Intelligent Transportation Systems in the Phoenix Metropolitan Region

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MARICOPA ASSOCIATION of GOVERNMENTS

What are Intelligent Transportation Systems?

- Fully Integrated Transportation Systems
  - networks of roads, bus & rail systems
- Intelligence
  - provide/share information on real-time conditions
  - real-time traffic management based on reliable data on current conditions
- Sources: cameras, sensors, computer algorithms
- Essential: Trained Professionals

ITS Goals

- “To build and operate integrated transportation systems so that they meet the needs of all users” – Safety & Efficiency
- System Users – commuter drivers, truckers, bus riders, bicyclists, pedestrians
- Systems that address User Needs Via ITS User Services
- Based on the National ITS Architecture – a requirement for federally funded ITS projects

Who is Building ITS?

- Infrastructure-based systems – USDOT funding, state DOTs and local agencies
- Vehicle-based systems by auto manufacturers – adaptive cruise control,
- Other value-added services – Google Traffic, MSN Traffic, GM's OnStar, Ford's RESCU, TV and Radio, Traffic.com, etc.

ITS Infrastructure in the Phoenix Region

- Freeway Management System (a centralized system)
  - Only 24/7 facility in the region
  - Central hub for regional ITS communications
- Arterial ITS (a distributed system)
  - Smart Street Networks – optimized operations
  - Local Traffic Management Centers (9)

Traveler Information Systems

- Electronic message boards – Dynamic Message Signs (DMS)
- Radio traffic reports (uses ADOT freeway information)
- TV traffic reports (uses ADOT cameras)
- 511 phone service - statewide
- AZ511.COM Website >>>

AZ511.COM

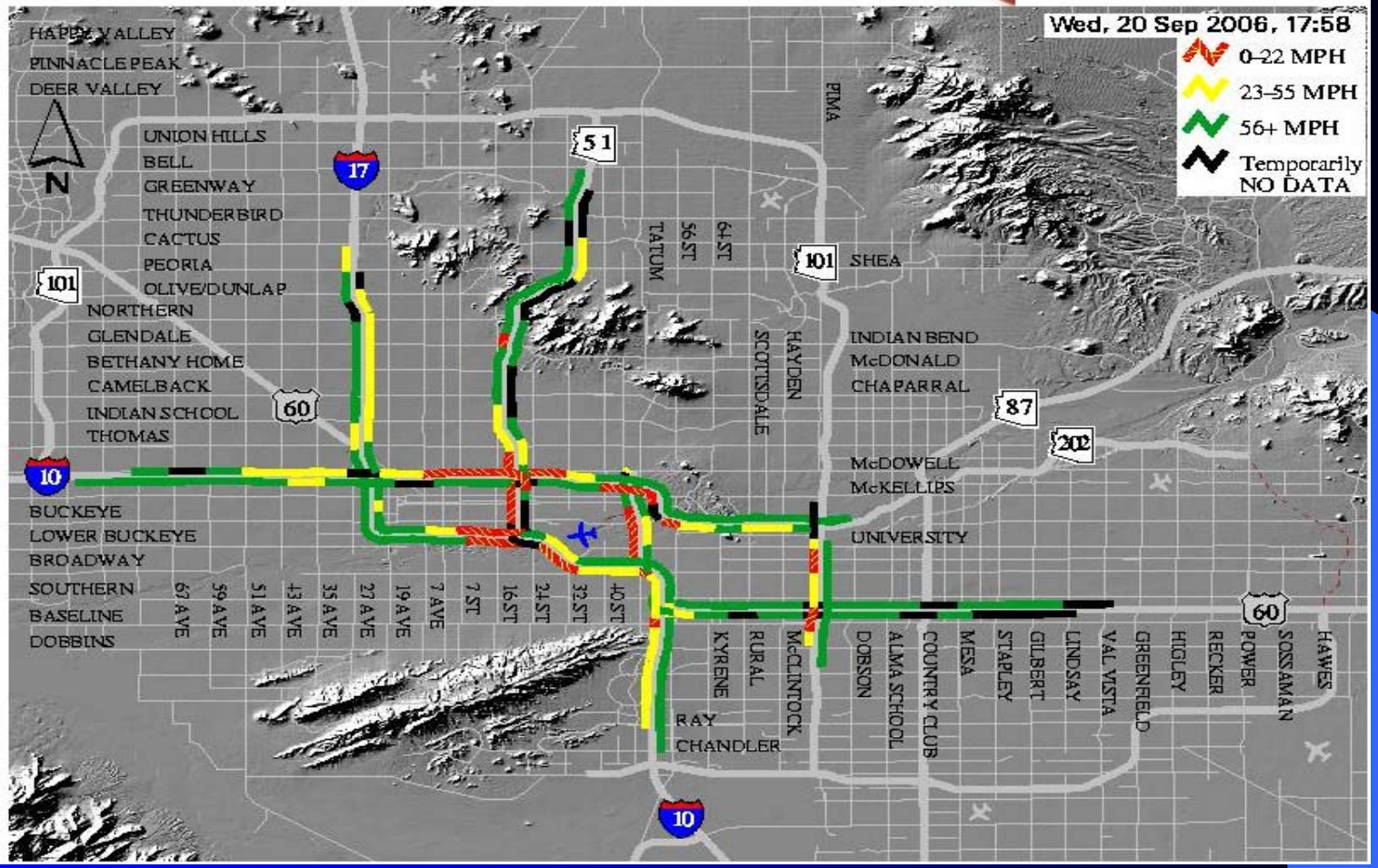
Roadway Conditions

Home

Traffic

Closures & Restrictions

Traffic



ADOT TRAFFIC OPERATIONS CENTER (TOC)

CHANDLER TRAFFIC MANAGEMENT CENTER (TMC)

SCOTTSDALE TRAFFIC MGMT CENTER

MARICOPA COUNTY TRAFFIC MGMT CENTER

Regional ITS Architecture

- Status of existing systems & responsible agency – centers, roadside, traveler, vehicle
- Recommended future subsystems
- Regional ITS architecture vision
- National ITS standards where available and applicable

Regional ITS Architecture Vision

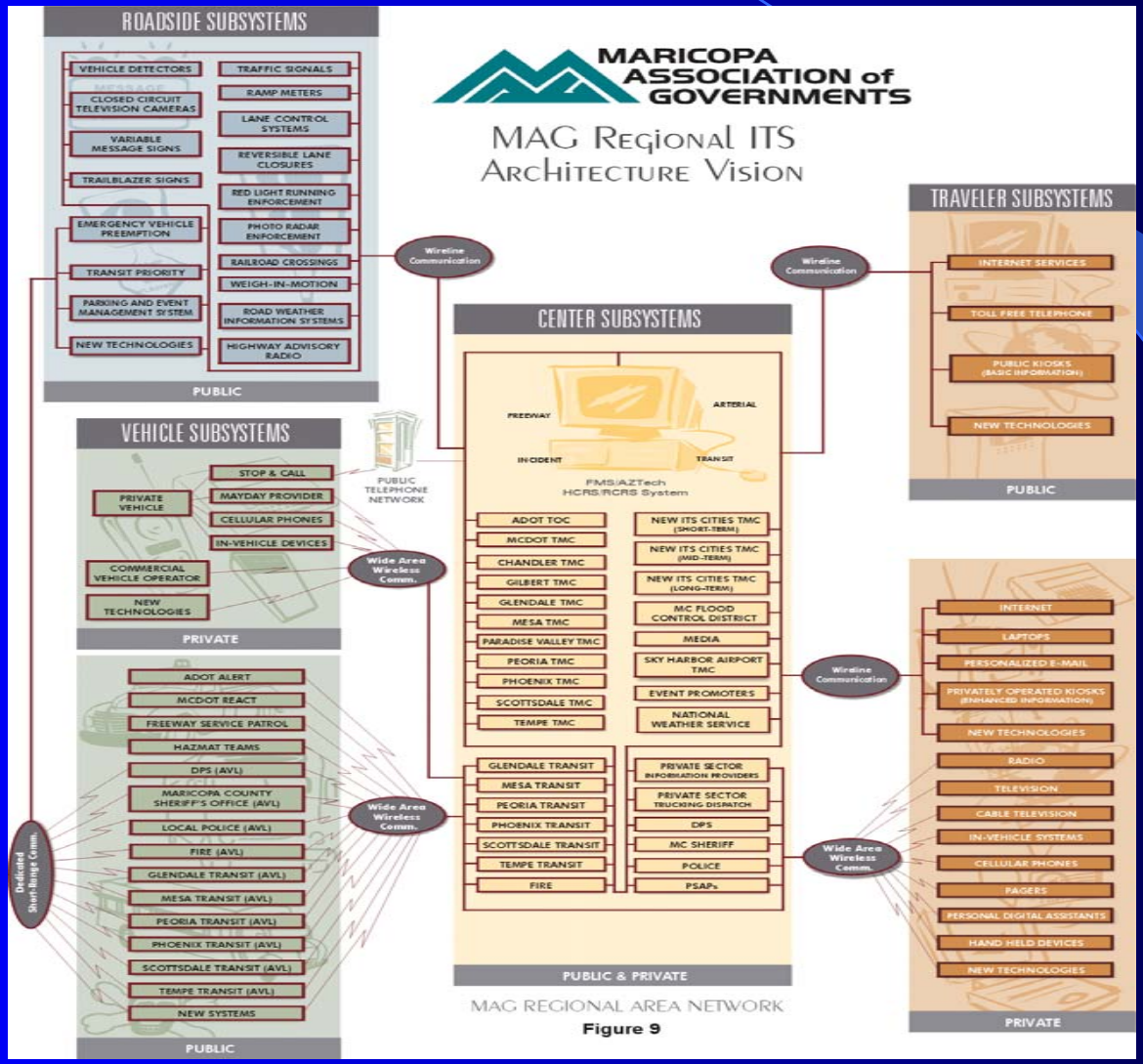
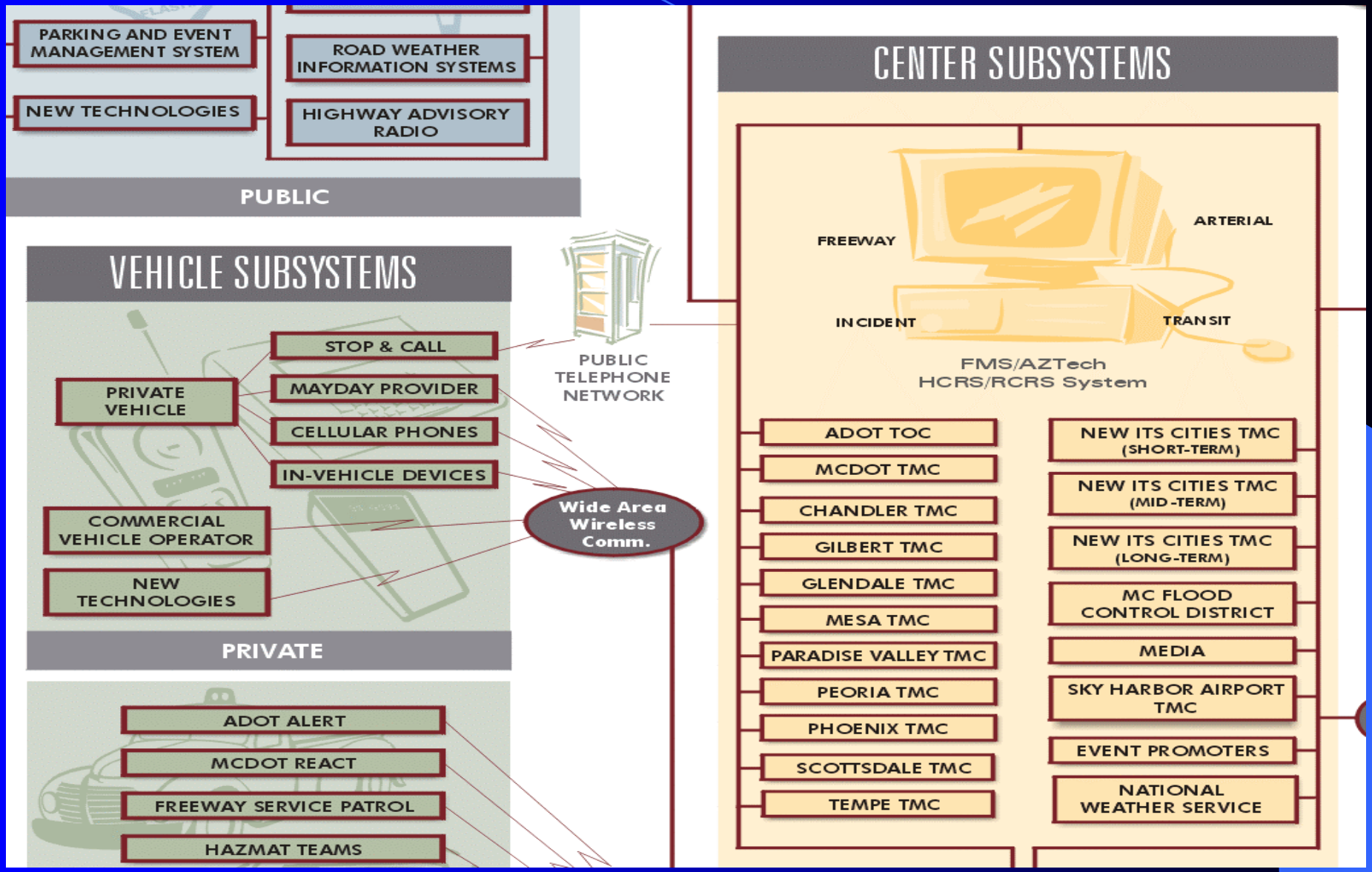


Figure 9

Regional ITS Architecture Vision



RTP: Expansion of ITS in the Future

- Freeway ITS - $ 143 million (for 20 yrs) for expansion of the FMS –> 85 percent coverage
- Arterial ITS - $ 50 million (for 10 yrs thru' 2018) Integrated Arterial-Freeway Corridors

Freeway ITS Expansion

- More miles of FMS coverage – new freeways
- Adaptive ramp metering – field test on I-10
- Travel time advisories – web test underway
- Freeway Service Patrol expansion
- Access to DPS/police CAD information

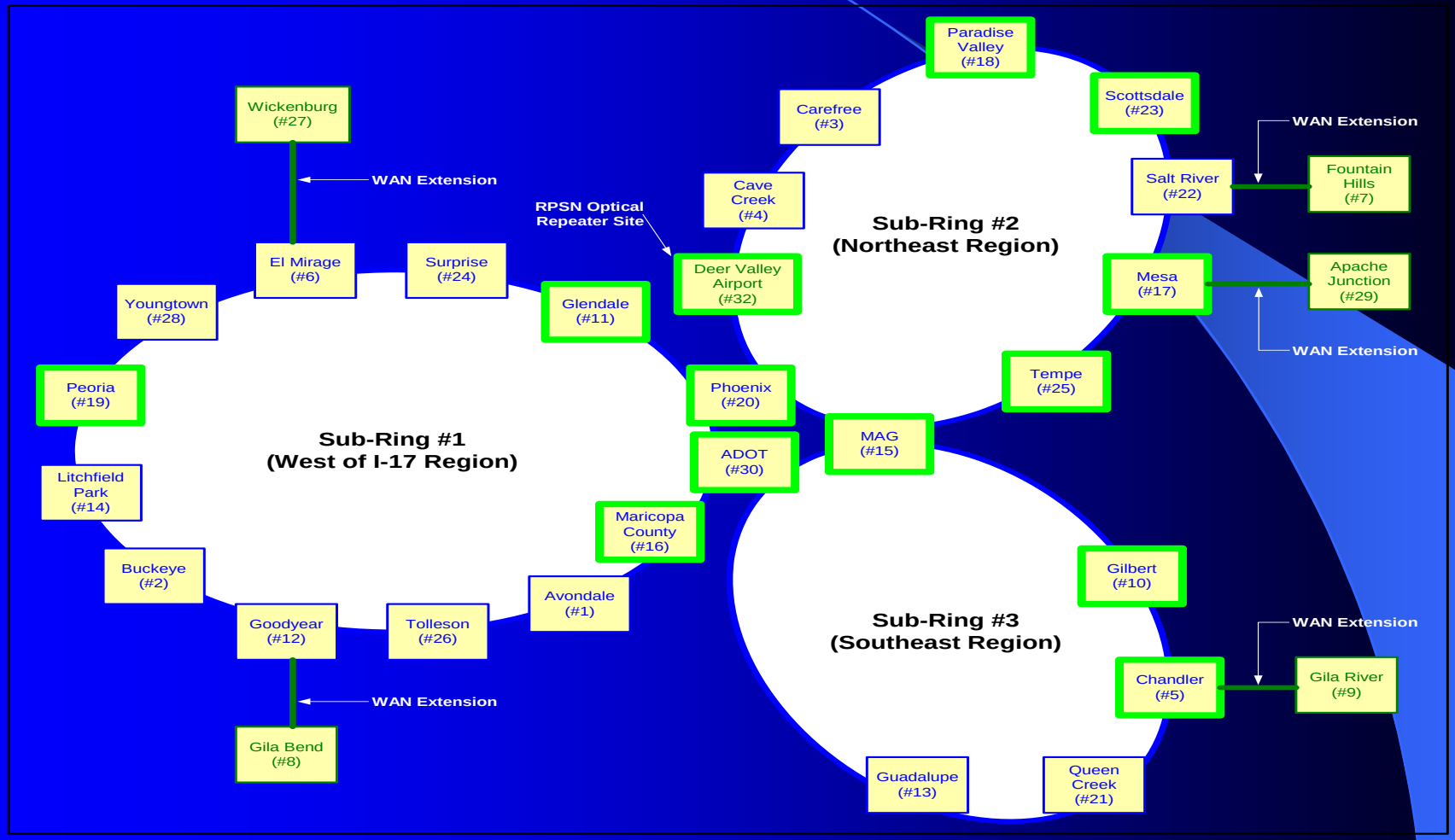
Arterial ITS Expansion

- Expand traffic surveillance via cameras and sensors
- Better coordination with freeways
- Quick response to crashes and other blockages
- Transit signal priority
- More real-time adjustments to traffic signals – reduced delay

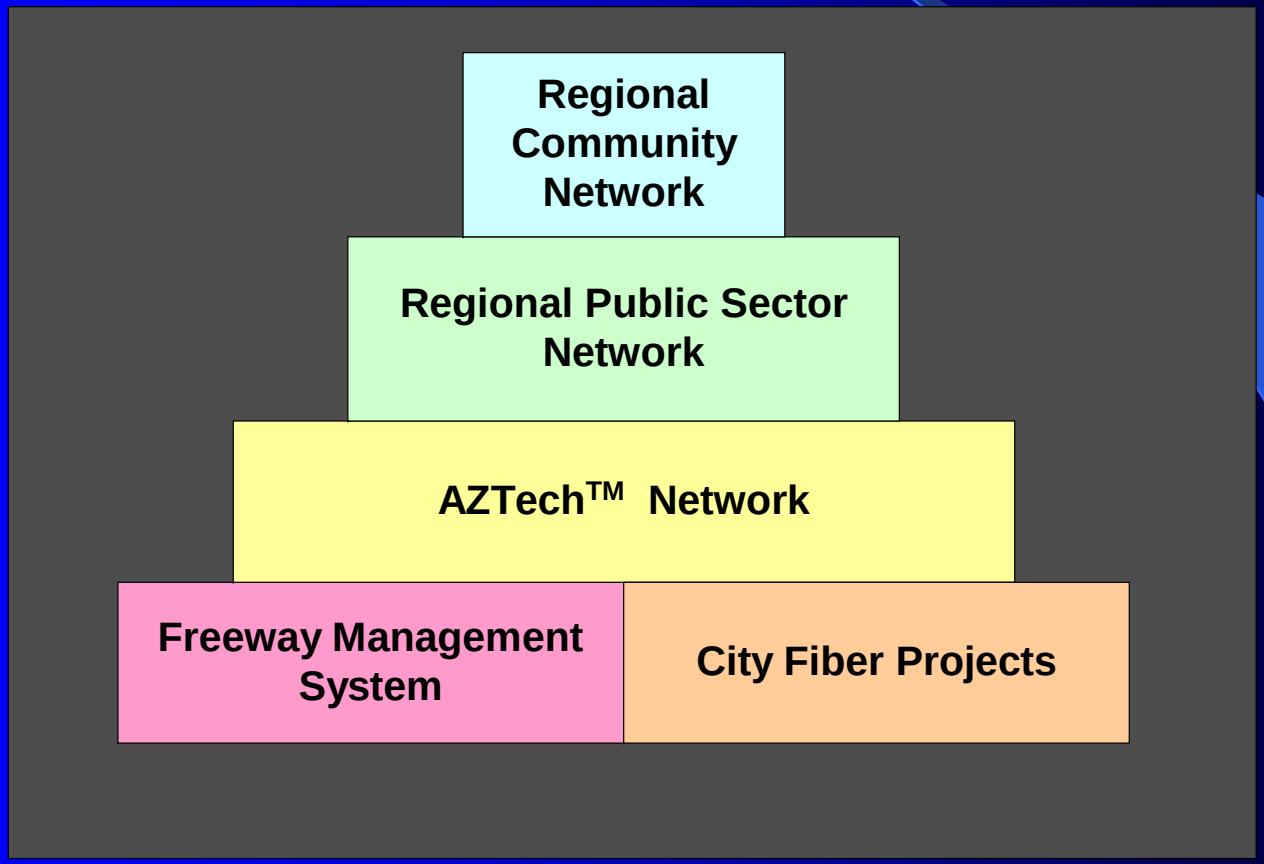
Telecommunications for ITS

- Goal: Regional Community Network (RCN) – a fiber backbone primarily for ITS
- ADOT TOC to serve as the regional hub
- Individual cities and towns are building fiber backbones linked to freeway backbone
- Infrastructure and resource sharing

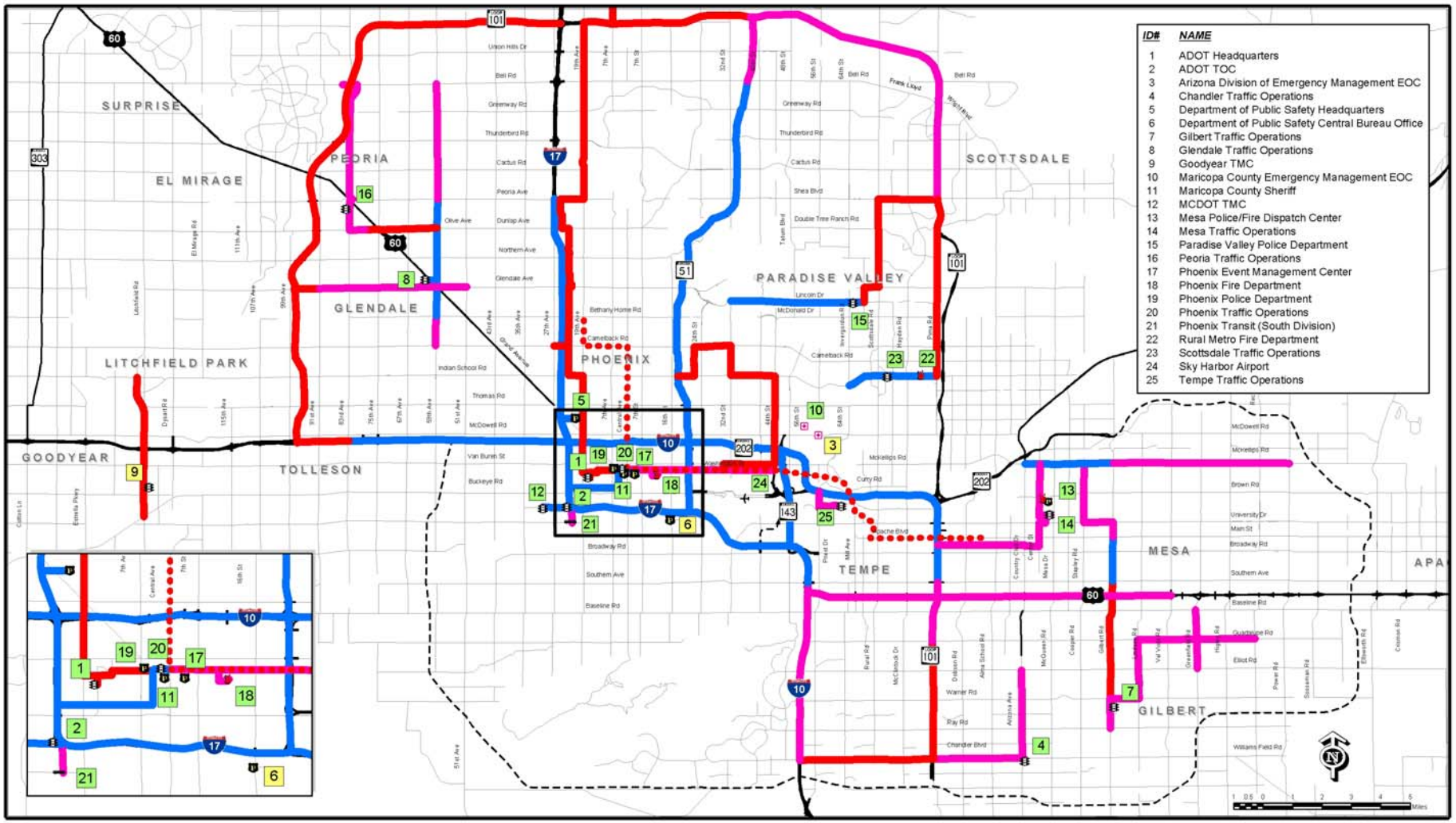
RCN Concept


Wickenburg (#27)
WAN Extension
El Mirage (#6)
Surprise (#24)
Youngtown (#28)
Glendale (#11)
Peoria (#19)
Litchfield Park (#14)
Buckeye (#2)
Goodyear (#12)
Tolleson (#26)
Avondale (#1)
Maricopa County (#16)
WAN Extension
Gila Bend (#8)
Sub-Ring #1
(West of I-17 Region)
RPSN Optical Repeater Site
Cave Creek (#4)
Carefree (#3)
Deer Valley Airport (#32)
Phoenix (#20)
ADOT (#30)
MAG (#15)
Paradise Valley (#18)
Scottsdale (#23)
Salt River (#22)
WAN Extension
Fountain Hills (#7)
Mesa (#17)
Apache Junction (#29)
WAN Extension
Tempe (#25)
Sub-Ring #2
(Northeast Region)
Gilbert (#10)
Chandler (#5)
WAN Extension
Gila River (#9)
Guadalupe (#13)
Queen Creek (#21)
Sub-Ring #3
(Southeast Region)

Basic Framework for RCN



Estimated Fiber Deployment by 2007



AZTech™ Communication Master Plan
Fiber Deployment by the End of 2007

RCN Implementation Status

- Funds available = MAG CMAQ $1.6m
- Using a federal grant ADOT has completed the RCN Initial Deployment Area -- a subset of Sub-Ring#1
- $1.6 million to be used for implementation
- Federal requirement >> Systems Engineering Analysis for all ITS projects
- SEA project planned to be launched by MAG shortly

Thank you!