



INCREASE SITUATIONAL AWARENESS

It's 2:30 a.m. and a motorist coming home is stopped by a red light. The streets are deserted and there are no other vehicles going in any direction. Yet the driver must wait until the light changes or break the law. How can you get him on his way sooner?



DECREASE TRAFFIC CONGESTION

It's ten in the morning and lane reductions create a rather unexpected traffic jam. Traffic signals are still working as if traffic were normal. What would help is if traffic signals could instantly begin to provide longer green lights for vehicles on the major thoroughfare.



REDUCE AIR POLLUTION

Traffic tie-ups are not only bad for commuters, they're bad for the environment. The more time vehicles spend idling, the more carbon emissions enter the atmosphere. The good news is, traffic management systems that reduce congestion also reduce pollution.

Keep Traffic Moving with High-Speed Wireless Connectivity

How municipalities are using wireless broadband connectivity to help decrease traffic congestion, reduce air pollution, increase situational awareness and improve safety

MOTOROLA PMP WIRELESS SOLUTIONS

Motorola's portfolio of wireless broadband products facilitates advanced traffic control systems for municipalities of all sizes. Our Point-to-Multipoint solutions are proven in more than 120 countries around the world, delivering high-speed wireless connectivity in thousands of networks in both the public and private sectors. Our networks offer exceptionally simple, fast and low-cost installation, with deployment in a matter of days rather than months for wired networks. Equally important, our PMP wireless networks are developed, deployed and supported by the global leader in wireless experience, knowledge and innovation, Motorola.

During the last quarter century, traffic volume in the United States has grown approximately three to five percent a year. We can speculate about the reasons — expanding population, a larger workforce, an increasing number of suburban jobs — but the reasons matter less than the simple fact that more people are driving more cars more often. And the trend is likely to continue. There will be fluctuations due to things like rising gas prices and a struggling economy. But according to the Texas Transportation Institute's 2009 Urban Mobility Report, traffic volume will continue to grow at a rate of one to two percent each year. That's significant because traffic congestion is more than just annoying. It's also a safety and environmental issue. And it's costly. In 2007, for example, estimates are that Americans lost \$87.2 billion in wasted fuel and lost productivity... about \$750 per driver.

Signaling a Trend

Numbers like these are a clear signal for cities and municipalities to find better ways of reducing congestion on their streets and highways. Many are responding to that signal by revisiting their own signals. Traffic signals have come a long way in the last few years. There was a time when a signal with a timer that set consistent light changing intervals

was state-of-the-art. That's changed radically. Today, many companies offer intelligent controllers and smart switches that provide greatly increased signal functionality. Newer, more intelligent traffic signal systems give municipalities more real-time knowledge and control over what's happening at hundreds of important intersections where congestion can cause enormous problems.

High-Speed Wireless Networks

It's not surprising that more and more municipalities are interested in deploying more sophisticated traffic management systems. As they are deployed, however, another issue must be taken into account. These new systems rely on high-speed transmission of signal and other intersection data — often including video — back to the traffic control center. In many cases, municipalities find that the copper networks now serving their traffic signals have neither the bandwidth nor the reliability to provide this essential backhaul capability. How are they handling the backhaul part of the system? A growing number are turning to Motorola's Point-to-Multipoint (PMP) wireless broadband networks to help them enable faster, more reliable, real-time management of the intelligent intersection.

Wireless Broadband and the Intelligent Intersection

Today's new traffic signal technology is innovative and smart. Powerful new intelligent switches and controllers allow the traffic control center to manage signals in important new ways. Technology embedded in signals can inform the control center of traffic buildups and empower them to remotely adapt switching intervals to help alleviate the situation. Municipalities also use the technology in the deployment of sophisticated adaptive traffic management systems that incorporate video to not only sense problems, but deliver real-time images to the control center. In addition, the systems can be shared by other departments, such as public safety and public works, to provide increased situational awareness of the scene, whether it's an accident, a fire or congestion. That's the promise of the intelligent intersection.

also show traffic controllers the situation as it is happening, helping them make the fastest and most appropriate response.

- **Increased Safety and Productivity.** In addition to managing traffic, the new traffic control systems integrate with other networks, sharing real-time data and images with police, fire, public works and other city departments. These connections can significantly increase safety through more efficient dispatch and improved situational awareness. They can also help improve productivity in public safety, public works and other departments.
- **Reduced Costs.** For many municipalities, the deployment of sophisticated wireless PMP networks also helps them eliminate the monthly leasing costs of their old wired systems, saving money while increasing bandwidth. Others deploy wireless networks to complement their existing wired lines. And as the city grows and there are areas where no connectivity exists, wireless networks are able to be deployed faster, easier and at much less cost than wired systems.
- **Decreased Pollution.** More cars on the road for longer periods of time add up to more harmful emissions in the atmosphere. Intelligent traffic signal systems can play an important part in a municipality's green initiatives by helping to reduce both the number of vehicles on the road and the amount of time they are traveling. The result is fewer greenhouse gases emitted, reduced pollution levels and safer air.



ENABLING INTELLIGENT INTERSECTIONS MORE COST-EFFECTIVELY

Motorola PMP wireless broadband solutions not only help reduce congestion and improve roadway safety, they also typically provide ROI less than 12 months.

Real-Time Traffic Management

Low-bandwidth wired network technology can be a severely limiting factor in the battle against congestion. Because wired networks often lack the capability of carrying bandwidth-intensive data to the control center, they are often being replaced. Most often, they are replaced with wireless broadband networks that provide the real-time data transfer that empowers more efficient, more effective traffic management. Wireless solutions such as Motorola PMP technologies are among the most important facilitators of crucial benefits such as:

- **Increased Traffic Flow.** The ability to keep traffic moving smoothly is the most basic benefit of today's increasingly sophisticated traffic management systems. It may also be the most important. With the capability of allowing real-time remote traffic signal adjustment, it can help unclog already congested roadways; it can also help stop congestion before it starts. Video cameras can

Traffic Control Today and Down the Road

Traffic congestion is not slowing down. It is expected to continue growing year after year for the foreseeable future. But technologies for controlling and managing traffic are growing, too. With sophisticated and intelligent new software tools providing real-time analysis and control of traffic signals, municipalities now have the tools to combat congestion by reducing the duration of traffic tie-ups as well as lowering their number. By relying on Motorola PMP high-speed wireless technology for connectivity, these municipalities can also provide real-time data and images of situations, helping to improve safety and increase productivity. For more information, contact your Motorola representative or visit www.motorola.com/government/transportation.

**MOTOROLA**

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