Half of Traffic Accident Fatalities are Pedestrians, Cyclists, and Motorcyclists

World Health Organization Finds 1.27 Million People Die in Traffic Accidents Annually

The first comprehensive global assessment of road safety finds that almost half of the estimated 1.27 million people who die in traffic accidents every year are not people driving or riding in automobiles or trucks. Rather, they are people walking, cycling or riding a motorcycle.

Progress has been made towards protecting people in cars, but the needs of pedestrians, cyclists and motorcyclists – vulnerable groups of road users – are not being met, according to the World Health Organization (WHO). This underscores the need for these road users to be given more attention in road safety programs, according to the WHO.

“Global Status Report on Road Safety: Time for Action” is the first broad assessment of the road safety situation in 178 countries, accounting for over 98 percent of the world’s population and using data drawn from a standardized survey conducted in 2008. The study suggests that, although road traffic death rates in many high-income countries have stabilized or declined in recent decades, road deaths are increasing in most regions of the world. If trends continue unabated, the report says, traffic deaths will rise to an estimated 2.4 million a year by 2030, surpassing AIDS and tuberculosis as a leading cause of death.

The results show that road traffic injuries remain an important public health problem, particularly for low-income and middle-income countries. Road crashes cause between 20 million and 50 million non-fatal injuries every year and are an important cause of disability. In many countries support services for road traffic victims are inadequate. Research shows that these avoidable injuries overload already stretched health-care systems in many countries. The findings suggest that, in many countries, road safety laws need to

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Competition Offers $50,000 for Best Idea to Fight Traffic Congestion

ITS America, IBM and STCI Partner to Offer Challenge

The Intelligent Transportation Society of America (ITS America), in partnership with IBM and Spencer Trask Collaborative Innovations (STCI), is challenging transportation experts, entrepreneurs, researchers, and citizens from all over the world to come up with innovative ideas to reduce traffic congestion.

Called the ITS Congestion Challenge, it is the first global competition aimed at identifying the best ideas to reduce congestion and mitigate its impact on the economy and environment. The Challenge was announced during the ITS America Annual Meeting & Exposition June 1-3. Additional partners include AAA, the American Highway Users Alliance, the Environmental Defense Fund, ITS Sweden, and the California and Virginia Departments of Transportation.

“The average metropolitan commuter

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CDOT Reduces Time to Clear Vehicles Stranded Due to Inclement Weather by More Than Half

*Tow Units That Can Relocate Commercial Vehicles are Stationed at Strategic Locations*

Colorado’s Heavy Tow Quick Clearance Program managed to reduce the average time to clear weather-stranded vehicles off the road to 23 minutes from approximately 50 minutes before the program started.

The program, carried out by the Colorado Department of Transportation (CDOT) as well as Stantec and American Towing Alliance, involved clearing obstructions and moving commercial vehicles to safe locations during weekends, holidays and other adverse weather days along Interstate 70 from Thanksgiving weekend through late April. It included all weekends and holidays and four other separate “severe storm” occasions during that time period. During this period CDOT relocated 184 commercial vehicles and cleared 217 lanes.

Bernie Guevara, a CDOT region one traffic program engineer, told UTM that tow units are typically stationed at 3 strategic locations — Floyd Hill, Eisenhower/Johnson Tunnel and Vail Pass. “They are relocated depending on the storm forecast, which is being monitored from the tunnel,” he explained. “This covers approximately 60 miles of mountain highways which consist of at least three major mountain passes with 7% grade.”

The Colorado Motor Carriers Association encouraged the program, and worked with the DOT and the American Towing Alliance.

“It can cost thousands of dollars in lost revenue and hours of travel delays, even when just one lane of I-70 is closed, impacting trade, travel, tourism and recreation,” said Tony DeVito, CDOT regional transportation director in a June press release. “When we’re able to get traffic moving again in a timely manner, it reduces those lost revenues and travel delays.”

The program, which involves three heavy tow units capable of relocating semi-trucks, costs approximately $500,000 a year, Guevara said. He noted that the benefits far outweigh the costs.

“The program achieves our goal of keeping traffic moving and maintaining safety along the Interstate 70 West corridor and is a win-win for all involved - CDOT, the traveling public and the truck drivers who were able to be moved quickly out of harms way,” Guevara said.

The pilot Heavy Tow program operated from January to May 2008. A favorable evaluation of its effectiveness provided CDOT with the necessary confirmation to extend the service for the 2008-2009 season. Slight changes were made to make it more efficient, including modifying shift times to save money and advanced patrols on Vail Pass to find disabled vehicles sooner. In the 2008-2009 season, clearance time averaged 27 minutes.

Heavy Tow is scheduled to begin again over the Thanksgiving weekend but will resume at an earlier date, if necessary, due to adverse weather.

For more information, visit [http://www.dot.state.co.us/Communications/News/CE20090603-1.html](http://www.dot.state.co.us/Communications/News/CE20090603-1.html) or contact Bernie Guevara by e-mail at [Bernardo.Guevara@dot.state.co.us](mailto:Bernardo.Guevara@dot.state.co.us).

*Photo, Courtesy of the CDOT*
Study Finds Congestion Pricing Most Effective When Equity Issues Are Addressed Early

HOT Lanes Tend to Raise Fewer Equity Concerns Since Users Have a Choice to Pay a Toll or Not

Congestion pricing to improve traffic flow is most effective when policymakers address equity concerns in the early planning stages of a pricing program, according to a study by the RAND Corporation. Each situation is unique and must be evaluated on a case-by-case basis, the study said.

Critics often suggest that, because congestion pricing imposes a cost on something that was previously free, it will harm lower-income drivers who will be forced to pay additional costs or be “priced off” the roads.

The study, “Equity and Congestion Pricing: A Review of the Evidence,” was supported by a grant from the Environmental Defense Fund (EDF). The findings indicate that:

- Equity issues can and must be addressed early on when designing a congestion pricing project, and
- Well-designed congestion pricing projects can deliver clean air and less gridlock to everyone.

The report comes at an auspicious time because Congress is working to reauthorize the federal transportation bill before it expires on September 30. Also, the U.S. Department of Transportation’s Urban Partnership Program recently awarded hundreds of millions of dollars to six metropolitan areas — Chicago, Los Angeles, Miami, Minneapolis-St. Paul, San Francisco and Seattle — willing to implement congestion pricing to reduce congestion.

“There is no single answer to the question of whether congestion pricing is equitable,” said Thomas Light, co-author of the study and an associate economist with RAND, a nonprofit research organization. “The answer depends on how equity is defined and measured. It also depends on how congestion pricing is implemented and the characteristics of the region where it is put into practice.”

The RAND study evaluated alternative ways of defining and measuring equity and how such approaches interact with alternative forms of pricing, as well as the context in which congestion pricing is imposed. Light and co-author Liisa Ecola reviewed dozens of studies and found that congestion pricing often results in most lower-income people paying less in taxes to fund transportation — though some may pay more. For example, one analysis found that if a road construction bond was paid off with toll revenues rather than sales taxes most — but not all — lower-income persons would pay less overall.

The authors say congestion pricing can be either regressive or progressive but that if regions use revenues in ways that benefit low-income individuals, then it is more likely to be progressive.

High occupancy toll (HOT) lanes tend to raise fewer equity concerns since drivers have a choice of using a set of toll lanes or using parallel free lanes. Studies have not shown lower-income drivers to be worse off, the study said, in part because they may benefit from improved traffic flow in the free lanes.

Since equity is specific to individual regions, the study recommends that transportation planners consider measuring and assessing equity concerns early in the planning process for congestion pricing programs. Then, the policymakers should:

- Test programs through modeling to determine whether low-income or other transportation-disadvantaged groups are disproportionately affected.
- Conduct outreach so that residents understand the proposal and can offer suggestions.
- Monitor the programs, once implemented, to make sure that they remain equitable over time as populations and travel patterns shift.

Methods to promote equitable outcomes include discounts or exemptions for low-income and disabled drivers and redistributing revenues through public spending on transportation-related improvements. London, for example, uses most of its congestion pricing revenues to fund bus service enhancements.

The RAND Corporation is a nonprofit research organization providing objective analysis and effective solutions to challenges facing the world. EDF is a leading national nonprofit member organization.

For more information, the study is available at www.rand.org/pubs/technical_reports/T R680.
San Francisco Adopts Significantly Expanded Bicycle Plan; Court Injunction is Expected to be Lifted; Miles of Bike Lanes to Increase by 76%  
The San Francisco Municipal Transportation Agency (SFMTA) voted in June to adopt a new citywide bicycle plan. The 2009 San Francisco Bicycle Plan is a five-year master plan intended to provide greater safety and convenience for city cyclists. The Bike Plan outlines a significant extension of the city’s existing bicycle network and identifies short and long-term projects to further upgrade bike routes.

The SFMTA Board approved the Bicycle Plan and the specific traffic modifications required to implement 45 of the 60 near-term bicycle projects outlined in the plan. Those projects would add 34 miles to the existing 45 miles of bike lanes in the city, increasing the total by 76 percent.

The SFMTA vote followed the city Planning Commission’s certification of the Bike Plan Environmental Impact Report (EIR) in June. The EIR was required after a 2006 Superior Court found that the existing Bicycle Plan had not been sufficiently evaluated under the California Environmental Quality Act (CEQA).

The approval clears the way for the Superior Court to end a three-year long Bike Plan injunction, which is expected by the end of the summer. Implementation of the plan will begin as soon as the injunction is lifted.

San Francisco adopted its first Bike Plan in 1997 and developed an updated version in 2005. The 2009 Bike Plan is designed to enhance the city’s existing bicycle network, an officially designated web of pathways and streets adapted for bike travel.

The network is made up of 210 miles of paths and roadways designated as official bike routes. The 2009 Bike Plan includes traffic engineering measures to address the places in which the network is discontinuous or broken, improving the connectivity of the network to make it safer, more efficient, and more welcoming to cyclists of all levels.

The environmental impact study determined that some of the proposed measures likely would slow commuter traffic, including city transit buses. Some vehicular lanes would be eliminated, left turns would be restricted in places, and fewer on-street parking spaces would be available.

Twenty-seven intersections were identified in the EIR as likely to experience a significant impact to street congestion under the plan, and an increase in vehicle idling could result in higher levels of undesirable emissions. But city officials assert that the trade-offs ultimately will result in cleaner and calmer streets.

In addition to the 60 near-term projects, the majority of which will be completed in the next three years, the plan identifies 24 long-term improvements to be made throughout the network. Besides adding 34 miles of bike lanes, other projects include the marking of 75 miles of on-street bike routes with shared lanes (“sharrows”) and the application of colored pavement markings for bike lanes.

The plan also calls for thousands of new sidewalk bike parking racks as well as on-street bike parking corrals. It includes programs to enhance bicycle access to transit, educational programs for bicyclists and motorists, and bicycle-related planning and traffic enforcement policies.

SFMTA staff estimates that the 60 near-term projects could cost $14 million, which will be funded through local sales taxes and regional, state and federal grants. The agency is responsible for developing and maintaining the Bike Plan as part of the city’s transportation system, while working in conjunction with other agencies and the broader community.

The Bicycle Plan seeks to promote eight main goals: 1) increasing bike lanes and sharrows; 2) expanding bike parking; 3) extending accessibility of bikes on local transit; 4) furthering bike safety education; 5) improving bicycle safety through targeted enforcement; 6) promoting and encouraging safe biking; 7) adopting bicycle-friendly practices and policies; and 8) prioritizing and increasing bicycle funding.

“This long-awaited approval of the Bicycle Plan re-starts our progress toward making San Francisco the pre-eminent city for bicycling in North America,” said Nathaniel P. Ford Sr., SFMTA Executive Director/CEO.

Bicycling in the city was on the rise even before the plan was approved, increasing 43 percent since 2006 according to the SFMTA’s May 2009 State of Cycling report. SFMTA expects that number to increase substantially as improvements are made and new measures are put into place. Agency statistics show that bicycling activity increases by an average of 50 percent after a bike lane is added.

For more information, visit http://www.sfmta.com/cms/bproj/bikeplan.htm.

Innovative Systems Help Propel Development of European Transportation Market
The European transportation market is undergoing several changes, chiefly fuelled by increasing traffic congestion and the need to cut down on travel time, according to a new report.

Frost & Sullivan’s research report, “Key Growth Trends in the European Markets for Road User Charging, Congestion Charging, Public Transport & Ticketing and Parking,” provides an overview of key growth trends for transport and traffic management systems in Europe. Analysis of systems, technologies, challenges, drivers and restraints are covered in the research. Frost & Sullivan’s analysts examined the following markets: road-user charging, congestion charging, public transport, ticketing, and parking systems.

The researchers found that, due to rapid urbanization, public transport is becoming increasingly popular in Europe, with rail/underground usage reaching 1.2 billion passenger journeys in...
2006-2007, showing year-on-year growth of 8 percent. European transportation market development is being fuelled by the introduction of innovative traffic management and advanced payment systems.

The report found that 20 countries across Europe impose a road toll charge. France has the highest number of passenger car road tolls with approximately 81 road tolls, whereas Great Britain has the highest number of bridge and tunnel tolls with approximately 22 bridge and tunnel tolls. Technology will shift from automated number plate recognition (ANPR) used in existing schemes to Dedicated Short Range Communications (DSRC) Tag and Beacon - expected by 2008 in London and Stockholm. The Global Positioning System (GPS) is anticipated by 2014-2015 in the Netherlands and the United Kingdom coupled with Galileo for greater accuracy in terms of traffic management in downtown areas. Advanced payment systems are key features of the car parking process. As a result, it is vital for parking companies to consider expanding their businesses for car parking telematics subscription systems.

Intelligent Transport Systems (ITS) are starting to gain prominence in Europe, especially as city planners and government organizations seek to minimize congestion and optimize urban traffic/passenger flow. The EU is now investing more money to enhance traffic management and the use of public transport systems by 2015. In this context, several exciting projects are being made operational in London, Italy and Stockholm.

According to the researchers, road-user charging is developing rapidly. While the market for road-user charging is well established in the Western Europe, it is still in the early stages of development in Eastern Europe, creating considerable potential for expansion. There is also growth potential for vehicle positioning systems (VPS) and ANPR as they provide opportunities for participants with a primary focus on manufacturing video enforcement systems. Congestion charging is gaining importance. This segment is projected to generate an estimated 2.05 billion ($3.40 billion) by 2015. Congestion charging will experience the implementation of new technologies such as GPS by 2011. In the future, this segment will be populated by new entrants who are already active in road-user charging and are both service and IT service providers.

Advanced parking systems manufacturers are looking to expand in Europe by implementing technology systems that have successfully held trials in Asia. This segment will generate higher revenues by 2015 if innovative technologies can be developed. In order to test parking system technologies and overcome specific challenges, various projects have been carried out to test a combination of navigation and parking information.

For more information, please visit http://w_Hl/234402406_Hl/234402407_wBM_1_BM_2_w.frost.com/prod/servlet/report-brochure.pac?id=M2F6-01-00-00-00.

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Half of Traffic Fatalities are Pedestrians, Cyclists, and Motorcyclists

be made more comprehensive while enforcement should be strengthened.

The study determined the number of registered motorized vehicles in each country and action being taken to invest in public transport and encourage non-motorized travel such as walking and cycling.

The study also produced the following findings:

- Less than a third of countries meet basic criteria for reducing speed in urban areas.
- Less than half of countries use the recommended blood alcohol concentration limit of 0.05 grams per deciliter as a measure to reduce drunk-driving.
- While helmet laws exist in more than 90% of countries, only 40% have a law that covers both riders and passengers while also requiring that helmets meet a specified standard.
- Only 57% of countries have laws that require all car occupants to wear seat-belts; this figure is only 38% in low-income countries.
- Half of all countries do not have laws requiring the use of child restraints (e.g., child seats and booster seats). This figure masks considerable variation, with relevant laws in 90% of high-income countries but only 20% of low-income countries.
- Only 15% of countries have comprehensive laws which address all five of these risk factors. Moreover, where laws on these risk factors are in place, they are often inadequately enforced, particularly in low-income countries.
- “More than 90% of the world’s road deaths occur in low-income and middle-income countries, while these countries only have 48% of the world’s vehicles,” said Dr Etienne Krug, Director of W.H.O.’s Department of Violence and Injury Prevention and Disability. “Roads are particularly unsafe for pedestrians, cyclists and motorcyclists who, without the protective shell of a car around them, are more vulnerable. These road users need to be given increased attention. Measures such as building sidewalks, raised crossings and separate lanes for two wheelers; reducing drunk-driving and excessive speed; increasing the use of helmets and improving trauma care are some of the interventions that could save hundreds of thousands of lives every year.”


For further information, visit www.who.int/violence_injury_preventio n/road_safety_status/2009/ and contact W.H.O. Communications Officer Laura Sminkey at tel.: +41 22 791 4547 or e-mail: sminkeyl@who.int.
House Transportation Bill Would Restructure Transportation Department Programs

Obama Administration Proposes Stopgap Measure Instead

Chairman Jim Oberstar and the members of the House Transportation and Infrastructure Committee are moving forward on a new six-year transportation bill that would restructure many Transportation Department programs, in hopes of bringing it to the full House for a July vote.


The act would provide $450 billion for highways, highway safety and transit investment over six years – a 38 percent increase above current funding levels, the committee said. Within this, $99.8 billion would be allocated for public transportation programs administered by the Federal Transit Administration – a more than 90-percent increase over current levels, according to the American Public Transportation Association. The act also would provide an additional $50 billion over six years to develop 11 authorized high-speed rail corridors linking major metropolitan regions in the United States.

The act does not detail where increased revenues to finance the $450 program would be found. The last transportation bill authorized $286.4 billion. Oberstar has said that sources of funding will be developed by the House Committee on Ways & Means.

According to House Transportation and Infrastructure Committee Spokesman Jim Berard, the committee wants to complete the new legislation by the time the current transportation law – SAFETEA-LU – expires on September 30, 2009. Another impetus has been provided by the Transportation Department’s estimate that the Highway Trust Fund will run out of money in mid-to-late August.

But the committee’s actions are meeting resistance from the Obama administration. On June 17, Transportation Secretary Ray LaHood called for a stopgap 18-month highway authorization plan to restore funding for the Highway Trust Fund, while delaying consideration of program changes. Oberstar has said that any temporary extension of the current federal highway program is unacceptable. John Mica, the ranking Republican member of the committee, also rejected the administration’s plan. Then, on June 24, the committee’s Democratic members sent a letter to President Obama, expressing their dissatisfaction with the administration’s proposal.

In contrast, some senators appeared to be open to the administration’s plan, which would provide more time for passing a comprehensive transportation bill with stable and reliable funding sources.

Specifically, the Surface Transportation Authorization Act of 2009 would consolidate or terminate more than 75 programs. Most highway funding would be consolidated under four core categories:

- Critical Asset Investment – Consolidates the existing Interstate Maintenance program, National Highway System program, and Highway Bridge program into one outcome-based program with the goal of bringing highways and bridges (including the Interstate System) to a state of good repair and maintaining that condition.

- Highways Safety Improvement – Restructures the Highway Safety Improvement program to focus on reducing motor vehicle crash fatalities and injuries on the nation’s highways, grade-crossings, and rural roads by investing in improvements to remove or lessen roadway safety hazards.

- Surface Transportation – Provides states with surface transportation funding through a flexible program that enables states and metropolitan regions to address state-specific needs including new highway and transit capacity. Facilitates local decision-making and participation by increasing the role of communities.

- Congestion Mitigation and Air Quality Improvement (CMAQ) – Restructures the program to fund projects that improve air quality, reduce congestion, and improve public health and the livability of communities.

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- Congestion Mitigation and Air Quality Improvement (CMAQ) – Restructures the program to fund projects that improve air quality, reduce congestion, and improve public health and the livability of communities.

The act would focus most transit funding in four core categories to bring urban and rural public transit systems to a state of good repair; provide specific funding to restore transit rail systems; provide mobility and access to transit-dependent individuals; and plan, design, and construct new transit lines and intermodal facilities.

It would establish three programs to improve and expand mobility on the nation’s surface transportation system:

- Metropolitan Mobility and Access – Provides significant, dedicated funding to help the largest metropolitan regions address congestion.

- Projects of National Significance – Enhance U.S. global competitiveness by increasing the focus on goods movement and freight mobility.

- Freight Improvement – Provides state formula grant funding for freight and goods movement projects and for improving states’ ability to conduct freight planning.

The act would reform the Transportation Department to require intermodal planning and decision-making; to ensure that projects are planned and completed in a timely manner; and to ensure that DOT programs advance the livability of communities. It would also require states and local governments to establish transportation plans with specific performance standards; measure their progress annually in meeting these standards; and periodically adjust their plans as necessary to achieve specific objectives.

It would create an Office of Livability within the Federal Highway Administration (FHWA) to provide leadership for the creation of livable communities and the development of sustainable transportation choices.

The act would create a National Infrastructure Bank to better leverage limited transportation dollars.

It would significantly restructure transit New Starts and Small Starts to speed project delivery and provide a level playing

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Green Bike Project Reduces Drive-Alone Commuting, Changes Lifestyles

King County Metro Transit Partnered with State DOT, Bike Advocates

With free bicycles, bicycle gear, training lessons and the promise of entry into a lottery, King County Metro Transit motivated 265 commuters to get out of their cars and try cycling to work.

The incentives were part of the Green Bike Project, a partnership between King County Metro Transit, the state Department of Transportation, REI (the outdoors clothing and gear cooperative), and the Cascade Bicycle Club aimed at reducing traffic congestion. The program was officially launched on Aug. 21, 2008 and lasted through May 2009.

According to Green Bike Project (GPB) Program Manager Susan Whitmore, King County Metro Transit designed the Green Bike Project to reduce drive-alone commute trips and to create sustainable bike commute cultures at employer sites.

REI provided 200 specially branded, fully outfitted “Novara Transfers” bikes and tune-ups for 100 existing bikes. The Cascade Bicycle Club provided bicycle commute safety training, an online commute calendar and access to bike mentors. King County provided project management and a 50/50 match to participating employers who chose to give GBP participants a “Commuter Bonus Plus” voucher of up to $60.00.

The Washington State Department of Transportation provided a $225,000 funding grant through its Trip Reduction Performance Program (TRPPP). The money helped pay for the bikes from REI, which were sold at a discount, and the training classes and a website provided by the bicycle club.

Whitmore told UTM that program participants pledged to reduce 60 percent of their drive-alone commute trips by commuting by bike (or by bike and transit) and were given use of a Green Bike. If these participants fulfilled their pledge, they earned ownership of the bike. Whitmore noted that participants who used their own bikes received a gift card for a bike tune-up at the start of the project and, if they fulfilled their pledge, were entered into a drawing for a $1,000 REI gift card.

Participants were required to complete a free bicycle safety training class prior to participation, wear a bicycle helmet while riding in the project, and sign a waiver of liability developed by King County. Participants logged their commutes at www.greenbikes.net under an honor system.

The Green Bike Project had 265 participants from 25 companies in King County. They logged 8,820 bike trips, biked 109,202 miles (averaging 12 miles per trip), and saved 109,202 pounds of CO2. More than 100 Green Bike participants fulfilled their pledge of reducing 60% of their drive-alone commute trips.

Participating employers included Boeing, Callison Architecture, the city of Kent, the city of Kirkland, the city of Renton, the city of SeaTac, Expedia, the Fairmont Hotel, Foss Maritime, Microsoft, PATH, North Seattle Community College, Quadrant Homes, REI, Swedish Medical Center, Tommy Bahama, Williams Kastner, and ZymoGenetics.

Partnering employers were required to have between 5 and 15 employees eligible to participate in the program – that is, employees who were driving alone for the majority of their commutes before the program began. Employers also were required to provide:
- Secure bicycle parking for all bicycle commuters.
- Access to showers, clothes lockers or closets for all bicycle commuters.
- An employee transportation coordinator (ETC) or bike mentor to help manage the project and act as a liaison between GBP participants and King County.
- An investment in bicycle gear or incentives to all bicycle commuters.

For more information, visit www.kingcounty.gov/transportation/CommuteSolutions/PartnershipsGrants/greenbikeproject.aspx and contact Susan Whitmore at Susan.Whitmore@kingcounty.gov.

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House Transportation Bill Would Restructure Transportation Department Programs

field for local decision-making. It would create offices within FHWA and the Federal Transit Administration to improve project delivery by eliminating duplication and expediting projects through the environmental review process, design, and construction.

Finally, the act would create a new under secretary and Office of Intermodalism, charged with developing and implementing a National Transportation Strategic Plan for addressing the long-term needs of the surface transportation network. The under secretary would have responsibility for administering the Metropolitan Mobility and Access and Projects of National Significance programs and the National Infrastructure Bank.

For more information, visit http://transportation.house.gov and contact Jim Berard at tel. (202) 226-5064 or by e-mail at jim.berard@mail.house.gov.
Flexible Solar Cell Technology Lights Bus Shelter

Solar Cells Bend to Fit Curved Surfaces

Students won’t be waiting in the dark anymore at a campus bus shelter. New flexible solar cell technology, developed by a group of engineering researchers at McMaster University in Hamilton, Ontario, has been installed to power lighting for night-time transit users.

The researchers are hoping that the prototype will help boost efforts to commercialize the new technology.

The flexible solar cell project started as a master’s thesis for Wei Zhang, who subsequently worked as an engineer in the Department of Engineering Physics. Julia Zhu, a research technician in the department, and Jesika Briones, a master’s of engineering entrepreneurship and innovation graduate, also helped develop the initiative.

Zhang told UTM that the ability to bend the solar cells to fit the curved roof of the bus shelter is one of the main features of the technology. The flexibility is achieved by tiling a large number of small silicon elements into an array and mounting them onto a flexible sheet, and connecting them through a proprietary method. The two solar strips installed on the McMaster bus shelter are about 90 cm long and 12 cm wide, he said. Each strip has 720 one-centimeter square solar cells and generates up to 4.5 watts of power.

With the help of Facility Services at McMaster, a solar strip was mounted at each end of the bus shelter roof and connected to two energy-efficient, multi-LED, light fixtures. Each light fixture produces about the same light output as a three-watt regular tungsten bulb or what a small night light would use. The lights are bright enough for easy reading.

The solar cells capture sunlight during the day and convert it to electricity to recharge batteries located in each lighting unit. The batteries can hold enough charge to light the shelter for the better part of a night.

The solar cell research team is monitoring the installation to determine how much solar power is required to fully recharge the batteries based on weather conditions. Winter months will be a particular focus as short, overcast days, snow and cold can affect the charging ability of the solar cells and batteries.

Zhang said that flexible solar cell technology has many advantages. It:

- Conforms to various architectural surfaces such as curved rooftop, dome.
- Uses proven silicon solar cell technology and LED light fixtures.
- Is lightweight. One 4.5-watt panel weighs about 2 kg.
- Has customizable features, including the power output, shape and size of the product.

Moreover, Zhang stressed that the technology has high efficiency (around 12%) compared with other thin film type flexible solar cell (only 5% to 8%) in the market. “In another words,” he explained, “our technology offers higher power output per unit area. This advantage is especially important because the rooftop area of bus shelters usually is very limited, and higher energy output means smaller installation and other material cost.”

“Right now, the initial cost of prototypes is quite high,” Zhang said, “but we believe the cost of a 100-watt unit can be lowered to around $1,200 by mass production.” The actual cost also depends on the...
**Competition Offers $50,000 for Best Idea to Fight Traffic Congestion**

in the U.S. spends nearly a full work week stuck in traffic each year,” said ITS America President and CEO Scott Belcher in a press release. “We cannot allow congestion to grind cities, suburbs and supply chains to a halt every morning and afternoon when we have innovative tools, technologies, and strategies available to manage our transportation systems and utilize our infrastructure more effectively.”

According to an ITS spokesman, all ideas will be reviewed, discussed and rated by an open global community. The winner will be announced during the 16th World Congress on Intelligent Transportation Systems in Stockholm, Sweden, September 21 – 25, 2009. The winner will receive a cash investment of $50,000 in addition to development and implementation support to become a real-world solution.

Winning ideas are expected to focus on one or more of the following:

- **Speed & Efficiency** – enhance transportation system efficiency, use technology to reduce delays and transport people and goods more reliably.
- **Behavioral Impact** – provide travel alternatives and choices to reduce congestion.
- **Safety** – prevent accidents, improve incident response, provide more timely and accurate transportation information.
- **Sustainability** – lower energy use and emissions, actively manage traffic and reduce congestion.
- **Economic Competitiveness** – wireless applications, mobility tools and other cost, efficiency and productivity improvements.

“The intent of the ITS congestion challenge is to generate new ideas to reduce congestion,” said Gerry Mooney, IBM General Manager, Global Government and Education. “This will lead to smarter transportation solutions.”

 Asked if IBM will try to develop the winning idea, IBM Public Sector Media Relations Manager Lia P. Davis said, “Our role in the challenge is to help the best ideas get out there and — for the market, better yet the community of Challenge participants — to determine which ideas have merit and which ones are feasible.”

Davis told UTM that smart transportation may not be the norm today — but it is also not some far-off vision of tomorrow. In many places, she said, IBM is helping to make it happen today. In Stockholm, she said, a dynamic toll system based on the flow of vehicles into and out of the city has reduced traffic by 20%, decreased wait time by 25% and cut emissions by 12%. In Singapore, controllers receive real-time data through sensors to model and predict traffic scenarios with 90% accuracy. And in Kyoto, city planners simulate large-scale traffic situations involving millions of vehicles to analyze urban impact.

“Smarter traffic systems can improve drivers’ commutes, give better information to city planners, increase the productivity of businesses and raise citizens’ quality of life,” Davis said. “They can reduce congestion, shrink fuel use and cut CO2 emissions.” By supporting the ITS Congestion Challenge, she said, IBM is helping to solve one of the biggest issues facing our planet.

Those who wish to submit a proposal should visit: [http://www.itsa.org/challenge](http://www.itsa.org/challenge) for more information. There they are invited to join the Challenge by joining VenCorps. VenCorps© 2009 Spencer Trask Collaborative Venture Partners is a member of the Spencer Trask family of companies. It is an online community dedicated to identifying and cultivating the most creative ideas and solutions through collaborative innovation.

VenCorps has three types of members:

- **Founders:** Entrepreneurs looking for funding and community support to cultivate their solutions.
- **Funders:** Accredited angel investors looking to syndicate deals, network with other high net worth investors and increase the quality of their deal flow.
- **Facilitators:** Members of the entrepreneurial ecosystem who support solutions through early adoption, mentorship, research, evangelism, providing services and acquisitions.

According to the website, those seeking funding will be judged by the VenCorps community on criteria including potential impact, global relevancy, and the ability to execute and to speed to market. The top nine ideas will be announced on August 1 and asked to submit more information. Community members will then allocate points that they will have earned among the top proposals. The winner will be the solution that receives the most backing.

For more information, visit [www.itsa.org/challenge](http://www.itsa.org/challenge) or contact Lia Davis at (202) 515-5499 or by e-mail at lia.p.davis@us.ibm.com or ITS Director of Communications Sabrina McGowan at (202) 721-4205 or by e-mail at smcgowan@itsa.org.

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**Flexible Solar Cell Array Lights Bus Shelter**

Customer requirements and geographic location. The cost of the system at a northern U.S. region will be higher than that of a southern region because, for example, solar power is much stronger in Arizona as compared to New York State. Therefore, he said, a larger power system then would be required for New York.

According to Zhang, the lifetime of solar cells is more than 20 years. He noted that the McMaster engineering team is validating the lifetime of its product through testing agencies such as Bodycote testing group and UL (Underwriters Laboratories Inc.). “We expect more than 15 years lifetime for our flexible solar panel,” he said.

Zhang said that they have applied for a PCT patent for the technology. “We are now looking for industrial partners interested in producing this product at a more affordable price for bus shelters and transit use,” he said. Some local transit agencies and U.S. bus shelter manufacturers are showing great interest in the technology, he added. “We are currently contacting them to build a partnership further developing, producing and commercializing the technology.”

For more information, visit [http://dailynews.mcmaster.ca/](http://dailynews.mcmaster.ca/) or contact We Zhang at zhangw8@mcmaster.ca.
City of Long Beach Unveils Unique Pavement Markings for Shared Bicycle-Vehicle Lanes

Features Green Striped Lane with Sharrows on the Center of the Outside Traffic Lane

In its effort to become the most bicycle-friendly city in the nation, the city of Long Beach, California has unveiled “sharrows” – clear markings on existing street lanes designed to show that the lanes are shared by vehicles and bicycles.

The Long Beach sharrows are a unique, Federal Highway Administration-approved demonstration project that includes a 6-foot wide green striped lane with sharrows down the center of the right lane. Salt Lake City is the only other city in the country that utilizes similar sharrows with a colored stripe.

The lane markings were unveiled last month. They have been painted in the outside traffic lane in each direction on Second Street from Livingston Drive to East Marina Drive, a 15-block retail corridor in the Belmont Shore section of Long Beach.

“The new sharrows compliment the city’s public outreach campaign for greater bicycle infrastructure,” said Tony Cruz, bike ambassador for the city of Long Beach. “It’s as important for motorists and cyclists to learn to share the road as it is illegal to ride your bike on the sidewalk.

Sharrows also keep cyclists away from the opening doors of parked cars.”

Sharrows are arrow-like designs painted on a roadway used to mark a bicycling route, to alert motorists to slow down and to guide cyclists to a safer spot in the roadway, a city press release said. Sharrows are used in lanes shared by bicyclists and motorists. In contrast, bicycle lanes set aside a pavement area for bicyclists and are marked by a solid white line and a different symbol.

“Generally sharrows will be used on arterial and collector streets in Long Beach where cyclists need to go and there is not enough room in the existing street space to mark a bicycle lane,” the press release said. But, bicyclists can ride on any street in Long Beach except for interstates and other controlled access highways with signs specifically prohibiting bicyclists.

“Sharrows are ‘preventive engineering’ tools used to clearly indicate the safest place in the travel lane for cyclists,” said Charles Gandy, the city’s mobility coordinator. Gandy’s job entails working to improve the liveability of Long Beach by identifying programs and physical improvements to promote more healthy modes of transportation. His position is funded through a grant from the Los Angeles County Department of Public Health for the creation of more livable communities.

Other bike-friendly improvements will be unveiled throughout Long Beach in the next few weeks, including additional sharrows (without a colored stripe) on streets that are considered bike routes as well as hundreds of numbered bikeway signs on every bike route and bike lane in the city. The city is also beginning the design process for wayfinding signage to provide better access to bike paths and bike lanes.

A total of $10 million in grant funding is being dedicated for bike infrastructure and safety and education as part of Long Beach’s transformation to a more bike-friendly city. In May 2009 the city was awarded a Bronze-Level Bicycle-Friendly Community Award from the American League of Bicyclists for providing safe accommodations and facilities for bicyclists and encouraging residents to bike for transportation and recreation.

Sharrows or shared lane markings are used in Australia, Canada, France, Germany, Switzerland and the United Kingdom, and they generally use standard bicycle logos painted on the road. In the United States, sharrows were first used in the city of Denver in the 1990s, and they used a bicycle symbol inside an arrow. In 2004, San Francisco, California started experimenting with sharrows and developed a marking that used a bicycle symbol with two sets of chevron markings above the cycle. In a study conducted for the San Francisco Department of Parking and Traffic (SF DPT), the stencil markings significantly improved both motorists’ and cyclists’ positions in the roadway. The markings also reduced sidewalk and wrong-way riding. This study was accepted by the California Traffic Control Devices Committee (CTCDC). Caltrans issued a policy directive in 2005 allowing the use of the shared lane marking in California and providing guidance in a MUTCD 2003 California Supplement.

Many U.S. cities are taking part in federally approved experiments with sharrows including Flagstaff, AR, Fort Collins, CO, Miami Beach, FL, Louisville, KY, Ithaca, NY, Columbus, OH, Portland, OR, Bethlehem, PA, Pittsburgh, PA, Spartanburg, SC, Salt Lake City, UT, Bellevue, WA, and Sheboygan, WI.

In January 2007, the U.S. National Committee on Uniform Traffic Control Devices (NCUCTCD) endorsed the shared lane concept and recommended that it be included by the Federal Highway Administration in the next U.S. Federal Manual on Uniform Traffic Control Devices (MUTCD).

For more information, visit http://www.bikelongbeach.org/ or contact Charles Gandy at (562) 570-6679 or by email at BikeLongBeach@LongBeach.gov.
U.K. Highways Agency to Expand Successful Hard Shoulder Running Program

Can Be Implemented Quickly at Lower Cost than Conventional Capacity Expansion

The U.K. Highways Agency provided details last month of a plan to extend the successful Hard Shoulder Running (HSR) program on the M42 near Birmingham to other major roadways.

The scheme will be put into place near the city of Bristol on a five-mile stretch of the M4 between Junctions 19 and 20 and a seven-mile section of the M5 between Junctions 15 and 17. Both roadways are experiencing heavy congestion that is expected to worsen in the future.

A 2008 report, “Advanced Motorway Signaling and Traffic Management Feasibility Study,” identified about 497 miles on England’s motorways that could benefit from using the hard shoulder as an extra lane, including sections of the M4 and M5.

The Highways Agency, charged with developing and delivering the program, describes HSR as part of a broader Managed Motorway approach to traffic management. In addition to making the hard shoulder lane available for travel, variable speed limits and close monitoring of traffic on these sections of motorways enable traffic officials to respond more effectively to heavy congestion.

The scheme was first tested in a pilot program on the M42. Sensors were used to detect the buildup of traffic, which triggered sign boards instructing drivers to slow down and use the extra lane. Messages telling drivers the lane was closed appeared if there was an accident, allowing emergency services to move by. Also, “emergency refuges” were established approximately every one-third of a mile.

The pilot was deemed a success and the program was extended. The agency views the M42 program as a model of how HSR can provide the benefits of motorway widening at significantly lower cost and without the need for additional land.

According to Transport Minister Chris Mole, “We have successfully and safely opened up the motorway hard shoulder on the M42 at busy times, giving us confidence that we can do the same elsewhere on the network.”

Mole added that “the innovative use of the hard shoulder has seen journey times on the M42 reduce significantly, in some cases by as much as 27% during weekday journeys, and there has been a reduction in personal injury accidents.”

The U.K. Department for Transport confirmed in January that it would roll out HSR to the M4 and M5, as well as other parts of the core motorway network, as part of a £6 billion ($9.73 billion) investment program to improve national roadways.

A January 2009 report, “Britain’s Transport Infrastructure Motorways and Major Trunk Roads,” outlines the department’s national roads program through 2015-16 and identifies locations where capacity will be added.

HSR is appealing because it can be implemented more quickly, at a significantly lower cost, and with fewer environmental impacts that roadway widening. In addition to providing more reliable driving times for commuters and travelers, the scheme can add a third more capacity to the roadways.

Work on the fast-tracked M4 and M5 projects is scheduled to start in March 2010 and should be completed by summer 2012. Preparations necessary in order to introduce the scheme include strengthening the hard shoulder and building emergency refuge areas along the roadways.

Additional steps involve installing overhead gantries and electronic signs, installing sensors in the road to measure traffic levels and speeds, and adding CCTV cameras to monitor the motorway and emergency refuge areas.

The agency held a two-day public information exhibition last month to explain how the system will work once it is operational and to demonstrate how the innovative technique will benefit motorists.

Information about the speed limit and the opening and closing of the hard shoulder will be displayed for motorists on electronic signs on gantries above the motorways, controlled and monitored by staff in the agency’s regional control center.

Significant safety features will include emergency refuge areas at regular intervals; intensive monitoring of the network by traffic control officials, and tight control of travel speeds.

HSR has proven popular with motorists along the M42, with 60% of drivers interviewed wanting to see the scheme implemented elsewhere. The benefits of the program include an increase of 27% in journey time reliability, a decline in personal injury accidents from an average of 5.1 to 1.8 per month, and a reduction in vehicle emissions of 4% to 10%.

For more information, visit www.highways.gov.uk.
This Week’s Survey Results (Survey 1)

Downtown and Activity Center Streets

Last month, *The Urban Transportation Monitor* sent via e-mail survey questionnaires on Downtown and Activity Center Streets to 900 traffic engineers. Altogether 157 responses were received. This represents a return rate of 17.4%.

The results of the survey are published here.

### Should streets be one-way, two-way, or should both be applied?

<table>
<thead>
<tr>
<th>Multiple Choice Answer</th>
<th>Percentage of Respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>only one-way streets</td>
<td>2%</td>
</tr>
<tr>
<td>only two-way streets</td>
<td>5%</td>
</tr>
<tr>
<td>both one-way and two-way streets</td>
<td>93%</td>
</tr>
</tbody>
</table>

### What are the main reasons for your answer to the previous question? (Answers listed in order of frequency provided by respondents.)

**Reasons for answering “one-way”:**
- Better control, more efficient, and safer.
- Provides capacity for vehicles.

**Reasons for answering “two-way”:**
- Slows traffic.
- Helps calm traffic in areas where pedestrians are typically present and provide better opportunities for pedestrians to cross.
- Better connectivity, easier to find destinations.

**Reasons for answering “both should be applied”:**
- Depends on the ROW, land use and other field conditions.
- Depends upon the context of the street and the volume of the traffic.
- Depends upon the function of the street.
- Both should be viable options depending on the circumstances.
- One-way streets usually provide better progression, especially in a dense downtown grid.
- Two way streets provide better access and improve efficiency.
- One-streets increase capacity and improve traffic flow.
- Two-way streets are more forgiving for drivers that may not be familiar with an area.
- Decisions should depend on road classification, surrounding land uses, pedestrian and biking destinations and generators nearby, mass transit routes and the nature of the traffic using the roadway (commuter versus local only).
- Both should be considered to facilitate the movement of traffic.
- One way streets in grid formation work well, but in hub street layouts, one way is confusing.
- Both one-way and two-way streets are fine for downtown activity centers. It’s important to properly and clearly sign these streets to avoid misuse.
- You have to balance the need for efficiency, circulation and safety.
- One way streets make it difficult to circulate and frequent businesses. Two-way is slows speeds and creates a more “friendly” business environment.
- The choice is “context sensitive” relative to goods delivery, transit flow and pedestrian patterns.
- You can’t generalize. One-way streets have advantages from a traffic operations standpoint and are generally safer for pedestrians; but two-way streets are better for slowing traffic and easier for visitors to navigate. Right of way widths vary and can affect which works better also.
- Street designation should ALWAYS be the result of a traffic study based on local requirements.
- One-way streets can afford more crossing time for pedestrians in dense downtown areas due to a reduction in conflicting turning movements.
Downtown and Activity Center Streets (continued)

- One way streets should be used sparingly and only when needed for mobility purposes since they promote higher speeds and are less contextual in a downtown setting.
- One-way streets work better, but not all streets can be converted to one way.

Should medians be provided on streets?

<table>
<thead>
<tr>
<th>Multiple Choice Answer</th>
<th>Percentage of Respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>yes, on most streets</td>
<td>8%</td>
</tr>
<tr>
<td>sometimes, depending on the type and function of streets on only two-way streets</td>
<td>89%</td>
</tr>
<tr>
<td>no, not on any streets</td>
<td>2%</td>
</tr>
<tr>
<td>other</td>
<td>1%</td>
</tr>
</tbody>
</table>

What are the main reasons for your answer to the previous question? (Answers listed in order of frequency provided by respondents.)

Reasons for answering “yes, on most streets”
- Medians improve safety, provide refuge for the pedestrian and calm traffic.
- Drivers tend to reduce their level of aggressiveness when traveling streets with well-landscaped medians.
- Medians enhance the aesthetics of the street and urban environment.
- Medians should be provided where there is sufficient ROW. This increases storage space for left turning vehicles, provides space for future lane expansion, and allows for landscape improvements in the median.

Reasons for answering “sometimes, depending on the type and function of streets”:
- Medians are great for safety. They provide access control to major roadways, reduce side friction, and turning conflicts.
- Pedestrians benefit from the pedestrian refuge provided by medians on wide streets.
- They are not practical on narrow streets.
- It depends on many factors including street width, pedestrian volume and pedestrian characteristics (elderly).
- They provide an aesthetic value. In many urban areas, the presence of utilities and other obstructions in the ROW may place challenges in providing street trees behind the roadway curbs, which increases the need for medians to counter the visual envelope reduction.
- Apply where needed or ROW width allows.
- Speeds, volumes, number of drives and local access alternatives all have an impact on the decision whether to include medians.
- It depends on function. If a street is used primarily as an arterial, a median may be most appropriate. If a street’s main use is access to abutting properties such as retail stores or residential units, then a median may not be appropriate.
- Medians should only be installed where there is adequate room and they provide substantial benefit. Otherwise the additional maintenance cost is not justified.
- Medians should be considered on urban streets, if necessary, to control traffic movements and to shorten crossing distances where sufficient median width can be achieved.
- Pedestrian refuges should be installed where feasible; they encourage walkability and give elderly and physically challenged persons an opportunity to rest and reassess the experience of crossing safely.
- Medians are good for high volume, high speed streets or where left turns would create safety concerns. But remember, the more you concentrate left turns at a few intersections, the more capacity problems you will have.
- A landscaped median can help reduce the heat generated by paved surfaces and make the area more inviting for activities.
- Medians are not needed on low volume streets.
- Major roadways should have medians to maintain traffic flow.
- The need varies widely. In most cases, they don’t work well downtown because you don’t have room within old, narrow rights of way and cut off access to parking decks and other driveways.
- They use up lots of space and restrict development density.

Reasons for answering “no, not on any streets”:
- One way streets don’t need medians.

Reasons for answering “other”:
- Medians afford safety for opposing vehicles and a pedestrian refuge when the streets are two-way.
Downtown and Activity Center Streets (Continued)

Should exclusive left-turn lanes be provided?

<table>
<thead>
<tr>
<th>Multiple Choice Answer</th>
<th>Percentage of Respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>yes, on most streets</td>
<td>27%</td>
</tr>
<tr>
<td>sometimes, depending on the type and function of streets</td>
<td>71%</td>
</tr>
<tr>
<td>no, not on any streets</td>
<td>0%</td>
</tr>
<tr>
<td>other</td>
<td>2%</td>
</tr>
</tbody>
</table>

What are the main reasons for your answer to the previous question? (Answers listed in order of frequency provided by respondents.)

Reasons for answering “yes, on most streets”:
- Decreases accidents and increases safety.
- Increases storages and capacity.
- Improves the traffic flow and efficiency.
- Helps reduce drivers cutting over to get around one or more cars waiting to turn left in what would be otherwise a through lane.
- Provides better sight lines at the intersection.
- Depending on the street, traffic volumes and the operation of the intersection.
- Convenience.

Reasons for answering “sometimes, depending on the type and function of streets”:
- To improve safety, reduce rear-end collisions, protect pedestrian movements.
- Where traffic volume is high.
- Where existing and projected left-turn demand is high.
- To help maintain or improve capacity.
- To improve traffic flow.
- If speed reduction is a goal on low-volume streets, then left-turn storage lanes should not be provided.
- Right-of-way is the main issue downtown with finding the extra width to provide exclusive lanes.
- Depends on the functional classification of the streets. Useful on arterials and major collectors whose primary function is to move traffic between or around urban/suburban centers.
- When large turning movements are present or anticipated.
- In low volume situations, exclusive left turn lanes are not needed unless roadway geometry creates situations where exclusive lanes can provide a safety benefit.
- Volume, direction, speed of traffic, and ROW width should all be considered.
- Depending on adjacent land uses.
- Helps phasing of traffic signals.
- Where warranted, given engineering analysis and judgment.
- Where a median is desirable, then left-turn storage is likely desirable.
- Facilitate smoother traffic movements and may enhance pedestrian safety by making it unnecessary for a car trapped behind a left-turner to make an abrupt movement.
- Should always be the result of a traffic study based on local requirements.
- On a case-by-case basis.
- One way streets would not need exclusive left-turn lanes, while some two-way streets providing circulation or connection functions would need them.
- Especially during rush hour, short left-turning lanes can provide an opportunity for cars to bypass turning at one location and turn at the next, helping to alleviate driver frustration.
- Left turning traffic to/from arterial roadways are important for private property access, but detrimental to the overall flow and safety of the arterial. In the Phoenix area, we have been looking at indirect left applications as a solution for meeting the travel demand on some of our highest volume corridors.

Reasons for answering “other”:
- Exclusive left-turn lanes increase the pedestrian crossing distance and time. Alternating green arrow phasing could assist in minimizing the need for left-turning lanes. If capacity is a strong problem, then thoughtfully designed left-turn lanes could add benefits to the overall system.
- If streets were one way, there would be no need for an exclusive left turn lane. Adding a left turn lane takes away something else like parking or a through lane.
Downtown and Activity Center Streets (Continued)

Should exclusive right-turn lanes be provided?

<table>
<thead>
<tr>
<th>Multiple Choice Answer</th>
<th>Percentage of Respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>yes, on most streets</td>
<td>8%</td>
</tr>
<tr>
<td>sometimes, depending on the type and function of streets</td>
<td>85%</td>
</tr>
<tr>
<td>no, not on any streets</td>
<td>2%</td>
</tr>
<tr>
<td>other</td>
<td>5%</td>
</tr>
</tbody>
</table>

What are the main reasons for your answer to the above question? (Answers listed in order of frequency provided by respondents.)

Reasons for answering “yes, on most streets”:
- Decreases accidents and improves safety.
- Increases capacity.

Reasons for answering “sometimes, depending on the type and function of streets”:
- Needed when right turn volumes are high to remove right turn movement from the through traffic.
- Depends on traffic volume.
- Helps maintain and improve capacity since vehicles are not queued in the through lanes.
- Reduces rear-end collisions and improves safety.
- Care should be taken when exclusive right turns are provided to properly account for pedestrian safety and right-turn-on-red may need to be prohibited if pedestrian activity is high.
- Increases vehicle speeds and crossing distance at the expense of pedestrians.
- If right turn lanes are essential, they should be designed with pedestrian signals at the ramp, providing the pedestrian an opportunity to cross without danger.
- To expedite traffic flow.
- Depends on available right-of-way.
- Depends upon the right-turn-on-red laws.
- Right turn lanes become problematic if transit services are operating in the area.
- On arterials and major collectors whose primary function is to move traffic between or around urban/suburban centers.
- Depends on volume, space available, signal operation and roadway connectivity.
- Should always be the result of a traffic study based on local requirements.
- Improved performance of the intersection should justify the cost of installation.
- Responsible professionals using peer-reviewed published guidelines and engineering judgment can determine the best fit.
- Not as important as left turn lanes due to more free flow.

Reasons for answering “no, not on any streets”:
- Impedes pedestrians, by increasing crossing distance and speed of turning vehicles.
- Don’t work well downtown.

Reasons for answering “other”:
- Only in very rare cases; exclusive right-turn lanes are very detrimental to the pedestrian environment and pedestrians are the lifeblood of good urban areas.
- Rarely, only if queues cannot be accommodated or pedestrian volume does not allow right turns to move easily. If no substantial benefit is received, they only take up valuable space on the street that can be used for parking, bike lanes, and bus lanes.
- Rarely, in situations where right turns are extremely heavy.
- Rarely, only on arterials.
Downtown and Activity Center Streets (Continued)

Should bike lanes be provided?

<table>
<thead>
<tr>
<th>Multiple Choice Answer</th>
<th>Percentage of Respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>yes, on most streets</td>
<td>18%</td>
</tr>
<tr>
<td>sometimes, depending on the type and function of streets</td>
<td>72%</td>
</tr>
<tr>
<td>no, not on any streets</td>
<td>5%</td>
</tr>
<tr>
<td>other</td>
<td>5%</td>
</tr>
</tbody>
</table>

What are the main reasons for your answer to the previous question? (Answers listed in order of frequency provided by respondents.)

Reasons for answering “yes, on most streets”:
- Encourages other modes of transportation. Reduces the use of gas-emitting vehicles.
- Safest form of bike accommodation, which is especially needed in more crowded areas like downtown. Encourage visibility for bicyclists and tend to establish more respect from motorists.
- All streets that have enough width should have them.
- Promotes bicycling. Bikes should be encouraged in downtown and activity center areas.
- They should be implemented throughout, except on streets with on-street parking.
- Where bike traffic warrants it.
- Everywhere, at all times, there should be bike lanes. Physical separation is required on major collectors and arterials.
- This opportunity should be considered even if reducing the inside lanes in width to say 11 feet on major roads. A minimum 3 foot shoulder lane should be applied on all streets.
- Perhaps not a full bike lane on lower-volume residential roadways (<2,500 VPD) but some type of sidewalk(s), off-road trail, wide lane or indicator that bicycles share the road with vehicles should be mandated or accepted as a standard (or signed as necessary). Prefer wider than 4.0’ bike lanes in some instances where pedestrian, bicycle or transit travel is highly promoted.
- Only on a new street or an existing street if the additional width is available without affecting the capacity or causing a parking problem.

Reasons for answering “sometimes, depending on the type and function of streets”:
- Bike lanes should be provided when they are part of a continuous network of bike routes or paths and when they are connected to transit routes.
- Bike lanes are beneficial on all higher classification streets, that is, collectors and arterials. Bike lanes remind drivers that they need to share the roadway.
- Bike lanes should be provided based on need – if there is (or will) be high demand.
- If the right of way provides for it, bike lanes could enhance traffic options.
- Bike lanes can be problematic on streets with high volumes of traffic, high speed, and/or trucks. Care must be taken to make sure that you are not creating bike lanes only to make for very hazardous conditions for those who may choose to ride in them.
- Bikes can share lanes with cars on low volume and local streets.
- Depends on width of streets; many downtown streets are too narrow.
- If the street has street-angle parking, parallel on-street parking that cannot be removed and has a high parking turnover, or if the street is too narrow, look for other nearby streets that could be a better fit for a bike lane.
- A separate bike lane is a great idea, but the reality is it costs a ton of money to make an existing street wider to accommodate the lane and generally something has to go, either parking or lane width is narrowed.
- Curb side use should be considered in relation to the appropriateness of providing dedicated bicycle lanes.
- Intersection conflicts and roundabouts should be considered.
- Bike lanes should be provided as part of a complete streets approach to the transportation network.
- Bicycles should be encouraged to stay off major thoroughfares and use lower volume parallel streets and residential streets to avoid interaction with other vehicles.
- If they can be properly implemented in downtown areas, they can be a beneficial component of the transportation network since they promote non-vehicular, multi-modal travel.
- Improve safety and efficiency.
- Striping shared use lanes (wide outside lanes with sharrows) might serve a similar need to encourage experienced cyclists to be on the road and legitimize their presence on the streets with cars. Sometimes bike lanes get tricky at intersections, so shared use lanes seem to be more flexible.
- The type and function of the street does not automatically exclude accommodation of bicycles, nor should we designate all streets bikeable.
- If they are designed into the overall roadway design. The “afterthought” design that is used in many places is unsafe and creates more problems than it fixes.
Downtown and Activity Center Streets (Continued)

Reasons for answering “no, not on any streets”:
- In low speed conditions, such as downtown, it is safer to have bike traffic blend in with vehicular traffic.
- Bike lanes conflict with on-street parking, which takes priority in the downtown area.

Reasons for answering “other”:
- Not on any downtown streets; downtown roadways should not be designed for <1% of the users.
- Mobility by bike should be encouraged, but needs to be balanced with safety.
- In the Midwest due to weather, bike lanes cannot be used for 60% of the year. Moreover, if residential areas are not within bike distance, these lanes would remain unused, for example, downtown Detroit.
- Typically no an effective use of space.
- The issue of bike lanes is sensitive and should be looked at in a case-by-case manner.
- Bike lanes cause problems. I believe in separated bike facilities for certain areas due to safety but cyclists should ride with traffic, following the rules of the road in most cases.

Do you believe it is advantageous, (if it is justified in terms passenger volumes and frequency) to provide for exclusive right-of-way (bus lanes or streetcar lanes) for transit on some streets?

Percentage of respondents who answered "No:" 8%
Percentage of respondents who answered "Yes:" 82%

What are the main reasons for your answer to the previous question? (Answers listed in order of frequency provided by respondents.)

Reasons for answering “no”:
- Bus ridership and frequency will never be high enough to justify a dedicated lane.
- The extra space that would be used for such lanes is better used as a travel lane open to all.
- Option is too expensive.
- Not unless it is a major metropolitan city with a strong transit system.

Reasons for answering “yes”:
- It promotes increased transit ridership, which is a sustainable solution, as we can’t keep providing more pavements for increasing traffic on streets. It’s also going green or reducing fuel consumption/emissions.
- Efficient movement of transit through the downtowns and activity centers is critical to the successful operation of transit. Very important in congested areas.
- Facilitating movement of transit vehicles makes the use of transit more attractive to potential users and may generate increased ridership.
- You need to have enough bus traffic to warrant the use, for example, in urban areas with frequent transit traffic.
- The more passengers that can be moved in an expedient manner, the more likely the transit will be used. More transit used, the more capacity for other vehicles on the roadway and less pollution.
- To promote multi-modal travel.
- Can facilitate the movement of traffic, reduce or eliminate congestion.
- Increased passenger carrying capacity, environmental improvements, reduced parking requirements.
- Only if ridership is sufficient to justify the use of transit.
- If the throughput of passenger volumes is equal to or greater than the competing interest (pedestrian, autos, bikes) for that space.
- Not a bad idea, good for 24/7 application or special events?
- Carpoolers should be able to use this lane too or to use it for emergencies.
- Transit usage needs to be encouraged with the benefit of a free-flow operation. In a very active downtown, the buses will be stopping in that lane anyway. Allowing passenger cars to use the bus lane for right turns is a good compromise.
- Capacity and flow of transit vehicles are important considerations.
- It would promote a less auto-dependent community. It might be good in dense urban areas, but maybe not in less dense areas.
- If the capacity for cars is available.
- When transit systems have very short headways, their travel times are reduced with dedicated lanes.
- Plenty of model transit operations (Curitiba, Ottawa, and U.S. examples) provide tangible evidence of the merits of integrated, “exclusive” right-of-way for transit.
- Light rail - yes, street car - no, bus – no. It depends on the width of the street and normal traffic flow. We have very narrow streets and cannot spare a lane on most streets.
What do you consider to be the ideal street system?

<table>
<thead>
<tr>
<th>Multiple Choice Answer</th>
<th>Percentage of Respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>a grid</td>
<td>74%</td>
</tr>
<tr>
<td>a combination of a grid and diagonal streets</td>
<td>17%</td>
</tr>
<tr>
<td>other</td>
<td>9%</td>
</tr>
</tbody>
</table>

What are the main reasons for your answer to the previous question? (Answers listed in order of frequency provided by respondents.)

Reasons for answering "grid":
- It is easier for the drivers to understand and for new or out-of-town drivers to navigate
- A grid offers the greatest flexibility and dispersion of traffic.
- A grid provides right-angle intersections and creates a traffic pattern that is more readily learned by the traveling public.
- Provides for efficient circulation and control.
- Easier to move about on foot, bike or car.
- Equal spacing can provide a lot of operational benefit, especially regarding signalization.
- Simplicity, connectivity, alternate routes in traffic jams or incidents/construction, and creates a more walkable environment created by the shorter block and full access design.
- A grid system provides continuity (for dispersion of traffic flows), predictability (for signal timing), and could be considered safer since roadways are intersecting at the ideal perpendicular alignment.
- The grid provides the most overall efficient circulation system (least travel times, maximum fuel efficiency, and so on.)
- It is the easiest to manage from a traffic engineering and traffic signalization point of view.
- Grid is a better land use.
- Combination of grid and radial streets makes for too many 6-legged intersections which are difficult to handle with signals.

Reasons for answering "combination of a grid and diagonal streets":
- A grid in downtown areas is best. In urban and suburban areas, a circumferential system is best.
- A grid system makes it easy for visitors to double back and find things while diagonal streets can make access a little quicker for residents.
- Diagonals allow for rapid movement from one area to another, and often provide the opportunity for interesting car-free nodes.
- Grids in downtown areas; combinations w/ highways outside of CBD’s.
- Local street grid with diagonal freeways often works very well.
- The street system should take into consideration existing and future land-use, the character of the areas where it needs to be implemented as well as historical, environmental, and social factors.
- Majors and secondary streets should be designed per design speeds and to carry higher volumes, lower or residential streets should be designed to be more curvilinear and friendlier to neighborhood activities.

Reasons for answering "another layout":
- Street systems in regions that have a variation in topography and have boundary restrictions like rivers and lakes must accommodate both land forms, construction budgets, social justice issues where new roads are being proposed to serve either underserved areas or new traffic generators, and other project layout restrictions. A grid system is what is typically found where the land is flat or where planning was done in advance with the support of the municipality’s leadership.
- A grid system provides for good connectivity but does not always provide the curvatures that naturally reduce speeds.
- The street system should be developed based on the existing terrain.
- It has been shown mathematically and empirically proven that the diagonal imposed on a grid is counter productive. The urban form with compatible transportation system including street layout ought to define the ideal street system. My ideal system for the Downtown or Activity Center would be a radial network emanating from an inner ring road and complemented by an outer ring road.
- I like the concept of a grid system with respect to car, pedestrians, bike mobility & access. However, there are clear advantages to control access on major arterials to improve capacity & safety. Therefore, I think the ideal system would provide full grid access for ped/bikes through the use of connector walks to the arterial; however, there should be controlled access at the arterials.

Downtown and Activity Center Streets (Continued)
Downtown and Activity Center Streets (Continued)

What do you consider to be the ideal block size? (This determines the spacing of intersections.)

<table>
<thead>
<tr>
<th>Multiple Choice Answer</th>
<th>Percentage of Respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>smaller than 300 ft. x 300 ft.</td>
<td>9%</td>
</tr>
<tr>
<td>400 ft. to 600 ft. x 400 ft. to 600 ft.</td>
<td>72%</td>
</tr>
<tr>
<td>other</td>
<td>19%</td>
</tr>
</tbody>
</table>

What are the main reasons for your answer to the previous question? (Answers listed in order of frequency provided by respondents.)

Reasons for answering “<300 ft. to 300 ft.”
- Smaller works better in downtown areas or town centers for pedestrians, improves crossing and enhances walkability.
- Traffic signal coordination may be more manageable.
- In residential areas, I favor longer blocks.

Reasons for answering “400 ft. to 600 ft. x 400 ft. to 600 ft.”
- Large enough to support development and small enough to support pedestrian activity.
- Longer spacing provides better opportunity for signal coordination where signalization exists.
- Provides enough lot size for developments and separates intersections.
- Allows for intersection traffic control to work most efficiently.
- Provides adequate land use diversity.
- Provides more storage space for vehicles which prevents queue spilling back into the intersections, better for transit and LRT stations which make frequent stops.
- A good compromise between accessibility and safety, between cars and pedestrians.
- Small blocks are not efficient for land use because the ROW requirements for the roadways and alleys consume too much space. Intersection spacing is too short and difficult to operate from a traffic perspective.
- Intersections that are too close together affect vehicular traffic progression, cause driver frustration and increased accidents.
- Smaller block sizes decrease mobility.

Specifications given for “another block size”
- There is no “ideal”. It depends on the type of land use and its configuration.
- Depends on the adjacent environment
- One that conforms to the natural configurations of the area
- Depends on whether you are representing the interests of private development or utility and public safety concerns.
- A quarter of a mile block
- Would suggest using traffic signal spacing chart versus speeds desired.
  - 600 ft. x 800 ft.
  - 500 ft. x 500 ft.
  - 660 ft. x 660 ft.
  - The wider the better.
  - 300 ft. to 400 ft. x 300 ft. to 400 ft.
  - Spacing for signal timing/progression efficiency.
  - 250 ft. x 500 ft.
  - 1320 ft. x 1320 ft.

Reasons for answering “another block size”:
- 600 ft. x 800 ft. for signal operation and queuing.
- 1200 ft. x 300 ft. for subdivisions enhances traffic flows.
- 250 ft. x 500 ft. provides for differentiation and use of alleys.
- A quarter of a mile block. This minimizes conflicts as compared with smaller blocks.
- It depends on the adjacent environment. Larger block sizes are beneficial along arterial corridors to improve capacity & safety (to provide adequate storage for turning vehicles). However, in a less intense environment along a collector street, shorter blocks to improve pedestrian mobility (400 ft. x 500 ft.) are better.
- 500 ft. square blocks work with a 60 second cycle with a quarter cycle offset in an alternating one way grid.
- It depends on the situation. For pedestrian movement the shorter block lengths provide a better network. For automobile movement a longer block length means fewer intersections, therefore fewer points of conflict.
Downtown and Activity Center Streets (Continued)

The following comments were received on the use of square blocks versus the use of rectangle blocks

- Rectangle blocks are preferable.
- Square blocks are easier to comprehend and for unfamiliar persons to navigate.
- Square blocks are more efficient for pedestrians and vehicles.
- The rectangular block allows for good utility easements, emergency vehicle access and owner access.
- It depends on situation, topography, classification of adjacent streets. I like longer residential blocks intersecting major and divided roadways.
- Square blocks are easier to understand, predictable, and provide numerous alternative travel patterns, thus distributing the flow more equitably. They could be a combination, but square will make everything consistent.
- Rectangular blocks allow for service roads, like alleys, which are helpful in commercial areas.
- Equal spacing is important for progression.
- Square blocks make interlocking signal timing/progression easier.
- I believe square blocks are best in downtown areas.
- Square blocks allow storage in both directions. Rectangle blocks stop traffic on the short side.
- Rectangular blocks may inhibit some traffic carry capabilities; need to see further studies.
- Square blocks are preferred when there is no dominant traffic volume between north-south movements and east-west movements. If one movement is dominant, then that direction should have longer spaces between blocks - primarily to provide queuing distance.
- Square maximizes the space for real estate and provides for efficient movement.
- Rectangle shape provides more exposure to the main street.
- The block shape should be tailored to the existing and proposed land-use and the character of the downtown.

Should mid-block alleys be provided?

Percentage of respondents who answered "No:" 27%
Percentage of respondents who answered "Yes:" 73%

What are the main reasons for your answer to the previous question? (Answers listed in order of frequency provided by respondents.)

Reasons for answering "no":
- Safety concerns. The line of sight necessary for exiting an alley would limit the location of on-street parking and building locations or it would create an unsafe condition.
- Creates unnecessary conflict points, and turning movements between intersections impede or disrupt traffic flow.
- Sometimes okay depending on street volumes, availability of alternate loading/unloading zones and parking lots.
- Depends on the environment. There are some benefits to alleys, but they become difficult to maintain.
- Creates an opportunity for a “ghetto-like” feel.
- Streets are preferred because of the greater space efficiency provided.
- Waste of real estate.
- They should be provided only where they make sense for the size of the block and the development pattern.

Reasons for answering "yes":
- Allows delivery and commercial services vehicles to stay out of the main pedestrian and vehicular traffic, allowing for the efficient flow of people and goods.
- Moves service functions such as trash collection to an out of the way area so streets to function better. More efficient way to provide services
- Provides benefit of secondary access, particularly for utilities, and are therefore beneficial for longer blocks.
- Needed for service and emergency vehicles.
- Reduces traffic impacts on local roads.
- Safety issues such as lighting and sight distances should be considered.
- Are vital to a properly functioning grid system.
- Should provide back-access, not through access.
- Helps pedestrian and bike circulation in high-density areas.
- If drive entrances are provided on alleys, conflicts on main streets can be greatly reduced.
- If access to garages is off the alley, curb cuts along the street are minimized, resulting in safer sidewalks.
- Allows for “behind the building” parking so the building itself can be adjacent to the sidewalk.
- Should be avoided when possible. More points of conflict to consider in a congested roadway network.
Downtown and Activity Center Streets (Continued)

How should goods loading be handled?

<table>
<thead>
<tr>
<th>Multiple Choice Answer</th>
<th>Percentage of Respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>on-street loading zones</td>
<td>1%</td>
</tr>
<tr>
<td>off-street loading zones</td>
<td>41%</td>
</tr>
<tr>
<td>both on-street and off-street loading zones</td>
<td>55%</td>
</tr>
<tr>
<td>other</td>
<td>3%</td>
</tr>
</tbody>
</table>

What are the main reasons for your answer to the previous question? (Answers listed in order of frequency provided by respondents.)

Reasons for answering “on-street loading zones”:
- Take the deliveries out of the traffic flow by creating an inset to the sidewalk and allow the delivery driver a safe place to off-load, with heavy fines for delivery drivers who block traffic.

Reasons for answering “off-street loading area”:
- Less disruptive to pedestrian and vehicular traffic flow.
- On-street loading zones are dangerous for bikes and pedestrians. Off-street minimizes safety issues.
- Alleys should be used whenever possible.
- Off-street loading frees up space for traffic and parking.
- Whenever possible, loading should not take place in the ROW.
- If not possible, restrict loading to off-peak hours such as nights, early mornings and weekends
- Functional land use, level of service.

Reasons for answering “both on-street and off-street”:
- Depends on the context and constraints of the area, including the traffic volume and the intensity of the land use.
- Depends on the function and type of streets as well as street width, traffic volume and capacity, and number of lanes available for moving and parked traffic.
- Short-duration loading operations can be handled satisfactorily on-street; frequent major loading operations or operations of longer duration should be off-street.
- Prefer off-street, but on-street during non-peak times would work as well.
- Depends on development density and the need to minimize conflicts with deliveries and processing through traffic. Off street would be preferred in high-density areas and on-street in low density ones.
- A combination is ideal; it provides flexibility.
- Depends upon the functionality of the roadway, and should be a local decision.
- Depends on available right-of-way, site access rights and building distribution.
- On-street in core downtown areas where space is limited, and off-street at more suburban fringe locations.
- Need to provide options that address safety, circulation and operational efficiency as applicable.

Reasons for answering “other”:
- They will end up blocking traffic some of the time; if this time is the off-peak time, that would benefit the peak time.
- Depends on the community being served.

Should on-street parking be provided on all streets?

<table>
<thead>
<tr>
<th>Multiple Choice Answer</th>
<th>Percentage of Respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>yes, on most streets</td>
<td>21%</td>
</tr>
<tr>
<td>sometimes, depending on the type and function of streets</td>
<td>74%</td>
</tr>
<tr>
<td>no, not on any streets</td>
<td>4%</td>
</tr>
<tr>
<td>other</td>
<td>1%</td>
</tr>
</tbody>
</table>
Downtown and Activity Center Streets (Continued)

What are the main reasons for your answer to the previous question? (Answers listed in order of frequency provided by respondents.)

Reasons for answering “yes, on most streets”:
- On-street parking, with adequate turnover, is beneficial to businesses.
- Provides convenient access. People want to park as close as possible to where they are going.
- Provides traffic calming, slowing traffic and protecting sidewalks.
- Creates an environment of vitality of the streetscape that may encourage potential customers to park.

Reasons for answering “sometimes, depending on the type and function of streets”:
- Depends on street width, functional class of the street as well as adjacent land use (residential, retail, short turn, turn over, access to other parking, etc.).
- Depends on the nature of the streets and traffic volumes.
- Local or low-volume collector streets can have on-street parking, but main arteries or high-volume collectors should not. For streets with higher traffic volumes, on-street parking causes reduced flow and higher accident probability.
- A function of demand and often funding/ROW constraints.
- Parking should be prohibited on thoroughfares. However, to maximize the use of the street, there may be places where parking may be permitted during off-peak hours.
- Streets requiring increased capacity should have little to no on-street parking.
- Within the available width, use must be assigned as traffic lanes or as parking/loading spaces. Assignment should be based upon needs of the street segment.
- Parking should follow demand but not be detrimental to traffic flow.
- Depends on zoning/business in the area, and the availability to provide a parking lot.
- Depends on the traffic demand for that block and the number of lanes available; angled parking is better than right angled.
- Central business district parking should be off-street.
- Beneficial in business districts.
- Depends on the community being served.
- Given the choice between on-street parking and a bike lane, I would prefer a bike lane.

Reasons for answering “no, not on any streets”:
- On-street parking increase friction with vehicular traffic and increase the level of congestion by encouraging circling more than once to find a convenient parking spot.
- If through and left turn capacity are adequate, maneuvering into and out of parking spaces is disruptive to traffic flow.
- Level of service, incorporate into building design, provide means for alternate modes of transportation.

Reasons for answering “other”:
- Perhaps provide a few handicap spaces, but providing on-street parking is unsafe for pedestrians and isn’t pleasing to the eye.
- Too many to list; buffers for pedestrians and traffic calming are top.

<table>
<thead>
<tr>
<th>Curb Return Radius</th>
<th>Percentage of Respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>less than or equal to 10 ft.</td>
<td>9%</td>
</tr>
<tr>
<td>11 ft. to 20 ft.</td>
<td>25%</td>
</tr>
<tr>
<td>21 ft. to 30 ft.</td>
<td>42%</td>
</tr>
<tr>
<td>31 ft. to 40 ft.</td>
<td>21%</td>
</tr>
<tr>
<td>greater than 40 ft.</td>
<td>3%</td>
</tr>
</tbody>
</table>

What do you consider to be the best curb return radius at intersections?
Downtown and Activity Center Streets (Continued)

Please list other desirable characteristics of streets and traffic operations in downtown and activity center areas that are not covered by the questions listed above (Answers in order of frequency)

- Wide sidewalks.
- Bulb-outs at intersections, especially where on-street parking exists. Bulb-out curbs provide for parking refuge and shorten pedestrian crossing distance. The bulb out curb also gives a good radius for turning trucks.
- Clear signage needs to be provided helping drivers in and through downtown areas. Provide large street name signs.
- Traffic signals need to be coordinated and good pavement markings need to be maintained. Landscaping should take into consideration the traffic signing needs.
- Access for all modes of transportation. The streets are big enough for cars, buses, railcars, bikes.
- Positive wayfinding signage for unfamiliar visitors to the downtown area. Wayfinding signage for critical services such as hospitals.
- Streetscape elements- wide pedestrian zone, trees, benches, bus shelters.
- Pedestrian needs need to be considered highly.
- Pedestrian movement and intersection features (ADA and issues). Directional curb ramps with domes and dummy joints that guide sight-impaired pedestrians to the receiving ramp.
- Pedestrian audible and countdown traffic signals, high intensity cross walks, safe mid-block crossings (included actuated signal control), lane widths closer to 11', bicycle lanes or nearby bike route, bike parking.
- The need for bus stops, bulb outs, shelters, etc, for buses.
- Good separation of pedestrians from travel lanes to encourage greater perception of walkability, street furniture, tactile crosswalk materials (helps to slow traffic), outdoor dining on public sidewalks to encourage perception of active streets, which promotes greater pedestrian volumes.
- Applications of ITS to improve traffic efficiency and safety. Need synchronized signal systems w/ITS capabilities.
- Good lighting. Good lines of sight. No diagonal or box span signals. Buried utilities.
- Traffic impact policies for new development right of way management policies related to access control and utility construction.
- Better construction traffic control with warning signs, aligned lane markings and cat-tracks for offset markings.
- Traffic calming (roundabouts, traffic circles, bulb-outs, etc) rather than signals. Very few traffic lights if low to medium volumes.
- pedestrian crossings at intersections only. Angle parking.
- The best curb return depends on the type and function of the street.
- Curb cuts for residential pick-up and drop-off. 1. Streets that a reserved for non-motorized vehicles (bikes, segways), for pedestrians only, and for transit only. 2. Adequate signage directing the street user (motorized and non-motorized) to the various establishments, streets, and activity centers in the Downtown area. 3. Countdown pedestrian signals at all signalized intersections.
- These will vary with the flavor and function of the downtown, from very heavy commercial use, which has to be extremely functional, to the more open and lightly used central business districts (CBDs) in declining cities where nobody goes anymore. Traffic free zones are nice if they do not drive business away because they become inaccessible. The community has to know how they want the CBD to function prior to developing a set of characteristics.
- Linking signals and having control over the signals for specific downtown events are very beneficial. Too, determining if signals are still warranted should be done. We have removed signals that were not warranted anymore and replaced the signal control with stop sign control. The traffic actually is performing better than it was before with the signals.
- The connections of buildings above street level (with integrated pedestrian overpasses) in areas with large volumes. Dedicated transit circulators and feeders. Intermodal terminals. Auto parking planned, managed, limited and placed in periphery. Trucking and delivery services planned, managed, and regulated. Shared streets that serve different functions at different times of the day or week.
- Building entrance orientation closer to the street.
- Protected turns when possible at intersections; actuation of minor signalized intersections rather than everything being pre-timed; possible bus queue jumper applications.
- Tighter curbing means slower turns and safer implications to pedestrians.
- Driveways set back from intersections, driveway spacing, etc. need larger curb return radius if no on street parking.
- Actuated signals. Flashing signals between midnight and 6am (or other applicable time period). Optimize signals.
- People need to be willing to accept slower traffic, more congestion, parking issues, and noise. Don’t promote “Complete Streets” and then complain about congestion and traffic issues!!!!
- Optimize access to transit, favor transit over auto movement and access within the site. Transit is extremely important in reducing the overall congestion.
- Multi-story parking garage structures (at reasonable parking fee rates) should be provided within 5-minute walking distance from any location.
- Use of roundabouts at complex intersections. Lighting that acknowledges pedestrian scale as well as roadway.
- Successful corridor management is key. Allowing excessive median breaks and left turns reduces corridor mobility. Excessive driveways should also be avoided, as well as driveways close to intersections.
- Depends on the street type to street type connection and typical turning truck (design vehicle) and the existence and width of the paved shoulder. Refer to the AASHTO (safety) design guidelines.
- Enforcement of traffic laws.
- A well managed, often retimed, interconnected traffic signal system and ample public gathering space.
- Lower vehicle speeds are self enforced by a sense of dense tightly packed development with curbside parking where practical.
This Month’s Survey Results (Survey 2)

Real Time Bus Arrival Information Systems

Last month, The Urban Transportation Monitor sent survey questionnaires to organizations that use real-time bus arrival information systems.

The results of the survey are published here.

Real Time Bus Arrival Information Systems Contacts

<table>
<thead>
<tr>
<th>ORGANIZATION</th>
<th>CONTACT PERSON</th>
<th>ADDRESS, TELEPHONE, E-MAIL</th>
</tr>
</thead>
</table>
| City of Fairfax                                  | Alexis Verzosa     | 10455 Armstrong Street
Fairfax, Virginia 22030
(703) 385-7889
avernzosa@fairfaxva.gov |
| TriMet                                           | David Crout        | 4012 SE 17th Ave., Mailstop OP3
Portland, OR 97202
(503) 962-5613
croutd@trimet.org |
| Blacksburg Transit                               | Timothy A. Witten  | 2800 Commerce Street
Blacksburg, VA 24060
(540) 443-7100 x2053
twitten@blacksburg.gov |
| Regional Transportation District                 | Gary Googins       | 1900 31st Street
Denver, CO 80216
(303) 299-6116
gary.googins@rtd-denver.com |
| Metropolitan Transit Authority of Harris County  | Vince Obregon      | 1900 Main St.
Houston, Texas 77002
(713) 739-4866
vo04@ridemetro.org |
<table>
<thead>
<tr>
<th>Question</th>
<th>City of Fairfax</th>
<th>TriMet</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>What is the general name of your real-time bus arrival information system (next-bus)?</strong></td>
<td>NextBus</td>
<td>TransitTracker</td>
</tr>
<tr>
<td><strong>Transit Agency</strong></td>
<td>City of Fairfax</td>
<td>TriMet</td>
</tr>
<tr>
<td><strong>What year was your next-bus system implemented?</strong></td>
<td>2000</td>
<td>2001</td>
</tr>
<tr>
<td><strong>What is the name of the vendor that supplied your next-bus system?</strong></td>
<td>NextBus</td>
<td>Initially, Orbital TMS; then, in-house development.</td>
</tr>
<tr>
<td><strong>What was the total implementation cost of your next-bus system</strong></td>
<td>$150,000</td>
<td>$1.1 million capital (2001 dollars). Includes wayside signs for both bus and rail, and infrastructure for Internet- and telephone-based system that provides arrival times for 100% of bus stops and rail stations.</td>
</tr>
<tr>
<td><strong>Please indicate how much your next-bus system has grown beyond what was first implemented as indicated in the above question. Please provide an approximate percentage increase in fixed route buses and bus stops included in your next-bus system compared to the initial implementation for which costs are provided in the above question.</strong></td>
<td>0%</td>
<td>Initial installation of bus and rail wayside signs: about 5% of bus stops and 50% of rail stations. Internet- and telephone-based went from 0% to 100% of stops and stations in 2004. Scheduled this year are digital flat screen displays of arrival information: 5 for commuter rail, 40 for LRT and 39 for buses. Most installations are on our new downtown Transit Mall where the extremely high volume of boarding rides justifies a broadcast of information.</td>
</tr>
<tr>
<td><strong>What are your annual operational and maintenance costs?</strong></td>
<td>$20,000</td>
<td>$100,000 per year</td>
</tr>
<tr>
<td><strong>How have your annual operational and maintenance costs changed over time?</strong></td>
<td>Increased with inflation</td>
<td>Increased with inflation</td>
</tr>
<tr>
<td><strong>How many of your organization's staff members work full time on your next-bus system?</strong></td>
<td>0.5</td>
<td>1.0</td>
</tr>
<tr>
<td><strong>How many of your bus routes are covered and what % is this of all your bus routes?</strong></td>
<td>100%</td>
<td>100 % (Internet/telephone)</td>
</tr>
<tr>
<td><strong>How many of your fixed route buses are equipped with AVL technology and what % is this of all your fixed route buses?</strong></td>
<td>100%</td>
<td>100% of fixed route buses are equipped with AVL.</td>
</tr>
<tr>
<td><strong>How many of your bus stops are equipped with electronic real-time arrival signs and what % is this of all your bus stops?</strong></td>
<td>7 bus stops. 0.4%</td>
<td>10 bus stops ( &lt;1%), 25 rail stations (50%). 100% of stops &amp; stations Internet- and telephone-based.</td>
</tr>
<tr>
<td><strong>What information do you consider to be the minimum information that should be displayed at bus stops as part of a next-us system?</strong></td>
<td>Waiting time until next bus, current time, route number, service disruptions, date.</td>
<td>Waiting time until next bus, current time, route number, service disruptions, final destination of arriving bus. If real-time information is not available, some alternate information should be given (e.g., scheduled time, frequency).</td>
</tr>
<tr>
<td><strong>By which other means can your next-bus information be accessed?</strong></td>
<td>Via a website, via a telephone line.</td>
<td>Via a website, via a telephone line.</td>
</tr>
<tr>
<td><strong>Do you believe the benefits associated with your next-bus system outweigh the costs and associated effort?</strong></td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td><strong>Please provide reasons for your answer to the above question.</strong></td>
<td>Less calls for bus locations, less calls on complaints of late buses.</td>
<td>The dramatic increase in use of the phone-based system and customer surveys suggest a high degree of satisfaction. Calls into TransitTracker by phone has averaged 1.4 million per month throughout 2009.</td>
</tr>
<tr>
<td><strong>What advice would you give to a transit agency contemplating the implementation of a next-bus system?</strong></td>
<td>Check how system operates when buses are on dwell mode. Check power sources for displays at stops.</td>
<td>Consider using an Internet- or telephone-based real-time arrival information system so that as many stops as possible can be covered at minimum cost. If necessary, limit installation of wayside signs to those in areas with the largest boardings, such as major transit centers or in central business districts.</td>
</tr>
</tbody>
</table>
# Real-Time Bus Arrival Information Systems ("Next-Bus")

<table>
<thead>
<tr>
<th>Question</th>
<th>BT-Tracker</th>
<th>We had one in the past called NextBus and we have our current system called GoRTD</th>
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</thead>
<tbody>
<tr>
<td>What is the general name of your real-time bus arrival information system (next-bus)?</td>
<td><strong>BT-Tracker</strong></td>
<td>We had one in the past called NextBus and we have our current system called GoRTD</td>
</tr>
<tr>
<td><strong>City</strong></td>
<td>Blacksburg, VA</td>
<td>Denver, CO</td>
</tr>
<tr>
<td><strong>Transit Agency</strong></td>
<td>Blacksburg Transit</td>
<td>Regional Transportation District (RTD)</td>
</tr>
<tr>
<td><strong>What year was your next-bus system implemented?</strong></td>
<td>In implementation</td>
<td>Next-bus: 2002-2007 GoRTD: 2002-Present</td>
</tr>
<tr>
<td><strong>What is the name of the vendor that supplied your next-bus system?</strong></td>
<td>Open-source projet</td>
<td>Next-bus: NextBus GoRTD: In-house</td>
</tr>
<tr>
<td><strong>What was the total implementation cost of your next-bus system?</strong></td>
<td><strong>$50,000-$70,000</strong> (2009 dollars). Still ongoing.</td>
<td>Next-bus: Actual costs at installation time: $5,000 per route to engineer the route, $2,500 for a 18&quot; ruggedized transit display, average $3,000 per stop for installation, recurring support costs $750/vehicle. GoRTD: Actual costs at installation time: $35,000 for IVR system &amp; website designed for mobile devices. Ongoing Support: $500/month to host IVR, minimal cost to support website.</td>
</tr>
<tr>
<td>PLEASE INDICATE HOW MUCH YOUR NEXT-BUS SYSTEM HAS GROWN BEYOND WHAT WAS FIRST IMPLEMENTED AS INDICATED IN THE ABOVE QUESTION. PLEASE PROVIDE AN APPROXIMATE PERCENTAGE INCREASE IN FIXED ROUTE BUSES AND BUS STOPS INCLUDED IN YOUR NEXT-BUS SYSTEM COMPARED TO THE INITIAL IMPLEMENTATION FOR WHICH COSTS ARE PROVIDED IN THE ABOVE QUESTION.</td>
<td>0</td>
<td>Next-bus: Grew from 15 to 40 stops before being removed completely in 2007. GoRTD: Continual growth in use. IVR grew to 2,200 calls/month, website 22,000 hits/month.</td>
</tr>
<tr>
<td><strong>What is your annual operational and maintenance costs?</strong></td>
<td><strong>$5,000-$6,000</strong></td>
<td>Next-bus: Recurring Support Costs $750/vehicle. GoRTD: Ongoing support $500/month to host IVR. Minimal costs for website support.</td>
</tr>
<tr>
<td><strong>How many of your organization's staff members work full time on your next-bus system?</strong></td>
<td>0</td>
<td>Only one, very part-time basis.</td>
</tr>
<tr>
<td><strong>How many of your bus routes are covered and what % is this of all your bus routes?</strong></td>
<td>One route by this fall (10%); all (100%) by next fall.</td>
<td>Next-bus: 12 routes of 167 GoRTD: 100%</td>
</tr>
<tr>
<td><strong>How many of your fixed route buses are equipped with AVL technology and what % is this of all your fixed route buses?</strong></td>
<td>45 vehicles, 100%</td>
<td>1,072 fixed route buses, 100%.</td>
</tr>
<tr>
<td><strong>How many of your bus stops are equipped with electronic real-time arrival signs and what % is this of all your bus stops?</strong></td>
<td>Five proposed locations (2%)</td>
<td>There were 40 out of 10,500; now there are 0.</td>
</tr>
<tr>
<td><strong>What information do you consider to be the minimum information that should be displayed at bus stops as part of a next-us system?</strong></td>
<td>Waiting time until next bus, current time, route number</td>
<td>Waiting time until next bus, current time, route number, final destination of arriving bus.</td>
</tr>
<tr>
<td><strong>By which other means can your next-bus information be accessed?</strong></td>
<td>Via a website, via email, via a telephone line, working on SMS messaging.</td>
<td>Via a website, via a telephone line.</td>
</tr>
<tr>
<td><strong>Do you believe the benefits associated with your next-bus system outweigh the costs and associated effort?</strong></td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td><strong>What advice would you give to a transit agency contemplating the implementation of a next-bus system?</strong></td>
<td>Talk to peers. do your research. Do not fall in love with a vendor before you write an RFP.</td>
<td>Be sure your buses report frequently enough to ensure the predictions are accurate. Account for bus-swaps and how your buses are logged onto the AVL system. What if a driver doesn’t log-on? What if a trip is cancelled? What if a trip has a radio failure? We wanted them to insert the “scheduled time” when there was no good information, but they never made that happen, so we cancelled the next-bus system.</td>
</tr>
<tr>
<td><strong>Please provide reasons for your answer to the above question.</strong></td>
<td>Customers want this information.</td>
<td>Customers demand it!</td>
</tr>
</tbody>
</table>

*Note: The table was created to organize and present the information regarding real-time bus arrival information systems. The questions and answers have been formatted to maintain coherence and readability.*
### Real-Time Bus Arrival Information Systems ("Next-Bus")

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<tr>
<th>What is the general name of your real-time bus arrival information system (next-bus)?</th>
<th>NextBus</th>
</tr>
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<tbody>
<tr>
<td>Transit Agency</td>
<td>Metropolitan Transit Authority of Harris County</td>
</tr>
<tr>
<td>City</td>
<td>Houston, Texas</td>
</tr>
<tr>
<td>What year was your next-bus system implemented?</td>
<td>June 2009</td>
</tr>
<tr>
<td>What is the name of the vendor that supplied your next-bus system?</td>
<td>Initi</td>
</tr>
<tr>
<td>What was the total implementation cost of your next-bus system (include capital cost, preparation cost, pilot cost (if applicable), training cost, etc. directly related to your next-bus system. Please state AVL implementation costs separately if these were incurred due to the implementation of the next-bus system). Please indicate if you are using today's $’s (adjusted for inflation) or the actual $’s at the time of implementation.</td>
<td>The communications backbone was already in place. The signage</td>
</tr>
<tr>
<td>Please indicate how much your next-bus system has grown beyond what was first implemented as indicated in the above question. Please provide an approximate percentage increase in fixed route buses and bus stops included in your next-bus system compared to the initial implementation for which costs are provided in the above question.</td>
<td>Currently only one route.</td>
</tr>
<tr>
<td>What are your annual operational and maintenance costs?</td>
<td>Too early to estimate annual costs; only one month of operation. So far $9,000 per unit (includes installation, software integration only)</td>
</tr>
<tr>
<td>How have your annual operational and maintenance costs changed over time?</td>
<td>N/A</td>
</tr>
<tr>
<td>How many of your organization's staff members work full time on your next-bus system?</td>
<td>N/A</td>
</tr>
<tr>
<td>How many of your bus routes are covered and what % is this of all your bus routes?</td>
<td>Only one route</td>
</tr>
<tr>
<td>How many of your fixed route buses are equipped with AVL technology and what % is this of all your fixed route buses?</td>
<td>&gt;90%</td>
</tr>
<tr>
<td>How many of your bus stops are equipped with electronic real-time arrival signs and what % is this of all your bus stops?</td>
<td>18 stops on BRT route.</td>
</tr>
<tr>
<td>What information do you consider to be the minimum information that should be displayed at bus stops as part of a next-us system?</td>
<td>Waiting time until next bus, route number.</td>
</tr>
<tr>
<td>By which other means can your next-bus information be accessed?</td>
<td>Via a website, via a telephone line.</td>
</tr>
<tr>
<td>Do you believe the benefits associated with your next-bus system outweigh the costs and associated effort?</td>
<td>It is too new an operation to estimate costs, but the customer response to the new system has been very positive.</td>
</tr>
<tr>
<td>Please provide reasons for your answer to the above question.</td>
<td>Benefit of providing better customer information is that it should promote ridership. Within the first 30 days of our operation, there was one day in which the system didn’t work correctly and it hurt ridership that day.</td>
</tr>
<tr>
<td>What advice would you give to a transit agency contemplating the implementation of a next-bus system?</td>
<td>Challenge is making sure that each department understands its role in implementing a new system (IT, service, and operating departments).</td>
</tr>
</tbody>
</table>
REQUESTS FOR PROPOSALS

1. Transportation Planning & Engineering Services
   Agency: Delaware Department of Transportation
   Deadline: 2009-07-22 15:00:00
   Contact: Mark F. Letavish, Consultant Control Coordinator
   Contract Administration Delaware Department of Transportation
   800 Bay Road, Dover, DE 19901
   Website: http://www.deldot.gov/information/business/preservices/pdf/1505-1506-RFQ.pdf?07010916134
   Description: The Delaware Department of Transportation is seeking to establish up to two (2) open-end task order agreements with a 3-year term to perform planning and engineering support services. The successful candidates will assist with long range and multi-modal plans, transportation modeling, and perform public outreach.

2. NaviGAtor (Intelligent Transportation System)
   Agency: Georgia Department of Transportation
   Deadline: 2009-07-20 12:00:00
   Contact: Percival Griffiths
   Website: http://ssl.doas.state.ga.us/PRSapp/PublicBidNotice/bid_op=094840048400-090-000000000
   Description: The Georgia Department of Transportation (GDOT) is seeking Statements of Qualifications (SOQ) from firms interested in providing, implementing and integrating new traffic management system application to replace the current Georgia NaviGAtor Intelligent Transportation System (ITS). This Request for Qualifications (RFQ) seeks to identify qualified firms interested in providing a solution for the statewide Transportation Management Center (TMC) in Atlanta, and a variety of satellite centers, including both GDOT and non-GDOT entities. This will enable the sharing of information between these centers to facilitate traffic management functions at a variety of governmental levels (state, regional, city, county, transit authority, and others (GDOT partners)). The intent of this Request for Qualification is to result in the selection of a vendor to provide, integrate and support a new version of ITS/traffic management software for GDOT and its NaviGAtor partners.

3. West Transitway Extension Planning and Environmental Assessment
   Agency: City of Ottawa, ON
   Deadline: 2009-07-21 15:00:00
   Contact: Mr. Cornelio Ledda, Purchasing Officer Supply Management Division Tel: (613) 5680-2424 Ext: 25822 Fax: (613) 560-2126
   Website: http://www.merx.com
   Description: The City of Ottawa has issued a Request for Proposal to provide professional engineering services for the West Transitway Extension Planning and Environmental Assessment. RFP 01109-92535-P08

4. Rail Safety and Derailment Investigation
   Agency: National Research Council of Canada
   Deadline: 2009-08-11 14:00:00
   Contact: Gerald Kennedy
   Website: http://www.nrc-cnrc.gc.ca/eng/programs/cst/rail-division.html
   Description: The Rail Division of the NRC - Centre for Surface Transportation Technology periodically requires expert support on an ‘as and when required’ basis to investigate and/or understand rail derailments and rail safety issues for its many clients in North America and internationally. This includes supporting ongoing projects and others still to be developed. The expert is also expected to provide training in derailment investigations to NRC-CSTT and our external clients if requested.

5. Update 2001 Transit Implementation Plan
   Agency: City of Manhattan, KS
   Deadline: 2009-07-31 17:00:00
   Contact: Karen Davis, AICP Director of Community Development City of Manhattan 1101 Poyntz Avenue Manhattan, KS 66502
   Website: http://www.ci.manhattan.ks.us/Bids.aspx?bidID=172
   Description: The City of Manhattan is partnering with the Kansas Department of Transportation to update the 2001 Transit Implementation Plan to review the feasibility for transit service. The purpose of this planning effort is to review the feasibility of citywide transit and to determine the best approach for developing, financing, and managing the service. In addition, the study must involve an analysis of regional transit providers and options to move people to major employers and service centers within the region.

6. Truck Idling Scoping Study
   Agency: Transportation Research Board
   Deadline: 2009-08-21 16:30:00
   Contact: William C. Rogers
   Website: http://www.trb.org/TRBNet/ProjectDisplay.asp?ProjectID=2671
   Description: The objective of this research is to develop a plan for decisionmakers that provides the scope, methods, and cost estimates for obtaining national and regional data sets for the time and corresponding fuel consumed by on-road trucks while idling. The data sets shall include truck characteristics, type of operation, and the causes of the idling. The plan will be used in a follow-on study to provide guidance on how to apply and supplement the idling estimates at the local level. Note: the data sets should include all trucks except Class 1 and Class 2a trucks.

7. Freight Transportation Cost Data
   Agency: The New York Metropolitan Transportation Council (NYMTC)
   Deadline: 2009-09-17 12:00:00
   Contact: Ismet Apdirouglu
   Description: The project will assist transportation planners and others in transportation planning and programming decision-making process in the NYMTC region. The project will create a Data Repository for maintenance, transactions, and data sharing, and to create a Data Warehouse with predefined browser-based Geographic Information System (GIS) and other non-GIS applications for querying and analysis. The project will consist of determining hardware and software requirements and developing applications for input, storage, archival, query, and output. The project will also consist of gathering and aggregating IT’S data appropriate for planning use and for transportation system operations use. Data for the project will include Intelligent Transportation System (ITS), GIS, travel surveys; Best Practice Model (BPM) generated data, traffic data and other appropriate data.

NOTE: If you wish to receive these and other RFP notices IN ADVANCE VIA THE INTERNET OR FAX, please call us at tel.(703)764-0512 for details.

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

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<tr>
<th>DATES</th>
<th>CONFERENCE AND SPONSOR</th>
<th>CITY</th>
<th>VENUE</th>
<th>MAIN TOPICS</th>
<th>EST. ATTEND</th>
<th>REGISTR. COST</th>
<th>WEBSITE AND CONTACT</th>
</tr>
</thead>
<tbody>
<tr>
<td>July 11-15</td>
<td>WASHTO Annual Meeting (AASHTO)</td>
<td>Seattle, WA</td>
<td>Bell Harbor Conference Center</td>
<td>The conference theme, &quot;Waves of Change,&quot; reflects the challenges we will be facing in 2009, including a new federal transportation act, and new advances in transportation funding. Join us on Seattle's waterfront where we'll showcase innovative transportation efforts including the nation's largest ferry system, HOT lanes, safety initiatives, and other progressive programs. State members: Alaska, Arizona, California, Colorado, Hawaii, Idaho, Montana, New Mexico, Nebraska, Nevada, North Dakota, Oklahoma, Oregon, South Dakota, Texas, Utah, Washington, Wyoming.</td>
<td>N/A</td>
<td>$600.00</td>
<td><a href="http://www.washto2009.com/">http://www.washto2009.com/</a></td>
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<td>Karri Workman (360) 704-3270.</td>
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<tr>
<td>July 15-17</td>
<td>Mississippi Valley Conference (AASHTO)</td>
<td>Grand Rapids, MI</td>
<td>Amway Grand Plaza</td>
<td>Technical program sessions include &quot;Public-Private Partnerships,&quot; which will explore innovations in public-private partnerships between state DOTs and the private sector, including innovative programs such as the Safe and Sound Bridge Program developed by Missouri DOT, and &quot;Green Highways,&quot; which will explore innovations in highway design, construction, maintenance, and operations that promote &quot;green&quot; outcomes. Peer exchange sessions will include work zone safety, and Intelligent Technologies.</td>
<td>400-500</td>
<td>$350</td>
<td><a href="http://eventbrite.com/e/275323096">http://eventbrite.com/e/275323096</a></td>
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<td>Jan Pohl Special Assistant to the Director 517-373-9571 <a href="mailto:pohl@michigan.gov">pohl@michigan.gov</a></td>
</tr>
<tr>
<td>July 16-18, 2009</td>
<td>18th International Symposium on Transportation and Traffic Theory (Hong Kong Polytechnic University and Hong Kong Society for Transportation Studies)</td>
<td>Hong Kong</td>
<td>Chiang Chen Studio Theatre, The Hong Kong Polytechnic University</td>
<td>The 18th International Symposium on Transportation and Traffic Theory (ISTTT18) is the premier gathering for the world’s leading transportation and traffic theorists, and those who are interested in contributing to or gaining a deeper understanding of the field. The Symposium covers both scientific and operational aspects of transportation and traffic, spanning all modes of transport, including freight as well as public and private transport.</td>
<td>N/A</td>
<td>HK$4,500-HK$4,000-</td>
<td><a href="http://www.isttt18.org/">http://www.isttt18.org/</a></td>
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<td>Members of HKIE and CILTHK</td>
<td><a href="http://www.michigan.gov/mvc2009">http://www.michigan.gov/mvc2009</a></td>
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<td>Jan Pohl Special Assistant to the Director 517-373-9571 <a href="mailto:pohl@michigan.gov">pohl@michigan.gov</a></td>
</tr>
<tr>
<td>July 19-22</td>
<td>Joint Summer Conference (TRB)</td>
<td>Seattle, WA</td>
<td>Sheraton Seattle Hotel</td>
<td>Join more than 300 transportation professionals participating in the midyear meetings of more than 30 TRB committees. In open committee meetings, joint collaborative discussions, and general sessions, transportation professionals specializing in planning, policy, economics, freight, and data systems will share information on how transportation agencies are dealing with uncertain times. Plus, attend optional workshops before and after the conference.</td>
<td>300+</td>
<td>$565</td>
<td><a href="http://eventbrite.com/e/275323096">http://eventbrite.com/e/275323096</a></td>
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<td><a href="mailto:TRBMeetings@nas.edu">TRBMeetings@nas.edu</a></td>
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<tr>
<td>July 19-22</td>
<td>48th Annual Workshop on Transportation Law (TRB)</td>
<td>Denver, CO</td>
<td>Sheraton Denver Hotel</td>
<td>Workshop participants – lawyers, engineers, and transportation planners – not only present unusual cases, but often identify potential legal problems before they become widespread predicaments. But the meetings greatest success is providing a forum in which attorneys from federal, state, and local highway and transit organizations come together once a year to exchange problems and propose solutions.</td>
<td>150-175</td>
<td>$500</td>
<td><a href="http://eventbrite.com/e/275323096">http://eventbrite.com/e/275323096</a></td>
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<td>James McDaniel <a href="mailto:TRBMeetings@nas.edu">TRBMeetings@nas.edu</a></td>
</tr>
<tr>
<td>July 20 - 22, 2009</td>
<td>11th International Conference on Advanced Systems for Public Transport (Hong Kong Polytechnic University and Hong Kong Society for Transportation Studies)</td>
<td>Hong Kong</td>
<td>Inter-Continental Grand Stanford Hotel</td>
<td>This conference is a forum for the international community of researchers, practitioners and vendors on all aspects of public transport planning and operations. Themes include: Public transport network/route planning, timetables planning and generation, vehicle, driver and crew scheduling, operations monitoring, control and management, information management, public transport regulations/competition, financial sustainability, and public-private partnership.</td>
<td>N/A</td>
<td>HK$4,000-HK$3,500-</td>
<td><a href="http://www.casp09.org/">http://www.casp09.org/</a></td>
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<td></td>
<td>Members of HKIE and CILTHK</td>
<td>Ms. Connie Lam <a href="mailto:secretary@casp09.org">secretary@casp09.org</a></td>
</tr>
<tr>
<td>Aug. 2-4</td>
<td>Sustainability and Public Transportation Workshop (APTA)</td>
<td>Salt Lake City, Utah</td>
<td>Hilton Salt Lake City Center</td>
<td>Join transit professionals from across the country for this 5th annual APTA Sustainability and Public Transportation Workshop focusing on &quot;The Business Case for Sustainability&quot;. This premier event focuses on best practices in sustainability within the transit industry and the role of public transportation in meeting federal, state and local sustainability goals such as increasing energy efficiency and reducing greenhouse gas emissions.</td>
<td>150</td>
<td>$475 m</td>
<td><a href="http://www.apta.com/conferences/tech-sustainable/preliminary_08.htm">http://www.apta.com/conferences/tech-sustainable/preliminary_08.htm</a></td>
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<td>$975 nm</td>
<td>Program: Rich Weaver (202) 496-4809 <a href="mailto:rweaver@apta.com">rweaver@apta.com</a></td>
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<td>Registration: Jemima Mawanya (202) 496-4874 <a href="mailto:mawanya@apta.com">mawanya@apta.com</a></td>
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</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.
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</tr>
</thead>
</table>
| Aug. 8-11 | Summer Meeting/Bus & Paratransit Roadeo (Pennsylvania Public Transportation Association) | Greensburg, PA        | Four Points Sheraton Greensburg | Hosted by the Westmoreland County Transit Authority, this meeting will address community transportation, marketing and communication, operations, maintenance and government affairs. The Roadeo includes two competitions for drivers to test their skills. | 125         | $130 - meeting and Roaddeo | www.ppta.net  
|           |                         |                      |                        |                                                                               |             |               | PPTA/PennTRAIN (800) 847-0333  
|           |                         |                      |                        |                                                                               |             |               | Martha Pierce  
|           |                         |                      |                        |                                                                               |             |               | mpierce@ppta.net  
|           |                         |                      |                        |                                                                               |             |               | Cindy Conaway  
|           |                         |                      |                        |                                                                               |             |               | cconaway@penntrain.net  
| Aug. 9-11 | 2009 Annual Conference (Missouri Public Transit Association) | Osage Beach, MO       | Tan-Tar-A Resort       | The theme is “Bright Transit: Public Transit is a Bright Idea.” Topics to be addressed at the conference include marketing/public awareness, maintenance/safety, security/emergency preparedness, planning, access and technology. By August 1: $290 m $440 nm $455 $465 | 145         | Free for registered attendees | www.mptaonline.com  
|           |                         |                      |                        |                                                                               |             |               | Doris Boeckman  
|           |                         |                      |                        |                                                                               |             |               | (573) 634-4314  
|           |                         |                      |                        |                                                                               |             |               | mpta.org@earthlink.net  
| Aug. 9-12 | 2009 Annual Meeting and Exhibit (ITE) | San Antonio, TX       | Henry B. Gonzales Convention Center | This forum is where professionals exchange ideas on transportation issues. The meeting is divided into five tracks, offering 52 technical sessions. The tracks are Traffic Engineering and Design, Safety, Planning, Transportation Operations, Conversation Circles and Professional Development Seminars. Visit the exhibits and see the latest products and services. | 2,000       | $635 m $710 nm | Meeting Registration and Information  
|           |                         |                      |                        |                                                                               |             |               | Sallis Doolins  
|           |                         |                      |                        |                                                                               |             |               | (202) 289-0222 ext. 149  
|           |                         |                      |                        |                                                                               |             |               | sdollins@ite.org  
| Aug. 11-14| State Public Transportation Partnerships Conference/FTA State Programs (AASHTO, APTA, CTAA, FTA) | Washington, DC        | Renaissance Mayflower Hotel | This meeting is for federal and state government employees (FTA staff and state DOTs), state transit associations and state transit agencies. (Consultants and other outside organizations may not unless invited.) | 50-100      | Free for registered attendees | Brian Alberts, MTAP Coordinator  
|           |                         |                      |                        |                                                                               |             |               | 202-624-5838  
|           |                         |                      |                        |                                                                               |             |               | balberts@aashto.org  
|           |                         |                      |                        |                                                                               |             |               | Shayne Gill, Program Manager for Public Transportation  
|           |                         |                      |                        |                                                                               |             |               | 202-624-3630  
|           |                         |                      |                        |                                                                               |             |               | sgill@aashto.org  
| Aug. 11-14| Annual Meeting, Trade Show, and Golf Tournament (Michigan Public Transportation Association) | Thompsonville, MI     | Crystal Mountain | The agenda includes a mix of traditional presentations and up-to-date learning opportunities. These include group presentations on new technology applications and changing rules associated with the Americans with Disabilities Act (ADA) requirements. Topics include: safety and security, transit system condition management, mobility management, and engaging legislators. APTA and CTAA will also present a lively discussion. | 120         | $170 Coalition members/state employees $175 Transit properties | www.mptaonline.org  
|           |                         |                      |                        |                                                                               |             |               | Cindy Zolkowski  
|           |                         |                      |                        |                                                                               |             |               | (517) 324-0858  
| Aug. 28-Sept. 2 | Annual Meeting (SASHTO) | Biloxi, MS             | Beau Rivage Resort & Casino | Highlights of SASHTO 2009 include: --An Opening Session consisting of the traditional Roll Call of the States  
|           |                         |                      |                        |                                                                               |             |               | N/A $599  
|           |                         |                      |                        |                                                                               |             |               | SASHTO (866) 228-9154  
| Aug. 31-Sept. 2 | Annual Meeting (Kansas Public Transit Association) | Wichita, KS             | Hyatt Regency Wichita | Speakers include Kansas DOT Secretary Deb Miller and John Madden on “How to Get Different Results by Doing Something Different.” Topics include Collaborating to Design a Better Future (American Recovery and Reinvestment Act and more), Motor Carrier Regulation, Mobility Management, Rural Issues, Urban Issues, and sessions on legislation in Washington, DC and Kansas. | N/A         | $110 m $160 nm | http://kstranstransportation.org/newsletter.htm  
|           |                         |                      |                        |                                                                               |             |               | (785) 235-8825  
|           |                         |                      |                        |                                                                               |             |               | kptc@kansas.gov  
| Sept. 13-16| 2009 International Public Works Congress and Exhibition (American Public Works Assoc. International) | Columbus, OH           | Columbus Convention Center | With the congressional stimulus package funding thousands of new infrastructure projects including roads, bridges, public transportation, etc., you may ask how I get in on these projects. The answer is by attending the Public Works Congress and Exhibition. More than 125 technical and professional development sessions address current public works issues as well as ongoing challenges. | 6,000       | Before July 20: $560 m $700 nm $395 ret. n  
|           |                         |                      |                        |                                                                               |             |               | After: $610 m $750 n $395 ret. n | www.apws.net/congress/2009  
|           |                         |                      |                        |                                                                               |             |               | Dana Pridy  
|           |                         |                      |                        |                                                                               |             |               | (816) 472-6100  
| Sept. 13-17| The 2009 International Conference on Ecology & Transportation (Center for Transportation and the Environment at North Carolina State University, Minnesota DOT) | Duluth, MN             | Duluth Entertainment Convention Center | The theme is “Adapting to Change.” Our transportation systems and ecosystems need to be addressed in the context of global climate change and shifts in transportation funding and priorities. Interaction between transportation infrastructure and natural systems requires increasingly integrated approaches. ICOT will focus on challenges as we adapt for global climate changes, shifts in transport demand and patterns, and evolving environmental and transportation policy. | N/A         | Before August 21: $275 After: $375 | http://www.icot.net/ICOT_2009/registration.asp  
|           |                         |                      |                        |                                                                               |             |               | James Martin  
|           |                         |                      |                        |                                                                               |             |               | (919) 515-8620  

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.
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<tr>
<th>DATES</th>
<th>CONFERENCE AND SPONSOR</th>
<th>CITY</th>
<th>VENUE</th>
<th>MAIN TOPICS</th>
<th>EST. ATTEND</th>
<th>REGISTR. COST</th>
<th>WEBSITE AND CONTACT</th>
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<tr>
<td>Sept. 14-15</td>
<td>Integrated Corridor System Management &amp; Best Practices Workshop (TRB)</td>
<td>Irvine, CA</td>
<td>Arnold and Mabel Beckman Conference Center</td>
<td>The workshop is designed to explore corridor study experiences, identify best practices, highlight data needs and collection methods, and develop a collective research agenda on integrated corridor systems management and modeling.</td>
<td>120</td>
<td>N/A</td>
<td><a href="http://guest.event.com/EVENTS/bv/5y3m">http://guest.event.com/EVENTS/bv/5y3m</a> summary.aspx?en=4444b413-c934-4e08-9054-82b509ed942f, Thomas Palmerlee <a href="mailto:TPalmerlee@nas.edu">TPalmerlee@nas.edu</a></td>
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<tr>
<td>Sept. 20-25</td>
<td>National Transportation Management Conferences (AASHTO)</td>
<td>Spokane, WA</td>
<td>The Davenport Hotel</td>
<td>These conferences, now in their 54th year, provide mid-level managers in transportation departments the skills for transitioning from technical to management responsibilities. Participants are introduced to tools, techniques and best practices for effectively managing people and projects. For more experienced managers, the workshops update and refine existing skills, challenge current thinking, introduce new concepts, and explore changing employee and customer relationships. These leadership courses are offered 5 times per year in different locations throughout the country.</td>
<td>275</td>
<td>N/A</td>
<td><a href="http://www.transportation.org/meetings/221.aspx">http://www.transportation.org/meetings/221.aspx</a>, Donna Tamburelli (202) 624-5811 <a href="mailto:donnat@aashto.org">donnat@aashto.org</a></td>
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<tr>
<td>Sept. 21-23</td>
<td>MN/WI Public Transit Conference</td>
<td>Duluth, MN</td>
<td>Duluth Entertainment Convention Center</td>
<td>The joint Minnesota/Wisconsin Public Transit Conference will focus on useful information for everyone involved in transit. You can choose from sessions featuring important strategies for training staff, improving customer service, managing technology and marketing your transit service. In addition, you’ll get the latest news from agency officials on important activities at both the state and federal levels.</td>
<td>275</td>
<td>Before Sept. 1: $250, After: $300</td>
<td>Tony Kellen, MN Public Transit Association (320) 529-4481 <a href="mailto:tkellen@iclouducmc.com">tkellen@iclouducmc.com</a>, Dave Mumma, Wisconsin Urban Rural Transit Association (608) 755-3150 <a href="mailto:mummad@ci.janewes.wi.us">mummad@ci.janewes.wi.us</a></td>
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<tr>
<td>Sept. 21-23</td>
<td>“25 Years and Rolling On” 25th Anniversary Celebration (Dakota Transit Association)</td>
<td>Fargo, ND</td>
<td>Radisson Hotel</td>
<td>Conference agenda includes transit operations training, FTA sessions on increasing ridership, awards presentation, Metro Transit garage tour. The joint Minnesota/Wisconsin Public Transit Conference will focus on useful information for everyone involved in transit. You can choose from sessions featuring important strategies for training staff, improving customer service, managing technology and marketing your transit service. In addition, you’ll get the latest news from agency officials on important activities at both the state and federal levels.</td>
<td>N/A</td>
<td>Coming soon</td>
<td><a href="http://www.dotransport.org/newsletter/pdf/2009spring.pdf">http://www.dotransport.org/newsletter/pdf/2009spring.pdf</a></td>
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<tr>
<td>Sept. 21-23</td>
<td>ITS World Congress</td>
<td>Stockholm, Sweden</td>
<td>Stockholm International Fairs &amp; Congress Centre</td>
<td>ITS World Congresses gather participants from around the world looking to share experiences and build networks. As a decision-maker, manufacturer, supplier or consultant within the private or public sector, the World Congress is an opportunity for you to learn more about what intelligent transportation systems and services can do to improve the efficiency of your operations.</td>
<td>5,000</td>
<td>Before July 24: €1,187.50 – delegate, €900 – speaker/moderator, After: €1,062.50 – speaker/moderator</td>
<td>Program: Ms. Valerie Mindlin Tel: +32 (0) 526 11 30 <a href="mailto:v.mindlin@mail.tiscongress.org">v.mindlin@mail.tiscongress.org</a>, Logistics: Rachel Gardner Tel: +44 (0) 20 7973 4617 <a href="mailto:r.gardner@bpsk.com">r.gardner@bpsk.com</a></td>
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<td>Oct. 4-7</td>
<td>Annual Meeting (APTA)</td>
<td>Orlando, FL</td>
<td>JW Marriott Orlando Hotel Grande Lakes</td>
<td>APTA’s Annual Meeting, the premier event of the industry, is a must-attend for all public transportation professionals. Critical and timely topics include sustainability and green jobs, authorization, economic stimulus, workforce development, high-speed rail and technology.</td>
<td>1,500</td>
<td>Before Aug. 24: $600-$1,150, After: $650-$1,150</td>
<td><a href="http://www.apta.com/conferences_calendar/annual/index.cfm">http://www.apta.com/conferences_calendar/annual/index.cfm</a>, Program: Pam Boswell (202) 496-4803, Registration Anitha Atkins (202) 496-4839, or Jemima Maweny at 4874.</td>
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<tr>
<td>Oct. 7-9</td>
<td>5th International Marketing Conference (UITP)</td>
<td>Lisbon, Portugal</td>
<td>Lisbon Marriott Hotel</td>
<td>This conference will consider how organizations can use marketing to increase their market share, improve their profit margins, successfully compete against the car, and stimulate demand for public transport as a whole. A special focus will be given to solutions developed by small and medium-sized companies and networks from all over the world.</td>
<td>N/A</td>
<td>Before July 31: €875.00 – delegate, €1,185.00 – speaker, €1,000.00 – On-site, €1,270.00 – MVN</td>
<td>Deborah Wéri, Events Officer Tel: +32 2 663 66 64 <a href="http://www.uitp.org">www.uitp.org</a></td>
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<tr>
<td>Oct. 18-21</td>
<td>“Transportation in a Climate of Change” Annual Conference and Exhibition (Transportation Association of Canada)</td>
<td>Vancouver, Canada</td>
<td>Fairmont Hotel and Hyatt Regency Hotel</td>
<td>Speakers will explore infrastructure development, technological innovation, climate change and urban action. Presenters will focus on measuring change in urban transportation planning, the role of policy in creating a climate of change, greener roads, reducing the carbon footprint through traffic management, the economic implications of climate change, and a new paradigm for urban freight movement and trade. Other topics include the design of facilities for vulnerable road users, integrating transportation and land use, multi-lane roundabouts, road pricing in an urban context, advances in pavement design and construction, and sustainable communities.</td>
<td>N/A</td>
<td>Before Aug. 28: $775m – delegate, $970m – speaker, $770m – basic, After: $860m – delegate, $1005m – delegate, $665m – basic, $830m basic</td>
<td><a href="http://www.tac-atc.ca">www.tac-atc.ca</a>, Gilbert Monier (613) 736-1350, ext. 234 <a href="mailto:gmonier@tac-atc.ca">gmonier@tac-atc.ca</a></td>
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