

Benefits By Program Area

Program Area / Benefit Measure		Summary
Arterial Management Systems	Safety Improvements	Automated enforcement of traffic signals has reduced red-light violations 20-75%.
	Delay Savings	Field studies in several cities have shown that adaptive signal control systems can reduce peak period travel times 5-11%.
	Throughput	
	Customer Satisfaction	In Michigan, 72% of drivers surveyed felt "better off" after signal control improvements.
	Cost Savings	Transit signal priority on a Toronto transit line allowed same level-of-service with less rolling stock.
	Environmental	Model estimates showed advanced traffic signal control systems can reduce fuel consumption 2-13%.
Freeway Management Systems	Safety Improvements	Studies of traffic management centers using ramp meters show freeway management systems reduce accidents 15-50%.
	Delay Savings	Advanced Traffic Management Systems (ATMS) in the Astrodome area reduced street congestion delay by 46%.
	Throughput	After ramp meters were experimentally turned off in the Twin Cities, MN, freeway volume declined 9% and peak period throughput decreased 14%.
	Customer Satisfaction	After the Twin Cities ramp meter shutdown test, public support for a complete shutdown fell from 21% to 14%.
	Cost Savings	Variable speed limits with lane controls on the German Autobahn reduced injury accidents 20-29% saving approximately \$4 million/year.
	Environmental	In Denver, dynamic message signs (DMSs) that displayed real-time vehicle emission levels motivated most motorists surveyed to consider repairs.
Transit Management Systems	Safety Improvements	
	Delay Savings	Computer Aided Dispatch (CAD) and Automatic Vehicle Location (AVL) technologies improved on-time bus performance 9-23%.
	Throughput	In Portland, OR, models of transit data showed AVL/CAD may allow same level-of-service to more travelers using the same rolling stock.
	Customer Satisfaction	In Denver, installation of a AVL/CAD system contributed to improved schedule adherence. Customer complaints decreased 26% per 100K boardings.
	Cost Savings	In San Jose, CA, a paratransit scheduling and routing system increased shared rides 45% and reduced operating costs \$500K the first year.
	Environmental	
Incident Management Systems	Safety Improvements	In Pennsylvania, Traffic and Incident Management Systems (TIMS) decreased secondary incidents on highways 40% between 1993 and 1997.
	Delay Savings	The I-95 Traffic and Incident Management System (TIMS) in Pennsylvania cut highway incident closure time 55%.
	Throughput	
	Customer Satisfaction	The Virginia DOT has received hundreds of "thank you" letters from customers satisfied with service patrols.
	Cost Savings	In Minnesota, a \$600K/yr Highway Helper Program reduced the average duration of stall incidents by 8 minutes, saving \$1.4 million/yr in delay costs.
	Environmental	Based on calculations of incident delay reduction, models of the Maryland CHART system showed a fuel savings of 4.1 million gallons/year in 2000.
Emergency Management Systems	Safety Improvements	In Erie, NY, dispatch center notification time was about 1 min. for vehicles equipped with automated collision notification, and 3 to 46 minutes without.
	Delay Savings	
	Throughput	
	Customer Satisfaction	In Puget Sound, WA, 95% of drivers equipped with Mayday voice communications felt more secure. 70% with text messaging felt more secure.
	Cost Savings	In New Mexico, a private ambulance company used CAD/AVL to guide ambulances to exact locations. The company increased efficiency 10-15%.
	Environmental	
Electronic Payment	Safety Improvements	In Florida, driver uncertainty about toll plaza configuration and traffic speeds contributed to a 48% increase in accidents at E-PASS toll stations.*
	Delay Savings	The New Jersey Turnpike Authority (NJTA) E-Zpass system reduced overall toll station traffic delay by 85%.
	Throughput	Tappan Zee Bridge, New York, NY: Manual lane 400-450 vehicles/hour (vph), ETC lane 1000 vph.
	Customer Satisfaction	20% of surveyed travelers on two bridges in Lee County, FL adjusted their departure times as a result of value pricing at electronic tolls.
	Cost Savings	In New Jersey, automated fare collection increased revenues 12%, and saved an estimated \$2.7 million from the reduced cost of handling fare media.
	Environmental	NJTA models indicate E-Zpass saves: 1.2 mil gallons of fuel/year, 0.35 tons of VOC/day, and 0.056 tons NOx/day.
Traveler Information	Safety Improvements	IDAS models of ARTIMIS in Cincinnati and Northern Kentucky estimated traveler information reduced fatalities 3.2%.
	Delay Savings	In the DC metro area, a simulation model estimated that commuters who used traveler information improve their on-time reliability 5-16%.
	Throughput	A simulated traffic network of Seattle estimated that supplementing freeway ATIS with arterial ATIS will not significantly improve throughput.*
	Customer Satisfaction	In Philadelphia, 66% of surveyed commuters changed their departure time, and 86% changed their route after receiving traveler information.
	Cost Savings	In the DC area, models showed pre-trip departure notification can reduce early/late arrivals and save 40% of users \$60 or more each year in lost time.
	Environmental	Models of vehicle emissions in Boston showed users of Smart Traveler generated 1.5% less NOx, and 25% less VOCs.
Information Management	Safety Improvements	
	Delay Savings	
	Throughput	
	Customer Satisfaction	
	Cost Savings	
	Environmental	
Crash Prevention & Safety	Safety Improvements	In Colorado, a downhill speed warning system on interstate I-70 decreased truck accidents 13%, and reduced runaway ramp usage 24% in 2 years.
	Delay Savings	Models of increased traffic flow at a San Antonio rail crossing showed dynamic message signs with delay information can reduce system delay 6.7%.
	Throughput	
	Customer Satisfaction	70% of truck drivers and 85% of car drivers surveyed in California felt curve speed warning systems were useful.
	Cost Savings	
	Environmental	An automated horn warning system in Ames, Iowa, reduced elevated noise impact areas 97% adjacent to a highway rail intersection.
Operations & Maintenance	Safety Improvements	In Iowa, 55% of truckers surveyed said the automated work zone CB-radio warning system first alerted them of painting crews on I-35.
	Delay Savings	Work zone surveillance and incident response at the "Big-I" interchange in Albuquerque, NM, reduced average clearance time 44% the first year.
	Throughput	
	Customer Satisfaction	Most people surveyed about the Minnesota Guidestar program said Smart Work Zone warning signs were accurate and useful.
	Cost Savings	In MT, WIM scales installed in travel lanes on major truck routes can improve pavement fatigue estimates and save \$4.1 M/year in construction costs.
	Environmental	
Road Weather Management	Safety Improvements	In Idaho, weather-related warnings on freeway dynamic message signs decreased vehicle speeds 35% compared to a 9% decrease without the signs.
	Delay Savings	
	Throughput	
	Customer Satisfaction	30% of highway maintenance staff surveyed in IA, MO, WI used an Internet based weather information network to prepare for winter storms.
	Cost Savings	In WI, a snow forecasting model (with ice detection) improved DOT work schedules and reduced labor costs 4 hrs/person during significant storms.
	Environmental	
Commercial Vehicle Operations	Safety Improvements	Infrared brake screening tested in 4 states improved inspection selection for trucks, increasing the percentage placed out-of-service by 250%.
	Delay Savings	Carriers commissioned new vehicles 60% faster by printing their own electronic credential paperwork and not waiting for conventional mail delivery.
	Throughput	
	Customer Satisfaction	A survey of truckers showed operators who carried hazardous materials were very much in favor of hazardous materials incident response programs.
	Cost Savings	Motor carriers surveyed indicated CVISN electronic credentialing reduced paperwork and saved them 60-75% on credentialing costs.
	Environmental	
Intermodal Freight	Safety Improvements	
	Delay Savings	Biometric/smart-card authorization vs. manual duplication/photocopying of paperwork at transfer stations saved carriers about 8 min. per shipment.
	Throughput	
	Customer Satisfaction	Carriers surveyed indicated they were very satisfied with the ability of electronic supply chain manifest systems to duplicate paper-based systems.
	Cost Savings	
	Environmental	
Intelligent Vehicles	Safety Improvements	After a transport company installed radar sensors on trucks to warn operators of obstacles in blind spots, at-fault accidents decreased 34% in 1 year.
	Delay Savings	In Turin, Italy, cars equipped with in-vehicle navigation systems experienced a travel time savings of more than 10% during the CLEOPATRA project.
	Throughput	Models show intelligent cruise control vehicles (ICC) that use TMC detector data to optimize speeds and match signal timing increase capacity 3-6%.
	Customer Satisfaction	Participants overwhelmingly ranked intelligent cruise control over manual or conventional cruise control for convenience, comfort, and enjoyment.
	Cost Savings	A company's operating costs declined 10% after they installed GPS/AVL systems to eliminate miscommunication between drivers and dispatch.
	Environmental	Field data shows introducing an ICC vehicle into traffic with manually controlled cars can smooth traffic flow and reduce fuel consumption 0.4-3.6%.

Benefits By Measure

Benefit Measure/ Program Area		Summary
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