

# Chapter

# 4

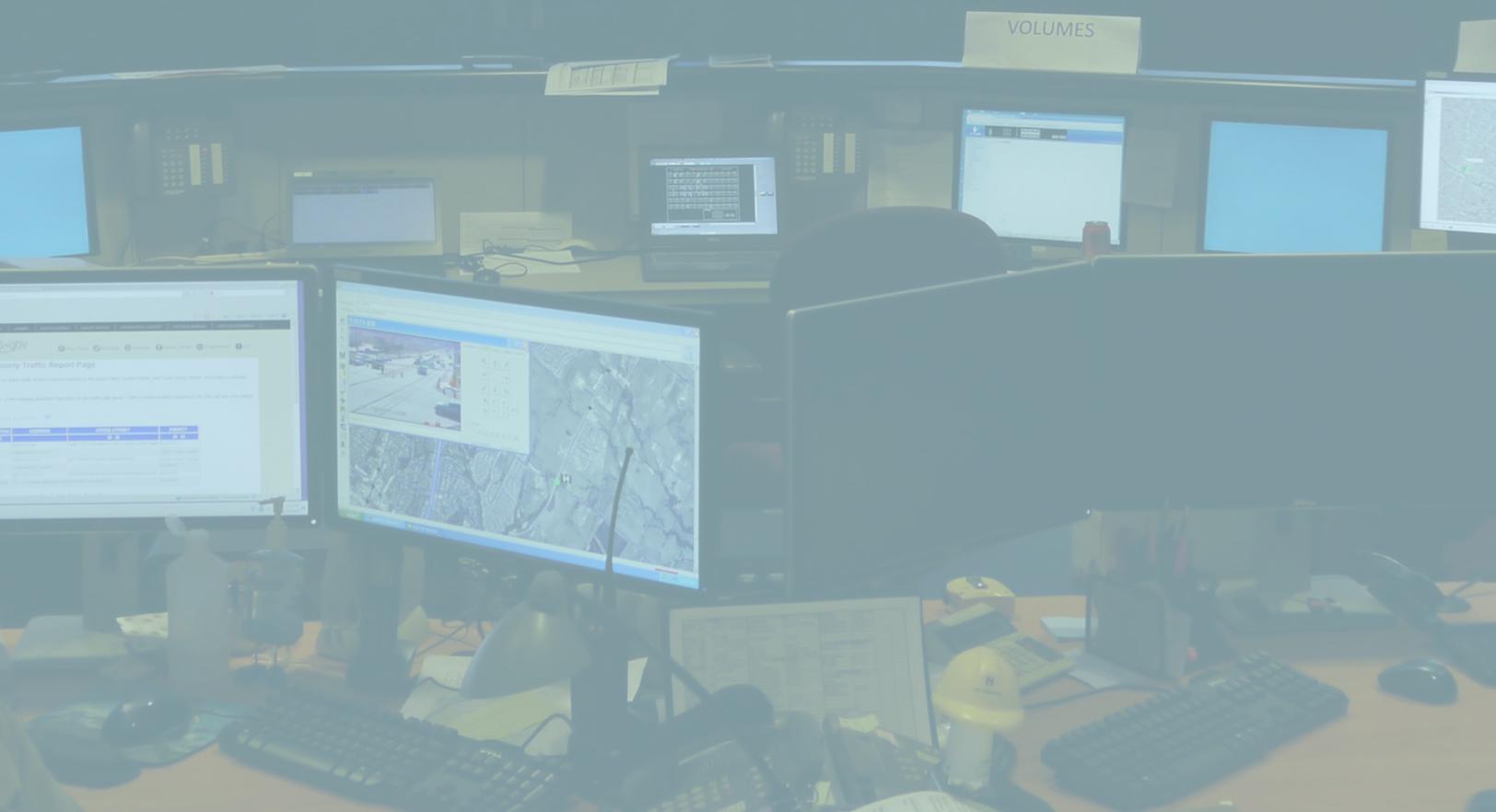


# Operating Our Transportation Network

Operating our transportation network means ensuring that all the parts of our network are running normally and correctly. Our traffic signals must be functioning, painted lines on the street must be visible, and signs must be standing so they can be read by people. Transportation network operations involve care and maintenance over these pieces of infrastructure, as well as guidelines and standards to ensure that certain events involving the transportation network are dealt with safely and efficiently.

A well-run transportation network will be able to accommodate unforeseen or temporary changes. When a traffic crash occurs, first responders must be able to access the site, and our transportation network must react to this unexpected closure. Special events like street festivals use our streets and sidewalks, removing them from the network temporarily. The construction of new buildings and infrastructure repairs are other temporary changes that affect how smoothly people move on our network. Managing and planning for these disruptions ensures that our network can continue running safely, reliably, and efficiently.

This chapter emphasizes system efficiencies. Efficiencies can be achieved through improved transportation operations, such as maintaining signal infrastructure. Better managing closures and detours on our transportation network helps people more efficiently move around or through disruptions. Clear guidelines on how to move freight on our network, will improve local freight operations and increase our network's efficiencies. Well-run operations will ensure our network will be safe, reliable, and efficient for our community.



VOLUMES

DATE	TIME	LOCATION	TYPE	STATUS
2023-10-27	10:15	101st Ave	Accident	Minor
2023-10-27	11:30	101st Ave	Accident	Minor
2023-10-27	12:45	101st Ave	Accident	Minor
2023-10-27	14:00	101st Ave	Accident	Minor
2023-10-27	15:15	101st Ave	Accident	Minor
2023-10-27	16:30	101st Ave	Accident	Minor
2023-10-27	17:45	101st Ave	Accident	Minor
2023-10-27	19:00	101st Ave	Accident	Minor
2023-10-27	20:15	101st Ave	Accident	Minor
2023-10-27	21:30	101st Ave	Accident	Minor



# Policy Summary

## ***Transportation Operations***

**Policy 1** Operate the transportation network safely, reliably, and efficiently

**Policy 2** Build and maintain technology infrastructure to meet the needs of all users

**Policy 3** Increase real-time responsiveness to changing transportation conditions

**Policy 4** Strive for connected operations across departments, agencies, and jurisdictions

**Policy 5** Allocate signal timing to coincide with modal priorities

**Policy 6** Manage the movement of oversize and overweight vehicles

## ***Closures and Detours***

**Policy 1** Accommodate all users safely when there are closures and detours

**Policy 2** Ensure detours are accessible and convenient

**Policy 3** Lessen the impact of temporary right of way closures on mobility

**Policy 4** Streamline and enforce closure and detour requirements

**Policy 5** Include all modes and users in special event planning

**Policy 6** Provide helpful information about closures and detours to partners and the public

## ***Goods Movement***

**Policy 1** Support reliable freight operations and efficient goods movement through, into, and out of Austin

**Policy 2** Recognize, plan for, and mitigate impacts of goods movement

**Policy 3** Improve safety and predictability of hazardous materials movement through Austin

**Policy 4** Support local and last-mile goods delivery innovations

**Policy 5** Participate in state and regional freight planning efforts



## Transportation Operations

Our infrastructure is only as effective as how we use, operate, and maintain it, and we are dedicated to managing mobility and safety for all modes that get around on our transportation network.

Transportation operations define how we safely and efficiently assign space to travelers throughout the transportation network. The most visible examples of how we operate our transportation network are through traffic signals, traffic control signs, and pavement markings. Traffic signals provide safe and efficient movements for all roadway users through an intersection. A variety of technology and infrastructure is used to operate traffic signals and to manage them remotely, and emerging technologies may improve our ability to operate more efficiently in ways we have yet to discover.

Markings, which are the lines and symbols on the surface of our streets and urban trails, help different users know where they should be and what they can do. Some examples of markings include turn lanes, parking symbols, arrows, crosswalks, dividing lines between different directions of traffic, bicycle lanes, and “stop bars” (the thick lines at an intersection or crossing that indicate where to pull up to and stop). Traffic control signs help indicate where to go, what is allowed, and what is not allowed. They are placed to improve safety and mobility for school zones, crosswalks, yielding, and parking, among other things. Traffic control signs also give us information about what is around us to help make decisions and can alert us to potential conflicts or dangerous situations.

All of the ways we operate our transportation network can help us support our mobility goals. More efficient roadways can lead to fewer vehicle emissions, helping protect our health and environment. Operations also have a big role to play in decreasing commuter delay and helping us maintain more reliable travel times.

*“Traffic signals need to be synced for better flow during peak hours.”*

—Community Member

## Indicators and Targets



### **Increase the number of signalized intersections that can be remotely monitored**

*Achieve and maintain ability to remotely monitor 100% of signalized intersections by 2020*



### **Increase the number of signalized intersections with emergency vehicle preemption capability**



### **Increase the efficiency of detection equipment at intersections**

*Achieve and maintain efficient detection for all modes of transportation at 95% of locations with actuated signals by 2023.*



### **Increase the frequency of adjusting timing and phasing of signalized intersections**

*Assess and adjust 33% of all signalized intersections every year*



### **Increase the number of signals and pedestrian hybrid beacons constructed or upgraded**

*Construct at least 75% of requests received annually that have been determined to be currently justified by an engineering study*



### **Increase the person-carrying capacity of the transportation network**



### **Decrease the percentage of signs and markings in poor or failing condition**

## *Transportation Operations Policy 1*

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### **Operate the transportation network safely, reliably, and efficiently**

**Promote safe, reliable, and efficient mobility for all modes of transportation across the entire network**

Operating our transportation network is about getting everyone where they need to go, when they want to get there, safely, reliably, and efficiently. Today transportation comes with inherent risks to travelers. While we cannot eliminate risk entirely, safety is our number one goal and we seek to reduce risk, especially to vulnerable road users. For example, a broken pedestrian push button is considered an emergency priority for repair. Another example of prioritizing safety in transportation operations is ensuring that our first responders can arrive quickly and safely using technologies such as emergency vehicle preemption.

Providing reliable operations is also an important goal. Traditionally, transportation engineers have focused their work on reducing vehicle travel time. However, vehicle travel time does not account for other factors such as safety, comfort, and predictability for the trips that we take. Although it is appealing to focus on shorter travel times, we must consider “travel time reliability,” which offers a holistic view to improving transportation operations. For example, if you often encounter a crash or unusually heavy traffic on your way to work, your travel time is not very reliable. To compensate for this lack of reliability, we typically leave early, which is time that could be spent in other areas of our lives.

A successful, inclusive transportation network must also consider the different needs of people with varying mobility needs and vehicle types across all modes. People traveling by foot and bicycle may not be as visible to people who are driving and may need a head start to travel through an intersection. New strategies and devices in our transportation network can help everyone move more safely.

### **Waze Connected Citizens Program**

**Austin Transportation is a member of the Waze Connected Citizens Program (CCP), which gives City staff access to real-time anonymized traffic and incident data generated by Waze users. City staff submits data to Waze on planned road closures and detours, like those due to special events or roadway construction, so the Waze app can redirect users to take alternate routes. In exchange for sharing this data, Waze sends notifications of crashes and unusual congestion to Austin Transportation staff, who then update signal timing plans and disseminate information as appropriate to keep our transportation network operating safely, reliably, and efficiently. Through this information-sharing, the CCP helps improve travel time reliability by helping Austinites make more informed travel decisions, getting us where we want to go, when we want to get there.**

## Transportation Operations Policy 2

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### **Build and maintain technology infrastructure to meet the needs of all users**

**Supply all modes with the necessary, innovative technology infrastructure to keep pace with the existing and future transportation network**

Technology powers and influences our transportation network. Smart intersections, innovative traffic control signals, and new modes of transportation are a few of many different transportation technologies that affect the safety, reliability, and efficiency of our network. By recognizing, acquiring, and maintaining new technology that is available for all modes of transportation, we will help our transportation network grow and adapt to emerging mobility technologies as they develop.

Our transportation network must accommodate current technology and prepare for future technology. One existing technology that is becoming widespread is the pedestrian hybrid beacon. The pedestrian hybrid beacon is a button-activated traffic control signal that allows pedestrians to safely cross streets where there may not be a traffic signal. Some technology is not widely used yet, but we still must prepare for its adoption. Vehicles that use dedicated short-range communications (DSRC) to communicate with traffic signals are an emerging technology. This technology helps an intersection and car communicate with each other, and which increases transportation network safety and efficiency. We must pursue and integrate new technology for all modes, not just a few, so that we can increase the overall safety, reliability, and efficiency of our transportation network.

Building infrastructure to support this technology is important, but maintaining it and educating our staff and community on how this technology works is equally important. Public communication on how to use innovations like pedestrian hybrid beacons is crucial to ensuring that we properly use our infrastructure. City of Austin staff must also be trained on how to use, operate, and maintain this new technology. Proper maintenance of the technology will maximize its value to travelers and its useful lifetime. City of Austin staff must also be trained to test and incorporate new technology as it becomes available. Continuous innovations in technology require that we stay aware and knowledgeable about how we can improve our transportation infrastructure and achieve our mobility goals.



## *Transportation Operations Policy 3*

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### **Increase real-time responsiveness to changing transportation conditions**

#### **Mitigate safety and congestion concerns that arise from events and incidents that cause unusual traffic patterns**

The City of Austin's Mobility Management Center (MMC), formerly the Transportation Management Center, is the headquarters for monitoring mobility and managing traffic in real time throughout the Austin area. The MMC is staffed every day of the week from before the morning peak travel time until after the evening peak travel time, as well as during special events. Staff at the MMC monitor the transportation network through cameras, signals, and sensors to ensure smooth operations. From the center, City staff are able to, among other things, help the transportation network accommodate construction, assist first responders at an incident, make adjustments in response to congestion, and inform travelers and agencies of unforeseen issues.

Optimal use of the MMC requires experienced and knowledgeable people, appropriate and decisive action, and collaboration among different partners to ensure the best result is realized. Adequate staffing and hours of operation are critical for effective MMC operation. When an incident does occur, MMC staff must be able to quickly address the issue, which often includes alerting emergency services and working with other partners to ensure there is a quick solution. We must be able to see and predict how the network will be affected by this crash, and use our resources to modify traffic signal operations, dispatch a signal technician to make a repair, and alert the public about the incident.

### **HERO Program**

**TxDOT and CAMPO partner together to run the Highway Emergency Response Operator (HERO) patrol service program. HERO is a free program that assists motorists in need and clears minor crashes along certain roadways. The program operates on highways in the Austin area. This includes stretches of I-35, US 183, US 290, SH 71 and MoPac/Loop 1.**

**The goal of the HERO program is to improve safety and keep the highways clear of incidents. The program was established in 2010 and quickly grew from covering 34 miles of roadways to the 138 miles it currently covers. HERO trucks include digital messaging that help provide information about the incident to oncoming traffic, as well as cameras and feeds to keep the Combined Transportation, Emergency & Communications Center (CTECC), a regional center for emergency response coordination, up to date on the incident.**

**The HERO program offers a wide variety of services, ranging from jumping dead batteries to removing debris from travel lanes to providing water to stranded motorists. The program is accessible by phone, seven days a week. It currently operates from 5 a.m. to 9 p.m. Monday- Friday, and 7 a.m. to 7 p.m. Saturday and Sunday.**

## Transportation Operations Policy 4

### **Strive for connected operations across departments, agencies, and jurisdictions**

**Partner across administrative and jurisdictional boundaries to ensure a seamless experience for travelers in the region**

We must ensure that our community's mobility experience is part of a consistent experience that continues beyond Austin's boundaries. Travelers do not know, or care, when they move across jurisdictional boundaries while traveling. Neither do they know nor care which department or agency is responsible for providing infrastructure or staffing. For example, several major corridors within City of Austin limits are owned by the Texas Department of Transportation (TxDOT), and, conversely, several TxDOT and Travis County signals are maintained by the City of Austin. We are committed to working with our partners across jurisdictional boundaries to ensure a seamless experience for the traveler. Coordination is not only needed across these boundaries, but also within the City of Austin. We will work to continuously strengthen interdepartmental relationships to ensure a smooth experience for everyone.

To that end, we are joining with partner transportation agencies, such as TxDOT, CTRMA, and Capital Metro to create "One System" of operations for roadways. Working side by side, these agencies can communicate in real time about traffic incidents and work together to develop transportation safety and congestion management. Not only is it more efficient to combine operations, but the end result is a seamless mobility experience for the traveler.



## Transportation Operations Policy 5

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### **Allocate signal timing to coincide with modal priorities**

#### **Prioritize green time based on the priority networks and surrounding context**

Much like we allocate space in our transportation network, we can also allocate time. We control the green and red times not just for our motor vehicle signals, but also our pedestrian walk signals, bicycle or transit signals, and turn arrows. This gives our transportation network flexibility when dealing with different travel demands on certain streets across different modes throughout the day. To keep our network moving as safely and efficiently as possible, we will time our signals to allow for the most efficient movements along priority networks whenever possible.

Properly-timed signals require a combination of data, technology, and evaluation. The Vehicle, Transit, and Bicycle Priority Networks deserve careful consideration and coordination when prioritizing green time for the most efficient travel of each of these modes. These roadways carry the most people and are critical to our overall transportation network. These priority networks are the basis for where we should focus signal retiming. Our equipment should also allow us to control and quickly change them to avoid interruptions and ensure smooth operations. By planning for, installing, and maintaining infrastructure that accommodates quick response across different modes of transportation, we can achieve a safe, efficient, and reliable transportation network.



## Transportation Operations Policy 6

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### **Manage the movement of oversize and overweight vehicles**

**Increase the reliability and sustainability of the transportation network by managing the movement of larger vehicles**

To keep our network operating safely, efficiently, and reliably, it is necessary to manage the movement of certain vehicles above a certain size or weight. This management includes designating routes for the transport of hazardous materials and posting overpass height limitations for trucks and other taller vehicles.

The State of Texas defines what is considered oversize or overweight, and these designations often depend on the type and make of the vehicle. Oversize vehicles range from being 8 feet wide by 14 feet high to an almost unlimited length depending on the vehicle. Overweight vehicles range from 20,000 to 80,000 pounds gross vehicle weight.

Oversize vehicles face numerous difficulties maneuvering in cities, because they require sufficient area to make turns and must fit beneath underpasses. Overweight vehicles face similar problems and require greater stopping distances, and not all bridges can safely support their weight. In addition to the difficulties operating these vehicles, oversize and overweight vehicles can also pose significant safety issues in urban environments. Given these vehicles' dimensions, people on foot and bicycle may not be visible below elevated truck cabs, and narrow urban streets may increase risks between these vehicles and other people traveling.

Acknowledging and preparing for oversize and overweight vehicles will go a long way to safely and efficiently managing these vehicles. Setting routes for them, publishing maps, and installing and maintaining clear signage will allow these operators to plan a safe and efficient route to their destination. Collaborating on logistics, moving, and construction with companies that frequently operate oversize and overweight vehicles will also help us prepare routes so that these vehicles can reach their final destinations safely, while others on our transportation network are kept safe, as well.

### **National Example: goDCgo Bus and Truck Map**

Washington, D.C. released a truck and bus map to help oversize vehicles manage their movements on the city's narrow streets. The map shows through routes, loading/pick-up zones, and parking locations for trucks and buses. Any restricted areas are differentiated by whether the restriction is for bus, truck, or both, and includes the size in feet of the restriction. This tool is publicly available, and it is used by the trucking industry along with the District to plan truck routes throughout the city.



## Closures and Detours

Planned, temporary disruptions to our transportation network are necessary to keep our transportation network healthy and running smoothly. Regular maintenance to our transportation infrastructure, work on the utilities that run above, below, or alongside our transportation facilities, and special events such as street festivals are all important activities that require a closure along our network.

Closures and detours on our transportation network can take many forms. A work zone will often close part of the street to perform maintenance or construction activities. The closure might affect traffic lanes or sidewalks, require overhead work or be a short-term (work completed in 30 days or less) or long-term closure. As our city grows and ages, the need for these closures and detours become more frequent.

Maintenance on the transportation network is not the only reason a closure may occur. Our streets, as important public spaces, often host social and neighborhood events and activities. Special events like festivals, block parties, and parades all require the use of our transportation network, and they all result in street closures or detours. It is important that we balance the civic functions our streets support and offer, while also preserving mobility throughout our network. Natural disasters, such as flooding or wildfire, as well as traffic incidents, could also cause closures and detours on our transportation network.

Whenever they occur, detours on our transportation network must maximize safety. Detours should be limited and convenient for all to ensure that people follow the detour and do not risk injury. Information should be communicated clearly and early to the public, and detours should be planned for all modes. All detours must be accessible. Safety for workers in work zones must also be considered. The Federal Highway Administration found that, on average in 2015, a crash occurred in a work zone every five minutes across the country, and that every week there were 12 work zone crashes that resulted in at least one fatality. Enforcing our regulations and ensuring that traffic control plans are being adhered to will help us keep our closures and detours as safe as possible.

Well-planned closures and detours will strengthen our community. It is critical that we are able to perform routine and emergency maintenance on utilities and other infrastructure that live within our transportation right of way. We must also be able to use our streets for their many different functions. Well-planned temporary changes to our transportation network will allow us to accommodate closures and detours on our transportation network with as few impacts to mobility as possible.

*“Plan out the projects so detoured traffic has somewhere to flow without getting gridlocked by multiple work zones.”*

—Community Member

## Indicators and Targets



### **Decrease the number of crashes reported in work zones in City of Austin right of way**

*Achieve zero crashes reported in work zones in City of Austin right of way every year*



### **Improve the review time of traffic control plans**

*Review 100% of traffic control plans within 9 business days*



### **Decrease the number of closures and detours on major downtown streets during peak hours**



### **Increase the number of special events providing and encouraging multimodal travel options**

## Closures and Detours Policy 1

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### **Accommodate all users safely when there are closures and detours**

#### **Prioritize safety for all travelers and site workers over efficiency when there are changes to normal transportation operations**

The safety of everyone who uses the transportation network is our top priority. This is reflected in our mobility decisions, and is no different for closures and detours on the network. All closures and detours must ensure the safety of people on the transportation network, regardless of mode. It is critical that this safety perspective includes not just people moving along the network, but the safety of anyone working within the closure, as well.

There are a variety of strategies that can be applied to help ensure safety when there are closures or detours, and the correct application of these strategies requires a careful, context-sensitive approach. Proper signage and communication of closures is imperative to ensure the safe movement along our network. Enhanced crossings, such as pedestrian hybrid beacons, refuge islands, or rectangular rapid flash beacons can be used to assist pedestrians, particularly if it is in a known high-injury location. Lower speed limits, clear posted notices, and flaggers to assist roadway users will help ensure safety. Proper lighting, equipment like barriers to separate modes, and safe access to a reasonably convenient detour will all contribute significantly to elevating safety. Detours must be simple to follow, well-signed, and convenient so people will complete the detour. A safe detour must also allow people to use it without any assistance if flaggers or workers are not present.



Considering different modes when planning a temporary traffic closure or detour is critical. A sign intended for a car must be posted early enough and be large enough that a driver can see it. Steel plates, while important for covering holes, can be very dangerous for bicyclists to maneuver on or around. Proper drainage is necessary so people can walk through a site. The safe movement of everyone on our transportation network is the cornerstone of an effective transportation network, even when there are temporary closures or detours.

## Closures and Detours Policy 2

### Ensure detours are accessible and convenient

#### Create detours that take into account modal and user abilities, preferences, and capacities

Detours are often a hassle regardless of transportation mode. Whether you are a driver, bicyclist, pedestrian, or using another mode, detours present unexpected changes that typically add time to our trips. Although they are necessary to maintain the health and vitality of our transportation network and our community, detours must be context-sensitive and reflective of how people actually use and react to them. Detours must be limited whenever possible, convenient when necessary, and accessible to people with mobility impairments.

Accessible detours are mandated by the Americans with Disabilities Act of 1990 (ADA). Accessibility guidelines, from the ADA, the Manual on Traffic Control Devices, and our Transportation Criteria Manual outline the necessary steps to create an accessible detour. Accessible detours must also be maintained throughout the temporary closure. Although the location of work often changes within the work zone, it is critical that an accessible path is always available for people with mobility impairments. This includes considering the width and surface of the detour, as well as providing curb ramps that allow access to and from the detour. Proper lighting, colors with low contrasts, and audible and tactile messages are also necessary. Handrails and guide rails may also be necessary depending on the specifics of the detour.

A convenient detour must be properly planned for people across modes and of all ages and abilities. Convenience for drivers will require different signage than convenience for cyclists or pedestrians. Detour lengths will also differ based on mode, but should be as short as possible. People will only tolerate so much inconvenience, and inconvenient routes could lead someone into the street, a work zone, or other dangerous location. The length that a detour will be in place will also affect the convenience of a detour. A temporary closure in place for just a few hours will be used differently than one that is in place for several weeks.

It is important to plan out how people will actually use the detour before it is installed. Will it cut off access to a transit stop, can people see information about the detour, and is there sufficient protection from motor vehicles are just a few questions that should be asked when designing detours. By considering how different people and modes will react to a detour, we will be able to make our detours accessible and as convenient as possible for all users.



## Closures and Detours Policy 3

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### **Lessen the impact of temporary right of way closures on mobility**

#### **Limit and coordinate closures, including for special events, on the Vehicle, Transit, and Bicycle Priority Networks to minimize disruptions to transportation network operations**

Routine maintenance, special events, and unforeseen issues will always require closures in the transportation network. While accommodations for maintenance and events are necessary, we should strive to maintain mobility along our priority networks.

The Vehicle, Transit, and Bicycle Priority Networks carry the most cars, public transportation riders, and bicyclists. Many of these roads are also major pedestrian thoroughfares. Due to the high volumes of people using these transportation facilities disruptions due to temporary closures are even greater. While work-hour restrictions already limit construction on major arterials at rush hour times (6:00 a.m. to 9:00 a.m. and 4:00 p.m. to 7:00 p.m.), appropriately limiting the number of closures will also help ensure our transportation network runs as smoothly as possible for as many people as possible.

There are several ways to help ensure that planned, temporary closures on the network are limited. Currently, only work in certain areas of the City, those in the Downtown Austin Project Coordination Zone, are required to meet additional criteria for temporary closures on the transportation network. Extending this requirement to cover the Vehicle, Transit, and Bicycle Priority Networks would help ensure that projects that close these networks receive extra scrutiny. Additional coordination could also help combine projects; coordinating projects in similar locations will reduce the amount of time these priority networks are closed. Expanding work hours and permitting work to take place at night could allow street work to be completed more quickly, reduce unsafe traffic exposure for workers, and lessen the impact closures have on our mobility. An overall limitation on the number of times major city streets, such as along these priority networks, are closed for non-emergency purposes would also help ensure our transportation network supports our mobility as often as possible.



## Closures and Detours Policy 4

### **Streamline and enforce closure and detour requirements**

#### **Improve processes to enable enforcement of traffic control requirements across all projects**

To occupy or close a portion of our right of way requires both a traffic control plan and an approved permit. The requirements for these differ based on the specifics of each project, and City staff review each to ensure that the closure of the transportation facility is necessary and that safety and mobility will not be affected by the closure or detour.

As our community has continued to develop, expand, and age, the number of requests to enter the right of way, either to build something new or maintain or fix something that already exists, has increased. To help ensure that the safety of transportation users, as well as of workers in work zones, is prioritized, as well as limit impacts on our transportation network, we must improve the way we process and handle requests to temporarily close transportation infrastructure.

There are several ways we can improve the way we handle temporary traffic closures. Creating standardized traffic control plans that help applicants supply the necessary information and reduce the time and effort City staff need to review these plans will help increase the amount of requests City staff can handle. Currently, it often requires more time and energy to help applicants create and correct these plans and help them through the permitting process than it takes to actually review the plan and permit.

Increasing inspections and the enforcement of violations will help ensure that work zones are adhering to their plans, are providing safe and necessary accommodations, and are completing their work quickly. Focusing inspections along priority networks will help ensure safety and mobility are the top considerations when temporary traffic closures or detours are necessary. Increased enforcement will help ensure that detours are accessible for all and that accessibility violations are addressed as quickly as possible. Locating reviewers and inspectors together in the Mobility Management Center will improve coordination among different City departments that oversee traffic control requirements.



## Closures and Detours Policy 5

### **Include all modes and users in special event planning**

#### **Plan for special event attendees to access events through all modes of transportation and encourage shared mobility options**

Special events strain the transportation network in several ways. In addition to sometimes closing streets and parts of our transportation network, they often fill our streets to capacity as many people try to go to the same place at the same time. This overwhelms our network at certain points. By facilitating and encouraging users to arrive at special events through all modes of transportation, we can help manage the demand on our transportation network that these special events generate.

Including all modes and users in special event planning will support the event itself in several ways. It will spread people across our different transportation systems, making it easier for people to arrive or depart the event. It will provide a safer environment for everyone by creating a clear plan for how pedestrians, bicyclists, and other multimodal users should arrive at or depart from the event. Planning for all modes and users also reduces conflicts between different transportation modes. Many special events attract higher numbers of pedestrians than normal, especially if there is limited or restricted parking at the event. Clearly delineating how each mode can access the event, like sharing information on where mode-specific parking areas are, or designating pick-up or drop-off locations for ride-hailing and shared mobility options will support the event and create a safer environment for both attendees and community members in general.

Planning for all modes also requires creating clear and easily understandable instructions for the public to follow. A good plan without proper implementation will not help the public understand new rules or accommodations in place for the event. Disseminating information, like setting up signage along a pedestrian route, will assist people in accessing the event. Other multimodal accommodations, such as pick up or drop-off zones for ride-hailing or mode-specific parking, should be clearly shown on maps and signage distributed to event attendees and made available to the public as well.



## ACE and the Special Events Ordinance

Austin is home to numerous well-known special events. Austin City Limits, the Austin Marathon, and the Pecan Street Festival are just a few major events that draw tens of thousands of people into our community every year. These special events not only bring in lots of visitors, often causing strain on the transportation network, but they require the use of our right of way, closing parts of the network and requiring detours.

As our community has grown, the desire to host events here has, too. To help deal with the increasing number of applications for the limited amount of space in our community, as well as to deal with the limited number of days in a year, the City created the Austin Center for Events (ACE). ACE is a collaborative office designed to streamline special event permitting. ACE is anchored by experts from transportation, music, police, fire, EMS, and other departments, agencies, and facilities. By combining offices and creating a “one-stop shop” for event permits, ACE is able to ease the burden on event organizers, while also reviewing the amount of available public space and resources being used each day.

Dovetailing with the creation of ACE and their event planning guidebook, the City released the Special Events Ordinance (SEO) in 2018. This ordinance helps regulate and standardize the many different events that happen in Austin. The SEO creates four tiers of events that differ based on estimated number of attendees, the length of the event, whether or not the event is at a city facility, and how many municipal resources must be dedicated to the event.

The creation of ACE and passage of the SEO have helped bring focus to the impacts special events have on our transportation network and other municipal resources. Regulation like the SEO and a centralized office such as ACE allow the City to maintain a birds-eye view of all the events around our community that could be affecting the transportation network, and it allows us to plan for these atypical conditions. By planning ahead we can support both special events, which are important social, economic, and community activities, while also ensuring the continued safety and mobility for people on our transportation network.

## Closures and Detours Policy 6

### **Provide helpful information about closures and detours to partners and the public**

#### **Provide closure and detour information for all functional abilities to the public and coordinate closures with mobility service providers**

Austin Transportation gives advanced notification of restrictions to our transportation network. These notifications allow the general public, various transportation stakeholders, and mobility service providers, including emergency service responders, to make necessary preparations and adjustments to their operations. The notification system currently depends on the type of roadway affected and the duration of the planned closure or detour. We attempt to distribute helpful information about closures and detours through a variety of methods, including Austin 3-1-1, direct public outreach by neighborhood or community communications, press releases, coordination with navigation apps, and dynamic message signs on our streets. Certain projects, by nature, entail long-term closures, like large-scale developments and capital projects, and additional notification may be necessary for longer or more major disruptions.

Moving forward, we should develop and implement tools that disseminate real-time information about active work zones. Tools like these are helpful to alert our public transportation providers, like Capital Metro and CARTS, when operational changes need to be made that could affect their service. Additionally, knowing real-time conditions about closures and detours can also help route first responders quickly and effectively in the case of an emergency.

We would like to expand the accessibility of our notification methods to alert people of all functional abilities of changes to normal transportation operations. For example, currently, we may only require diversion signs mid-block to alert a pedestrian of a smaller or shorter sidewalk closure. In some cases this is adequate notice for pedestrians to find and follow an alternate route. However, pedestrians who are blind or low-vision may not be alerted to the sign until they come upon it and would not necessarily know which way to head for an alternate route to the sidewalk closure. Exploring how innovations in closure and detour alerts, including both physical and digital systems of notifications, can assist people with mobility impairments navigate changes to our transportation network will increase the safety and usability of our network for everyone.







## Goods Movement

Our transportation network serves a critical role in the movement of goods throughout Austin—and goods are essential to our daily lives, whether it is food, medicine, clothing, or fuel. The movement of goods through Austin is also critical to Texas' economy and position as a leader in the global economy. Austin's multimodal freight network includes roads, railways, and airports, and provides for the movement of materials and finished goods. The operation of the multimodal freight network also employs thousands of people, contributing to our thriving economy. With the projected population growth in Austin and in Texas as a whole, significant growth in freight is expected over the next few decades.

Much of this growth will occur in the mega-region called the Texas Triangle (Houston-Dallas-Fort Worth-San Antonio-Austin), furthering the need for our transportation network to support this growth in the movement of goods.

Goods movement can have varying impacts on communities, which must be considered in the planning of our transportation network. Not surprisingly, areas of high freight activity in Texas are also highly congested. Nine of the top 50 freight bottlenecks in the United States are found in Texas, with one being in Austin: I-35 through central Austin. Congestion erodes the safe, efficient, and reliable movement of goods, negatively impacting the end users, including Austin business owners and community members. Traffic incidents involving freight vehicles can also have impacts on our community if the materials being transported are hazardous to people or to the environment.

With the rise in e-commerce, local and last-mile goods movement is a growing need. Technology for such goods movement is quickly changing, requiring engagement between public and private sectors to minimize the potential impacts of new delivery technologies, like autonomous robots, while maximizing safety, access, and efficiency.

*"Shift through traffic on I35 especially truck traffic."*

—Community Member

## Indicators and Targets



**Improve travel time reliability for freight operations**



**Improve the flow of freight traffic**



**Reduce the number of crashes involving non-radioactive hazardous materials**



**Improve the productivity of dwell time for commercial delivery vehicles**



**Increase the number of last-mile delivery options**

## *Goods Movement Policy 1*

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### **Support reliable freight operations and efficient goods movement through, into, and out of Austin**

**Provide for the safe, efficient, and reliable movement of goods through all phases of delivery throughout Austin and along the Texas Multimodal Freight Network**

To remain competitive in the economy at all levels, it is important that we support the reliable and efficient movement of goods through, into, and out of Austin. Goods that are produced locally need to make the trip to their final destinations and goods that we import need to arrive to us reliably and safely. We rely on our transportation infrastructure, including highways, railways, and airports to support the interregional and interstate movement of goods.

TxDOT identifies key roadways, railroads, ports, waterways, and airports in the Texas Multimodal Freight Network. In Austin, roads like I-35, US 290/SH 71, and SH 130, and facilities like the Austin-Bergstrom International Airport are part of this network; these roads and facilities are critical for focusing investment to improve safe and efficient goods movement. Expanding cargo and freight facilities at the airport and improving transportation operations and incident management along major corridors and highways are strategies we should pursue to support goods movement in and along the Texas Multimodal Freight Network and throughout Austin.

### **Kyle Heavy Tow Program**

**Transportation incidents involving commercial or large vehicles pose additional obstacles for our transportation network. The size of these vehicles makes clearing incident areas particularly difficult. Traditional clean-up vehicles are often unable to deal with incidents involving commercial or oversized vehicles, such as an overturned semi-trailer truck.**

**The City of Kyle has implemented a contract, run through their police department, that calls in heavy wrecker vehicles to clear these incidents. This heavy tow program helps manage incidents involving large vehicles, and can help minimize the effects of a large traffic incident. Programs like these are crucial to not only keeping our entire network operating as smoothly as possible, but to supporting our goods movement through, in, and out of Austin.**

## Goods Movement Policy 2

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### **Recognize, plan for, and mitigate impacts of goods movement**

#### **Assess and consider equity, environmental, and mobility impacts of goods movement and proactively develop strategies to mitigate them**

The movement of goods throughout our community is critical to our economy and helps ensure access to basic needs for everyone. However, there are impacts that must be recognized, planned for, and mitigated to equitably spread the effects of urban freight movement across the community. Truck traffic can contribute to congestion, add to air and noise pollution, and expose the community to hazardous materials resulting from incidents. Considering these impacts in the planning for transportation improvements and regulations can increase the equity in our community.

One way to minimize congestion impacts from freight movement would be to require deliveries at certain times of day when there are not as many users on the roadway system, such as overnight. However, there could be unintended consequences to equity, such as forcing low-income jobs in the freight industry to night shifts. We need to identify these types of unintended consequences, and potential mitigation measures, before regulating goods movement.

Additionally, we should coordinate land development for freight-heavy land uses to ensure the supply of transportation and utility infrastructure minimize impacts to surrounding land uses. Historically, industrial land uses requiring higher amounts of freight vehicles were located in underserved and underrepresented communities, especially in low-income neighborhoods of color. It is important for us to recognize these historical actions, mitigate impacts as much as possible, and minimize future disproportionate impacts from freight movement on parts of our community. As the urban core grows and has more diverse uses supported by freight operations, it is necessary to spread industrial uses and activities throughout the community to distribute the impacts and support the economy.



## Goods Movement Policy 3

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### **Improve safety and predictability of hazardous materials movement through Austin**

#### **Reduce risk to populations and environmentally sensitive areas with a designated route for non-radioactive hazardous materials movement**

Our economy requires the movement of certain materials that can be hazardous to our health and environment if not planned for appropriately. Hazardous materials are substances determined to be capable of posing an unreasonable risk to health, safety, or property when transported in commerce. The movement of non-radioactive hazardous materials (NRHM) is regulated by the state of Texas when a city reaches 850,000 in population, as we did in 2013. NRHM are materials transported in types and quantities which require placards on motor vehicles that indicate the type of material. Examples of NRHM are gasoline, fireworks, chlorine, diesel fuel, sulfuric acid, and propane. On the other hand, movement of radioactive hazardous materials is regulated by the federal government, rather than state governments.

We need to direct hazardous materials being transported through Austin away from heavily populated areas, like downtown Austin, and environmentally sensitive areas, such as the Edwards Aquifer Recharge Zone. To achieve this and fulfill requirements under Texas state law, we need to designate routes through Austin for the movement of non-radioactive hazardous materials. The designation of routes requires studying populations, environmental features, and the risk of crashes. The designation of a route will help lessen the probability of incidents and emergency responders to prepare in case of an incident. Once designated, the route will require signs on the roadways to show where non-radioactive hazardous materials are allowed, and fines to help enforce the regulation.



## Non-Radioactive Hazardous Materials Route Designation Study

Texas state law requires cities with a population over 850,000 people to designate routes for commercial vehicles to transport non-radioactive hazardous materials (NRHM). When our population went above this number, we initiated a formal process to designate NRHM routing through Austin. The study worked with local industry stakeholders and the public. It initially considered the feasibility of each existing roadway in our network for designation as an NRHM route. Based on feedback from the stakeholder working group and guidance from the Federal Highway Administration, the potential network for NRHM route designation was narrowed down to only through-routes on roadways classified as a principal arterial or above, and did not focus on local deliveries. Roadways with physical or legal constraints were also disqualified from being considered for NRHM route designation.

In comparing NRHM routing options, the study considered potential risk, travel time, environmental justice populations, roadway miles within the Edwards Aquifer Recharge Zone, and the number of sensitive environmental features within close proximity to the routes. Risk is a measure of the relative safety for an NRHM vehicle traveling along a specified route that considers potential impacted populations and crash probability.

The risk analysis of potential routes involves calculating the relative risk for numerous combinations of routing alternatives and identifying the through-routes which provide the safest routing option. In this study, risk for a given through-route is defined by crash probability along the roadway and potential impacted population within 0.5 miles of the roadway. North-south travel is the predominant NRHM through-routing movement for the study area. All major north-south routing options were considered for designation, including MoPac/Loop 1, SH 130, US 183, Loop 360, and I-35.

When comparing potential north-south NRHM routing options, SH 130 scored as the safest route in terms of risk for the general population as well as for populations in environmental justice areas. This routing option also has the fewest roadway miles running through the Edwards Aquifer Recharge Zone. Among the north-south NRHM routing options, I-35 and US 183 were identified as having the highest risk, as they both run through high-density areas. The stakeholder working group considered many of the roadways in West Austin to be unsuitable for NRHM route designation due to environmental concerns.

Public outreach was a crucial element that helped shape the study. This extensive process involved fifteen separate outreach events during which community members and industry stakeholders provided feedback to help guide the study and inform decision-making. Outreach also included an online forum to gather community input.

Based on community input and technical analysis, a selected route will be presented to TxDOT and the Texas Transportation Commission for approval. The City will work with TxDOT to implement the final route designations, including installing signage and setting fines.

## Goods Movement Policy 4

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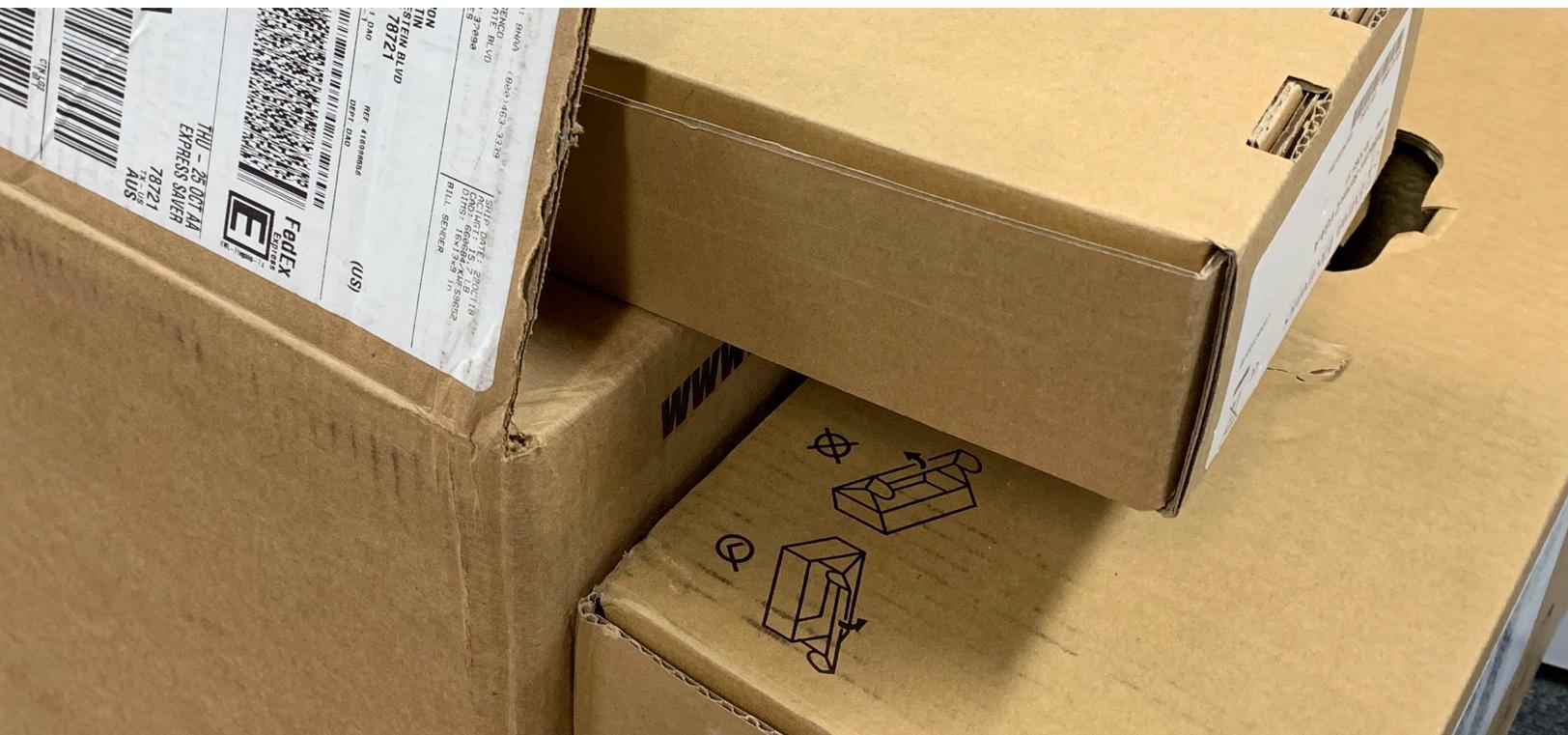
### Support local and last-mile goods delivery innovations

#### Improve efficiency of deliveries and increase access to goods for all by supporting new techniques and technologies

With the increase in e-commerce in recent years, local goods deliveries have increased significantly. Opportunities to improve the efficiency of delivery of goods once they arrive in Austin can reduce the impacts on congestion, reduce costs, and increase access to basic needs. Increases in traditional local goods deliveries by trucks of varying sizes means we need to be efficient in how we use curb space and loading zones, especially in areas of Austin where there is a lot of competition for that space, such as downtown.

New emerging technologies and techniques for last-mile deliveries, such as autonomous delivery robots, can achieve more flexibility in goods movement. We should work with the private sector and other jurisdictions to support and test these innovations in Austin to understand the possibilities they may serve as last-mile delivery options.

While the implications of these technologies are not always clear, it is important that we assess the benefits and impacts to the community to ensure we are reaching community goals. Mobility hubs, or locations with access to various mobility services, could serve as launching points for these emerging solutions. Mobility hubs could also incorporate delivery depot stations for customers to pick up packaged deliveries from a secured locker on their way home. This system would reduce the amount of deliveries to individual addresses and delivery vehicles on neighborhood streets.



## Goods Movement Policy 5

### **Participate in state and regional freight planning efforts**

**Work with industry trade groups, jurisdictions, and other entities to plan for growing demand and changes in freight operations**

The majority of the goods we rely on for personal and business needs are not produced in Austin, so it is critical that we participate in efforts to plan for freight movement across the region and the state. As technology and freight operations evolve, Austin must collaborate with industry trade groups and other jurisdictions in Central Texas and across the state to prepare the community for these changes. As automated driving vehicles are used more in freight activities, we must be prepared, through infrastructure, education, and regulations, to achieve the efficiency and safety benefits of the technology. We should seek opportunities to engage with industry leaders and organizations locally and across the state to share best practices, learn about new solutions and challenges facing goods movement, and plan for the future.

