How to Implement ITS

The ITS strategy recommendations support a range of operational areas such as traffic management, incident management, interagency coordination, work zone management, and traveler information. Strategies focus on implementation opportunities for the near-term, mid-term, and long-term for deploying and integrating ITS in the City.

The ITS strategy recommendations identify project and functional priorities for the City of Tempe to achieve the goals established as part of the strategic planning process. The process to develop project recommendations took into account stakeholder needs and priorities and other transportation projects and initiatives already underway in the City. The timeframes identified within the strategy development process builds in flexibility to accommodate available funding or mainstream ITS into other capital improvements. The plan provides the City of Tempe with a summary of resources, guidelines and recommendations for phased implementation and expansion of devices and operational capabilities.

Projected ITS Program Funding

The plan describes the City of Tempe ITS program funding needs, different funding sources and approaches for planning for ongoing funding of Tempe's ITS program elements. There are no major device lifecycle replacements anticipated for at least 10 years as new infrastructure is being implemented currently. There will be more emphasis on TMC network equipment upgrades within the 10 year timeframe. In the near-term, most ITS capital improvement costs involve already programmed projects which are subject to availability in federal funding through the Maricopa Association of Governments Transportation Improvement Program and required City match.

As the City of Tempe ITS infrastructure is deployed, the funding needs will shift from design and implementation to operations and maintenance. This represents a very different funding strategy in that operations and maintenance are typically not covered by federal funding. The plan factors in the shift in funding needs over the next decade.

NEAR-TERM
2012-2013
$3 Million

Additional CCTV, wireless network, TMC and IT action list for smaller collaborative tasks
(50 CCTV cameras, 2 miles of fiber, 20+ signals synchronized along one corridor, 26 wireless connections to traffic signals)

MID-TERM
2014-2016
$5-$7 Million

Traffic signal coordination, DMS, additional CCTV, communications (wireless and fiber), tools for enhanced TMC functionality and asset/system management
(10 CCTV cameras, 6 DMS, 15 miles of fiber, 50+ signals synchronized along three corridors, 40 wireless connections to signals, 10 miles of real-time corridor data, 3 bike/ped crossing treatments)

LONG-TERM
2017-2021
$6-$8 Million

Traffic signal coordination, additional DMS, additional CCTV, additional communications (both fiber and wireless), ITS studies/analyses, enhance real-time corridor data
(10 CCTV cameras, 23 DMS, 8.5 miles of fiber, 75+ signals synchronized along five corridors, 55 wireless connections to traffic signals, 10 miles of real-time corridor data, 5 bike/ped crossing treatments)

Next Steps

♦ Implement planned/programmed projects
♦ Initiate Tempe department collaborative efforts
♦ Partner with other jurisdictions
♦ Leverage local funding with federal grants
♦ Continue to support the ITS program!

Contact

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CITY OF TEMPE ITS STRATEGIC PLAN
EXECUTIVE SUMMARY
▶ Planning for the Future

CITY OF TEMPE ARIZONA

Purpose for ITS Planning

The City of Tempe has a Comprehensive Transportation Plan that guides development of a citywide multi-modal street system. The purpose of the Intelligent Transportation Systems (ITS) Strategic Plan is to build onto the Transportation Plan and define how technology can optimize the use of the network.

The goal is to better manage traffic, make for a safe travel experience for all mode users, and set the direction of future technologies to be able to address transportation needs—across the City as well as regionally. The Plan provides ITS management solutions focused on smart technology deployments which create efficiencies in the services that Tempe provides.

Objectives of Planning for ITS

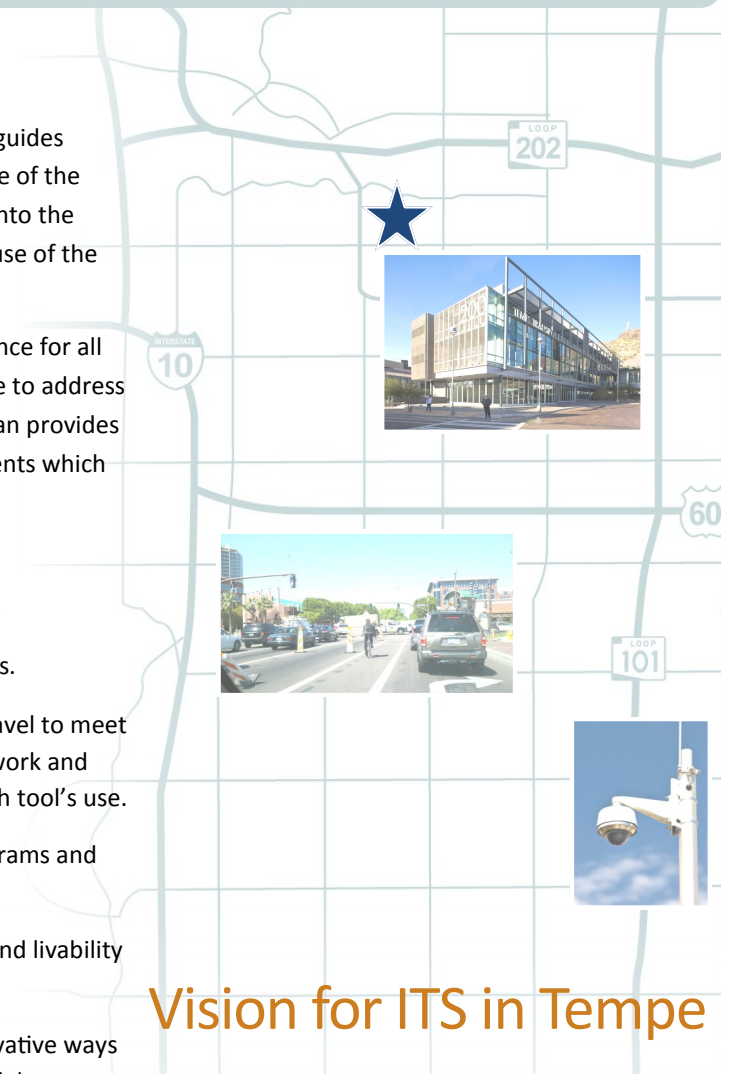*Safety* — Improve safety and emergency response for all travelers.

Integration — Innovation and integration across all modes of travel to meet the needs of the diverse users of Tempe's transportation network and implementation of smart tools in smart ways to maximize each tool's use.

Partner — Maximize partnerships and resources to support programs and services to improve efficiency and quality of travel.

Image — Incorporate ITS effectively into high quality aesthetics and livability of the City.

Creativity — Implement transportation technology tools in innovative ways to prepare the City for future citywide and regional multi-modal transportation needs.

Sustainability — Introduce ITS that can be effectively operated, maintained, and shared that has positive impacts to both environmental and economical sustainability.

Vision for ITS in Tempe

To effectively use technology to optimize Tempe's multi-modal transportation system.
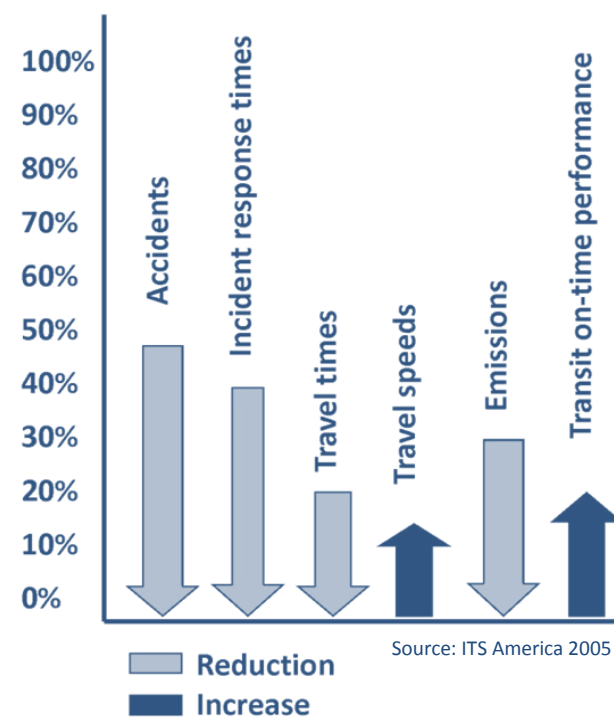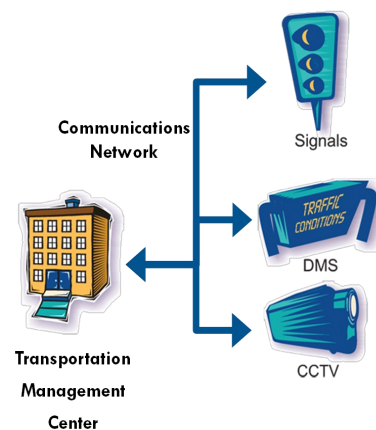
EXECUTIVE SUMMARY
Planning for the Future

Long Range Plan

What is ITS?

ITS is the integrated use of technology to improve the efficiency, mobility, and safety of the transportation system.

Intelligent Transportation Systems need a strong communication system and appropriate devices at the correct locations to:

- Monitor and control roadside equipment
- Provide traveler information on road and traffic conditions
- Create a network for agencies to share real-time information

Communications Network

Signals

DMS

TRAFFIC CONDITIONS

Transportation Management Center

CCTV

Chart:

Y-axis: 0% to 100%

Categories: Accidents, Incident response times, Travel times, Travel speeds, Emissions, Transit on-time performance

Legend: Reduction, Increase

Source: ITS America 2005

The Tempe TMC is able to manage devices using communications (wireless and fiber) - enhancing TMC functionality is an important objective of many of the strategies

Traffic cameras help the TMC have 'eyes on the road' to manage traffic around the City

Bicyclists and pedestrians travel safer at road crossings because of specialized ITS applications

Dynamic message signs help provide information to travelers in advance of incidents, construction, or special events

Real-time traveler information available via web or mobile devices with current road status info

Coordinated and customized traffic signal plans managed from the TMC minimize stop and delay on major roads

ITS infrastructure can support special event traffic movement toward venues and parking

Map labels: McKellips Road, Curry Road, University Drive, Apache Boulevard, Broadway Road, Baseline Road, Warner Road, Ray Road, Priest Drive, Kyrene Road, Rural Road, McClintock Drive

Arizona Loop 202, Arizona 143, Arizona Loop 101, I-10, 60

Map legend: Dynamic Message Sign | Traffic Camera | Fiber Communications | Wireless Communications

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Tempe is *well-positioned* to maximize the benefits of ITS!

- A state-of-the-art Transportation Management Center (TMC) is in place that uses central software and personnel to manage transportation infrastructure throughout City
- Tempe Police and Fire utilize central dispatch software to coordinate response to incidents
- The TMC has access to ADOT fiber on freeways surrounding the City, which it uses to connect to Tempe infrastructure
- The Tempe website is updated with events and planned closures, and the TMC works with ADOT to provide messages about road conditions or detours to the regional 5-1-1 traveler information services for events
- There is an existing network of cameras and communications that will form the basis of the build out of the Tempe ITS program

Recommended Strategies

- ITS device locations for traffic cameras, dynamic message signs, and communications (both wireless and fiber)
- Continued traffic signal coordination and detection upgrades
- Incorporate new devices and capabilities in future planning processes
- Integrate ITS tools to enhance Tempe strengths in transit, special event management, and bicycle/pedestrian access
- Establish collaboration between Tempe departments (Police, Fire, Community Development, etc.) to utilize ITS tools more effectively
- Develop agreements with neighboring jurisdictions to share, support, and enhance use of ITS in the region