tbody>
</table>

**FUNCTION OF PRODUCT**

- Improve pedestrian safety at crosswalk
- Access, modify and evaluate traffic signal controller timings parameters from a central office location.
- Low-cost implementation of adaptive control of traffic signals

**REASON WHY THIS IS AN OUTSTANDING PRODUCT**

- The various studies conducted on the use of the project were surprising since they showed driver yield compliance was significantly more than with other pedestrian beacon warning systems.
- Identify traffic signal malfunctions cost-effectively and modify traffic signal timings from a central location, which reduces operating costs.
- ACSLITE allows low-cost implementation of adaptive control of traffic signals

**DESCRIPTION OF PRODUCT**

- The RRFB - or Rectangular Rapid Flashing Beacon - was developed to fill a gaping need for a crosswalk warning device that could economically and effectively improve pedestrian safety at mid-block crosswalks. First approved for use by the Federal Highway Administration in 2008, the RRFB, when activated by a pushbutton, emits rapid, alternating bursts of light to warn motorists that pedestrians are crossing the roadway. This unique flash pattern is far more effective than standard round warning beacons. The RRFB boasts driver compliance rates exceeding 90%, the highest of any amber light warning device. Spot Devices makes the RRFB exceptional; the SB435 High Performance Rectangular Rapid Flashing Beacon (SB435HP) is brighter and has a larger light emitting surface area than required by FHWA standards. Motorists can see the SB435HP from further away, allowing them more time to react and stop for pedestrians. Further, SB435HP systems ship with an easy to use remote communication tool that allows users to program activation durations, run diagnostic reports and receive automatic email alerts from any internet-enabled desktop, notebook, tablet or smartphone. By combining spread spectrum wireless and solar technologies, the SB435HP RRFB can be installed without the need for costly trenching or the need to pull power from an AC source. Exceptional brightness, remote management and easy installation make Spot Devices SB435HP RRFB the most cost-effective RRFB system available.

- Smart Client Architecture
  - Centracs utilizes a client-server system architecture, which employs a unique approach to the segmentation of the system’s components. By encapsulating the user interface at the workstation, the interface is responsive, even over lower bandwidth connections. The ”core” server provides all of the central ATMS functionality, such as system administration, schedule functions, system alerts, user settings, traffic responsive and adaptive algorithms. A data abstraction layer on top of the Microsoft SQL Server database serves as a broker for all data requests throughout the system. Communications servers handle the real-time device messaging and network interface. This logical segmentation of the components provides tremendous scalability for the system.
  - Innovative Software Technology
    - Centracs is built upon the latest software technologies, including the Microsoft .NET 3.5 Framework, Windows® Presentation Foundation, and Windows® Communications Foundation. As a result, Centracs provides the transportation agency with a built-in hedge against obsolescence.
  - Intuitive User Interface
    - Perhaps the most innovative technology in Centracs is its powerful user interface, developed through extensive user analysis. The interface is unique to the transportation industry and capitalizes on the latest technology in software Graphic User Interface (GUI). The GUI uses “containers” as an organizing method to present a wide variety of data elements. With full multi-monitor support, the system supports additional frames that can be assigned to each monitor. Each user can save one or more preferred configurations and restore preferences when logged into the system.

**DESCRIPTION OF PRODUCT (Provided by manufacturer)**

- **WHERE PRODUCT IS APPLIED**: NAME OF PRODUCT
  - CROSSWALK WARNING BEACON: Spot Devices SB435 High Performance Rectangular Rapid Flashing Beacon
  - ADVANCED TRANSPORTATION MANAGEMENT SYSTEM (ATMS) SOFTWARE APPLICATION: Econolite Centracs
  - ADAPTIVE TRAFFIC CONTROL SOFTWARE APPLICATION: SiemensACS Lite and Econolite ACS Lite

**CONTACT PERSON(S)**

- **Spot Devices**: Bruce Horton, (719) 471-9866 or bhorton@econolite.com
- **Siemens**: visit: http://www.itssiemens.com or call (512) 837-8300.
- **Econolite**: Bruce Horton, (719) 471-9866 or bhorton@econolite.com

**COST OF PRODUCT (Provided by manufacturer)**

- **Approximately $7,000 depending on selected options and functionality.**
- **Not available**
- **Not available**

**MANUFACTURER(S)**

- **Spot Devices**
  - Econolite
  - Siemens and Econolite

**Visit www.spotdevices.com. You may also contact Mike Young at (888) 520-0008, or by e-mail at mikey@spotdevices.com.**
This Month’s Survey Results (Survey 2)

Characteristics of Urban Heavy Rail Systems in the U.S.

During the past few weeks, The Urban Transportation Monitor conducted a survey of the urban heavy rail systems in the U.S. The questionnaires were generally completed by directors of planning and/or operations and/or other senior personnel. Ten of the thirteen heavy rail systems responded to the survey. The results of the survey appear here.

Urban Heavy Rail Contacts

<table>
<thead>
<tr>
<th>CONTACT NAME</th>
<th>AGENCY</th>
<th>TELEPHONE</th>
<th>E-MAIL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Karen Dougherty</td>
<td>Port Authority Transit Corporation</td>
<td>(856) 772-6968</td>
<td><a href="mailto:kedougherty@drpa.org">kedougherty@drpa.org</a></td>
</tr>
<tr>
<td>Bruce Shelburne</td>
<td>Los Angeles County Metropolitan Transportation Authority</td>
<td>(213) 922-6951</td>
<td><a href="mailto:shelburneb@metro.net">shelburneb@metro.net</a></td>
</tr>
<tr>
<td>James M. Peyton</td>
<td>Maryland Transit Administration</td>
<td>(410) 454-7351</td>
<td><a href="mailto:jpeyton@mta.maryland.com">jpeyton@mta.maryland.com</a></td>
</tr>
<tr>
<td>Maria C. Batista</td>
<td>Miami-Dade Transit</td>
<td>(786) 469-5245</td>
<td><a href="mailto:bpb@miamidade.gov">bpb@miamidade.gov</a></td>
</tr>
<tr>
<td>Cheryl L. King</td>
<td>Metropolitan Atlanta Rapid Transit Authority</td>
<td>(404) 848-4401</td>
<td><a href="mailto:cking@itsmarta.com">cking@itsmarta.com</a></td>
</tr>
<tr>
<td>Larry Levin</td>
<td>Washington Metropolitan Area Transit Authority</td>
<td>(202) 962-1251</td>
<td><a href="mailto:Llevin@wmata.com">Llevin@wmata.com</a></td>
</tr>
<tr>
<td>Ed Sasportas</td>
<td>Port Authority of New York &amp; New Jersey</td>
<td>(201) 216-6198</td>
<td><a href="mailto:esasport@panynj.gov">esasport@panynj.gov</a></td>
</tr>
<tr>
<td>Chrystalle Cooper</td>
<td>Southeastern PA Transportation Authority</td>
<td>(215) 580-7454</td>
<td><a href="mailto:rhanratty@septa.org">rhanratty@septa.org</a></td>
</tr>
<tr>
<td>Carmen Bianco</td>
<td>MTA/New York City Transit (Dept. of Subways)</td>
<td>(646) 252-5860</td>
<td><a href="mailto:Carmen.Bianco@nyct.com">Carmen.Bianco@nyct.com</a></td>
</tr>
</tbody>
</table>
### Characteristics of Urban Heavy Rail Systems in the U.S.

<table>
<thead>
<tr>
<th>NAME OF SERVICE (AGENCY)</th>
<th>PATCO High Speed Line (Port Authority Transit Corporation)</th>
<th>METRO RED AND PURPLE LINES (Los Angeles County Metropolitan Transportation Authority)</th>
<th>METRO SUBWAY (Maryland Transit Administration)</th>
<th>METRORAIL (Miami-Dade Transit)</th>
</tr>
</thead>
<tbody>
<tr>
<td>DOWNTOWN SERVED</td>
<td>Philadelphia, PA/ Camden, NJ</td>
<td>Los Angeles, CA</td>
<td>Baltimore, MD</td>
<td>Miami, FL</td>
</tr>
<tr>
<td>LENGTH OF SYSTEM (miles)</td>
<td>14.2 mi.</td>
<td>15.9 mi.</td>
<td>15.5 mi.</td>
<td>22.6 mi.</td>
</tr>
<tr>
<td>NO. OF OPERATIONAL VEHICLES</td>
<td>120</td>
<td>104</td>
<td>100</td>
<td>136</td>
</tr>
<tr>
<td>SEATING/CRUSH CAPACITY OF VEHICLES</td>
<td>80/N/A</td>
<td>55/220</td>
<td>76/166</td>
<td>74/275</td>
</tr>
<tr>
<td>MINIMUM SCHEDULED HEADWAY IN PEAK (minutes)</td>
<td>3 min.</td>
<td>5 min. (downtown trunk) 10 min. (branches)</td>
<td>8 min.</td>
<td>7.5 min.</td>
</tr>
<tr>
<td>PRESENT WEEKDAY PASSENGER VOLUME -BOARDINGS (5 YEARS AGO)</td>
<td>35,600 (32,800)</td>
<td>145,000 (125,000)</td>
<td>51,000 (45,000)</td>
<td>62,670 (60,809)</td>
</tr>
<tr>
<td>MAXIMUM OPERATING SPEED (mph)</td>
<td>65 mph</td>
<td>70 mph</td>
<td>70 mph</td>
<td>58 mph</td>
</tr>
<tr>
<td>AVERAGE OPERATING SPEED, STOPS INCLUDED (mph)</td>
<td>33 mph</td>
<td>31 mph</td>
<td>33 mph</td>
<td>28.5 mph</td>
</tr>
<tr>
<td>NUMBER OF STATIONS</td>
<td>13</td>
<td>16</td>
<td>14</td>
<td>22</td>
</tr>
<tr>
<td>NUMBER OF PARK AND RIDE SPACES SERVING HEAVY RAIL STATIONS</td>
<td>12,626</td>
<td>2,990</td>
<td>7,992</td>
<td>9,557</td>
</tr>
<tr>
<td>HIGHEST FEE AT ANY PARK AND RIDE LOT FOR A DAY’S PARKING</td>
<td>$1.00</td>
<td>$0 for Metro lots. (Reserved parking - $39 per month). Non-Metro lots: $6.</td>
<td>Free</td>
<td>$4.00</td>
</tr>
<tr>
<td>YEAR HEAVY RAIL SYSTEM STARTED OPERATING</td>
<td>1969</td>
<td>1993</td>
<td>1983</td>
<td>1984</td>
</tr>
<tr>
<td>MINIMUM OR BASE FARE</td>
<td>$1.25</td>
<td>$1.50</td>
<td>$1.60</td>
<td>$2.00</td>
</tr>
<tr>
<td>TYPE OF SYSTEM FARE</td>
<td>Barrier</td>
<td>Gates, but not fully enforced</td>
<td>Barrier</td>
<td>Automated fare collection</td>
</tr>
<tr>
<td>PRESENT TOTAL OPERATING BUDGET PER YEAR</td>
<td>$46 million</td>
<td>$60 million</td>
<td>$35 million</td>
<td>$76 million</td>
</tr>
<tr>
<td>NEW TRACK MILES ADDED TO HEAVY RAIL OVER PAST 5 YEARS</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>NEW TRACK MILES PLANNED TO BE ADDED OVER THE NEXT 5 YEARS</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>2.4</td>
</tr>
</tbody>
</table>

N/A = Not available
### Characteristics of Urban Heavy Rail Systems in the U.S. (continued)

<table>
<thead>
<tr>
<th>NAME OF SERVICE (AGENCY)</th>
<th>MARTA (Metropolitan Atlanta Rapid Transit Authority)</th>
<th>METRORAIL (Washington Metropolitan Area Transit Authority)</th>
<th>PATH (Port Authority Trans-Hudson Corp.)</th>
<th>BROAD STREET SUBWAY &amp; MARKET FRANKFORD SUBWAY ELEVATED (Southwestern Pennsylvania Transportation Authority)</th>
<th>MTA - NYCT Subways (MTA/New York City Transit - Department of Subways)</th>
</tr>
</thead>
<tbody>
<tr>
<td>DOWNTOWN SERVED</td>
<td>Atlanta, GA</td>
<td>Washington, DC</td>
<td>New York/New Jersey</td>
<td>Philadelphia, PA</td>
<td>Manhattan</td>
</tr>
<tr>
<td>LENGTH OF SYSTEM (miles)</td>
<td>48 mi.</td>
<td>106 mi.</td>
<td>14 mi.</td>
<td>25 mi.</td>
<td>830 mi.</td>
</tr>
<tr>
<td>NO. OF OPERATIONAL VEHICLES</td>
<td>318</td>
<td>1,130</td>
<td>366</td>
<td>343</td>
<td>6,292</td>
</tr>
<tr>
<td>SEATING/CRUSH CAPACITY OF VEHICLES</td>
<td>64/128</td>
<td>68/175</td>
<td>31/129</td>
<td>50/160</td>
<td>51 feet: 40/170 60 feet: 46/230 75 feet: 72/260</td>
</tr>
<tr>
<td>MINIMUM SCHEDULED HEADWAY IN PEAK (minutes)</td>
<td>15 min.</td>
<td>3 min.</td>
<td>4 min.</td>
<td>4 min.</td>
<td>2 min.</td>
</tr>
<tr>
<td>PRESENT WEEKDAY PASSENGER VOLUME - BOARDINGS (5 YEARS AGO)</td>
<td>248,000 (229,700)</td>
<td>731,000 (668,000)</td>
<td>246,890 (206,274)</td>
<td>198,634 (188,955)</td>
<td>5,157,000 (4,737,000)</td>
</tr>
<tr>
<td>MAXIMUM OPERATING SPEED (mph)</td>
<td>70 mph</td>
<td>59 mph</td>
<td>55 mph</td>
<td>55 mph</td>
<td>55 mph</td>
</tr>
<tr>
<td>AVERAGE OPERATING SPEED, STOPS INCLUDED (mph)</td>
<td>34 mph</td>
<td>33 mph</td>
<td>20 mph</td>
<td>19 mph</td>
<td>18 mph</td>
</tr>
<tr>
<td>NUMBER OF STATIONS</td>
<td>38</td>
<td>86</td>
<td>13</td>
<td>52</td>
<td>468</td>
</tr>
<tr>
<td>NUMBER OF PARK AND RIDE SPACES SERVING HEAVY RAIL STATIONS</td>
<td>22,300</td>
<td>58,000</td>
<td>550</td>
<td>1,676</td>
<td>0</td>
</tr>
<tr>
<td>HIGHEST FEE AT ANY PARK AND RIDE LOT FOR A DAY’S PARKING</td>
<td>$8.00</td>
<td>$4.75</td>
<td>$10.00</td>
<td>$3.15</td>
<td>N/A</td>
</tr>
<tr>
<td>YEAR HEAVY RAIL SYSTEM STARTED OPERATING</td>
<td>1979</td>
<td>1976</td>
<td>1962</td>
<td>1908</td>
<td>1904</td>
</tr>
<tr>
<td>MINIMUM OR BASE FARE</td>
<td>$2.00</td>
<td>$1.60</td>
<td>$1.75</td>
<td>$2.00</td>
<td>$2.25</td>
</tr>
<tr>
<td>TYPE OF SYSTEM FARE</td>
<td>Barrier, flat rate</td>
<td>Automatic fare collection (fare gates)</td>
<td>Automatic fare collection (MetroCard; Smartlink Card)</td>
<td>Turnstiles/Barriers</td>
<td>Automatic fare collection</td>
</tr>
<tr>
<td>PRESENT TOTAL OPERATING BUDGET PER YEAR</td>
<td>$172 million</td>
<td>$822 million</td>
<td>$231 million</td>
<td>$191 million</td>
<td>$3,231 million (subways)</td>
</tr>
<tr>
<td>NEW TRACK MILES ADDED TO HEAVY RAIL OVER PAST 5 YEARS</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0.53</td>
</tr>
<tr>
<td>NEW TRACK MILES TO BE ADDED OVER NEXT 5 YEARS</td>
<td>0</td>
<td>23</td>
<td>0</td>
<td>0</td>
<td>6.9</td>
</tr>
</tbody>
</table>
REQUESTS FOR PROPOSALS

1. Travel Model Improvement Program
Agency: FHWA
Deadline: Contact FHWA
Contact: Brendon Ricketts, brendon.ricketts@dot.gov, tel. (202) 366-5507
Description: The FHWA Office of Acquisition Management contemplates multiple awards of the Travel Model Improvement Program (TMIP) Outreach Contract in support of the outreach and capacity building mission for the Office of Planning. The purpose of this market research to identify potential offerors having an interest in and the resources to support these requirements. Consideration will be given to identifying small business concerns, including the sub-categories of Service-Disabled Veteran-Owned Small Business (SDVOSB), HUBZone, 8(a), Small Disadvantaged Business (SDB) and Woman-Owned. The market research will contribute to determining the method of procurement. It is anticipated that work will be performed under the outreach contract that may be fixed price (FFP) or cost-plus-fixed-fee (CPFF).
Website: Access further information directly at https://www.fbo.gov/index?s=opportunity&mode=list&tab=list. Please use 11-R-00012 in Keyword/Solicitation # search box.

2. Traffic Class Counts
Agency: Baltimore Metropolitan Council
Deadline: Tuesday, March 22, 2011 at 2:00 pm EDT.
Contact: For more information, contact Ed Stylec, estyle@baltometro.org
Description: BMC desires to engage the services of a consultant with knowledge of Anne Arundel County, Baltimore City, Baltimore County, Carroll County, Harford County and Howard County, Maryland, roadway systems in order to provide valid hourly traffic counts; and possesses the requisite technical capability and professional expertise to provide the type of services required. The contractor will collect traffic volume data for a 48 hour period using portable traffic counters at 94 locations throughout the Baltimore Metropolitan Area. The project will take place from early April until early June 2011. The end product is to be delivered as individual traffic count records in the “.prn file” format mandated by Maryland State Highway Administration and an Excel spreadsheet including all locations completed including BMC ID numbers.
Website: http://www.baltometro.org/whats-new/reque sts-for-proposals#class

3. Traffic Volume Counts
Agency: Baltimore Metropolitan Council
Deadline: Tuesday, March 22, 2011 at 2:00 pm EDT.
Contact: For more information, contact Ed Stylec, estyle@baltometro.org
Description: BMC desires to engage the services of a consultant with knowledge of Anne Arundel County, Baltimore City, Baltimore County, Carroll County, Harford County and Howard County, Maryland, roadway systems in order to provide valid hourly traffic counts; and possesses the requisite technical capability and professional expertise to provide the type of services required. The contractor will collect traffic volume data for a 48 hour period using portable traffic counters at 94 locations throughout the Baltimore Metropolitan Area. The project will take place from early April until early June 2011. The end product is to be delivered as individual traffic count records in the “.prn file” format mandated by Maryland State Highway Administration and an Excel spreadsheet including all locations completed including BMC ID numbers.
Website: http://www.baltometro.org/whats-new/reque sts-for-proposals#class

4. On-Call Consulting Services
Agency: Kansas City Area Transportation Authority (KCATA)
Deadline: March 18, 2011 at 11 a.m.
Contact: Mellody, Procurement Manager
Phone: (816) 346-0279
Fax: (816) 346-0336
Email: jmellody@kcata.org
Description: The Kansas City Area Transportation Authority (KCATA) is soliciting proposals from consultants to perform on-call consulting services for projects in Paratransit Operations, Management and Scheduling; Transit Radio Communications Systems; Transit Customer Information Systems; Maintenance and Facility Management Systems; and Fare Collection Systems.
Website: http://www.kcata.org/procurement/on-call_c onsulting_services/

5. Kern Regional Traffic Count Study
Agency: Kern Council of Governments
Deadline: March 28, 2011
Contact: Ed Flickinger, Project Manager
Kern Regional Traffic Count Study
Tel. (661) 861-2191, email: eflickinger@ kernco.org
Description: Kern Council of Governments (Kern COG) is seeking proposals from qualified contractors to conduct a traffic count study of Kern County, California. Established in 2005, this ongoing study monitors traffic counts for approximately 1,000 locations on locally maintained roads in Kern County. A comprehensive description and complete list of tasks and products are included in the request for proposals (RFP). The Contractor shall furnish all labor, tools, traffic data collection equipment, mapping software, distribution media, and incidentals necessary to collect, process, and report traffic counts on arterial and collector road segments. By bidding on this contract, the Contractor certifies his/her ability to perform the following: 1) Collect, process and report 24-hour short count and vehicle classification control traffic count data as described in this Proposal; 2) Meet all schedules and timelines for contract deliverables; 3) Obtain appropriate permits and licenses from various agencies involved; and 4) Furnish GPS coordinates of each count when needed with the accuracy of 1 meter or better and specify the coordinate system used.
Website: www.kernco.org

6. On-Call Consultants For General Transportation Planning Services
Agency: Fredericksburg Area Metropolitan Planning Organization (FAMPO)
Deadline: April 11, 2011, at 2 p.m.
Contact: Any questions should be addressed to the following individual: Lloyd Robinson, FAMPO Administrator, FAMPO, 406 Princess Anne Street, Fredericksburg, Virginia 22401 540-373-2890 robinson@gwregion.org
Description: The George Washington Regional Commission (GWRC) and the Fredericksburg Area Metropolitan Planning Organization (FAMPO) are asking interested firms to propose to provide a range of transportation planning services on an on-call basis. GWRC intends to select and contract with two teams of consultants. The term of the contract will be three years, renewable for up to two successive one-year periods. The maximum compensation allowable during the possible duration period of this contract will be up to $4 million, for a total duration of the contract, whether it is three or more years, for each team selected.
Website: http://www.fampo.gwregion.org/requestsfor proposals.html

PUBLIC AGENCIES — RFP notices are published here FREE OF CHARGE — call (703)764-0512 for details and deadline.
## CONFERENCES

<table>
<thead>
<tr>
<th>Date</th>
<th>Conference Name</th>
<th>Location</th>
<th>Hotel/Address</th>
<th>Description</th>
<th>Registration Fee</th>
<th>Registration</th>
<th>Program/Contact Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mar 13-15</td>
<td>APTA Legislative Conference</td>
<td>Washington, DC J.W. Marriott</td>
<td>This forum examines vital legislative issues and developments, including latest information on authorization legislation.</td>
<td>$675 m $1175 nm</td>
<td><a href="http://www.apta.com/mc/past/2010/2010legconf/Pages/default.aspx">http://www.apta.com/mc/past/2010/2010legconf/Pages/default.aspx</a></td>
<td>Program: Meredith Slesinger (202) 496-4860 <a href="mailto:Mslesinger@apta.com">Mslesinger@apta.com</a> Registration: Adam Martin (202) 496-4845 <a href="mailto:amartin@apta.com">amartin@apta.com</a></td>
<td></td>
</tr>
<tr>
<td>Mar 13-16</td>
<td>Geo-Frontiers 2011</td>
<td>Dallas, TX Sheraton Dallas Hotel</td>
<td>This forum aims to share new developments in geotechnical engineering technologies -- the latest state of the art and practice as applied to geotechnical engineering. It will have extensive technical programs, workshops and short courses—from design and engineering strategies to cost-saving geotechnical solutions.</td>
<td>$795 m $905 nm</td>
<td><a href="http://www.geofrontiers11.com/">http://www.geofrontiers11.com/</a> Registration: Tracie Coopet (651) 225-6947 <a href="mailto:tkcoopet@ifai.com">tkcoopet@ifai.com</a> Program: Barbara Connett, (651) 225 6914 <a href="mailto:beconnett@ifai.com">beconnett@ifai.com</a></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mar 13-16</td>
<td>First T&amp;DI Congress (ASCE)</td>
<td>Chicago, IL Holiday Inn Chicago Mart Plaza</td>
<td>The First ASCE Transportation &amp; Development Institute Congress will discuss integrated strategies focusing on smart development and the efficient multi-modal movement of people and goods to support the economic pulse of the nation and the world.</td>
<td>N/A $745 m $895nm</td>
<td><a href="http://www.tanddi.org/events">www.tanddi.org/events</a> Elaine V. Watson (703) 295-6030 <a href="mailto:ewatson@asce.org">ewatson@asce.org</a></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mar 16-18</td>
<td>2011 Joint Rail Conference: Shared Corridors, Shared Interests (ASME, ASCE, IEEE, AREMA, TRB)</td>
<td>Pueblo, CO Pueblo Convention Center</td>
<td>JRC 2011 will address all aspects of rail transportation and engineering research. With American Recovery and Reinvestment Act funding for rail as backdrop, it will focus improving services on the U.S. railroad network. It will explore railroad infrastructure, rail equipment, signal and train control engineering, service quality and operations research, planning and development, and safety and security.</td>
<td>$425 $555</td>
<td><a href="http://www.asmeconferences.org/JRC2011/ConfRegistration.cfm">http://www.asmeconferences.org/JRC2011/ConfRegistration.cfm</a></td>
<td>David Tyrell (617) 494-2687 <a href="mailto:david.tyrell@dot.gov">david.tyrell@dot.gov</a></td>
<td></td>
</tr>
<tr>
<td>Mar 18-20</td>
<td>International Conference on Traffic and Transportation Engineering (IACSIT, IEEE)</td>
<td>Dubai, United Arab Emirates Hilton Hotel</td>
<td>The conference is aimed at fostering dialogue between universities and the industry on traffic and transportation engineering.</td>
<td>$400 m authors $400 student authors $450 nm authors $300 - listeners</td>
<td><a href="http://www.ictte.org">www.ictte.org</a> Dr. He Wende +65 66492724 <a href="mailto:Hewende1978@yeah.net">Hewende1978@yeah.net</a></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mar 21-23</td>
<td>Traffic Safety Conference (Texas Transportation Institute, Center for Transportation Safety )</td>
<td>Austin, TX Hilton Austin Airport Hotel</td>
<td>This conference will address all aspects of Texas traffic safety. Breakout sessions will cover innovations in safety, commercial and freight operations, and engineering for law enforcement, among others.</td>
<td>$150 - in advance $250 - on site</td>
<td><a href="http://tti.tamu.edu/conferences/traffic_safety11/">http://tti.tamu.edu/conferences/traffic_safety11/</a> Jessica L. Franklin (979) 845-5817 <a href="mailto:j-franklin@tamu.edu">j-franklin@tamu.edu</a></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mar 22-23</td>
<td>8th International Workshop on Intelligent Transportation (Hamburg University of Technology, Smartmicro, IEEE Communications Society – Germany Chapter)</td>
<td>Hamburg, Germany Hotel Hafen Hamburg</td>
<td>WIT 2011 Workshop will focus on new developments in the field of transportation systems, sensor concepts and communication technologies.</td>
<td>€320</td>
<td><a href="http://wlt.tu-harburg.de/">http://wlt.tu-harburg.de/</a> Dr. Hermann Rohling <a href="mailto:rohling.wlt@tu-harburg.de">rohling.wlt@tu-harburg.de</a></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mar 24-26</td>
<td>ITE Texas District Annual Spring Meeting</td>
<td>Ft. Worth, TX Hilton Ft. Worth</td>
<td>Meeting starts with highway products group exhibitions, and options include a visit to Burlington Northern Santa Fe Railroad Corporation operation center and corporate headquarters, an engineering ethics seminar, and a one-day workshop with FHWA staff on the value and techniques of roadway safety audits.</td>
<td>$275 m $160 m retired $375 nm</td>
<td><a href="http://www.texite.org/springmee.png">http://www.texite.org/springmee.png</a> Teresa Kohnert (979) 862-1219</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

N/A = Not Available; m = member; nm = non-member. To list your transportation conferences here FREE, send all information as above to: The UTM Conference Dept., P.O. Box 12300, Burke, VA 22009-2300, or call (703) 764-0512, or fax (703) 764-0516, or email: editors@lawleypublications.com.
<table>
<thead>
<tr>
<th>Event</th>
<th>Location</th>
<th>Venue</th>
<th>Description</th>
<th>Date</th>
<th>Price</th>
<th>Contact Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fare Collection Workshop (APTA)</td>
<td>Miami, FL</td>
<td>Hilton Miami Downtown</td>
<td>Forum provides an in-depth opportunity to explore the latest developments in revenue practices, systems standards, fare policy and equipment for the transportation market.</td>
<td>Mar 28-30</td>
<td>$475 m</td>
<td><a href="http://www.apta.com/mc/2011/Pages/FareCollection.aspx">http://www.apta.com/mc/2011/Pages/FareCollection.aspx</a>, Program: Bill Baum (202) 496-4888 Registration: Heather Rachels (202) 496-4838</td>
</tr>
<tr>
<td>TransiTech (APTA)</td>
<td>Miami, FL</td>
<td>Hilton Miami Downtown</td>
<td>TransiTech offers hands-on workshops focusing on information technology, traveler information, and intelligent transportation systems issues affecting public transportation systems.</td>
<td>Mar 29-31</td>
<td>$475 m</td>
<td><a href="http://www.apta.com/mc/2011/Pages/TransiTech.aspx">http://www.apta.com/mc/2011/Pages/TransiTech.aspx</a>, Program: Lou Sanders (202) 496-4886 DeeNaye Williams (202) 496-4899 Registration: Anitha Atkins (202) 496-4839</td>
</tr>
<tr>
<td>Technical Conference and Exhibit (ITE)</td>
<td>Lake Buena Vista, FL</td>
<td>Walt Disney World Swan</td>
<td>This conference is a call to professionals who hold a stake in improving transportation safety to come together on how we can “move toward zero.” It will address the impact the economy and changing policies will have on multimodal transportation planning, design, management and safety strategies.</td>
<td>Apr 3-6</td>
<td>$610 m</td>
<td>Sallie Dollins 202-785-0060 ext. 149 <a href="mailto:sdollins@ite.org">sdollins@ite.org</a></td>
</tr>
<tr>
<td>2011 National Planning Conference (APA)</td>
<td>Boston, MA</td>
<td>Hynes Convention Center</td>
<td>APA provides leadership in the development of vital communities. It promotes the public good through planning for better decision making, enhancing the quality and distribution of resources in the physical, social, and economic environment; and advocating an open, informed and inclusive public decision making process to reach rational decisions.</td>
<td>Apr 9-13</td>
<td>$745 m</td>
<td><a href="http://www.planning.org">www.planning.org</a>, Carolyn Torma (312) 786-6386 <a href="mailto:ctorma@planning.org">ctorma@planning.org</a></td>
</tr>
<tr>
<td>ITE Southern District Annual Meeting</td>
<td>Lafayette, LA</td>
<td>Hilton Lafayette</td>
<td>Our theme - “Back to the Basics: Safety, Convenience and Efficiency&quot; - will be interwoven throughout the conference presentations and events.</td>
<td>Apr 10-13</td>
<td>$350 m</td>
<td><a href="mailto:travis_smith@lafayettela.gov">travis_smith@lafayettela.gov</a></td>
</tr>
<tr>
<td>59th World Congress and Exhibition (UITP)</td>
<td>Dubai, United Arab Emirates</td>
<td>Dubai Convention and Exhibition Centre (DICEC), part of the Dubai World Trade Center (DWTC)</td>
<td>The theme of the Congress is &quot;Boosting Public Transport: Action.&quot; Dubai, the host city, is a city that offers extensive multimodal public transport and is recognized for its forward-looking and ambitious mobility policy, based on extensive city benchmarking.</td>
<td>Apr 10-14</td>
<td>$1,000 n</td>
<td><a href="http://www.uitpdubai2011.org/congress/home/">http://www.uitpdubai2011.org/congress/home/</a> Contact: Manuela Marchetti +971 4 427 0492 <a href="mailto:uitp2011@meetingmindsdubai.com">uitp2011@meetingmindsdubai.com</a></td>
</tr>
<tr>
<td>International Transport Research Conference</td>
<td>Pinang, Malaysia</td>
<td>Universiti Sains Malaysia, Pulau Pinang, Malaysia.</td>
<td>The theme is “A Road Map for Safer Mobility.” The conference is being held in conjunction with the 5th Malaysia Universities Transport Research Forum Conference. It will cover current scientific and operational issues as well as innovative and sustainable solutions.</td>
<td>Apr 12-14</td>
<td>$250 - international participant RM 500 – Malaysian participant</td>
<td><a href="http://www.bbp.usm.my/itrcc11/">http://www.bbp.usm.my/itrcc11/</a> Dr. Azizan Marzuki Conference Secretariat <a href="mailto:chik72@uws.my">chik72@uws.my</a></td>
</tr>
<tr>
<td>ITE Great Lakes District Annual Meeting</td>
<td>Columbus, OH</td>
<td>ODOT Conference Center</td>
<td>Speakers include DOT leaders from Ohio, Michigan and Indiana. Also the forum includes a training workshop from the National Complete Streets Coalition. Professional Development Hours (6.5 PDHs) are available.</td>
<td>Apr 14-15</td>
<td>$50</td>
<td><a href="http://www.greatlakesite.com/districtmeetingAnnouncement.html/">http://www.greatlakesite.com/districtmeetingAnnouncement.html/</a> Kevin Miller (937) 259-5166 <a href="mailto:kmiller@jbinc.com">kmiller@jbinc.com</a></td>
</tr>
<tr>
<td>ITE 2011 Mid-Colonial Annual Meeting</td>
<td>Alexandria, VA</td>
<td>Crowne Plaza</td>
<td>The meeting will consist of technical presentations, workshops, a transportation related tour, traffic bowl competition, a golf tournament, and social activities.</td>
<td>Apr 27-29</td>
<td>Coming soon</td>
<td><a href="http://www.mastite.org">www.mastite.org</a>, Jerry Baxter (410) 316-2320 <a href="mailto:gbaxter@mt.com">gbaxter@mt.com</a></td>
</tr>
</tbody>
</table>

N/A = Not Available; m = member; nm = non-member. To list your transportation conferences here FREE, send all information as above to: The UTM Conference Dept., P.O. Box 12300, Burke, VA 22009-2300, or call (703) 764-0512, or fax (703) 764-0516, or email: editors@lawleypublications.com.
<table>
<thead>
<tr>
<th>Date</th>
<th>Conference Name</th>
<th>Location</th>
<th>Venue</th>
<th>Details</th>
<th>Fee</th>
<th>Contact Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>May 1-4</td>
<td>4th International Transportation</td>
<td>Charleston, WV</td>
<td>Embassy Suites</td>
<td>This conference concentrates on the linkage between transportation and economic development. It will focus on issues related to the economy, global concerns and financial constraints, and the emerging transportation needs of business and economic development communities at local, regional, state, national and global levels.</td>
<td>N/A</td>
<td>$250 <a href="mailto:gbaxter@mt.com">gbaxter@mt.com</a></td>
</tr>
<tr>
<td></td>
<td>Economic Development Conference:</td>
<td></td>
<td>Charleston</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>“Economic Impact of Connecting People, Goods, Markets, Employment, Services and Production” (TRB)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>May 8-12</td>
<td>13th National Transportation Planning</td>
<td>Reno, NV</td>
<td>Peppermill Resort</td>
<td>This forum will focus on issues and challenges related to the economy, global concerns and financial constraints; the emerging transportation needs of business and economic development communities at local, regional, state, national and global levels. Subjects/ perspectives will include public and private sectors; academic, practitioner and policy issues; theory, concepts and operational tools; and all modes of transportation and their relationship to economic development.</td>
<td>N/A</td>
<td><a href="http://www.trb-appcon.org">www.trb-appcon.org</a></td>
</tr>
<tr>
<td></td>
<td>Applications Conference (TRB)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>May 10-11</td>
<td>UrbanRail 2011 (ARA)</td>
<td>Sydney, Australia</td>
<td>Sydney Harbour</td>
<td>World class cities need world class urban rail networks to guarantee the mobility of their citizens, businesses and visitors. The 3rd annual ARA Urban Rail conference will take a closer look on how a growing population will affect the rail industry. It will address the problems arising from higher passenger numbers and changes in government policy. It will focus on the need for innovative public transport solutions in rail to ensure future mobility and sustainable growth.</td>
<td>N/A</td>
<td>$ 2524.50 AUD</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Marriott</td>
<td></td>
<td></td>
<td><a href="http://www.informa.com.au/conferences/transportation/urbanrail">http://www.informa.com.au/conferences/transportation/urbanrail</a></td>
</tr>
<tr>
<td>May 17-20</td>
<td>3rd International Conference on</td>
<td>Carmel, Indiana</td>
<td>Renaissance</td>
<td>Conference covers wide range of roundabout issues including roundabout status and future, U.S. and international safety experience, design issues, simulation and visualization, control issues, economic and environmental issues, pedestrian issues, bicycle issues, capacity, mini roundabouts and a road diet, issues with blind pedestrians.</td>
<td>N/A</td>
<td>By March 19: $400</td>
</tr>
<tr>
<td></td>
<td>Roundabouts (TRB Task Force on</td>
<td></td>
<td>Indianapolis North</td>
<td></td>
<td>$450</td>
<td>Gene Russell <a href="mailto:geno@ksu.edu">geno@ksu.edu</a></td>
</tr>
<tr>
<td></td>
<td>Roundabouts, ITE)</td>
<td></td>
<td>Hotel</td>
<td></td>
<td>$500</td>
<td>Michael T. McBride <a href="mailto:mcbride@carmel.in.gov">mcbride@carmel.in.gov</a></td>
</tr>
<tr>
<td>May 18-20</td>
<td>“Building Bridges” Women’s</td>
<td>San Francisco, CA</td>
<td>Hyatt Embarcadero</td>
<td>This, the 3rd annual conference will address the problems arising from higher passenger numbers and changes in government policy. It will also focus on the need to drive and deliver innovative public transport solutions in rail to ensure future mobility and sustainable growth in our world class cities.</td>
<td>N/A</td>
<td>By April 18: $800 m</td>
</tr>
<tr>
<td></td>
<td>Transportation Seminar Annual</td>
<td></td>
<td></td>
<td></td>
<td>$725 nm</td>
<td>Deborah Dagang <a href="mailto:dagang@ch2m.com">dagang@ch2m.com</a></td>
</tr>
<tr>
<td></td>
<td>Conference (WTS)</td>
<td></td>
<td></td>
<td></td>
<td>$700 m</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>$825 nm</td>
<td></td>
</tr>
<tr>
<td>May 18-20</td>
<td>Performance Measurement for</td>
<td>Irvine, CA</td>
<td></td>
<td>WTS is an international organization dedicated to the advancement of women in transportation. The forum examines technical, policy, financial, and political aspects of transportation issues in all sectors.</td>
<td>300-400</td>
<td><a href="http://www.wtsinternational.org">www.wtsinternational.org</a> Margaret Mullins (202) 955-5085 <a href="mailto:mmullins@wtsinternational.org">mmullins@wtsinternational.org</a></td>
</tr>
<tr>
<td></td>
<td>Transportation Systems: Fourth U.S.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>and International Conference (TRB)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>May 22-25</td>
<td>Bus &amp; Paratransit Conference (APTA)</td>
<td>Memphis, TN</td>
<td>Marriott</td>
<td>The conference will provide a forum for the exchange of technical, policy, planning, and administrative information. The conference will focus on research, design, operation, safety, evaluation, and practical experience related to the roundabout form of intersections.</td>
<td>N/A</td>
<td>By April 15: $575 m</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Memphis Downtown</td>
<td></td>
<td>$1,125</td>
<td><a href="http://www.apta.com/mc/bus/registration/Pages/default.aspx">http://www.apta.com/mc/bus/registration/Pages/default.aspx</a></td>
</tr>
<tr>
<td>May 24-25</td>
<td>22nd Annual CTS Transportation</td>
<td>St. Paul, MN</td>
<td>Crowne Plaza</td>
<td>Features the latest bus and paratransit vehicles, products and services, as well as information sessions on all aspects of bus and paratransit services.</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td></td>
<td>Research Conference</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>