Bridging Borders
Integrating Traffic Signal Systems Across
Jurisdictional Boundaries

The Challenge:

To provide motorists with a coordinated transportation system, AZTech integrates the efforts of traffic, transit and emergency services agencies throughout the Valley of the Sun. An integral part of this objective is the synchronization of traffic signal systems between neighboring municipalities to provide motorists with a seamless commute from one city to the next. The AZTech goal of full integration faced special challenges in the burgeoning East Valley. The five cities of the East Valley -- Chandler, Gilbert, Scottsdale, Tempe and Mesa -- all had long operated their own traffic signal systems with some inter-jurisdictional coordination.

Traffic signals are typically synchronized along arterial streets to facilitate smooth cross-town commuting. However, the synchronization of signals is generally performed within the borders of individual municipalities. For motorists traveling along an arterial street, crossing a municipal boundary generally means an unnecessary stop as they pass from one signal system to the next. A high degree of collaboration would be required to precisely synchronize traffic signal systems across the shared boundaries of the five East Valley municipalities. To achieve full integration, AZTech needed to find common ground.

The Solution:

AZTech proves the adage that the whole is greater than the sum of its parts. Integrating the East Valley's traffic signal systems required significant cooperation and coordination between all five municipalities that share boundaries.

Before the necessary technical integration could be attempted, institutional integration would have to be achieved. By fostering an inter-agency approach to regional traffic issues, the AZTech Technical Oversight Committee provided a model for this effort. Out of this committee grew the East Valley Task Force, a working group of traffic management specialists from each of the five municipalities. "AZTech is all about recognizing that we're not just a collection of separate cities in a metropolitan area, we share a common road system," said Brian Latte, signal systems engineer for the City of Chandler. "And in doing that, AZTech has built a lot of positive working relationships and rapport between these municipalities so that you look at the big picture rather than just what your own needs might be."

The East Valley Task Force discussed issues and identified areas for improvement. Collectively and through city-to-city discussions between neighboring municipalities, solutions were developed to accommodate smoother interjurisdictional travel. The definition of peak hours were standardized. A common time point was established. Timing modifications were made at each boundary. Common cycle links (the timed sequence that links synchronized signals) were established according to traffic demand rather than arbitrary city limits. Signal timing along arterial streets was coordinated so that the last

traffic signal at the boundary of one city synchronized with the first signal in the adjacent city. Finally, signal systems were integrated across all boundaries to provide motorists with the experience of a seemingly single, unified system.

Coordinating systems presents each municipality with advantages that extend beyond the signal systems. "It's going to benefit us in our ability to respond to changes in the traffic," said Jan Siedler, signal systems supervisor for the City of Mesa and chairperson of the East Valley Task Force. "And we'll be able to use some of the new technology much sooner than we would have been able to if we were operating independently." As part of the AZTech initiative, each municipality is linked to AZTech's state-of-the-art telecommunications and information network.

"With AZTech, the technology makes it possible for the signal systems to be interconnected so they can be in synch," said Pierre Pretorius, AZTech program manager. "But it also required the cooperation of each of the cities to revise their traffic timing plans so that it's actually synchronized. Everybody chipped in and made it work."

The Benefits:

Signal synchronization provides a seamless driving experience and reduces the number of stops required for motorists traveling along arterial streets that cross municipal boundaries. In addition to enhancing convenience and reducing travel time for individual motorists, signal coordination translates into improved traffic flow.

Such cooperative efforts also have long-range impact. "Signal integration will always be an ongoing process," said Siedler. "We've made many improvements already, but it's a continual process, because traffic is always changing." By cultivating ongoing communication between cities, AZTech has laid the foundation for future improvements. "One of the greatest plusses of AZTech is fostering better working relationships between the municipalities," said Latte. "It's formed a good venue through which issues can be discussed." The project has already led to other cooperative efforts between the traffic management agencies of the East Valley communities.

"I believe AZTech made a big difference. The City of Mesa had historically been working very closely with the City of Tempe and establishing that kind of cross-jurisdictional analysis for at least the last 15 years," said Siedler. "What AZTech did was expand on that and improve it. We now also have routine discussions and a much closer coordination with the cities of Phoenix, Scottsdale, Chandler and Gilbert. And it's even improved our coordination with Tempe, as we now have more of a Valley perspective."

As an international showcase for state-of-the-art Intelligent Transportation Systems, the AZTech Model Deployment Initiative has documented numerous success stories. To learn more, visit the AZTech home page on the Internet at *http:www.azfms.com*.