

Mid-Region Metropolitan Planning Organization

# Congestion Management Process Toolkit



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The majority of the content of the CMP Toolkit is taken from the Denver Regional Council of Governments "Congestion Mitigation Toolkit." MRMPO would like to thank DRCOG for generously allowing their product to be used in the Albuquerque area.



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## ***Introduction***

The *Congestion Mitigation Process Toolkit* is a resource for transportation agencies and local jurisdictions to identify strategies to reduce traffic congestion. The *Toolkit* offers a range of mitigation strategies that address various locations, situations, and sources of congestion. In addition to reducing congestion, most strategies will help improve air quality and reduce fuel/energy consumption. The *Toolkit* encourages agencies to implement modest, small-scale projects that will reduce traffic delay and increase mobility, perhaps delaying or avoiding higher-cost roadway expansion projects.

Congestion is generally classified as either recurring or non-recurring. Recurring congestion causes relatively predictable daily delays during weekday rush-hour or peak recreational travel periods. Non-recurring roadway congestion results from incidents or other events that cause traffic delays. Examples include crashes, vehicle breakdowns, construction, weather, sporting and musical events, and roadside visual distractions (crash on other side of the highway, wildlife, etc.). Not all strategies outlined in the *Toolkit* are suitable for both form of congestion. Each strategy is discussed in detail to explain the types of benefits that may result from implementation.

The *Toolkit* organizes congestion management approaches into four general categories: 1) Active roadway management; 2) Travel demand management (TDM) and alternative travel modes; 3) Incident management; and 4) Physical roadway capacity. The first three categories fall into general operations and management approaches, which are meant to maximize the existing roadway infrastructure through improved efficiency or alternative travel modes. The final category considers physical changes to the roadway infrastructure. Categorization is purely for organizational purposes and does not imply a limited project scope or overall benefit. Strategies in the same or different categories may overlap. Generalized costs, benefits, implementation timeframe and other factors are included for each strategy. It is typically most beneficial for strategies to be implemented in comprehensive packages rather than alone.

### ***Toolkit Categories***

**1. Active roadway management** strategies usually include implementation of intelligent transportation systems (ITS) infrastructure and operational controls. Strategies or projects include signal timing; installation of traffic management technologies such as cameras, vehicle detectors and variable message signs; and development of traffic management centers (TMCs) to allow for real-time traffic monitoring. This category also includes traffic control assistance strategies (e.g. signing) that do not require physical construction to the roadway.

**2. Travel demand management (TDM) and alternative travel mode** strategies promote and encourage the use of travel alternatives to reduce the demand for single-occupant vehicle trips. Sample projects include transit operational improvements, educational and marketing programs, expansion of transit services, and the provision of bicycle and pedestrian facilities.

**3. Incident management** involves response to non-recurring congestion stemming from roadway crashes. Strategies include incident management plans that articulate and prescribe incident response measures and methods of cooperation between agencies, along with the implementation of specific response measures.

**4. Physical roadway capacity** projects involve construction within a roadway right-of-way. They typically include adding travel lanes and/or improving roads, intersections or alternative mode features. These types of projects are immediately noticeable to the public. All projects should consider and design for all users, including bicyclists, pedestrians, stranded motorists and transit users. Roadway capacity projects generally require lengthy implementation and can often be very costly.

**Location appropriateness**

Some of the strategies contained in the *Toolkit* are best implemented through regional initiatives or are improvements that are only feasible in a very specific set of circumstance. For example, travel demand management programs are regional in nature but could be applied to a specific activity center or destination. These strategies may serve to reduce congestion along a specific corridor, but require regional cooperation (including the participation of the private sector) to implement. Conversely, HOV bypass lanes are a useful means of ensuring high-speed through movement, but are only feasible along Interstates or expressways. The following lists indicate the *CMP Toolkit* strategies that are either regionwide or location-specific

High Priority Regionwide Projects

- Electronic fare collection (transit)
- Telework and flexible schedules
- Ridesharing travel services
- Alternative modes events and programs
- Traffic Management Center
- Incident management plans
- Incident response (Courtesy Patrol)

Medium Priority Regionwide Projects

- Roadway signage improvements (wayfinding)

Location-Specific Strategies

- Ramp meters
- HOV bypass lanes at ramp meters
- New (or converted) HOV/HOT/Truck lanes
- Roundabout intersections

Each strategy page contains a textbox titled **“Notes on Location Appropriateness and Priority Levels for the AMPA.”** For strategies that are best implemented at specific locations, the “Notes” section contains further details on appropriate situations and corridors in the AMPA. Some of the “Notes” sections discuss the types of facilities (regional, community, or neighborhood) for which the strategy may be considered. A description of these facility types is contained below. Consult the CMP Regional Roles map for facility type by CMP corridor. A “Non-CMP Corridors” row refers to the default or general priority level for a given strategy.

Location appropriateness and priority levels indicate where resources should go **first**. Low and medium priority status do not mean that the strategy in question should not be pursued, but that other locations may have needs that are more pressing.

**The CMP Strategies Matrix and the CMP Corridor Regional Roles Map are included at the end of this document serve as additional references in determining the appropriateness of a strategy by location.**

**Notes of regional, community, and neighborhood corridors**

Regional: Principal and Minor Arterials connecting regional activity and employment centers to outlying suburban areas, centers, and rural communities. Regional roads generally feature high speeds (unless passing through a center, rural town, or main street), limited access, high pedestrian use at centers and express transit use along corridors.

Community: Arterials and Collectors connecting rural towns, community activity centers, suburban activity centers, and Downtown. Community corridors provide increased access to local land uses and connecting major neighborhoods and communities. These roads feature moderate speed and access, low transit use in rural areas and high transit and pedestrian use in more urban areas.

Neighborhood: Minor Arterials and Collectors with frequent access connecting residential neighborhoods and neighborhood centers with local destinations. Neighborhood roads are characterized by slower speeds and moderate transit and pedestrian use.

### **Congestion Management Process**

The *Toolkit* is a product of the Congestion Management Process. Federal regulations require that transportation Management Areas – urban areas with more than 200,000 residents – incorporate an “objectives-driven performance-based” CMP into the regional transportation planning process. In practice a CMP is intended to assess the performance of the regional transportation system, identify the sources and extent of congestion, recommend appropriate strategies to manage congestion and improve mobility, and consider the benefits of proposed transportation projects and travel demand management (TDM) programs.

Apart from its utility as a general resource for the region, the strategies contained in the *Toolkit* are integrated into the Project Prioritization Process (PPP) for TIP selection. The PPP is a technical assessment tool that measures the benefits of proposed transportation projects based on a series of mostly quantitative performance measures. Projects which incorporate proven congestion management strategies generate points in the prioritization process; the extent of points awarded is based on the level of priority which a strategy is considered to be for a congested corridor (or a section thereof). The level of priority by corridor can be found in the CMP Strategies Matrix available on the Congestion Management Process page of the MRCOG website.

#### **Requirements of a CMP**

- Identify congested locations
- Determine the causes of congestion
- **Develop and propose mitigation strategies**
- Evaluate the impact of congestion management strategies on recently implemented projects

### **Notes on the Toolkit**

This toolkit is an adaptation of the *Congestion Mitigation Toolkit* produced by the Denver Regional Council of Governments for their region. DRCOG’s document proved to be both comprehensive and accessible and permission was sought to appropriate much of their work. The document was reviewed for applicability for the Albuquerque metropolitan area with input from the CMP committee. Some strategies were removed if deemed inappropriate or unrealistic for the region, while others strategies were added. Cost and timeframe estimates were compiled by DRCOG and it should be made clear that the dollar amounts are variable based on local conditions.

Finally, it should be noted the *Toolkit* is not intended to summarize every potential congestion mitigation strategy. Rather, it presents a series of proven options which may be considered for a particular location or transportation problem. The Toolkit will be revised periodically and new strategies will be added as appropriate.

## I. A. Expanded Traffic Signal Timing and Coordination

### Description

- Enhancements to timing/coordination plans and equipment to improve traffic flow and decrease the number of vehicle stops
- Typical timing plans include two peak periods plus off-peak; expanded timing plans include weekend, incident management, or non-traditional plans related to local travel patterns or major generators

### Applicable locations/situations

- Heavily traveled urban corridors with multiple signalized intersections
- Locations with outdated timing plans and signal equipment

### Cost: *Low to moderate*

- Estimated cost for implementing a signal timing plan is about \$4,000 per intersection. Additional timing plans may cost additional \$1,000 per intersection.

### Timeframe: *Short-term*

- Implementation of an overall traffic signal timing plan can take 6-12 months, including the following phases: data collection, existing conditions model, cycle analysis, plan development, implementation and fine tuning, and benefits analysis and documentation
- Immediate timing changes can be implemented after a site visit to an intersection.

### Benefits

- Fewer vehicle stops and less travel delay
- Reduced air pollution, fuel consumption and travel time
- Increased “capacity” of an intersection to handle vehicles, reduced number of vehicle crashes

### Related strategies

- In some cases existing traffic signals on lower-volume streets may not be warranted. More efficient traffic operations can occur if such signals are removed and stop-signs installed.
- Intersections with low volume late-night traffic could change to flashing operation.

### Other factors or considerations

- Emergency preemption of interconnected traffic signals can have extended impacts on signal timing and coordination and cause extensive travel delay during peak travel periods.
- Inter-jurisdictional cooperation is necessary to ensure optimal use of equipment and a coordinated traffic management approach.
- Any ITS-related enhancements should be coordinated through the Regional ITS Architecture.

### **Notes on Location Appropriateness and Priority Levels for the AMPA**

- The highest priority locations are *regional* facilities (i.e. high-volume roadways that perform a regional mobility function) that are also ITS-designated corridors.
- See CMP Strategies Matrix for priority level by corridor.

## I. B. Traffic Signal Equipment Modernization and Surveillance

### Description

- Modern technology that provides for real-time traffic and transit management, including surveillance from CCTV, vehicle detection stations, and real-time data collection programs
- Adaptive control that allows traffic signals to alter timing in response to immediate traffic flow conditions, rather than at predetermined times
- Transit signal priority system that can extend “green-time” a few seconds to allow buses to progress through an intersection

### Applicable locations/situations

- Intersections and travel corridors with older, actuated signal equipment
- Streets with high transit volumes and bus stop activity

### Cost: *Low to moderate*

- Costs include initial investment of equipment, software, and communication network connections

### Timeframe: *Short to medium-term*

- Purchase and installation can take place quickly, but may depend upon communications infrastructure already being in place.

### Benefits

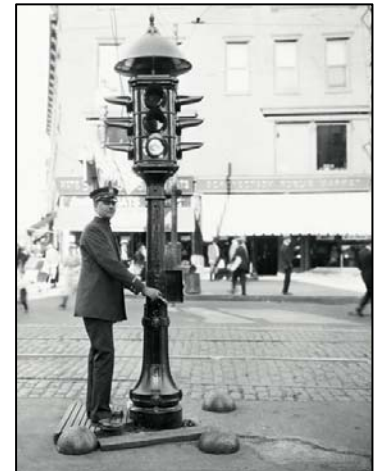
- Operation and serviceability of new equipment from remote locations
- Immediate traffic signal timing response to traffic flow changes
- Quicker repair of malfunctioning traffic signals
- Reduced travel delays

### Related strategies

- New timing coordination plans should be implemented along with modernized equipment.
- In some cases, bus routes or transit stops may be modified to increase ridership in conjunction with the transit signal priority system.
- Appropriate communications infrastructure must be in place for both traffic signal and transit systems.

### Other factors or considerations

- Newly signalized intersections (not on an existing interconnected system) may be favored for new technology instead of replacing existing outdated equipment.
- Any ITS-related enhancements should be coordinated through the Regional ITS Architecture.



### **Notes on Location Appropriateness and Priority Levels for the AMPA**

- The highest priority locations are *regional* facilities (i.e. high-volume roadways that perform a regional mobility function) that are also ITS-designated corridors.
- See CMP Strategies Matrix for priority level by corridor.



## I. C. Traveler Information Services

### Description

- Mechanisms to provide relay information via a range of media to allow travelers to make decisions regarding trip departures, route selection, and travel mode
- Message signs, mobile device applications, or other online services to provide information to the travelling public
- Travel data may be acquired from roadside devices such as Vehicle Detector Station monitoring or traveler information service (travel speeds, etc)

### Applicable locations/situations

- Heavily traveled freeways or arterials with frequent incidents or travel delays
- Locations before major interchanges and route decision-making points

### Cost: *Moderate*

- Costs depend upon communication networks and assigned technologies.
- San Francisco implemented a regionwide traveler information system with an initial investment of \$7 million.
- Colorado DOT spends an estimated \$3 million statewide annually on traveler information-related equipment and network expansion.



Source: [www.roadtraffic-technology.com](http://www.roadtraffic-technology.com)

### Timeframe: *Short to medium-term*

- Means for distributing roadway condition and traveler information are readily available.
- Other means for distributing traveler information that rely on capital investment, new communication networks, and physical rights-of-way can take one to four years to implement.

### Benefits

- Improved traveler decisions based upon pre-trip and en-route information.
- Reduced travel times and follow-up congestion at sites of major incidents.

### Related strategies

- Commercial traveler information services are now available (some are offered at a fee to subscribers).
- In-vehicle data collection, dissemination and vehicle response are soon expected to be mainstream technologies.

### Other factors or considerations

- Roadside (out of vehicle) traveler information systems should take advantage of relationships with new in-vehicle technologies.
- Regional hotline and information services require participation from many agencies

### **Notes on Location Appropriateness and Priority Levels for the AMPA**

- The highest priority locations are *regional* facilities (i.e. high-volume roadways that perform a regional mobility function) that are also ITS-designated corridors.
- See CMP Strategies Matrix for priority level by corridor.

## I. D. Communications Networks

### Description

- Base infrastructure (fiber, telemetry, etc.) required to support all operational activities.
- Communications networks that allow remote roadway surveillance and system control from a TMC and provision of data for immediate management of transportation operations and distribution of information

### Applicable locations/situations

- Locations of new roadway construction or major capital improvement projects
- High volume locations or roadways with safety considerations where an incident may be particularly disruptive to regional travel.
- Roadways identified for comprehensive ITS implementation

### Cost: *Moderate*

- Communication networks are not low-cost or high-profile items, but essential to get the most efficiency and capacity out of the existing transportation system.
- Costs can be reduced when done in conjunction with a large-scale construction project.

### Timeframe: *Medium to long-term*

- Small-scale items and opportunistic expansion can be done quickly. Larger-scale regional network components require more time for planning and funding.

### Benefits

- Increased capability for regional-level coordination of operations and traveler information.

### Related strategies

- Supplementing fiber optics communications with wireless technologies may prove beneficial.
- Most active management strategies described in the toolkit require the support of roadway surveillance and communications infrastructure.

### Other factors or considerations:

- Planning and implementation must account for both existing and potential future technologies.
- Resource sharing and partnering with other users should be pursued.

### **Notes on Location Appropriateness and Priority Levels for the AMPA**

- The highest priority locations are *regional* facilities (i.e. high-volume roadways that perform a regional mobility function) that are also ITS-designated corridors.
- See CMP Strategies Matrix for priority level by corridor.

## I. E. Ramp Meters

### Description

- Traffic signal device that controls the stream of vehicles entering a freeway
- May include bus or high-occupancy vehicle bypass lanes
- May require ramp widening to avoid extensive vehicle queuing

### Applicable locations/situations\*

- Existing high-volume freeway and expressway facilities
- On-ramps with heavy platoons of vehicles released from arterial/ramp intersections

### Cost: *Low to moderate*

- Equipment and ramp modification expenses are relatively low.
- It is most efficient to install ramp meter equipment in conjunction with a freeway construction or maintenance project.

### Timeframe: *Moderate-term*

- Implementation of ramp metering requires time for planning, engineering and construction phases

### Benefits

- Improved speed and travel times on freeway
- Increased traffic volumes and vehicle throughput
- Decreased crash rate on the freeway

### Related strategies

Installation of a vehicle detector at the top of the ramp and active management will help avoid queues extending to the arterial street.

### Other factors or considerations

- Limited adjacent rights-of-way may prevent widening of on-ramp or extension of merge area.
- Ramp meters can be controversial due to the perceived inconvenience and negative impacts on some vehicles.
- Vehicle queues backing up the ramp onto surface streets may disrupt intersection operations.



Source: [www.vastrek.org](http://www.vastrek.org)

### **Notes on Location Appropriateness and Priority Levels for the AMPA**

- Ramp meters are only feasible at certain *specific locations*.
- Priority Level:
  - Medium: Interstate 25, Interstate 40
  - Low: Paseo del Norte
  - *Not appropriate* for all other locations

## I. F. Access Management

### Description

- Planning and design practices that identify existing and future land use and arterial access points to maximize traffic safety and mobility
- Strategies include medians, turn lanes, side/rear access points between businesses, shared access, and local land use ordinances to control access

### Applicable locations/situations

- Future or existing high-volume arterial corridors with a large number of commercial developments and existing/potential “curb-cuts” or driveways

### Cost: *Low to high*

- Costs and complexity of strategies can vary widely and may depend on whether access controls are implemented before development occurs or as a retrofit.

### Timeframe: *Short to medium-term*

- Some access management strategies can be implemented quickly if there are cooperating property owners. Major access management plans require a greater amount of time for planning, negotiation and ultimate benefits related to the full anticipated future development. Capital construction efforts (e.g. medians) take a moderate amount of time.

### Benefits

- Reduction in crashes along a roadway
- Improved roadway capacity, greater vehicle throughput
- Decreased corridor delay

### Related strategies

- Access management is enhanced by parking lot/building site designs that incorporate adequate exit/entrance capacity, side or rear access points and walking and transit features.
- Comprehensive local growth management planning should incorporate access management.

### Other factor or considerations

- Limiting accessibility to/from developments may bring strong opposition.
- Increased vehicle delays may occur on driveway or side street exits onto the primary road.
- Physical roadway limitations like restricted left turns and minimized points of access may negatively impact adjacent commercial development.

### **Notes on Location Appropriateness and Priority Levels for the AMPA**

- The highest priority locations are *regional* facilities (i.e. high-volume roadways that perform a regional mobility function).
- Priority level:
  - Medium: Corridors with existing access policies – no additional access management effort required.
  - Low: Community facilities that encourage retail and pedestrian activity.

## I. G. Roadway Signage Improvements

### Description

- Adequate or additional signage that facilitates route-finding and the decision-making ability of roadway users
- Signs with clearer/larger lettering that can be read from a greater distance
- Consolidation of signs or elimination of unnecessary signage

### Applicable locations/situations

- Intersections or off-ramps lacking adequate directional signage or visible route markers
- Major intersecting streets or freeways
- Locations with a high percentage of visiting drivers - “design for the unfamiliar driver”
- Area in which roadway realignment or recent change in access has occurred

**Cost:** *Low*

### Timeframe: *Short-term*

- Production of signs and installation can occur shortly after site visits and design of new signing plans. Design should follow the guidance of the *Manual on Uniform Traffic Control Devices* (MUTCD).

### Benefits

- Reduced level of driver uncertainty and fewer erratic driving maneuvers
- Reduced delay for upstream approaching vehicles
- Psychological encouragement for unsure motorists
- Less chance of crashes caused by sudden lane changes, extremely slow-moving vehicles, or sudden stops

### Other factors or considerations

- Signs should be installed at highly visible locations.
- Too many signs or sign clutter should be avoided.

### Related strategies

- Variable message signs and other ITS applications can provide real-time or temporary information to travelers
- Emerging in-vehicle technologies that provide real-time traveler information and route-finding capabilities

### **Notes on Location Appropriateness and Priority Levels for the AMPA**

- Roadway signage improvements are appropriate as a regionwide or *location-specific* strategy.
- Priority Level: Roadway signage improvements are a *medium* priority strategy.

## I. H. Traffic Management Center (TMC)

### Description

- Facility serving as a hub for transportation management where information from local networks and other sources is collected and distributed
- Must include operational protocols that define specific responses and actions based on the information at hand (e.g. media notification, sign messages, maintenance crew direction, etc.)

### Applicable Locations/Situations

- Jurisdictions that own equipment, collect data, and manage traffic
- A strategic, centralized location serviced by major communication lines

### Cost: *Moderate*

- Design and construction of a TMC and purchase of all necessary equipment can range in cost greatly depending on the scope of the center and facility costs.
- Annual operational budgets (including personnel) must be developed separately.

### Timeframe: *Medium to long-term*

- Organizing partner agencies, reaching consensus on key issues and negotiating memoranda of understanding may take a moderate- to long-term commitment.

### Benefits

- Increased roadway safety through faster detection and response to incidents or equipment malfunctions
- Fewer travelers impacted by road closures or incidents
- Simultaneous management of ITS applications
- Increased efficiency of operations personnel
- Ability to coordinate/communicate with other TMCs

### Related strategies

- Most of the active roadway management strategies mentioned in this section of the toolkit are key components of an effective traffic management center.
- Methods for notifying long distance travelers of advisories before their arrival in the region should be implemented.

### Other factors or considerations

- A TMC must be fully staffed to effectively monitor and manage critical transportation infrastructure.
- Local traffic management entities must be willing participants with a TMC to ensure its success.

### **Notes on Location Appropriateness and Priority Levels for the AMPA**

- This strategy is most applicable at a *regionwide* level.

## II. A. Fixed Guideway Transit Travelways and Dedicated Transit Lanes

### Description

- Exclusive guideways (e.g. light rail, heavy/commuter rail) and street travelways (e.g. bus rapid transit (BRT)) devoted to increasing the person-carrying capacity within a travel corridor (see section IV. G. for information on HOV lanes)
- Roadway lanes reserved for bus only travel

### Applicable locations/situations

- Densely developed urban corridors or station areas
- Rights-of-way adjacent to severely congested freeways or arterial streets

### Cost: *Moderate to high*

- Implementation cost will vary, but cost could be high due to acquisition of rights-of-way, materials, and infrastructure.

### Timeframe: *Medium to long-term*

- Development and implementation of a rail project is a major undertaking that can take 10 or more years from initial planning phases through NEPA studies to an opening day.
- On-street conversion of travel lanes to BRT may not take quite as long.

### Benefits

- More consistent and sometimes faster travel times for transit passengers versus driving
- Increased person throughput capacity within a corridor due to people switching from single-occupant motor vehicles to transit
- Stimulation of efficient mixed-use or higher-density development

### Related strategies

- Transit-oriented developments (TODs) adjacent to stations stimulate additional use of rail and bus services.
- Parking management, fare collection, and other technological transit applications are important elements.
- Transportation demand management services and programs to encourage more transit use.

### Other factors or considerations

- Complex project funding arrangements may be required.
- Fare structure and discount mechanisms are important for inducing motorists to switch to transit.

### **Notes on Location Appropriateness and Priority Levels for the AMPA**

- Priority Level:
  - High: Existing Rapid Ride routes or proposed BRT routes
  - Medium: ABQ Ride routes with high frequency and high ridership service
  - Low: Low ridership or low frequency routes
- See CMP Strategies Matrix for priority level by corridor.

## II. B. Transit Service Expansion (more vehicles, extended/new routes)

### Description

- New bus routes or extension of existing route service
- Run buses more frequently (shorter headways between buses) on existing routes

### Applicable locations/situations

- Areas with growing concentrations of residential, commercial, and/or business activity
- Existing bus routes that are operating near capacity
- Route locations that offer increased access to major transit stations

### Cost: *Low to moderate*

- Increasing service frequency via shorter headways and more buses redeployed from an existing fleet is low cost. Creating a new transit route requiring new buses is much more costly.

### Timeframe: *Short-term*

- Most minor changes to transit service involve a short-term process that may require public notification; fleet expansion and hiring new personnel would take longer.

### Benefits

- Improved convenience and travel reliability for passengers
- Reduced traffic congestion due to trips switched from driving alone to transit
- Increased travel options and expansion of transit coverage area
- Provide additional transportation capacity without building new roadways

### Related strategies

- Transit queue-jump lanes save time.
- Use of automated vehicle location (AVL) technology enables provision of real-time traveler information.
- Developments designed with transit-friendly features and connections to and from transit stops make bus travel more convenient.

### Other factors or considerations

- New or modified service must be marketed to attract additional riders.
- Maintenance of increased vehicle fleet must be accounted for.

### ***Notes on Location Appropriateness and Priority Levels for the AMPA***

- Transit service expansion is a *high* priority along regional transit facilities (frequency improvements) and in growing areas in need of additional transit service.
- Service expansion is a *medium* priority general strategy.
- See CMP Strategies Matrix for priority level by corridor.



## II. C. Transit Vehicle Travel Information

### Description

- Communications infrastructure, GPS technology, vehicle detection/monitoring devices, and signs/media/Internet sites for providing information to the public such as the arrival times of the next vehicles
- Mobile device applications or websites that provide real-time transit information to users.

### Applicable locations/situations

- Transit stations and major bus stops.
- Major event and activity venues adjacent to transit stations.

### Cost: *Moderate*

- Costs vary based on communication networks, changing technologies, and the number of fleet vehicles to be equipped.

### Timeframe: *Medium*

- Time is required for detailed planning, design, and funding procurement.

### Benefits

- More satisfied customers and increased ridership due to enhanced and reliable information sources
- Improved operations and management of transit service

### Related strategies

- Integration of transit information with that provided to motorists provides a more comprehensive base of materials for travelers.
- New or expanded transit services can be marketed in conjunction with new information outlets.

### Other factors or considerations

- Reliability and accuracy of systems are closely scrutinized by transit agencies.
- This strategy may be more efficient to implement when transit stations are being designed and constructed.

### **Notes on Location Appropriateness and Priority Levels for the AMPA**

- Transit vehicle travel information is a *high* priority along regional transit facilities or locations with premium service (e.g. Bus Rapid Transit including ABQ Ride's Rapid Ride system).
- This strategy is a *medium* priority some locations and low priority for others depending on ridership levels.
- Transit vehicle travel information is also a *medium* priority if pursued on a regionwide basis.
- See CMP Strategies Matrix for priority level by corridor.

## II. D. Transit Intersection Queue-Jump Lanes and Signal Priority

### Description

- Additional travel lane at a signalized intersection that allows buses to proceed via their own “green-time” before other vehicles
- Done by restriping within existing road footprint or through additional right-of-way acquisition

### Applicable locations/situations

- Heavily traveled corridors with multiple traffic signals and frequent transit stops
- Locations where a bus may need a “head start” to merge into or cross general-purpose lanes of traffic

### Cost: *Low to moderate*

- Installation and operation cost of queue jump lane and signal equipment is low.
- Constructing a new designated transit lane has a higher cost.

### Timeframe: *Short-term*

- All phases—planning, engineering and implementation—for a queue-jump lane can be reasonably completed in less than one year.
- Longer time period is needed if new lane must be constructed.

### Benefits

- Reduced bus travel delays due to traffic signals and traffic congestion
- Improved operational efficiency of transit service within a corridor
- Increased ridership and reduced congestion due to time savings
- Safer driving conditions for all vehicles due to fewer severe and sudden lane changes by buses



### Related strategies

- Queue-jump lanes must be considered when signal coordination plans are being prepared.

### Other factors or considerations

- Newly constructed queue-jump lanes are costly if right-of-way must be obtained. Efforts should be made to incorporate the lane into the existing roadway.
- Enforcement at transit queue-jump locations is important to ensure safety and proper operation.
- If the queue-jump lane replaces on-street parking meter spots, cities may receive less parking revenue.

### Notes on Location Appropriateness and Priority Levels for the AMPA

- Priority Level:
  - High: Existing Rapid Ride routes or proposed BRT routes
  - Medium: ABQ Ride routes with high frequency and high ridership service
  - Low: Low ridership or low frequency routes
- See CMP Strategies Matrix for priority level by corridor.

## II. E. Electronic Fare Collection

### Description

- Equipment that allows riders to electronically pay a transit fare by using credit, debit and magnetic fare cards

### Applicable locations/situations

- Buses in the transit agency vehicle fleet

### Cost: *Moderate to high*

- The cost to purchase and implement electronic fare collection equipment can be high depending on the technology used.
- An initial surge in the maintenance and repair of electronic fare equipment can be expected due to the need for highly-trained personnel.

### Timeframe: *Medium-term*

- It is estimated that a full deployment of an electronic fare payment system could take from three to five years

### Benefits

- Improved service efficiency, passenger convenience and passenger loading time
- Increased ridership
- Acquisition of more accurate and comprehensive ridership and trip data
- Improved analysis and forecasting of trip ridership patterns and fare structure impacts
- Reduced overall operating cost of fare collection and processing
- Increased revenue through less fare evasion and greater accountability

### Related strategies

- Future technology and equipment may allow fare payment media to be used as general-purpose debit cards for other types of purchases.

### Other factors or considerations

- Integration with all forms of transit service in a region should be pursued.
- Prepaid electronic payment options may create confusion if there is a complex fare structure. Fair structures may need to be simplified to ensure users pay appropriate fares.
- Current fare payment systems may still be needed for passengers not willing to use electronic payment technology.

### **Notes on Location Appropriateness and Priority Levels for the AMPA**

- Electronic fare collection is a medium priority regional strategy.
- It is a high priority along regional transit facilities or locations with premium service (e.g. Bus Rapid Transit including ABQ Ride's Rapid Ride system).

## II. F. Park and Ride Facilities

### Description

- Parking lots or formal transit facilities where commuters can leave their vehicles behind and access public transit

### Applicable locations/situations

- High ridership transit corridors
- Suburban settings with too little density for local transit service but can generate enough transit users in a concentrated location to make transit service both efficient and beneficial in terms of air quality and congestion reduction
- Locations upstream of congestion in order to reduce congestion and provide easy access to transit users.

### Cost: *Low to Moderate*

- Costs vary based on the size of the facility and the level of services provided

### Timeframe: *Medium-term*

- The construction of formal facilities with rider services requires a longer timeframe than simple surface-level parking lots; however, such facilities may generate greater ridership.

### Benefits

- Improved convenience for transit users
- Reduced congestion and emissions due to fewer vehicle trips on roadways

### Related strategies

- Travel demand management programs that encourage commuting through alternative forms of transportation
- Expanded transit service
- Park and ride facilities can be paired with commercial and housing zones through transit-oriented development
- Transit vehicle travel information systems



### Other factors or considerations

- Projecting long-term use and incorporating station designs that are capable of expansion as demand grows
- Maintenance costs

### **Notes on Location Appropriateness and Priority Levels for the AMPA**

- Priority level depends on proximity to regional or high ridership transit routes or corridors where transit service expansion is likely near-term.
- See CMP Strategies Matrix for priority level by corridor.

## II. G. Parking Management

### Description

- Initiatives designed to provide, control, regulate, or restrict parking space
- Strategies for limiting parking supply include: redeveloping surface-level parking, removing on-street parking, converting on-street parking to transit-only lanes, time of day restrictions, and parking structures serving major activity centers
- Replace surface-level parking with structures to encourage compact/mixed-use development
- Utilize on-street parking as means of reducing speed and improving pedestrian safety in activity centers or Main Street communities.

### Applicable locations/situations

- Activity centers and locations where parking is in short supply
- Corridors where right-of-way could be converted to general purpose or dedicated bus lanes
- Locations where mode shift occurs and with high levels of pedestrian activity.

### Cost: *Low to Medium*

- Costs vary greatly depending on the chosen strategy.

### Timeframe: *Medium-term*

- Repurposing on-street parking for travel lanes may require extensive planning and participation from community stakeholders. Constructing parking facilities requires private investment or a deliberate public process. Pursuing land use changes may take many years to produce meaningful impacts, however those changes may be more sustainable long-term.

### Benefits

- Reduced single occupant vehicle trips
- More efficient flow of traffic/decreased corridor delay
- Redevelopment of underutilized vacant surface lots

### Related strategies

- Land use practices prescribing less obtrusive parking practices
- Improved transit service
- Complete Streets initiatives
- Travel demand management programs that encourage carpooling, transit ridership, and non-motorized travel



### Other factors or considerations

- Backlash/cooperation from business community over perceived loss of business access

### **Notes on Location Appropriateness and Priority Levels for the AMPA**

- *High* priority strategy where pedestrian and transit activity is encouraged: around activity centers; Main Street communities; locations where on-street parking could be removed for a transit-only lane
- Parking management is a *low* priority general strategy
- Inappropriate to introduce on-street parking along high-speed or limited access locations
- See CMP Strategies Matrix for priority level by corridor.

## II. H. Telework and Flexible Work Schedules

### Description

- Program or adopted policies that allow an employee to work from home
- Employer policies that permit employees to work a compressed work week and take a day off (e.g. work 40 hours in four days or 80 hours in nine days)

### Applicable locations/situations

- Workplaces that perform tasks or services that can be completed from remote locations (e.g. via computer or Internet)
- Workplaces with extended daily hours of operation, allowing employees to work 9 to 10 hours in a day

### Cost: *Low*

- Very little initial cost is attributed to the employer and the employee.

### Timeframe: *Short-term*

- DRCOG offers consulting through its RideArrangers program and advertises that a telework program can be established and implemented in less than three months.

### Benefits

- Fewer drivers during morning and afternoon rush hours
- Reduced vehicle miles traveled due to employees working at home or working fewer days at the workplace
- Increased employee productivity, improved employee retention and recruitment, reduced overhead costs and lower demand for physical office and parking space
- Decreased commuting time and expenses for employees

### Related strategies

- Telework participants may also be interested in alternative travel mode services on days in which they do commute to the workplace.

### Other factors or considerations

- Telework is suitable only for select employees with applicable job responsibilities.
- Employee accountability and consistent communication are necessary to ensure a successful program.
- Employers must establish/install information technology software, hardware and protocols.

### **Notes on Location Appropriateness and Priority Levels for the AMPA**

- Telework and flexible scheduling initiatives are appropriate as a *regionwide* strategy or may be focused in major activity centers.
- Priority Level: Medium

## II. I. Ridesharing Travel Services (Carpool, Vanpool, Schoolpool)

### Description

- Programs that encourage and facilitate two or more people sharing a ride in a car or van.
- May be operated by a third-party public agency, private enterprise (e.g. SECA Vanpools), individual workplace, or business/office park.

### Applicable locations/situations

- Areas with a high concentration of employees working at one worksite or a group of workplaces
- Schools with a large number of students that are not served by school buses
- Residential areas outside transit service districts or with a high number of long-distance commuters

### Cost: *Low to moderate*

- Ridesharing matching services are relatively inexpensive programs to start and maintain. Vanpool programs cost more because of the vehicle purchases and maintenance.

### Timeframe: *Short-term*

- Large or small-scale programs can be started in a short timeframe.

### Benefits

- Fewer single-occupant vehicles on the road and reduced overall traffic congestion
- Lower commuting costs
- Improved safety and reduced congestion around schools

### Related strategies

- Cross-promotion of complementary transit services can result in greater overall benefits.
- Programs to encourage carpooling to transit stations may have merit.
- Services that provide an emergency ride home to car/vanpoolers (e.g. Guaranteed Ride Home programs) should be provided.
- Employer-based “trip reduction managers” can operate programs geared toward their employees.

### Other factors or considerations

- The personal convenience of a private vehicle is often a deterrent to carpooling.
- Complementary facilities such as high-occupancy vehicle (HOV) lanes that offer carpools a less congested roadway should be cross-marketed.
- Provision of preferential carpool parking spaces offers a further incentive.
- Education of the public of the true costs of commuting and auto ownership is important.

### **Notes on Location Appropriateness and Priority Levels for the AMPA**

- Ridesharing travel services are appropriate as a *regionwide* strategy or may be focused in major activity centers.
- Priority Level: Medium

## II. J. Alternative Travel Mode Events and Programs

### Description

- Variety of events that promote, encourage and educate people about alternative travel modes (e.g. Bike to Work Day, employer transportation fairs, or bicycle safety education programs)
- Programs that provide free or low-cost transit services or other incentives

### Applicable locations/situations

- Areas with a high concentration of employees working at one worksite or a group of

### Cost: *Low*

- Cost can be relatively low, depending on the level of participation from employers and sponsors.

### Timeframe: *Short-term*

### Benefits

- Fewer single-occupant vehicles on the road and less overall traffic congestion
- Lower commuting costs

### Related strategies

- Cross-promotion of complementary transit services can result in greater overall benefits.
- Provision of additional transit or vanpool service and construction of bicycling facilities offers further encouragement.
- Complementary facilities such as high-occupancy vehicle (HOV) lanes that offer carpools a less-congested roadway.



### Other factors or considerations

- A significant effort may be required to secure sponsorships and media attention to help gain participation in events.
- Education of the public of the true costs of commuting and auto ownership is important.

### **Notes on Location Appropriateness and Priority Levels for the AMPA**

- Alternative travel modes events and programs is a *regionwide* strategy, although programs may be focused in major activity centers.
- Priority Level: High



## II. K. Off-Street Multi-Use Trails (pedestrian and bicycle)

### Description

- Off-street facilities for use by pedestrians, bicyclists and other “non-auto” users. Also popularly known as bike paths, bike trails, shared-use/multi-use paths, etc.

### Applicable locations/situations

- Along drainage-ways of creeks or rivers, utility easements or parallel to major highways
- Locations that provide access to popular destinations such as transit stations, employment centers, parks, schools and entertainment districts

### Cost: *Low to moderate*

- Cost depends on right-of-way availability and other construction constraints.

### Timeframe: *Medium-term*

- New trail facility sections may take from one to four years to complete. An entire trail system will take much longer.

### Benefits

- Lower commuting costs
- Fewer single-occupant vehicles on the road and less overall traffic congestion



### Related strategies

- Road construction projects should consider interaction with off-street multi-use trails.
- Access management practices that reduce the number of driveways across trails or parallel to roadways that reduce the risk for car-bicycle crashes.
- Bicycling promotion events can encourage use of facilities.

### Other factors or considerations

- Underpasses or overpasses of major barriers (e.g. highways and railroads) are critical.
- See the American Association of State Highway and Transportation Officials (AASHTO) *Guide for the Development of Bicycle Facilities* for more information on design considerations for off-street facilities.

### **Notes on Location Appropriateness and Priority Levels for the AMPA**

- Priority level depends on purpose and length of the facility.
- Projects that complete gaps in trail network are considered *high* priority
- Corridors with existing facilities are considered *medium* priority in recognition of need for ongoing maintenance and improvements.
- Off-street multi-use trails are *medium* priority as a general strategy.
- See CMP Strategies Matrix for priority level by corridor.

## L. On-Street Bicycle Treatments

### Description

- Designated areas on streets for bicycles—either separated from (bike lanes) or shared with (shoulders, wide curb lane) motor vehicle traffic
- Usually delineated or separated with pavement markings

### Applicable locations/situations

- Roadways that are part of a comprehensive local or regional bikeway or bicycle route system
- Locations that provide access to popular destinations such as transit stations, employment centers, parks, schools, and entertainment districts

### Cost: *Low to moderate*

- Cost depends on whether facility can be marked within the existing roadway footprint or if new construction is required.

### Timeframe: *Short to medium-term*

- New facilities may take a short time for pavement markings or a few years for construction.

### Benefits

- Lower commuting costs
- Fewer single-occupant vehicles on the road and less overall traffic congestion
- More comfortable space on roadway and improved safety for bicyclists

### Related strategies

- Road construction projects should consider on-street bicycle treatments.
- Interaction with connecting off-street multi-use trails should be considered.
- Bicycling promotion events can encourage use of facilities.

### Other factors or considerations

- Signs and markings for short segments where the pavement narrows (e.g. on an underpass or bridge) should be considered.
- Conflict points at intersections and on approaches to locations with weaving motor vehicle traffic should receive special attention.
- Adjacent on-street parking can impact bicycle lanes.
- See the AASHTO *Guide for the Development of Bicycle Facilities* for more information on design considerations for off-street facilities.



### **Notes on Location Appropriateness and Priority Levels for the AMPA**

- Projects that complete gaps in street network are considered *high* priority
- Corridors with existing facilities are considered *medium* priority in recognition of need for ongoing maintenance and improvements.
- On-street treatments trails are *medium* priority as a general strategy.
- See CMP Strategies Matrix for priority level by corridor.

### III. A. Incident Management Plans (IMP)

#### Description

- Operational plans that define roles, rules, procedures, traffic diversion routes, and protocols to be followed by agencies and personnel in the event of an incident
- Regional effort to respond to nonrecurring congestion.

#### Applicable locations/situations

- Regionwide programs
- Major travel corridors with multiple emergency, jurisdiction, law enforcement, and transportation responders
- Highways with limited shoulder width, construction zones, locations with frequent incidents

#### Cost: *Low to moderate*

- IMPs are inexpensive unless significant new equipment is required.

#### Timeframe: *Short-term*

- An IMP can be completed in four to six months and is immediately ready for implementation.
- Routine updates to IMPs are required.

#### Benefits

- Reduction in travel delay due to incidents
- Increased roadway safety during and after an incident
- Improved emergency response time and information distribution
- Quicker clearing of crash scenes and prompt cleaning of material spills
- Predetermined communication methods and vehicle diversion/detour routes

#### Related strategies

- Traffic signal timing and coordination plans along predetermined diversion/detour routes
- Variable message signs and other traveler information devices to alert oncoming traffic
- Training for IMP participating agencies and staff
- Development of a regional IMP, which combines all existing corridor-level IMPs into one document, to provide greater awareness, functionality and efficiency

#### Other factors or considerations

- Emergency/first responders must participate in the preparation of IMPs. New staff should be educated about IMP protocols.
- Failure to follow IMP protocols could result in additional vehicle delays and possible safety hazards.
- Periodic reviews of IMP use and protocols should be conducted.

#### **Notes on Location Appropriateness and Priority Levels for the AMPA**

- Incident Management Plans are a *regionwide* activity, although such plans may have a particularly significant impact on and may dedicate special attention to particular corridors and facilities (e.g. river crossings and Interstates).
- Priority Level: High

### III. B. Courtesy Patrol (incident response)

#### Description

- Service for to stranded freeway travelers to assist with vehicle breakdowns, stalls, and crashes

#### Applicable locations/situations

- Regionwide programs
- Freeways with heavy traffic volumes and/or documented history of incidents or regional facilities with limited shoulder width
- Major construction zones

#### Cost: *Low*

- The estimated cost for the existing freeway courtesy patrol program in the Denver metro is \$2 million annually, covering approximately 100 miles

#### Timeframe: *Short-term*

- Development of a courtesy patrol program from conceptual planning to in-the-field assistance can take from one to two years. An even shorter time is required to expand existing service.

#### Benefits

- Reduced vehicle delay for traffic affected by an incident; subsequent travel time savings
- Fewer secondary crashes
- Greater sense of security for motorists and reduced demand on law enforcement for non-emergencies

#### Related strategies

- Traveler information devices (stationary or portable) can provide real-time traffic information to motorists upstream of an incident.
- Expanded communication and surveillance capabilities allow regional traffic management centers to detect incidents, coordinate a response and quickly inform the traveling public and media.
- A TMC can assist in coordination and dispatch of courtesy patrol vehicles



Source: [www.nmshtd.state.nm.us](http://www.nmshtd.state.nm.us)

#### Other factors or considerations

- Marketing is necessary to promote courtesy patrol services and benefits.
- Centralized or coordinated dispatch is most efficient.

#### **Notes on Location Appropriateness and Priority Levels for the AMPA**

- Courtesy Patrols are a *regionwide* activity, although such programs may have a particularly significant impact on and may dedicate special attention to particular corridors and facilities (e.g. river crossings and Interstates).
- Priority Level: High

## IV. A. Intersection Turn Lanes (New or Improved)

### Description

- Additional left-turn or right-turn lanes that separate turning vehicles from through-traffic
- Extending length of existing turn lanes to increase space for queues

### Applicable locations/situations

- Intersections with a high number of turning vehicles and/or subsequent rear-end crashes
- Intersections with available right-of-way adjacent to the roadway
- Corridors where combined turn lanes and transit lanes could be implemented

### Cost: *Low to moderate*

- The cost is relatively low compared to major highway projects, depending on right-of-way needs.

### Timeframe: *Medium-term*

- Agencies must be sure to plan for possible time needed to obtain right-of-way.

### Benefits

- Greater number of vehicles can pass through the intersection in given amount of time, resulting in a lower level of travel delays and stopped time
- Can reduce the likelihood of rear-end crashes

### Related strategies

- Signal timing must be coordinated with neighboring signalized intersections.
- Installation of traffic signal or ITS communication equipment should be done at the time of construction.
- Combine right-turn lanes with queue-jump facilities or transit-only lanes

### Other factors or considerations

- Designs must incorporate accommodations for pedestrians – e.g. signal timing for pedestrian crossing phase, refuge islands and crosswalk markings/treatments.
- Turning radii for trucks should be considered.

### ***Notes on Location Appropriateness and Priority Levels for the AMPA***

- Most appropriate on access-controlled or regional facilities that require a balance between throughput and accommodations for turning movements.
- See CMP Strategies Matrix for priority level by corridor

## IV. B. Deceleration Lanes

### Description

- Deceleration lane provided on a freeway just before an exit off-ramp allowing vehicles to reduce speed outside the through-lanes
- Deceleration lanes on non-Interstate facilities allow vehicles that need to reduce speeds to complete turns to do so safely without slowing through-traffic

### Applicable locations/situations

- Areas with a high number of merging or weaving vehicles
- Interstate merging points on steep up-grades
- Freeway approaches to off-ramps that require a significant speed reduction
- Busy intersections with high turning movement counts

### Cost: *Low to moderate*

- Cost is relatively low if right-of-way or bridge widening is not required.

### Timeframe: *Medium-term*

- Right-of-way is an important factor in the time required for implementation and construction.

### Benefits

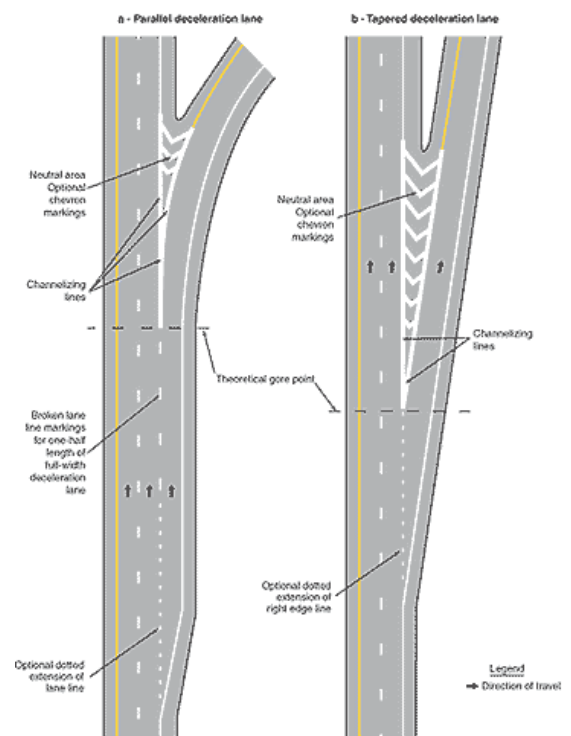
- Slower-moving turning or exiting vehicles are removed from through-lanes resulting in fewer delays for upstream traffic
- In certain situations, can greatly reduce delays (caused by braking) for upstream vehicles during peak traffic flow periods

### Related strategies

- Signs to alert drivers to the availability of deceleration lanes can greatly increase the proper use of these lanes.

### Other factors or considerations

- Some drivers may use deceleration lanes inappropriately during traffic delays and cause additional problems for vehicles attempting to use deceleration lanes for upcoming turns.



Source: [www.ops.fhwa.dot.gov](http://www.ops.fhwa.dot.gov)

### Notes on Location Appropriateness and Priority Levels for the AMPA

- Most appropriate on access-controlled high speed facilities that facilitate regional movement.
- Deceleration lanes are *low* priority on community and neighborhood facilities.
- See CMP Matrix for priority level by corridor

## IV. C. Freight Movement Strategies

### Description

- A range of strategies that improve freight travel options or coordination
  - Freight-specific infrastructure (dedicated truck route, hill-climbing lanes)
  - Freight plans / coordination and logistics
  - Freight facilities (e.g. transfer center, hub facility, rest areas)
- Additional lanes provided for a short distance to allow slower-moving vehicles (e.g. trucks and recreational vehicles) to move to the right and allow faster-moving vehicles to pass
- Upgrade roadway infrastructure to permit the movement of freight/heavy trucks

### Applicable locations/situations

- Identified freight facilities, including Interstates.
- Local freight delivery routes.

### Cost: *Low to moderate*

- Creating hill-climbing lanes is relatively low unless right-of-way, major rock-cuts or environmental mitigation is required.
- Other forms of dedicated infrastructure may cost substantially more.

### Timeframe: *Short to medium-term*

- Freight infrastructure such as hill-climbing lanes with no right-of way needs can be done in a short time. Developing freight hubs or transfer centers may require extensive planning and resources.
- Plans and coordination efforts can be undertaken in relatively short timeframe

### Benefits

- Major travel time savings for vehicles on rural highways, especially those with peak levels of recreational traffic
- Safety benefits due to fewer frustrated drivers making dangerous passing maneuvers
- Increased economic activity
- Reduction in conflicts between motorists and freight vehicles.

### Related strategies

- ITS implementation may enable freight-specific coordination and monitoring.
- Hill-climbing lanes may sometimes feed into deceleration lanes or emanate from acceleration lanes.

### Other factors or considerations

- Impact of freight movement on private vehicle travel.
- Additional maintenance requirements due to freight activity.

### **Notes on Location Appropriateness and Priority Levels for the AMPA**

- Priority level and appropriateness depend on trucking restrictions and primary freight corridors identified in 2035 MTP.
- See CMP Strategies Matrix for priority level by corridor.

## IV. D. Grade-Separated Railroad Crossings

### Description

- Roadway underpass or overpass of a railroad line

### Applicable locations/situations

- Roadways with a high daily volume of traffic
- Locations with either a high frequency of trains crossing the road or long-time durations of multi-car trains blocking the road
- High traffic-generating land uses on either side of the railroad tracks
- Locations with a documented crash rate higher than established thresholds

### Cost: *High*

- Cost is very high to provide either a roadway or railroad bridge or tunnel.

### Timeframe: *Medium to long-term*

- Implementation requires significant negotiation with railroads and local communities.

### Benefits

- Significant reduction in travel delays at high-volume locations
- Likely elimination of car-train crashes
- Decreased noise from train horns/whistles

### Related strategies

- Grade-separations should be planned for in conjunction with new roadways that are built.
- The capability to provide real-time information on message signs regarding the location and time of train crossings has been implemented in other cities.

### Other factors or considerations

- Long approaches of a gradual grade are required for railroad bridges that may require right-of-way.

### ***Notes on Location Appropriateness and Priority Levels for the AMPA***

- Priority level varies depending on the regional role of the affected roadway, the volume of railroad traffic, and the extent of the delay caused
- See CMP Strategies Matrix for priority level by corridor



## IV. E. Grade-Separated Intersections

### Description

- An overpass or underpass for one roadway to avoid intersecting with a cross street

### Applicable locations/situations

- Very high-volume and congested intersections
- Locations with limited right-of-way or physical constraints to expanding the width of the intersection approaches

### Cost: *High*

- Cost depends on the amount of right-of-way needed and the scale of construction impediments.

### Timeframe: *Medium- to long-term*

- Completion of a grade-separated intersection can take from five to 15 years, including planning, engineering, environmental analysis and construction phases.

### Benefits

- Increased capacity and fewer stops
- No stops for through-traffic
- Fewer turning movement conflicts

### Related strategies

- Transit enhancements (e.g. queue-jump lane) may be considered.

### Other factors or considerations

- Appropriate accommodations for bicyclists and pedestrians must be implemented.
- Signing and pavement markings are especially important for roadway users unfamiliar with these types of designs.



Source: [www.southeastroads.com](http://www.southeastroads.com)

### ***Notes on Location Appropriateness and Priority Levels for the AMPA***

- Priority levels are highest where limited-access regional facilities intersect.
- See CMP Matrix for priority level by corridor

## IV. F. Roundabout Intersections

### Description

- An intersection modification that does not use traffic signal or stop sign controls
- Provides continuous movement via entrance and exit lanes to/from a typically circular distribution roadway

### Applicable locations/situations

- Certain congested intersections with many turning vehicles
- Atypical locations with more multiple (>4) roadway approaches

### Cost: *Moderate*

- Cost affected by the amount of right-of-way needed.

### Timeframe: *Medium-term*

- Completion time for a replacement roundabout is related to the amount of planning and public outreach time needed and the right-of-way acquisition process

### Benefits

- Greater capacity than traditional 3- or 4-way intersections in many situations
- Fewer crashes over time and a large reduction in injury and fatality crashes
- Lower air pollutant emissions due to fewer stopped vehicles



Source: [www.thurrock.gov.uk](http://www.thurrock.gov.uk)

### Related strategies

- Access management for the approach roadways and adjacent properties should be done.

### Other factors or considerations

- Detailed evaluations to determine benefits and appropriateness of a roundabout at the specific location must be conducted and presented to the public.
- Appropriate treatments and facilities for bicyclists and pedestrians need to be considered.
- Accommodation of large vehicles (e.g. fire trucks, buses and semi-trucks) important.
- Campaigns to educate the public on how to use a new roundabout are essential.

### **Notes on Location Appropriateness and Priority Levels for the AMPA**

- Roundabouts are a *location-specific* strategy with priority levels depending on the findings of an engineering analysis.
- Priority level is high if engineering analysis demonstrates a clear benefit from a roundabout.
- Priority level is low if no engineering analysis has been conducted.

## IV. G. New or Converted HOV/HOT Lanes

### Description

- A new lane, or conversion of existing lane, that serves buses, high-occupancy vehicles (HOV), and other approved users such as motorcycles, toll paying vehicles (HOT), low-emission vehicles or hybrid engine vehicles
- Congestion-based (dynamic) or time-based (variable) pricing typically used for HOT lanes

### Applicable locations/situations

- Interstates or long-distance limited-access corridors
- Highly congested corridors with extensive bus service

### Cost: *Moderate to high*

- Construction of a new set of lanes is much more costly than converting existing traffic lanes.

### Timeframe: *Medium to long-term*

- Time is required for planning, design, rule setting, construction, and, if needed, environmental studies and legislation.

### Benefits

- Offers a reduction in travel delays and more consistent travel times for buses to help keep the vehicles on schedule
- Encourages carpooling and vanpooling if HOV lane driver and passengers can pass by stopped or delayed vehicles

### Related strategies

- Enhanced bus service, bus rapid transit and carpool/vanpool/TDM services will increase the number of persons using the facility.
- Electronic toll collection methods are commonly used.

### Other factors or considerations

- A good level of service (free-flowing traffic) for buses and HOVs must be maintained.
- Several unique design and operational aspects must be evaluated – e.g. time of day operations/reversing of lanes, traffic operations at start and end points, and the types of vehicles permitted.
- Legislation may be required before implementation.
- Emergency vehicle access and egress must be planned for.
- Enforcement technologies, methods, and personnel are critical to a successful facility.

### **Notes on Location Appropriateness and Priority Levels for the AMPA**

- HOV/HOT lanes are not appropriate for most locations in the AMPA.
- Priority level:
  - Medium: Interstate 25, Interstate 40
  - Low: Paseo del Norte; Coors Blvd; Alameda Blvd

## IV. H. New Travel Lanes (Widening)

### Description

- New travel lanes added along an existing roadway

### Applicable locations/situations

- Severely congested roads with a clear capacity or safety deficiency
- Locations that experience link congestion rather than intersection congestion
- Location with limited appropriate alternative routes

### Cost: *High*

- Cost depends on amount of right-of-way needed and the scale of construction impediments.

### Timeframe: *Medium to long-term*

- Completion of a capacity expansion project can take from five to 20 years, including planning, engineering, environmental analysis, and construction phases.

### Benefits

- Increased capacity and reduced congestion and travel delays for existing level of traffic
- Less traffic on parallel side streets and arterials as vehicles divert to the widened road

### Related strategies

- Active roadway management strategies in this toolkit and newer technology to monitor/control traffic conditions should be implemented during construction.
- TDM strategies could provide significant benefits during construction and they could carry over following project completion.
- Preservation of right-of-way and building set-back requirements should be established many years before construction.

### Other factors or considerations

- Appropriate bicycle, transit, and pedestrian facilities must be considered.
- Construction will impact property owners, businesses and residents on the roadway itself or on parallel streets.
- New lanes could possibly move the bottleneck point downstream if project is not of sufficient length.
- Unnecessary new roads may induce demand and encourage sprawl.

### ***Notes on Location Appropriateness and Priority Levels for the AMPA***

- Priority levels are highest for corridors with volume-based link congestion, where there are an uneven number of lanes along a corridor or if the roadway has fewer than 3 existing lanes.
- See CMP Strategies Matrix for priority level by corridor.

## IV. I. New or Extended Roadways

### Description

- A new roadway along separate right-of-way to serve newer developed or developing areas
- Extension of existing roadway to complete a network

### Applicable locations/situations

- Location that serves areas experiencing new development or anticipating development soon
- Location that would divert traffic from an existing severely congested corridor
- Unimproved roads with safety issues or development potential

### Cost: *High*

- Cost depends on amount of right-of-way needed and the scale of construction impediments.

### Timeframe: *Medium- to long-term*

- Completion of a new roadway project can take from 5 to 25 years, including planning, engineering, environmental analysis, and construction phases.

### Benefits

- Increased capacity to serve developing areas
- Reduced traffic and congestion on parallel streets due to vehicles diverted to the new road

### Related strategies

- Active roadway management strategies in this toolkit and newer technology to monitor/control traffic conditions should be implemented during construction.
- Transit service can be provided to reduce the demand for vehicle travel on the new road.
- Land use practices should be enacted that manage the amount of new development in the area to a level that the roadway system can adequately handle.

### Other factors or considerations

- Appropriate bicycle, transit, and pedestrian facilities must be considered.
- Preservation of right-of-way many years before construction will reduce cost and impacts.
- Unnecessary new roads may induce demand and encourage sprawl.

### ***Notes on Location Appropriateness and Priority Levels for the AMPA***

- In general new roadways are considered inappropriate unless there are major air quality and travel time benefits.
- Despite capacity limitations, a new river crossing is considered *low* priority due to environmental concerns and feasibility issues.
- Appropriate locations with demonstrated benefits:
  - Alternative river crossing to NM 6
  - Connection between Rio Bravo Blvd and Mesa del Sol community
  - North-south alternative on the Westside to Coors and Unser
- Roadway extension to serve new development is a *low* priority strategy

# Appendix A: CMP Strategies Matrix

2012 CMP Strategies Matrix		Active Roadway Management				Travel Demand Management/Alternative Travel Modes							Physical Roadway Capacity											
		Expanded traffic signal timing and coordination - ITS	Traffic signal equipment modernization - ITS	Traveler information devices - ITS	Communications networks and roadway surveillance - ITS	Access management	Fixed guideways and dedicated transit lanes	Transit service expansion	Transit vehicle information	Transit intersection queue-jump lanes and signal priority	Electronic fare collection	Park & Ride facilities	Off-street multi-use trails	On-street bicycle treatments	Parking management	Intersection turn lanes	Deceleration lanes	Freight Improvement Strategies	Grade-separated railroad crossings	New grade-separated intersections	New travel lanes (general purpose)	New roadways		
	Non-CMP Corridor (NC)																							R
	Interstate 25																							125
	Interstate 40																							140
1	Alameda Blvd.																							1
2	Montano Rd.																							2
3	Paseo del Norte Blvd.																							3
4	Bridge/Cesar Chavez Blvd.																							4
5	US 590																							5
6	Parade Blvd.																							6
7	NM 47																							7
8	Corts Blvd.																							8
9	Jefferson St.																							9
10	Montgomery Blvd.																							10
11	Edbank Blvd.																							11
12	Isleta Blvd.																							12
13	Unser Blvd.																							13
14	Dennis Chavez/Rio Bravo																							14
15	Tramway Blvd.																							15
16	Wyoming Blvd.																							16
17	Irving Blvd.																							17
18	Osuna/San Mateo Blvd.																							18
19	Gibson Blvd.																							19
20	Central Ave.																							20
21	NM 528																							21
22	Fourth St.																							22
23	Second St.																							23
24	NM 6																							24
25	Broadway Blvd.																							25
26	Lomas Blvd.																							26
27	Menaul Blvd.																							27
28	Southern Blvd.																							28
29	Arenal Blvd.																							29
30	NM 14																							30

\* See CMP Toolkit for additional corridors for which the strategy is a high priority.

■ High Priority  
■ Medium Priority  
■ Low Priority  
■ Not Appropriate

**High Priority Regional Strategies**

- Electronic fare collection
- Telework and flexible schedules
- Ridesharing travel services
- Alternative travel mode events and assistance
- Traffic management center
- Incident management plans
- Incident response and Courtesy Patrol

**Medium Priority Regional Strategies**

- Roadway signage improvements (wayfinding)
- Location-Specific Strategies\*
  - Ramp Meters
  - New (or converted) HOV/HOT/Truck Lanes
  - Roundabout intersections

\* These strategies are only appropriate in a few locations. Consult the CMP Toolkit for appropriate locations and priority levels.

## Appendix B: Regional Role of CMP Corridors

