



# Proactive approach

Washington state is reaping the benefits of its first ATMS. Fewer collisions, less congestion and more reliable traffic information: what's not to like?

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On Tuesday 16 November 2010, Washington highways got a whole new look when Smarter Highways signs lit up over State Route 520 in Seattle. Smarter Highways is the latest transportation tool WSDOT is using to improve safety and reduce congestion.

"The system is already helping to reduce collisions on northbound I-5," says Paula Hammond, state transportation secretary. "We're excited to repeat that success and improve safety for the SR 520 commuters who depend on this vital link between Seattle and the Eastside."

WSDOT traffic engineers saw a drop in collisions on northbound I-5 in south Seattle after they activated Smarter Highways along that seven-mile stretch in August 2010. They counted 39 collisions from 10 August to 10 November. Collision data from the same period for the past five years shows a range of 100 to 140 collisions.



"Paying attention and responding to the signs makes the road safer for drivers and emergency responders," says Captain Steve Burns of the Washington State Patrol. "Drivers are moving out of the closed lanes, which creates a safer buffer."

Moving Washington is WSDOT's programme of investments and priorities to fight congestion and to keep the state moving through the next decade and beyond. Smarter Highways – also known as active traffic management systems (ATMS) – is a key element of the programme, and will help manage traffic during the Alaskan Way Viaduct replacement by making the I-5 highway more efficient and better prepared for increased traffic demand.

Over the next 10 years, the Moving Washington programme plans to improve travel times by 10%, reduce the number of collisions by 25%, improve trip time reliability by 10% and provide more choices to commuters in the major corridors.

For the Westside corridor, the strategically added capacity stage will, beside other changes, include high occupancy vehicle (HOV) lanes in a number of areas. Efficient operation will be achieved via the use of ramp metering, dedicated and improved incident response teams and employment of ATMS. In the third stage, demand will be managed by the reduction of commuter trips and increased use of alternative transportation modes.

## Active management

ATMS is the next generation of ITS and a necessary step to be taken to improve the existing transportation system. This is the first major installation of an ATMS in Washington State and in the broader picture, North America.

ATMS will include the installation of several ITS components to improve conventional signs along the roadway. The benefits that I-5's ATMS will bring are: safer driving with fewer collisions; less collision-related congestion; less congestion caused by traffic increase during replacement of the Alaskan Way Viaduct; better provision of information to drivers about traffic problems ahead, travel times and alternative routes; less waiting for clearance of traffic-blocking incidents; and finally, a more efficient I-5 that performs closer to its true potential.

Elcon Corporation, DKS Associates Inc. and Telegra have formed a collaborative alliance that offered WSDOT a fully integrated project by meeting all stated goals and requirements. Telegra's dynamic message signs (DMS) form the main part of



(Main image) **Seattle's Smarter Highways are now lit up**  
(Above) **LED signs**  
(Far left) **Telegra's VMS**

the I-5 ATM system. Telegra's experience in the best industrial practices of the European and North American DMS industry was essential for creating a synergy between the most demanding requirements of EN 12966, NEMA TS 4 and NTCIP standards in developing quality and performance requirements for new, advanced LED signs.

DMS are manufactured as full matrix displays and supplied as four different types: overhead lane control signs (LCS); side mount dynamic message signs (SDMS); and overhead variable message signs (VMS) in two different sizes.

Full matrix displays allow flexibility in the use of various text sizes and fonts, while symbols of any type and in any colour can be easily added and implemented (for example, icy road, slippery road, queue, traffic incident warning symbols, and so on). All the DMS and their communication capabilities are fully compliant with NTCIP and NEMA TS 4 standards.

## Longer lifetime

The high quality of the signs means they will not need to be replaced within a period of less than 10 years and their low cost of ownership over this extended lifetime has been further improved by requiring the same set of spares for all different

(Right) **Better information is given to drivers**  
 (Far right) **When signs are off, they are a discreet presence on the road**



(Above) **Telegra's signs are lighting up Seattle**

unit types deployed along the highway. Telegra's high-performance proprietary optical system creates very sharp sign images that provide excellent recognisability under any external lighting conditions. The innovative LED current drive technology reduces power consumption by up to 30% for a given luminance, thereby extending overall sign life. Reduced power requirements, low consumption and extended life with Telegra's separate LED current control and proprietary optical system work together to achieve a longer life than other signs available on the market.

All sign types share the same key modules such as power supplies, controllers and LED boards, which makes maintenance and replacement easy and simple. Uniform design and module choice increase serviceability and reliability.

#### **Modular approach**

A modular sign controller with a common touchscreen user interface that supports all signs on one gantry secures cost savings and reduces field cabinet space, while providing enhanced sign status communications and diagnostics. It supports up to eight NTCIP sign controller modules with plug-and-play capability enabled by auto configuration, which can be fitted in one 2U 19in rack, providing free space for additional traffic equipment such as CCTV, weather monitoring and traffic counting kit.

The graphical user interface (GUI) serves as a common interface for all sign controller modules, enabling an easy approach to all the functionalities

through interactive menus on a touchscreen LCD. The GUI offers real-time message monitoring in a 'what you see is what you get' format with preview and active messages from the GUI, monitoring/control of all sensors, heaters, fans, incoming power supply, LED power supply, door status and more.

The controller features a main communication module for single modem connection to the control centre and is equipped with an Ethernet switch and optional redundant UPS for sign controllers.

A quick mounting system for signs results in simplified installation and subsequent movement, and minimal traffic disruption during maintenance.

To ensure compliance with specifications and quality, reliability and performance within the ATMS system, WSDOT staged three levels of sign testing.

Upon delivery, signs had to undergo a 30-day testing process during which WSDOT staff inspected compliance with RFP, overall quality and functionality. After passing the test, signs were installed on the gantries and connected to the ATMS. Then a 20-day test procedure began. The goal of this second stage of testing was to ensure proper and reliable communication between the traffic management centre (TMC) and each sign.

The final stage was a 60-day test where all components of the ATMS were tested to ensure the functionality of the system as a whole.

After that the system went live and the high-tech signs are now helping to improve safety and reduce collisions. I-5 commuters are experiencing safer and smoother traffic on a roadway that detects changing traffic flows and automatically adapts to congestion by adjusting the speed limit and providing drivers with useful traffic information. The signs display speed limits from 40mph to 60mph, depending on traffic levels. The result is fewer traffic collisions and less collision-related congestion, and an increase in roadway capacity.

Telegra's extensive experience is essential in implementing ATMS and providing complete ITS solutions. Since 1989, it has delivered more than 5,500 LED signs, of which 1,500 are fully programmable displays, as part of the ATMS in more than 30 countries all over the world, including Germany, Brazil, Russia, South Africa and India. ■