AECOM Imagine it. Delivered.

Inspiring **innovation**

Transportation

Intelligent Transportation Systems

Transportation is changing, and so is the delivery of our services. Throughout the world, we apply innovative technology solutions to improve our transportation systems' safety, reliability and mobility.

Strategies

Intelligent Transportation Systems (ITS) have demonstrated their cost-effectiveness in complementing more expensive transportation infrastructure investments. The focus on next generation technology programs is envisioned to be on:

- Transportation management centers
- Active arterial management
- Traffic incident management
- Smart motorways
- Decision support systems
- Transit technology
- Integrated corridor management
- Congestion pricing
- Tolling systems
- Connected and automated vehicles
- Smart city integration

Left:
I-64 HOV/Bus Reversible Lanes,
Hampton Roads, Virginia, U.S.

Cover:
I-95 Express (Managed) Lanes,
Miami-Dade and Broward Counties, Florida, U.S.

Our services — your solutions

When transportation systems won't work as planned we all lose. Transportation becomes congested, travelers become frustrated and transportation agencies must use valuable resources to make quick and often inefficient changes with small issues sometimes costing big dollars. We understand and we can help. Our professionals are global leaders in intelligent transportation systems and technology solutions. We combine innovation, insight, knowledge and skills across a complete life cycle of services delivering cost-effective innovative projects that keep costs down and travelers moving.

Transportation management centers (TMC): We are leaders in TMC planning, design, software development, systems integration, operations and maintenance.

Transportation management centers serve as the command and control centers for freeway and toll road management systems; arterial signal systems; priced managed lanes and reversible roadways; highway patrol, public safety and emergency operations; and transit systems. We are also a leader in TMC operations, having provided these services in more than 40 facilities.

Active arterial management: Our extensive traffic system experience includes such traffic control systems as centralized vendor-supplied, closed-loop, distributed, hybrid, traffic responsive and real-time adaptive control systems. We also provide stafffing for day-to-day signal systems management including signal timing updates; monitoring signal systems in real-time; applying adaptive signal control; and trouble-shooting/ repairing equipment.

Traffic incident management (TIM): Our incident management experience encompasses work at the federal, state and regional levels. This experience includes preparing TIM manuals and training; new TIM team start-ups and conducting TIM meetings; preparing TIM strategic plans; as well as operating service patrols and incident response vehicles on freeway and managed lanes.

Decision support systems (DSS): We develop system requirements for DSS platforms, operating systems in use at multiple agencies. We also evaluate and report the benefits and challenges associated with integrating DSS into traditional traffic operations.

Smart motorways: We research, plan, design and perform operational assessment for Smart Motorways. Our experience encompasses smart motorway deployments for Highways England and support for the Ohio Department of Transportation, applying active traffic management strategies that address growing congestion within their major regional networks.

Transit technology: Our experience encompasses transit technologies including: bus telematics; bus stop, web and mobile electronic information services including design and process

Above:
FDOT District 4 TIM, Broward, Indian River, Martin, Palm Beach and St. Lucie Counties, Florida, U.S.

Left:
FDOT District 6 RTMC SMART SunGuide TMC, Miami-Dade and Monroe Counties, Florida, U.S.

Illinois Tollway System, Northern Illinois, U.S.

integration with printed information; back office management and data systems; urban traffic management integration; and automatic fee collection and smartcard ticketing.

Integrated corridor management (ICM): We supported the Federal Highway Association (FHWA)'s evaluation of two initial ICM pilot programs in San Diego and Dallas. The evaluation documented the benefits of ICM through improvement in corridor performance using realistic and useful metrics. We also develop ICM concepts of operations and designs enabling us to prepare successful grant applications.

Congestion pricing: We provide a wide range of services on managed lanes, cordon-based pricing and mileage-based user fee schemes to departments of transportation, toll road authorities and concessionaires. Our managed lanes experience includes projects in Florida, Virginia, North Carolina, California, Texas and Minnesota. We also have cordon-based pricing experience in London and planning experience in several other cities.

Tolling systems: Our professionals are helping clients transition from manual to open-road to all electronic tolling systems. Our full-service range includes preparing design and construction documents for tolling systems and conducting studies to optimize system performance and revenue. Our dynamic pricing software for managed lanes improves trip time reliability by adjusting toll rates to traffic low changes.

Connected and automated vehicles: We support our clients in a number of ways. For example, we are supporting the development of a connected vehicle vision for the Illinois Tollway that involves designing receiver spots along the toll roads where they will collect vehicle data and initially use it for ramp queue detection and smart work zones; engineering communications installation; coordinating with stakeholders for probe vehicle opportunities; and outfitting Tollway vehicles with aftermarket connected vehicle devices.

Smart city integration: We partner with technology companies, automobile manufacturers and communications firms, providing services related to smart city transportation integration. We offer transportation systems planning and design; software development and integration; communications design; IT network management; and command control center design to operate in highly connected smart cities that integrate technology and input from transportation networks.

Top:
Lincoln Tunnel, New York-New Jersey, U.S.

Bottom:
Miami-Dade Expressway Authority (MDX) Open Road Tolling, Miami-Dade County, Florida, U.S.

Our projects

We provide our ITS insight on a variety of innovative projects. With projects ranging from regional traffic operations in Miami, Florida, United States, to connected and automated vehicles in Auckland, New Zealand, our projects advance transportation management systems for our clients and the motorists they serve across the Americas and around the world.

Southeast Michigan Transportation Operations Center, Detroit, Michigan, U.S.

- Monitoring and controlling CCTV cameras, dynamic message signs and other ITS devices
- Special event traffic planning and implementation, including Super Bowl XL
- Research in applying connected vehicle data to support TMC operations

Our staff provides 24/7/365 staffing and operations support to the Southeast Michigan Transportation Operations Center. Operations cover more than 300 miles of freeway within the metro Detroit area. Our responsibilities include: control room operations, incident management planning and response, freeway courtesy patrol dispatch and traveler information provided via website, media and dynamic message signs.

Regional Traffic Operations Program, Atlanta, Georgia, U.S.

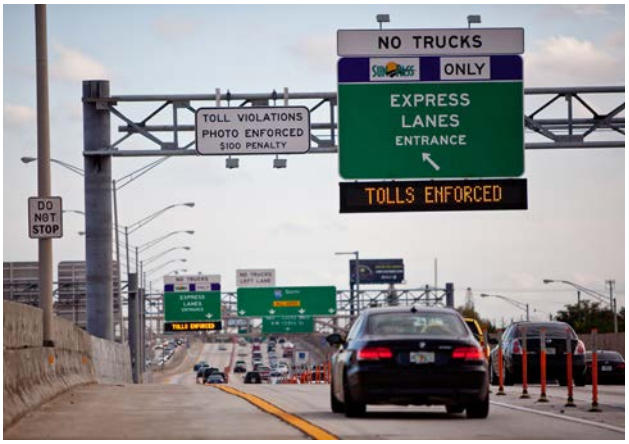
- Manage arterial signal operations and maintenance along strategic corridors
- Optimize signal timings along regional commuter corridors
- Maintain traffic control devices and telecommunications

Our staff updates signal timing to improve operations, monitors signal systems during peak periods, recommends operational improvements, performs regular site visits to verify proper equipment operations, troubleshoots and repairs signal equipment, and develops and applies performance reports to continuously improve arterial operations.

Managed Lanes, Miami-Dade and Broward Counties, Florida, U.S.

- Developed standard operating procedures and training program for managed lanes operations
- Developed, integrated and applied dynamic pricing software
- Provide performance reporting and advisory services to support managed lanes expansion

Our support for the Florida Department of Transportation's internationally recognized managed lanes program dates back to the program's 2008 inception. The dynamic pricing software we developed is used by our operators to monitor traffic conditions, calculate toll rates, identify incidents and facilitate reporting. We provide software enhancements to accommodate multiple toll zones and trip building capabilities as the system grows into a regional express lanes network.



Regional Incident Management System (RIMS), Houston, Texas, U.S.

- Real-time access to emergency information including available traffic capacity and services
- Serves as a critical staffing management tool in assigning operator responsibilities
- As the software is web-based, functions are distributed to the appropriate operator

We provided ITS software development, integration, implementation and maintenance services to the Texas Department of Transportation on several contracts since 2001. The RIMS software enables operators in the field to have the same capabilities as operators in the Traffic Management Center (TMC). Operations tasks and resources can be assigned, scheduled and tracked using RIMS.

All Electronic Tolling (AET), Boston, Massachusetts, U.S.

- Contract documents to convert the "cash" system to AET
- The roadside design-build contract includes a new AET toll system at 18 locations statewide
- Sites, toll zones and gantries to support the new AET system

We evaluated the performance of the existing cash toll collection system and network of toll plazas along the Massachusetts Turnpike for the Massachusetts Department of Transportation. We then developed innovative design-build contract documents for the new AET system procurement, and the design-build contracts to remove legacy cash toll plazas.

Smart Motorways, London to Reading, Midlands and Birmingham, England

- The first network advisory system built in England
- Uses congestion patterns to compare traffic conditions to predefined thresholds
- Implements varied strategies, reducing congestion and incident impacts

We developed the network advisory system for Highways England as part of the active traffic management pilot project deployed along the M-42 motorway — the first built in England. This system reduces congestion and incident impacts by using hard shoulder running, variable speed limit signs, lane control signals and dynamic messaging. We also provided preliminary and final engineering, construction inspection and commissioning for the M4 Smart Motorway All Lane Running (London to Reading) and M6 Smart Motorway (Midlands).

Connected and Automated Vehicles, Auckland, New Zealand

- Analyzed roadway infrastructure impacts and recommended requirements
- Used a scenario-based approach to manage uncertainty of a 30-year horizon
- Considered other strategies to complement connected and automated vehicles

We investigated the technical readiness to support the deployment of automated and connected vehicles for the New Zealand Transportation Agency. This research focuses on the necessary infrastructure, technologies and systems to support advanced levels of vehicle automation and connected vehicles. Our analysis was primarily focused on three areas: emerging vehicle technology, intelligent network management and shared mobility.

About AECOM

AECOM is built to deliver a better world. We design, build, finance and operate infrastructure assets for governments, businesses and organizations in more than 150 countries. As a fully integrated firm, we connect knowledge and experience across our global network of experts to help clients solve their most complex challenges. From high-performance buildings and infrastructure, to resilient communities and environments, to stable and secure nations, our work is transformative, differentiated and vital. A *Fortune 500* firm, AECOM had revenue of approximately $17.4 billion during fiscal year 2016. See how we deliver what others can only imagine at aecom.com and @AECOM.

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