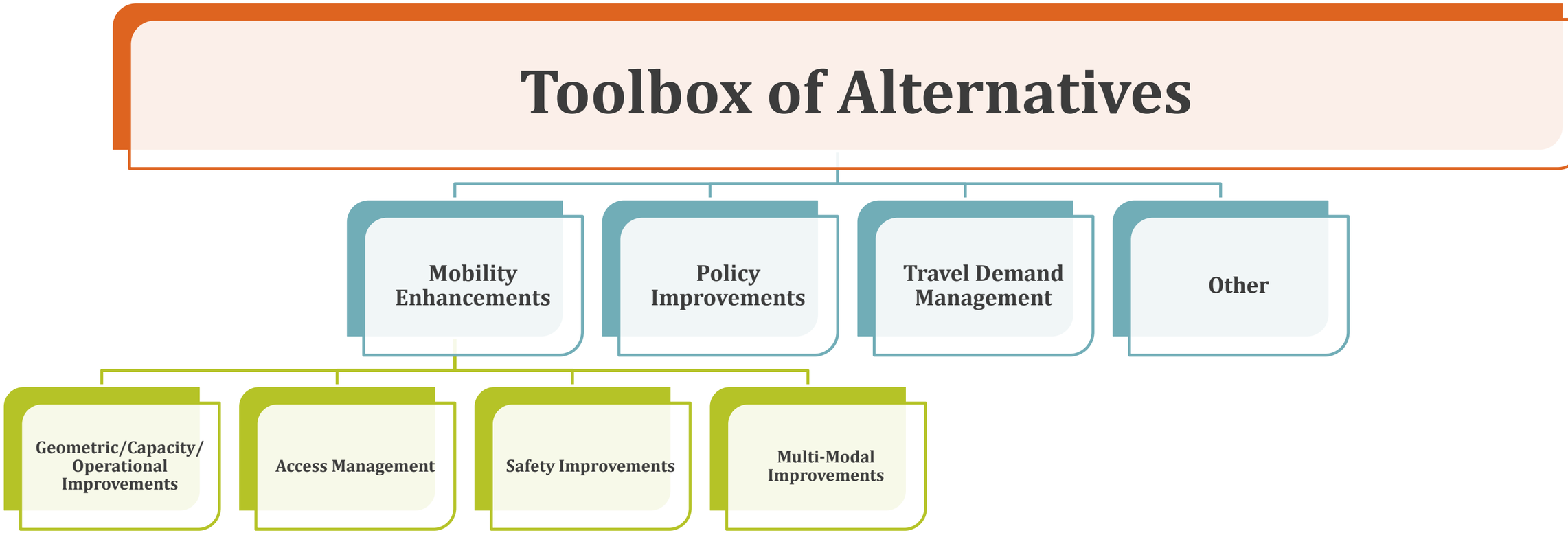
Toolbox of Alternatives



POLICY IMPROVEMENTS			
Recommendation	**Examples**	**Benefits**	**Considerations**
Planned Review and Update Standards/Regulations	• Annual update • Five year update	• Relevant and up-to-date standards	• Type and frequency of standard revisions • Identify committees/groups or individuals to determine/implement revisions
Zoning and Subdivision Regulations	• Residential • Commercial • Office	• Protects property values • Implements community goals • Preserves historic and/or environmentally sensitive areas	• Limit development potential of existing land uses that don't conform with new standards • Discourage development in some areas • Long-term commitment and collaboration between municipality and proper owners
Standardize setbacks requirements	• Define requirements by roadway functional classification	• Consistency and uniformity	• Local zoning ordinances may vary
Standard TIA Requirements	• Any development generating over 100 peak hour trips is required to complete a TIA	• Consistency and uniformity • Equity in mitigation measures • Leads decision makers	• Consensus of TIA standards/thresholds
Provision of mitigation measures	• Establish access spatial requirements • Establish turn lane queue accommodation requirements	• Enhances safety • Enhances roadway throughput	• Existing and future developable property access locations
Application of reasonable ROW reservation periods	• ROW width requirements along property frontage	• Accommodates future widenings and turn lanes	• Duration of reservation period
Adhere to legal guidelines	• Property owners' right to access • Developer proffers	• Avoids lawsuits • Eliminates potential implementation delays	• Local requirements of developers
Transportation Entity Coordination	• Monthly meetings with stakeholders from various entities • Transportation Technical Advisory Committee	• Communication • Consensus on important transportation topics	• Goals and objective of each entity • Turnover of personnel
Street Hierarchy	• Specific design standards by street classification • Rural vs. Urban Roads	• Improves capacity • Improves functionality	• Comprehend the characteristics of the surrounding area
Access Management Guidelines	• Conservative spacing guidelines	• Safer development access • Improves safety • Improves operations • Manages conflict areas • Preserves infrastructure • Promotes economic growth along a corridor • Cost savings	• Construction and maintenance costs • Corridor characteristics

Residential Street Standards	• Narrower street design	• Improves safety • Minimizes high volumes of traffic • Discourages high speeds	• Functionality of the street • Volume of traffic

TRAVEL DEMAND MANAGEMENT			
Recommendation	**Examples**	**Benefits**	**Considerations**

Parking Management	• Parking garage
	• Shared parking
	• Unbundled parking
	• Price parking
	• Regulate/enforce parking
	• Remote parking/shuttle service
	• Parking regulations
	  o Time limits
	  o Restrictions
		• Facility cost savings
		• Improves quality of service
		• Revenue generation
		• Reduces parking demand
			• Construction, Operation, and Maintenance costs
			• Enforcement of regulations
			• Connectivity with other modes of transportation
			• Determination of parking supply and demand

Ramp Metering	• On-Ramp Metering • Off-Ramp Metering	• Manages freeway traffic • Decreases travel time • Increases travel speed • Increases capacity • Decreases emissions • Reduces crashes	• Construction, Operation, and Maintenance costs • Increased ramp delay and spill back • Enforcement • Public acceptance and compliance • Increase ramp emissions and fuel consumption • Potential to discourage other modes of transportation • Ramp improvements • Potential impacts to the local street network
Freeway and Arterial Bottleneck Removal	• Ridesharing • Emergency patrol vehicles	• Reduces volumes • Reduces delay time	• Ridesharing administration costs • Emergency patrol operational costs
ITS Technology	• Dynamic Message Signs • Closed-Circuit Television • Advanced Traffic Management System • Traffic Management Centers • Traffic Incident Management • Electronic Toll Collection • Red Light Camera	• Reduces delay • Fuel savings • Increases safety • Improves travel time • Decreases emissions • Centralized operations and control	• Construction, Operation, and Maintenance costs • Location of technology • Communications and integration • Standards of practice • Interoperability with existing technologies
Alternative Work Schedules	• Flextime • Compressed Workweek • Staggered shifts	• Reduce delay • Increase capacity	• Dependent on businesses • Large scale shift to make an impact

Telecommute	• Working from home	• Reduce delay • Increase capacity • Decrease emissions • Fuel economy	• Equipment/technology requirements for telecommuting • Dependent on businesses

OTHER IMPROVEMENTS			
Recommendation	**Examples**	**Benefits**	**Considerations**
Corridor Studies and Plans		• Sets goals and objectives for the corridor • Identifies problem areas • Identifies land use changes • Identifies future traffic operations • Protection of transportation investments • Identifies potential funding sources	• Cost of improvements • Phased implementation of improvements • May require collaboration between public and private agencies • Adoption/Approval by public agencies
Thoroughfare Plans	• Master Plan of entire City/County/Town	• Outlines the goals and strategies • Determines functionality of existing and future roadways • Provides decision makers knowledge of future improvements • Permits developers to design subdivisions in a non-conflicting manner • Minimizes damage to property values • Promotes community appearance • Anticipates when funding strategies need to be programmed for improvements	• Requires collaboration between public and private agencies • May need to have schedule revision/update periods • Adoption/Approval by public agencies
Access Management Plans	• Statewide • Citywide	• Preserves the functionality of roadway systems	
Bicycle and Pedestrian Plans	• Complete Streets Plan • Local/County Plan • Regional Plan • Statewide Plan	• Connectivity of different modes of transportation	• Based on roadway classification/functionality • Transit locations
Comprehensive Plans		• Identifies current conditions • Identifies the strengths, weaknesses, and opportunities of existing and future conditions • Encompasses several key community components: Environment, Transportation,	• Requires collaboration between public and private agencies • May need to have schedule revision/update periods • Adoption/Approval by public agencies

		Agriculture, etc. • Provides a framework for officials and the community • Helps guide growth within the community • Establishes priorities and implementation strategies	
Public Involvement and Education	• Public meetings • Individual and small group interviews • Public comment period • Project website	• Informs the public • Allows for public input • Gains consensus on standards and/or improvements	• Difficult to reach out to everyone • Federal and state requirements for public involvement
Design Standards	• Roadway Design • Transit Design • Bicycle and Pedestrian Facility Design	• Consistency and uniformity of design • Promotes safe and efficient design elements	• Design exceptions • Various elements of design
Land Use Conflict Index		• Identifies complimentary land uses to support economic development • Diversifies land use types	• Value versus Development Preferences
Standardized Plan Process	• Establish Corridor Assessment Guidelines • Establish Alternative Evaluation Measures of Effectiveness	• Consistency and uniformity	• Dealing with extraordinary atypical situations
Outreach Strategies	• Public meetings • Project Committees	• Informs stakeholders • Gains consensus on standards and/or improvements	• Targets audience

GEOMETRIC/CAPACITY/OPERATIONAL IMPROVEMENTS			
Recommendation	**Examples**	**Benefits**	**Considerations**
Traffic Signalization	• Installation of a traffic signal	• Increases intersection capacity • Improves safety • Improves efficiency • Decreases delay • Reduces angle collisions • Controls pedestrian activity	• Roadway speeds • Construction, Operation, and Maintenance costs • Increase in rear-end collisions
Traffic Signal Timing and Phasing	• Revised signal timing plans • Interconnected signals • Coordination of signals • Flashing Yellow Arrow • Modify clearance intervals	• Improves efficiency • Decreases delay • Removes yellow trap	• Closely spaced signals

	• Modify phasing (i.e. protected)		
Additional Lanes (Through or Turn Lanes)	• Install exclusive turn lanes • Add through lanes	• Increases capacity	• Right-of-Way impacts • Signal impacts
Modify/Add Interchanges	• Remove signals at ramps • Create free flowing ramps/loops • Interchange concepts • Diverging Diamond Interchange (DDI)	• Increases capacity	• Construction and Maintenance costs
Construct New Highways/Arterials	•	• Increases capacity	• Construction and Maintenance costs
New Roadway Connections	• Frontage Roads • Internal Development Roads	• Increases capacity • Additional routes	• Construction and Maintenance costs • New way finding signage
Turn Lane Requirements/Modifications	• Adjust storage and/or taper lengths	• Increases capacity • Increases queuing area	• Right-of-Way impacts • Signal impacts • Adjacent intersection impacts
Alternative Intersection Design	• Roundabout • Continuous Flow Intersection (CFI) • Displaced Left-Turn Intersection • Median U-Turn Intersection • Restricted Crossing U-Turn Intersection • Grade Separation • Offset T-Intersection	• Improves safety • Reduces travel time • Reduces construction costs • Reduces impacts on the environment	• Construction, Operation, and Maintenance costs • Education of public regarding operations • Right-of-Way Acquisition

ACCESS MANAGEMENT			
Recommendation	**Examples**	**Benefits**	**Considerations**
Medians	• Non-Traversable • U-Turn Treatment • Median without turn lanes • Median with turn lanes	• Helps delineate travel lanes, separating left-turns from through traffic • Improves vehicle safety • Improves pedestrian safety • Increases efficiency • Improves aesthetics	• Type of median • Understanding median opening placement • Sight distance • Median width • U-turn considerations • Maintenance of medians
Spacing	• Traffic Signal Spacing • Commercial Driveway Spacing • Corner Clearance	• Controls the number of access points along a corridor • Wider spacing allows for drivers to better respond to changing conditions	• The greater the frequency of access points, the greater the number of accidents.
Offset Left-Turn Lanes		• Improves sight distance for opposing left-turning vehicles	• Drivers initially may be confused by the change in traffic patterns • Install advance guide signing and pavement markings • Increases the overall width of the intersection, may cause potential

		• Reduces the potential for dangerous right angle crashes	problems for pedestrians crossing • Provide a refuge island in the median for pedestrians
Consolidation of Access Points		• Reduces conflict points • Enhances safety • Lessens severity of crashes • Improves mobility • Increases connectivity • Develops aesthetics • Improves the functionality of a major roadway • Roadway operates more efficiently, channeling the turns into more predictable locations. • Minimizes the number of trips on the major arterial	• Scale and intensity of developments • Potential for increased delay at consolidated intersections
Frontage Roads	• Regular Frontage Roads • Reverse Frontage Roads	• Proper use of frontage roads can help eliminate conflict points on major route	• Inadequately designed frontage roads can create additional conflict points and driver confusion regarding yielding the right-of-way
Alternative Median Opening Configurations	• Full median crossover • Directional crossover • Right-In/Right-Out	• Directional median openings are appropriate for limiting cross traffic and exiting turns	• Scale and intensity of developments • The more movements allowed, the more conflict points
Driveway Location and Design		• Provides geometry and a safe environment that accommodates the characteristics of various users • Provides areas of smooth transitional flow • Corner Clearance - reduces of interferences from side-street activity	• Connection radius and flare • Corner Clearance - Retrofitting corner clearances is both difficult and expensive • Vehicle ground clearance • Clearance from fixed objects • Driveway width • Driveway grade • Driveway channelization • Driveway length/circulation • Auxiliary right-turn lanes • Throat Transition • Sight distance/Intersection angle • Driveway location/shared driveways • Advanced warning • Driveways and the pedestrian environment, ADA considerations • Avoid driveways skewed from median openings, creates potential

			for weaving issues • Functional/Influence area of adjacent intersections • Transit stop locations
Joint and Cross Access (Access Easements)		• Improves the operation and safety of the main highways • Reduces the number of trips on primary roadway; thereby, preserving capacity • Reduces number of driveways on major streets • Encourages pedestrian trips • Encourages shorter trips in autos • Provides good access to all properties through the use of easements • As property develops, local government can require owners provide for space for future public roads/accesses • Helps local governments achieve level of service goals	• Communication and consensus from multiple developers

SAFETY IMPROVEMENTS			
Recommendation	**Examples**	**Benefits**	**Considerations**
Signing	• Chevrons • Curve Warning • Intersection Ahead	• Advanced warning • Clear way finding	• Over signing • Non-conventional applications
Pavement Markings	• Lane Utilization Arrow • Rumble Strips • Edge Markings • Recessed Pavement Markers	• Clear delineation at intersections • Reduces roadway departures • Night-time delineation	• Minimal benefits
Geometry	• Add turn lanes • Flatten curves • Minimize intersection conflict points • Improve shoulder • Install median	• Reduces crash frequency • Improves vehicle throughput	• Costs may vary
Speed Limit	• Regulatory signs • Speed feedback signage	• Reduces crash severity	• Can reduce vehicle throughput • Often difficult to change

Sight Distance	• Reduce sight obstructions – objects, vegetation, etc.	• Minor costs	• May not control right-of-way
Street Lighting	• High mast lighting • Street lighting	• Significantly increase night-time visibility	• Costs may vary • Maintain consistent lighting levels
Guardrail/Median Barrier	• Cable • Concrete • Metal Beam	• Creates a barrier between travel lanes and potential hazards	• Costs may vary
Clear Zone	• 5-foot buffer space • 10-foot buffer space	• Better sight distance and visibility • Reduces potential for crashes	• No significant relationship between the fixed object density and the frequency of fixed object crashes • More effective when clear zone remains consist

Traffic Calming	• Vertical Deflections
	  o Speed Hump/Table
	  o Raised Intersection
	  o Textured Pavement
	• Horizontal Shifts
	  o Traffic Circle
	• Roadway Narrowing
	  o Central Island Narrowing
		• Reduces speed
		• Volume control
			• Costs may vary
			• Maintenance
			• Spacing

Pavement Surface	• Condition • Asphalt • Permeable Pavement • Textured Pavement	• Better driving conditions	• Maintenance • Costs may vary
Regulatory	• Americans with Disabilities Act (ADA) • Highway Safety Improvement Program (HSIP) • Transportation Safety Improvement Program (TSIP) • Roadway Safety Audit (RSA)	• Provides funding for safety improvements • Provides strict requirements • Reduces crashes • Enforcement of standards	•
Signal Operations	• Revised signal timing plans • Flashing Yellow Arrow • Modify clearance intervals • Modify phasing (i.e. protected)	• Improves efficiency • Decreases delay • Removes yellow trap	• Maintenance • Costs may vary

MULTI-MODAL IMPROVEMENTS			
Recommendation	**Examples**	**Benefits**	**Considerations**
Transit	• Bus • Trolley • Light Rail Transit (LRT) • Bus Rapid Transit (BRT) • Commuter Rail • Ferry • Paratransit	• Increases capacity • Provides alternative modes of travel • Additional travel options • Reduces congestion	• Construction, Operation, and Maintenance costs • Ridership Potential • Ridership Cost • Revenue Potential • Location of transit stops, shelters, and routes • Shelter Conditions • Connectivity of route and transit modes
Bicycle and Pedestrian (Context Sensitive Solutions)	• Striped/Exclusive Bike Lane • Shared Bike and Travel Lane • Multi-Use Paths • Sidewalk • Unpaved Trail	• Provides safer accommodations for pedestrians and bicyclists • Separation from vehicular traffic	• Lighting of Pathways • Facility Design Standards • Maintenance of Facility • Connectivity of bicycle and pedestrian facilities
Carpool/Vanpool Program Incentives	• Exclusive Carpool/Vanpool travel lanes (HOV/HOT Lanes) • Tax Breaks • Free Parking • Reserved Parking • Reduced Price Parking • Rewards Programs	• Cost sharing • Less wear and tear on vehicles • Time savings when dedicated lanes are used	• Construction, Operation, and Maintenance costs • Setup and coordination of incentive programs