

NOACA Regional ITS Architecture - Project List

Agency	Project	Service Area	Market Package	Description	S/M/L	Cost	Operation & Maintenance Cost (per year)	0-5 years	6+ years	Cost Source	Possible Agreements
ODOT	Regional ODOT Freeway Management System	Traffic Management, Maintenance & Construction, and Emergency Management	ATMS01: Network Surveillance	To include TMC, DMS, CCTV, Flow detection, freeway service patrols, hybrid communications system, HAR, ramp metering, web-based services and inter-agency communications network.	S	\$18,000,000		\$18,000,000		ODOT	ODOT & OTC
			ATMS04: Freeway Control								
			ATMS06: Traffic Information Dissemination	Many agencies (GCRTA, CECOMS, Cuyahoga County Emergency Management, etc) expressed a need to view information on CCTV and DMS from Cleveland Freeway Management Project.							
			ATMS07: Regional Traffic Control								
			ATMS08: Incident Management System								
			ATMS12: Virtual TMC and Smart Probe Data								
			MC03: Road Weather Data Collection								
			MC04: Weather Information Processing and Distribution								
			MC06: Winter Maintenance								
			MC07: Roadway maintenance and Construction								
			EM01: Emergency Response								
EM04: Roadway Service Patrols											
ODOT/County	Computer Aided Dispatch Integration w/ ODOT FMS	Emergency Management	EM01-7: Emergency Call-Taking and Dispatch	Develop software to export traffic incidents input to CAD systems, and import the information to ODOT. Assumes 3 different CAD vendors, and 5 additional connections. Consider City of Cleveland.	M	\$500,000	\$5,000		\$500,000	ODOT	ODOT & County
ODOT	511 Information System	Traffic Management	ATMS06: Traffic Information Dissemination	Traveler information by dialing 511 number; provided by ODOT and private partnership.	M	\$250,000	\$35,000		\$250,000	ODOT	
ODOT	Increase Service Patrols	Emergency Management	EM04-1: Roadway Service Patrols	Increase frequency on existing routes and expand geographic coverage. Purchase additional service patrol vehicles - two additional vehicles in Ohio.	S	\$515,000	\$175,000	\$515,000		ODOT	
ODOT	Maintenance Vehicle Upgrade	Maintenance and Construction	EM02: Emergency Routing MC01-3: Maintenance and Construction Vehicle and Equipment Tracking	Automatic Vehicle Location for maintenance vehicles.	L	\$1,250-\$5,800/vehicle; Central system	Communications - \$40 to \$60 per month; System administration, \$1,300/month for entire system.		\$1,250-\$5,800/vehicle; Central system	NCHRP, September, 2006	
ODOT	Install snow and ice detection management and advanced snow plow systems.	Maintenance and Construction	MC06-4: Winter Maintenance	Pilot project to assess use of road weather information systems integrated with advanced technology snow plows. These systems provide early warning of icing and snow, and meter the amount of chemical and/or sand applied based on surface conditions, including amount of chemical already applied. Savings in chemical and sand, and reduction of ice and snow-related incidents are anticipated.	L	\$1,000,000	\$30,000		\$1,000,000	http://www.itscosts.its.dot.gov	
ODOT	Work Zone Safety Improvements	Maintenance and Construction	MC09-3: Work Zone Safety Monitoring	Improvements to work zones to reduce collisions. Ability to alert drivers of a construction zone, roadway hazard, or speed change.	M	\$100,000/Zone	\$5000/Zone	\$100000/Zone		http://www.itscosts.its.dot.gov	
ODOT	Highway-Rail Intersection Advanced Safety Systems	Traffic Management	ATMS13-4: Standard Railroad Grade Crossing	Install advanced Highway-Rail Safety Systems at key crossings. A study must be conducted to identify the crossings and the preferred system.		\$1,000,000	\$50,000	\$1,000,000		HNTB Project Experience	
ODOT	Expand Traveler Information Delivery Methods	Travel Information	ATIS01-2: Broadcast Traveler Information	Implement additional traveler information dissemination methods which may include cable TV station; personalized traveler information on a subscription basis delivered to cell phones, pagers, personal computing devices, etc.; connections to private sector service providers that provide content for in-vehicle computing devices; and other means that may emerge in the future. This should be implemented via a public-private partnership. The key public sector cost element will be in infrastructure to enable providing enhanced content to the private sector.	M	\$1,500,000	\$250,000		\$1,500,000	HNTB Project Experience	ODOT & Private Providers
			ATIS02-1: Interactive Traveler Information	Implement multi-modal traveler information kiosks connected to Cleveland FMS at airport, key work sites, stadiums, etc. (5 kiosks in Ohio)		\$625,000	\$50,000		\$625,000		
ODOT	Public Radio Station	Travel Information	ATIS-1-2: Broadcast Traveler Information	Purchase a commercial power radio station to be used primarily during rush hour and special events. Consider partnering with CSU.	M	\$250,000	\$250,000		\$250,000	ODOT	
NOACA	Signal System Upgrades	Traffic Management	ATMS03: Surface Street Control ATMS07: Regional Traffic Control	Signal upgrade and coordination along the major evacuation routes	L					HNTB Project Experience	
NOACA	Signal System Upgrades and Integrated Corridor Management	Traffic Management	ATMS03: Surface Street Control ATMS07: Regional Traffic Control	Regional signal coordination system including freeway and arterial coordination system. Integration of arterial and freeway management systems along with transit in major corridors to improve overall corridor throughput. Includes development of concepts of operations, operational procedures, center-to-center interfaces, and integrated operational plans. Study corridor for potential improvements in signal progression, detection, DMS, and CCTV placement and implementation.	L	\$1,000,000/mile	Incremental cost of operation is minimal if FMS and arterial traffic management systems are covered; may require additional software licenses or communications costs		\$1,000,000/mile	HNTB Project Experience	
NOACA	Animal Detection System	Traffic Management	ATMS06: Traffic Information Dissemination	Placed at strategic locations where vehicle-animal crashes are frequent, this system can help warn drivers when large animals are present. The system detects motion by large animals using break-the-beam or area-cover sensors and then causes warning lights to flash. FHWA study in Montana has been completed and results are presented in final Reliability of Animal Detection Systems Report	M	\$165,000 (per one mile section)	\$15,000 (per one mile section)		\$165,000 (per one mile section)	http://www.itscosts.its.dot.gov	
County	Commercial Vehicle Ops	Commercial Vehicle Operations	CVO03-1: Electronic Clearance	System collecting data carried in trucks traveling on specific routes.	L	\$150,000	\$25,000		\$150,000	http://www.itscosts.its.dot.gov	
County	Evacuation Plan Updates	Emergency Management	EM09-1: Evacuation and Reentry Management	Study and development of plan to evacuate Cuyahoga County in case of an emergency affecting mass area.	S	\$300,000	\$3,000	\$300,000			
Municipalities	Signal pre-emption	Emergency Management/ Traffic Management	EM02: Emergency Routing	Pre-emption signal system for emergency vehicles	L	\$6,000/intersection \$2,000/vehicle	\$500		\$6,000/intersection \$2,000/vehicle	FHWA ITS Joint Program Office, January 2006	
Municipalities	Computer Aided Dispatch to Emergency Vehicles	Emergency Management	EM01-7: Emergency Call-Taking and Dispatch	Integrating the computer aided dispatch to the emergency management center that will allow the operators to dispatch emergency response vehicles to the scene more rapidly.	L	\$150,000	\$2,500		\$150,000	HNTB Project Experience	
City of Cleveland	Automated Parking Facilities	Traffic Management	ATMS16-1: Parking Facility Management	Possible IntelliDrive applications to assist travelers through on board devices.	L	\$35,000/ Garage	\$3000/ Garage		\$35,000/ Garage	http://www.itscosts.its.dot.gov	
City of Cleveland	Special Event Traffic Planning	Traffic Management	ATMS08-06: Traffic Incident Management	Development of plans, procedures and systems to improve traffic conditions associated with special events such as concerts, sporting events, or festivals.	L	\$250,000	\$30,000		\$250,000	http://www.itscosts.its.dot.gov	
City of Brunswick	Traffic Signal System	Traffic Management	ATMS03: Surface Street Control ATMS07: Regional Traffic Control	Upgrade the signal system with controllers with network addressable components to communicate with the system, closed circuit TV cameras, emergency vehicle pre-emption, detection for sight impaired, interconnect with existing signals for coordination and monitoring, and central office software.	S	\$5,000,000	\$300,000	\$5,000,000		TMS Engineers, Inc.	
City of Westlake	Traffic Signal System	Traffic Management	ATMS03: Surface Street Control ATMS07: Regional Traffic Control	Upgrade the citywide signal system with controllers with network addressable components to communicate with the system, closed circuit TV cameras, and expansion of the fiber optic communication system currently used to monitor the system.	S	\$3,300,000	\$200,000	\$3,300,000		City of Westlake	

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City of Cleveland/ Cuyahoga County Port Authority	Port Security Camera Installation including Vessel Tracking System (VTS)	Emergency Management	EM05-2: Transportation Infrastructure	With the aid of Homeland Security Funding, cameras will be installed underneath existing bridges along the Cuyahoga River to monitor river traffic.	S	\$1,200,000	\$24,000	\$1,200,000		Harbor Master	City of Cleveland, Cuyahoga Port Authority, and U.S. Coast Guard
Cuyahoga County Port Authority (Airport)	Automated Parking Facilities	Traffic Management	ATMS16-1: Parking Facility Management	Automated parking facilities to show available parking at the airport	M	\$35,000/Garage	\$3000/Garage		\$35,000/Garage	http://www.itscosts.its.dot.gov	
Cuyahoga County Port Authority (Airport)	Electronic Payment Collection	Traffic Management	ATMS10: Electronic Tolling	Automated payment collection.	M	\$58,000	\$3,000		\$58,000	http://www.itscosts.its.dot.gov	
Cuyahoga County Port Authority (Airport)	Vehicle Classification Notification	Commercial Vehicle Operations	CV006: Weigh-in-Motion	Weigh incoming vehicles and direct those over a certain weight to the necessary roadway for deliveries.	L	\$612,000	\$2,100,500		\$612,000	CITRE Iowa State WIM data	
Cuyahoga County Port Authority (Airport)	DMS	Traveler Information	ATMS06: Traffic Information Dissemination	DMS signs in allocated parking locations to provide incoming flight information to people picking up travelers	M	\$250,000/DMS	\$15,000/DMS		\$250,000/DMS	HNTB Project Experience	
GCRTA	GCRTA Passenger Management System	Public Transportation	APTS4: Transit Passenger and Fare Management	System that provides fare reconciliation between peer agencies using a common travel card.	S	\$635,700	\$60,000	\$635,700		http://www.itscosts.its.dot.gov	
GCRTA	GCRTA Surveillance Control	Traffic Management	ATMS01: Network Surveillance	To include CCTV at certain locations to provide surveillance at stations and surrounding areas along Euclid Corridor.	S	\$30,000 per location	\$3,600 per location	\$30,000 per location		HNTB Project Experience	City of Cleveland, Cleveland State University, Case Western Reserve University, Cleveland Clinic, City of Cleveland Heights
GCRTA	GCRTA Clifton Corridor	Public Transportation and Traffic Management	APTS01: Transit Vehicle Tracking APTS02: Transit Fixed-Route Operations APTS08: Transit Traveler Information (Kiosks, signs) APTS09: Transit Signal Priority ATMS01: Network Surveillance	Similar design to Euclid Corridor for corridor along Clifton Boulevard.	M	\$3,000,000	System will be maintained by municipality				GCRTA/Cities
GCRTA	Kiosks at Transfer Points	Public Transportation	APTS08-1: Transit Traveler Information	GCRTA to establish kiosk inside CVG airport to assist out of town users in finding their way using public transit.	M	\$80,000	\$8,000		\$80,000	http://www.itscosts.its.dot.gov	
GCRTA	Bus Traffic Signal Priority	Public Transportation	APTS09-2: Transit Signal Priority	Study key transit corridors for applicability of bus traffic signal priority to improve transit travel time. Implement transit signal priority on traffic signals on identified corridors.	S	\$500,000	\$1,000/Signal	\$500,000		HNTB Project Experience	GCRTA & Local Municipality
GCRTA/ Laketran	AVL System	Public Transportation	APTS01-1: Transit Vehicle Tracking	Installation of AVL on all GCRTA and Laketran vehicles.	M	\$1,000/Bus	2% of Capital Costs		\$1,000/Bus	http://www.itscosts.its.dot.gov	GCRTA & Laketran
GCRTA/ Laketran	Transit Vehicle Updates	Public Transportation	APTS08-1: Transit Traveler Information	Installation of Wireless Internet Feed on buses, automated signs, and annunciators.	S	\$2,500/Vehicle	\$250/Vehicle	\$2,500/Vehicle		http://www.itscosts.its.dot.gov	GCRTA & Laketran
Laketran	Google Transit	Public Transportation	APTS08-1: Transit Traveler Information	Laketran will pair with Google to feed information on Google transit.	S	No Cost	No Cost	No Cost		Laketran	
Laketran	Metro Vehicle Updates	Public Transportation	APTS10-1: Transit Passenger Counting	Upgrades in fareboxes hardware will enable accurate passenger counts to have real-time count of population on a bus at a given time.	M	\$10,000/Bus	\$500/Bus		\$10,000/Bus	http://www.itscosts.its.dot.gov	
Laketran	Advanced Para-Transit Scheduling and Dispatch System	Public Transportation	APTS07-1, APTS07-2: Multi-modal Coordination	Implement an advanced para-transit scheduling and dispatch system at Laketran coordinated with GCRTA.	S	\$750,000	\$35,000	\$750,000		HNTB Project Experience	
CSU	Research Program	Traffic Management	ATMS19-1: Speed Monitoring	Establish a research program, in conjunction with ODOT, to test new implementation concepts such as crash mitigation or work zone operations systems.	S	\$600,000		\$600,000		ODOT	
Private providers	Connection of Private Providers	Travel Information	ATIS-1-2: Broadcast Traveler Information	Private providers to work with ODOT to establish links with private providers to deliver traffic information to more people in different facets.	L	\$500,000	\$50,000		\$500,000	http://www.itscosts.its.dot.gov	ODOT & Private Providers
	IntelliDrive	Travel Information	ATIS10-1: VII Traveler Information	Deployment of IntelliDrive infrastructure, including roadside equipment and controller modifications, to implement vehicle-to-infrastructure (V2I) communications in the 2014-2020 timeframe (as vehicles are equipped). IntelliDrive is a suite of technologies and applications that use wireless communications to provide connectivity that can deliver transformational safety, mobility, and environmental improvements in surface transportation. IntelliDrive applications provide connectivity with and among vehicles, between vehicles and the roadway infrastructure, and among vehicles, infrastructure, and wireless devices (consumer electronics, such as cell phones and PDAs) that are carried by drivers, pedestrians, and bicyclists http://www.intellicdriveusa.org/	L	\$40,000,000	\$2,000,000		\$40,000,000	http://www.itscosts.its.dot.gov	

The costs shown in this estimate represent an estimate of probable costs prepared in good faith and with reasonable care. HNTB has no control over the costs of construction labor, materials, or equipment, nor over competitive bidding or negotiating methods and does not make any commitment or assume any duty to assure that bids or negotiated prices will not vary from this estimate.