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Performance Evaluation for City of Austin Transportation Management Center, 2017

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Contents

TMC Impact At-A-Glance for 2017

In summary:

- **815 customer service requests/month** are addressed by TMC staff
- **280 field technician dispatches/month** repairing problems throughout the city
- **18 timing adjustments/month** improve traffic flow during incidents and events
- **24,411 reported social media actions** based on traveler information
- **20 Special Events managed** across 56 days
- **More than 34,000 hours of citizen travel time saved** due to TMC intervention
- **$1,716,700 or more total taxpayer dollars saved**

Executive Summary

This report was commissioned to assess the impacts of the City of Austin Traffic Management Center (TMC) for the year 2017. The TMC is staffed every day of the week and serves to manage traffic signal malfunctions, monitor and manage traffic congestion due to on-street lane blocking incidents, and special cultural events, as well as to provide information to travelers and other agencies. An additional function is to assist in responding to related 3-1-1 customer service requests (CSRs). The goal of the report is to inform the City of the value of specific benefits. The ability to measure TMC performance becomes increasingly important as Austin population growth and traffic congestion challenges evolve.

To capture some of the benefits of the TMC to the traveling public, this report provides qualitative and quantitative analyses for selected aspects of TMC operation. For those aspects that are quantitatively analyzed, an underlying dollar amount is computed from traffic delay time estimates. These come from a mixture of measurements at the roadway, simulation results, and engineering judgment and assumptions. It is important to note that this report does not capture or report many other aspects, including costs saved due to improvements in emissions and safety. To this end, it is fair to say that this report quantifies a subset of all benefits, and provides a conservative indication of cost savings.

The quantitative assessment looks at four aspects of TMC operation. First, TMC staff adjust signal timings near lane-blocking incidents on city arterial roads to reduce travel delay. Such incidents are often caused by stalled vehicles, planned/unplanned utility work, and wrecks. Second, signals are sometimes re-timed on frontage roads in areas where the respective expressway experiences a lane-blocking incident. Third, the TMC responds to traffic signal outages that are made known through centralized monitoring software or customer service requests. Prompt response minimizes the travel delay time caused by a disabled signal. Finally, the remote monitoring and diagnosing capabilities of the TMC reduce the number of times that signal technicians are dispatched. This saves unnecessary trips, allowing more productive work to be completed sooner. In addition to these quantitative assessments, qualitative benefits are listed including the TMC's response to

planned citywide events, and the provision of traveler information via dynamic message signs (DMS) and online social media.

In comparing the analyzed quantitative cost savings estimates with the annual TMC operating expense, an indication of benefit can be expressed as a benefit/cost ratio. **The benefit/cost ratio for 2017 is 1.3**, indicating that the TMC provides more benefit to the traveling public than the tax dollars used to operate it. In considering the other benefits that are at this time difficult to assess monetarily, the true benefit is arguably more significant than what can be quantified in this report.

Introduction

The current City of Austin Transportation Management Center (TMC) opened in 2001 on Toomey Road. Since then the TMC has been monitoring traffic patterns, deploying resources to address equipment issues, implementing signal timing adjustments, and aiding in special event management with the ultimate goal of improving traffic operations in Austin. A summary of the assets monitored by the TMC can be found in Appendix A. In March 2015, the City released a Traffic Congestion Action Plan, which identified the need for operating the TMC for extended hours with additional staffing. In April 2016, the City expanded operations of the TMC by hiring a consultant firm after a competitive process. Through this contract, the TMC increased its level of service, managed incidents and events, improving operational efficiency and ultimately boosting transportation system performance.

This report was commissioned to assess the impacts of the TMC for the year 2017. The goal of the report is to inform the City of the TMC's performance and outlines the value of specific benefits. The report begins with an overview of TMC operations, identifies qualitative benefits, and provides a quantitative assessment of the benefits and costs largely in terms of the monetary cost of delayed traffic. It is important to note that this report does not capture or report on the many non-quantitative measurements, and does not account for the many types of activities and resulting savings, including those pertaining to emissions and safety. To this end, it is fair to say that this report quantifies a subset of all benefits.

This report is the second of an annual series that documents the TMC performance and impacts to the citizens of Austin. While the 2016 report only addressed *TMC expansion*, this report encompasses *all TMC activity* for 2017. The new methodology will allow for comparisons among benefit/cost ratios in future reports.

Transportation Management Center Overview

The population in the Austin area is growing at a fast rate. Since 2010, it has grown more than 14 percent, resulting in a similar increase in vehicle miles traveled in Travis County (1). Even larger increases have been reported for surrounding counties as the population

has surged in area suburbs (1). This growth in travel demand has stressed the transportation system in Austin as many suburban residents commute into and around Austin. The area has been consistently rated as having some of the worst traffic congestion in the nation. The Texas A&M Transportation Institute recently scored several Austin-area highways as some of the most congested in the state, with 14 segments in their Top 100 Most Congested Roadways in Texas (2).

According to a City of Austin Transportation Effectiveness Audit (1), the impact of area growth and congestion on the transportation network has not gone unnoticed by residents. In fact, growth has coincided with a significant decrease in user perception of system performance. Citizen satisfaction with traffic flow in Austin dropped from 27 percent to 10 percent between 2010 and 2016 (3). Area growth has caused travel demand to far outpace increases in supply, as providing additional capacity is challenging given limited availability of land for new roadways and limited funding.

To address the City's congestion challenges, staff developed a Traffic Congestion Action Plan (4) that outlines short-, mid-, and long-term actions. One of the first actions in the plan was to apply extended hours and staffing to the Traffic Management Center starting in 2016. The expanded hours in effect today are shown in Figure 1. Meanwhile, the TMC is operated with the goal of helping to address these challenges. Through this, the TMC is transitioning from serving a maintenance purpose (e.g. monitoring and rectifying malfunctioning field equipment) to increasingly serving an operations purpose (more fully optimizing the movement of traffic). Austin traffic is managed both proactively (in anticipation of a disruption), and also reactively (in response to a disruption), and expanding the TMC capabilities accelerates the reaction time.

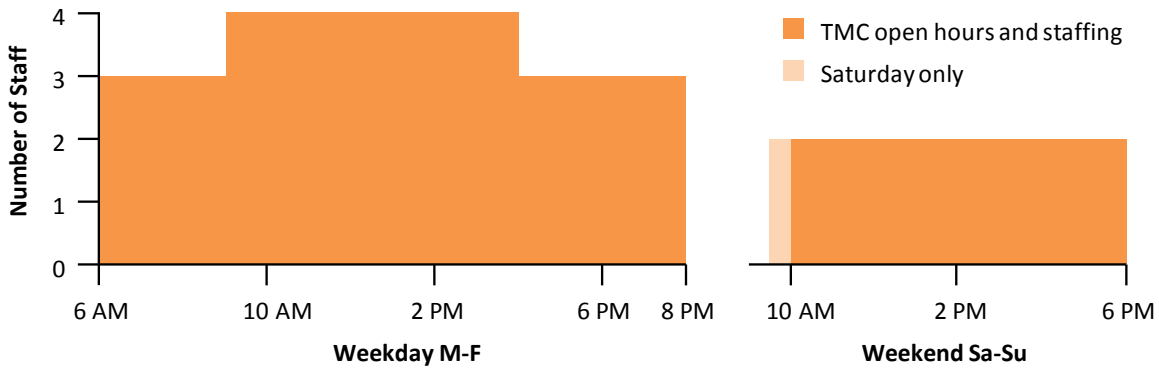

Figure 1 – TMC staffing and operating hours

Capabilities, Services and Goals

The TMC, at its core, conducts activities every day of the week. While the impact of some activities can be feasibly quantified (e.g. expressed as a dollar amount of savings), most activities at this time are only qualitatively identified. For each TMC activity listed below,

(P) signifies that the activity is in some way **presently quantified** in this report, and **(A)** signifies that the activity is **anticipated to be quantified** in the future.

- **Traffic Signal Adjustments due to Lane Closures (P).** Observing and updating signal operation on freeway frontage roads and arterials in response to lane-blocking incidents
- **Planned Events (A).** Preparing for upcoming special events and major construction projects, and actively monitoring and adjusting signal timings during events
- **Signal Outages (P).** Responding to unscheduled signal flashing or outages, to restore normal traffic operation promptly
- **Remote Investigation and Response (P).** Sending qualified personnel to diagnose and repair problems when an on-site visit is deemed necessary
- **Traveler Information (A).** Updating the city's traveling public through electronic message signs and social media with notifications on road closures, disruptive events, and safe driving practices to reduce congestion

In 2017, other major efforts that are only qualitatively identified include:

- **Coordination with TxDOT, APD, CTRMA, and other agencies.** Communicating to best leverage the capabilities and resources that each has to offer
- **3-1-1 Customer Service Requests.** Investigating, diagnosing, & resolving problems reported via 3-1-1 complaints.
- **Maintenance Tracking.** Keeping track of maintenance of infrastructure to reduce failures and reduce repair costs
- **Performance Monitoring.** Tracking the effectiveness of active traffic management to improve processes
- **Video Detection.** Setting up new video detection cameras and tweaking existing to maintain accurate working detection
- **Working with schools** in setting up school zone flasher schedules to improve safety
- **Coordinating with Hurricane Harvey** emergency operations center

Assessment of Benefits

The benefits assessment in this report focuses on activities with qualitative and quantifiable measures of impact the TMC makes on Austin's transportation system. For quantitative measures, a cost/benefit analysis is provided to identify, in simple terms, return on investment for the Austin traveling public.

Performance Measurement Methodology

To document issues identified through monitoring the performance of the transportation system or received via Customer Service Requests (CSRs), TMC staff uses a web-based issue tracking system. Examples of recorded issues include:

- Signals in flash mode (e.g. changing to all-way flashing red)
- Signals with malfunctioning detectors
- Lane blockages near signal locations
- Other signal retiming needs
- DMS and social media messages posted to the public

Among the recorded issue details, the issue tracker allows the duration of incidents or response times to be recorded and the locations of events to be identified. The electronic form can then be submitted to an associated database that organizes and stores user entries for future retrieval and analysis. A sample of the web-based tool is provided in Figure 2.

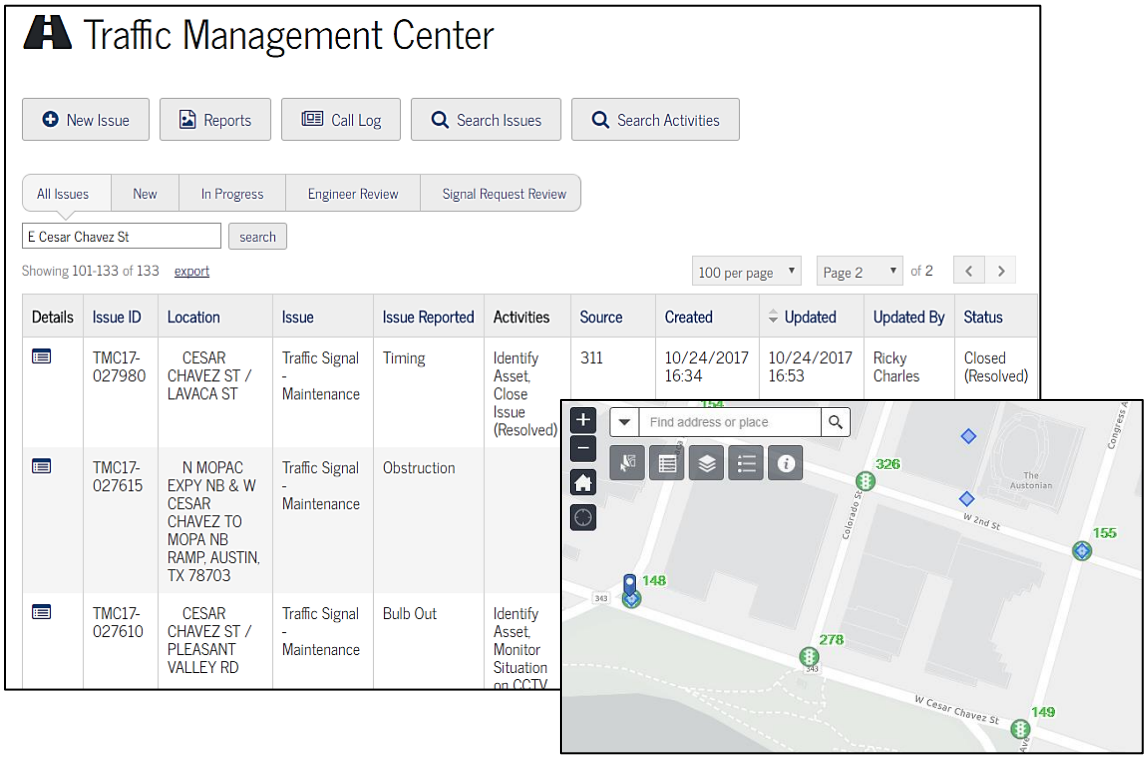

Figure 2 – Web tool for tracking TMC issues

The benefits captured in this report are obtained from data recorded in the web tool, as well as data obtained through simulation modeling for cases where field data was not available. More details are described below in the assessment of benefits.

Traffic Signal Adjustments due to Lane Closures

When a travel lane on a city street is blocked due to a stalled vehicle or crash, and the incident is within view of a closed-circuit television (CCTV) camera, the TMC monitors the incident and coordinates with responders. When a signal near a traffic-blocking incident or event is retimed, the goal is to best facilitate the movement of traffic that is diverting from the affected area. Often, this new traffic pattern is very different than the expected daily traffic movements that are measured in routine annual signal timing efforts. For example, demand for a left turn may increase significantly on a busy arterial whose normal through-movement is blocked because of a major traffic incident, or a fallen tree. Adjustments to signal timing can result in shorter queues, which have the added benefits of reduced emissions, fewer lane blockages caused by too many vehicles waiting to make a left turn, and fewer opportunities for secondary collisions.

Several special cases have been identified from 2017 that exemplify significant, measurable impact from interventions performed by the TMC. Scenarios from lane-blocking events in 2017 in key areas were analyzed or estimated using engineer logs, field data, and simulation results. The first portion of analysis applies to arterial roads, and the second pertains to frontage roads along expressways.

Arterial Lane Closure

In considering lane closures on arterial roads, the estimated delay time saved to travelers from a representative intersection (e.g. an incident along S. Lamar Blvd. and Barton Springs Rd.) was applied to similar intersections for off-peak hours (see the technical addendum that accompanies this report for details). To exemplify a typical TMC signal timing adjustment response, 10 seconds of green time was added to traffic approaching the lane closure to alleviate delays. An average value of $22.61/hour is used, which is derived from the TxDOT 2017 Road User Costs (6). A conservative occupancy estimate of one person per vehicle is used. As in the City's signal timing models, truck traffic is assumed to account for 2% of all traffic. See Table 1 below.

Table 1: Delay savings due to signal retiming responses on arterials

Representative intersection volume (veh/hr)	4,000
Estimated average delay savings/event (hr)	53
Average number of timing adjustments/month	18
Value of time with 2% trucks ($/hr) (Source: TxDOT)	$22.61
Annual delay savings	**$260,500**

Highway Lane Closure

The TMC response to lane closures or blockages on highways often involves adjusting timings of signals along nearby frontage roads. Representative frontage road intersections along an incident on Sept. 29 near IH-35 and E. William Cannon Dr. are analyzed and

applied to similar occurrences throughout the year. The number of vehicles exiting the expressway is assumed to be the number that would be traveling in the blocked lane. In this analysis, 10% of all vehicles are assumed to be trucks. This analysis shown in Table 2 only captures the delay savings at the primary intersection, and not upstream intersections, nor the highway.

Table 2: Delay savings due to signal timing responses along highways

Representative interchange volume (veh/hr)	9,000
Estimated average delay savings/event (hr)	281
Average number of events/month	3
Value of time with 10% trucks ($/hr) (Source: TxDOT)	$23.43
Annual delay savings	**$237,000**

Planned Events

The TMC monitors and responds to planned events. The events include major roadway construction and special cultural or sporting events. These are a sampling of events and corresponding TMC activities.

Construction, including coordination with Mobility35 (7):

- **There were 4 major TxDOT construction projects in 2017** that involved TMC traffic management: IH-35/Oltorf Dr., IH-35/51st St, US 183/Loyola Lane, and US 183/Techni Center Dr. The following are some of the key points associated with IH-35/Oltorf construction.
- The IH-35/Oltorf project involved replacing an existing bridge on Oltorf over IH-35 with a wider bridge that includes U-turns.
- There were 1 or 2-mainlane closures, bridge closures, or full overnight IH-35 closures for major construction activities.
- Coordination with TxDOT resulted in comprehensive checklists of activities to prepare for major overnight closures.
- Special signal timing plans were developed that did not require police officers to direct traffic all night. This increased safety for the officers.
- Traffic signals were watched remotely and signal timings for neighboring intersections were adjusted as necessary.

Special cultural and sporting events also entail planning and monitoring.

- **In 2017, the TMC managed 20 special events spanning 56 days** (see Appendix B for the complete list), including:
    - Major events such as Austin City Limits, SxSW, Blues on the Green, and the 3M Half-Marathon
    - Circuit of the Americas events including concerts and F1 races
    - University of Texas football games—6 home games
    - Fireworks for Independence Day and New Year's Eve

    - Scheduled and unscheduled protests
    - Republic of Texas Biker Rally
- There were also 2 major VIP visits:
    - President of the United States
    - Vice President of the United States

Because of the citywide impact of many of these events, quantitatively estimating the value of TMC intervention for such planned events is difficult and currently not reported.

Signal Outages

The TMC operators' highest priority is to respond to incidents involving a signal outage, which include situations where the signal goes into "all-way stop" flashing operation, or becomes totally dark. Signal outages may have a variety of causes, including lightning strikes, power outages, and vehicle collisions with signal hardware. When an outage occurs, the following steps typically take place:

1. An outage is discovered via camera, the advanced transportation management system, CSRs, and/or Austin Police Department (APD).
2. The incident is logged.
3. A signal technician is dispatched to the incident location.
4. Coordination is made with Austin Energy if the signal incident is caused by a power outage.
5. Coordination is made with APD if manual traffic control is needed while the signal is out.
6. DMS messages are posted where applicable.
7. Social media messages are posted where applicable.
8. Where cameras are available, the incident location is monitored until the issue is resolved.

To capture the delays associated with signal outages, traffic simulation software was used along with representative traffic counts to estimate travel delay caused by an outage. (Details on the simulation methodology are found in the technical notes that are issued with this report.) Table 3 shows the estimated benefit of active TMC intervention calculated over the 2017 analysis period. To calculate the cost savings, the same value of time is used as found in the lane-blocking arterial analysis above, and applied to the delay hours saved as logged in the Data Tracker for the month of July, 2017. In projecting to the entire year, it is assumed that the signal failure rate is similar in other months.

Table 3: Delay savings due to responses to signal outages

Total delay saved in one month (hr)	1,042
Value of travel time (Source: TxDOT)	$22.61
One-month savings	$23,600
Annual delay savings	**$283,200**

These results serve as estimates solely due to reduced delay and value of travel time, and do not consider other benefits as decreased fuel consumption, reduced emissions, and safety improvements.

Remote Investigation and Response

The TMC significantly reduces the need for signal technicians to travel throughout the city to investigate and service problems. Each dispatch involves a signal technician traveling from city facilities or prior service sites out to a new site that may need servicing—a time-consuming process, especially during times of heavy traffic. However, TMC staff can use images from cameras, data from traffic signal control devices, and communications offered by the citywide fiber-optic computer network to evaluate many problems and determine whether it is necessary for a signal technician to be dispatched. In many cases, a CSR can be addressed remotely through the advanced transportation management system and other tools. Whenever a technician is saved a trip, that technician is available for the next scheduled work activity. That accelerates work completion, and saves unnecessary cost.

Many CSRs are submitted through the Austin 3-1-1 service. Categories of CSRs that are addressed by the TMC include:

- **Traffic signal maintenance:** addressing a malfunctioning, at-risk, or sub-optimal traffic signal
- **Traffic signal new/change:** requesting the placement of a new traffic signal or the reconfiguration of an existing signal
- **School zone flasher:** maintaining or placing flashing beacons in school zones
- **Emergency vehicle preemption device:** prioritizing emergency vehicles through green lights
- **Traffic engineering:** maintaining or altering roadway markings, signs, and alignments
- **Traffic calming:** mitigating speeding and dangerous driving by installing roadway devices or curbside features that encourage slower driving

Table 4 shows an analysis of the estimated cost savings facilitated by the TMC's remote investigation and response capabilities.

Table 4: Savings due to remote investigation and response capabilities

Avg. CSRs handled by TMC	800/month
Avg. CSRs that result in a dispatch	280/month
Avg. time spent by signal tech dispatch (incl. travel)	1.5 hr
Avg. time savings for signal tech	780 hrs/month
Loaded cost for a signal tech	$100/hour
Cost savings per month	$78,000
Annual cost savings	**$936,000**

This estimate addresses signal technician dispatches only. It does not consider other TMC activities that facilitate collaborative teamwork between the centralized engineers and the onsite signal technician.

Traveler Information

The TMC issues information to the public through dynamic message signs (DMS) found throughout the city and on social media through Twitter. Media outlets monitor the Twitter feed. During times that a scheduled event or a traffic incident is not displayed, public service announcements encourage safe driving behavior.

For DMS, an estimated total of 80 messages pertaining to incidents and events were displayed during 2017. Some messages were city-wide while others were limited to a region of relevance. For most of the year, 12 DMS signs were operational along roadways that each carry approximately 10,000 vehicles per day.

While tools such as the Federal Highway Administration (FHWA) TOPS-BC tool (8) can be used to place an estimated monetary value on the benefit provided by DMS, it is difficult without in-depth surveying to determine the percentage of drivers that react to DMS messages, as well as the time saved by travelers. As the TMC moves forward in exploring how DMS can be tied with sensors throughout the city to display travel time estimates, the traveling public is expected to increasingly benefit from DMS.

For social media, or specifically the TMC's use of Twitter, the public is informed about incidents, travel delays, and public service announcements. The analysis shown in Table 5 pertains to messages issued by the TMC, and not messages solely originating from the Public Information Office.

Table 5: Twitter social media analysis for TMC activity

Tweets from TMC	**569**
Views (impressions)	2,403,500
Actions (engagement)1	24,411
Average engagement rate2	1.02%
Likes	991
Media engagements	12,436

While it is informative to use these criteria to understand the possible social media impact, it is difficult to equate impact to a dollar amount and benefit/cost ratio. As a result, benefit in monetary terms is not included in analysis of social media messages.

[1] Engagement is an indication of action taken upon information, including the number of Likes and Retweets.

[2] Twitter Analytics defines Engagement Rate as Engagements divided by Impressions. This serves as an indication of how much action results from the tweets.

Overall Benefit-Cost Analysis

The cost of TMC operations for the year 2017 is $1,347,500. This includes consultants that provide additional staff to manage and operate the TMC and support for the advanced traffic management software that control traffic cameras and provide automated alerts when incidents occur.

When communicating the benefits provided to the public, it is common for public service organizations and projects to present estimates of benefit and operating costs into a cost-benefit analysis (9). In such an analysis, evidence shows whether the benefits (B) outweigh the costs (C) of the project or service (in which the B/C ratio is greater than 1), or whether the project or service is inefficient (in which the B/C ratio is less than 1). The set of quantitative analyses above are incorporated into a benefit-cost analysis.

The analyses that are considered in Table 6 include benefits of TMC special signal timing responses, responses to signal outages, the prevention of unnecessary signal technician dispatches, and DMS messages.

Table 6: TMC measured activities for 2017

Activity	Benefit to public
Signal timing – arterial lane closure	$260,500
Signal timing – highway lane closure	$237,000
Signal outage response	$283,200
Remote investigation and response	$936,000
Total benefit	**$1,716,700**
Final benefit-cost analysis	
TMC cost	$1,347,500
Benefit-cost ratio[3]	**1.3**

Looking at the quantifiable aspects alone, the TMC provides value to the City of Austin traveling public. The measurable benefit outweighs the cost of operating the TMC.

As mentioned earlier, it is important to acknowledge that this benefit-cost analysis is only possible on TMC operation strategies that are quantitatively measurable under its current capabilities, and that all possible types of activities and savings are not accounted for, including emissions and safety. The results should therefore be seen as a minimum estimation of benefit, not a portrayal of total impact, and as such should not be a stand-alone factor in decision-making processes such as budget forecasting. Rather, the quantified benefit should be complemented with other inputs for a more complete analysis. Further research efforts will improve the comprehensiveness of TMC activity measurements.

[3] This number only includes benefits that were quantifiable given current information. For this reason, we believe our analysis gives a conservative estimate of the benefits achieved.

Conclusions

Since 2001, the City of Austin Transportation Management Center has been dedicated to improving traffic flow throughout the City. The TMC offers capabilities for quick response to signal outages, incident monitoring via cameras, active traffic signal timing adjustments, and traffic management during special events. Austin citizens are informed of travel conditions via messages posted to dynamic message signs and social media. The TMC staff assists in clearing incidents and promptly dispatches field technicians to repair broken signals.

Beginning with the TMC expansion in 2016, the City of Austin has pioneered efforts in assessing the benefit of TMC operations to the public. Despite the challenge of capturing and measuring many key aspects of the TMC, data collection and analysis has partially equated a dollar amount and hours of time saved to several types of activities.

Analyses based on engineer logs, service requests, traffic simulations, and engineering estimates from 2017 are conducted to quantify a value for special traffic signal retiming efforts, responses to signal outages, timesaving capabilities offered by remote diagnosing and servicing, and the impact of DMS. Many other benefits of the TMC are qualitatively identified within this report, but are difficult to measure. The quantitative estimates depicted this this report are therefore conservative. With the quantitative analysis, **the benefit/cost ratio of the TMC operations during 2017 for City of Austin is 1.3**. This indicates that the TMC offers value to the traveling public that exceeds the taxpayer dollars that fund TMC operations.

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Appendix A: Background on TMC-Monitored Assets

The TMC procures and utilizes a variety of assets to help efforts in managing traffic within the City:

- **Central software.** To help monitor the status of deployed equipment and implement real-time adjustments to signal timing plans, the City operates an advanced transportation management software tool called the Kimley-Horn Integrated Transportation System (KITS). See Figure A1. The City is currently undergoing an effort to connect more components, including detectors, to this system.

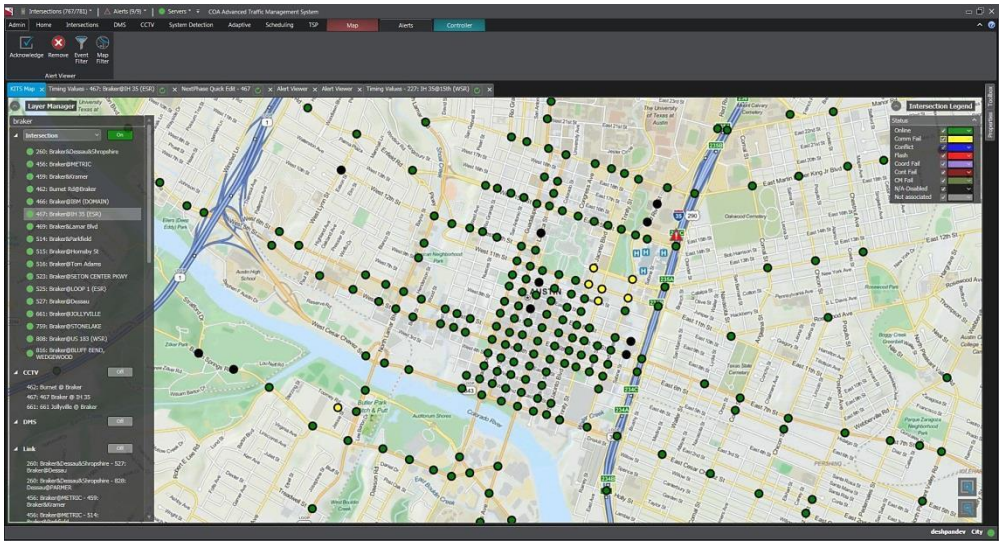

Figure A1 – KITS software with downtown Austin detail

- **Signals.** As of Dec. 2017, the City is operating and maintaining 1,100 signals and pedestrian beacons (see Figure A2).
- **School zone flashers.** Safety around 158 schools is enhanced by 561 school zone flashers.
- **Sensors and detectors.** The TMC also monitors 186 Bluetooth sensors, recording travel time throughout the City (see Figure A3). The City has 32 radar volume detectors that measure the amount of traffic on respective sections of roadways. Finally, the City has inductive loop detection or video detection working on most signals that allow signals to be responsive to current traffic conditions.
- **Cameras.** TMC operators monitor traffic conditions using CCTV cameras. Currently, the center operates 353 CCTV cameras. TxDOT operators at the Combined Transportation, Emergency & Communications Center (CTECC) can tap into the City's cameras to assist in emergency and freeway operations. Cameras and detector sensors are all used by TMC staff to understand and respond to changing traffic conditions without needing to physically access the respective locations. Figure A4 shows the location of operational cameras.

- **GridSmart units.** These high-tech devices provide 360-degree fish-eye camera views of intersections and have the ability to monitor and collect traffic data. City of Austin has deployed 33 of these at critical intersections.
- **Dynamic message signs.** Lastly, the TMC maintains and operates 13 dynamic message signs (DMS) throughout Austin, installed at permanent locations (see Figure A5). One of these was not operational for most of 2017. Each sign has the capability of providing three-line messages with up to two phases. They are used to convey information about upcoming events, road closures, and standard safety messages to the traveling public.

Many TMC services that use these assets are beneficial but not necessarily quantifiable at this time. Further research will be conducted to quantify more TMC services and costs of equipment. The underlying intent and result of all TMC services that use these assets is to reduce travel time, congestion, and emissions while improving safety.

Signals

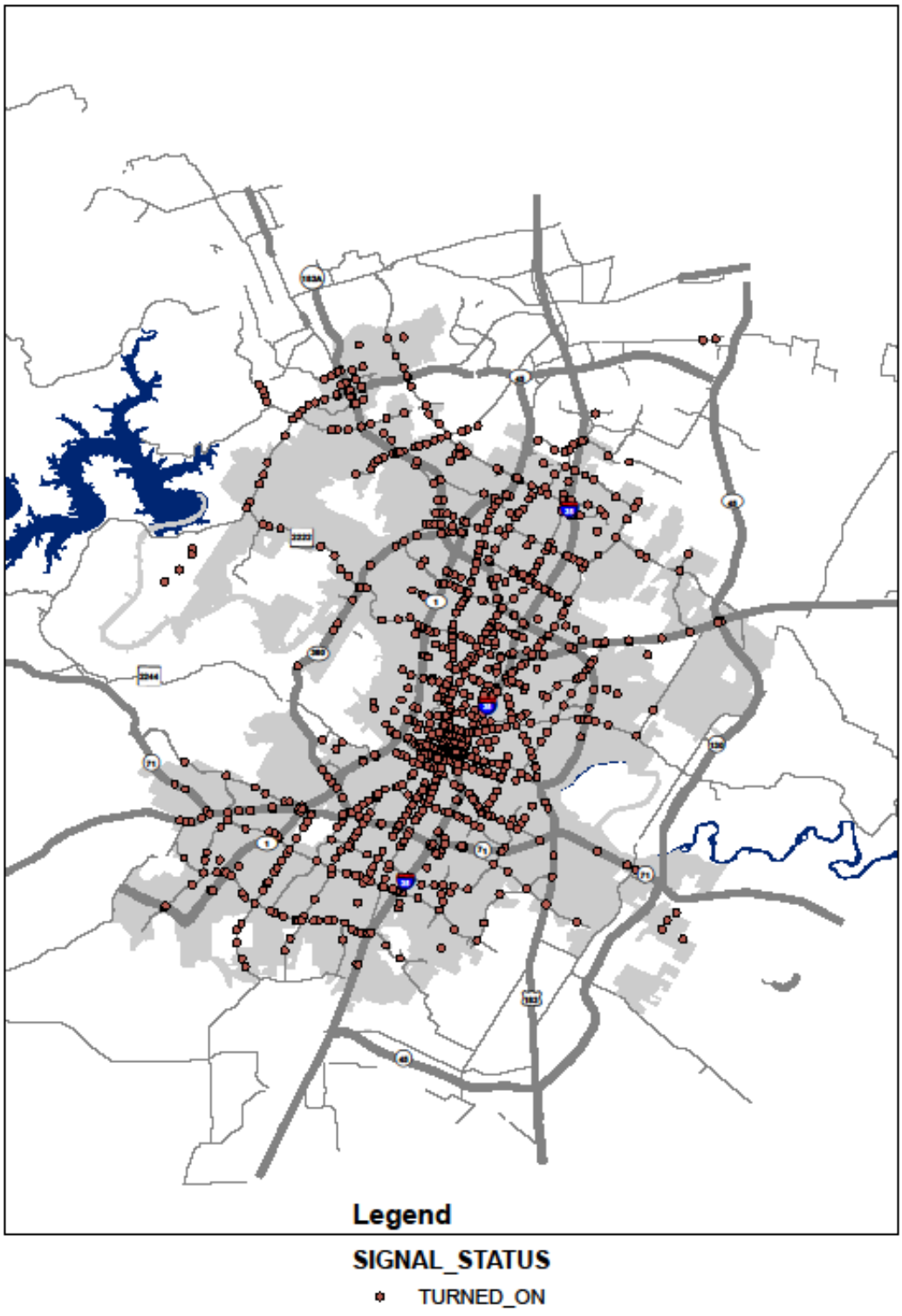

Figure A2 – City of Austin Traffic Signals

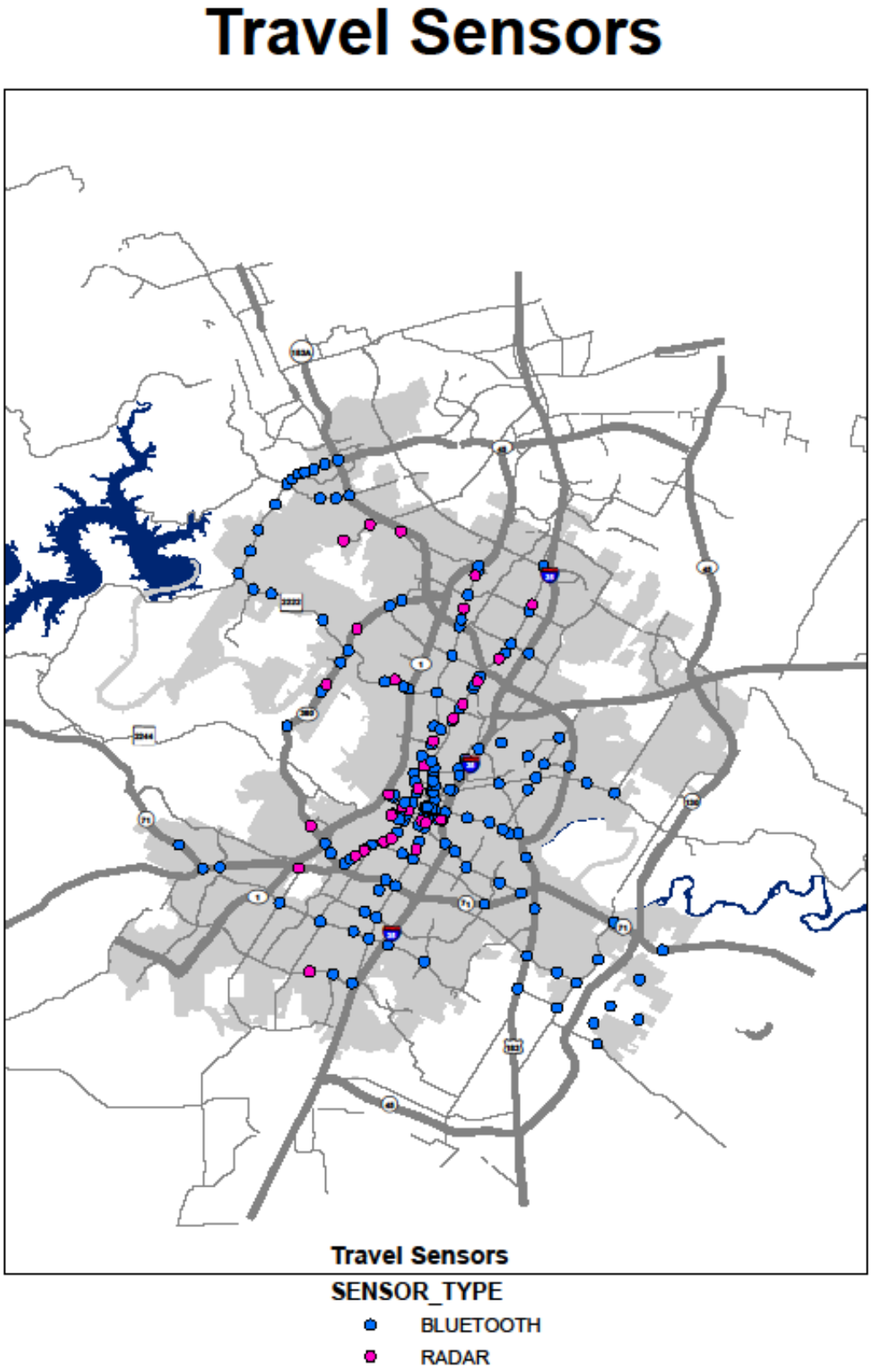

Figure A3 – City of Austin Travel-Time Sensors

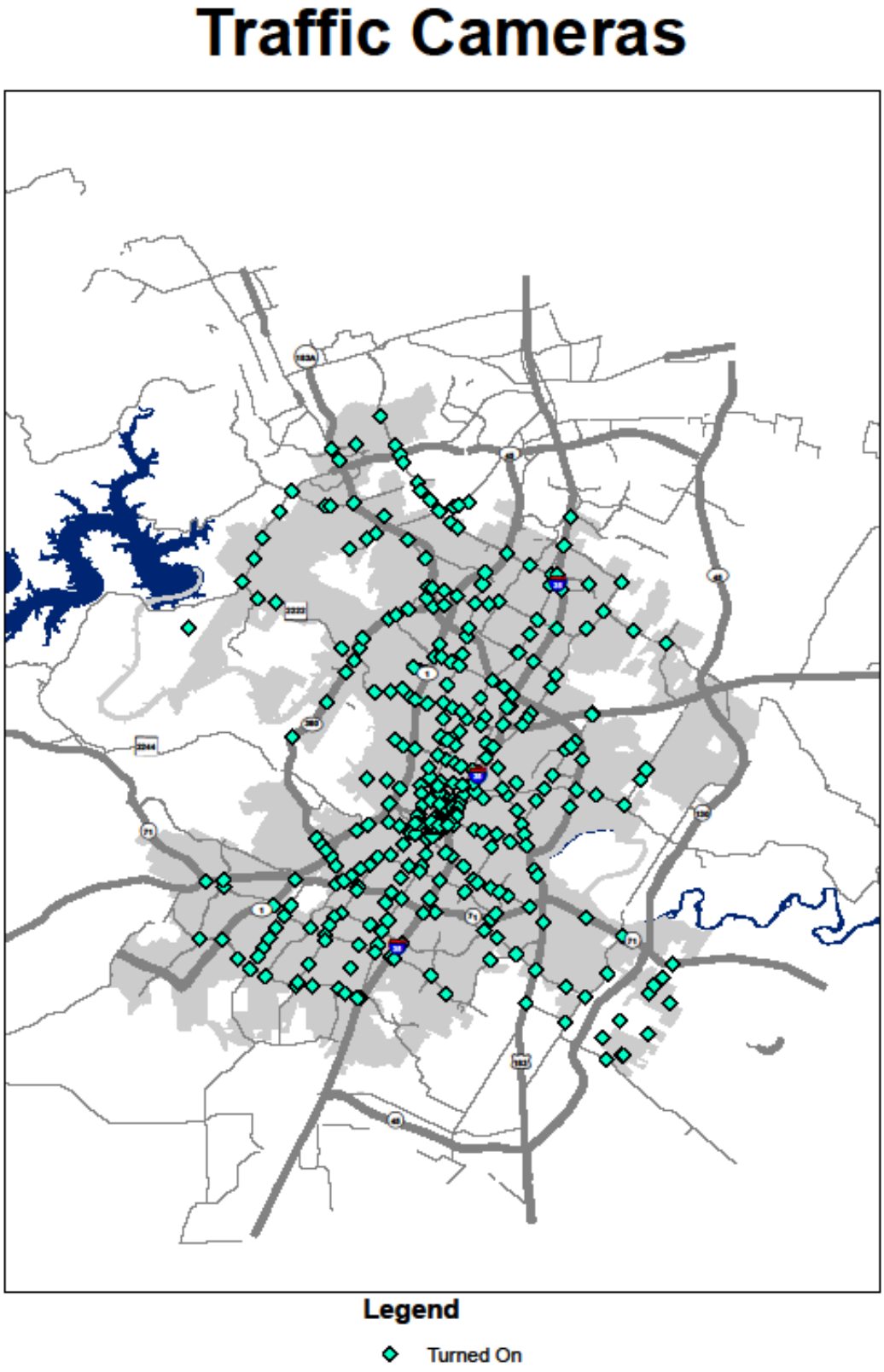

Figure A4 – City of Austin Camera Locations

Dynamic Message Signs

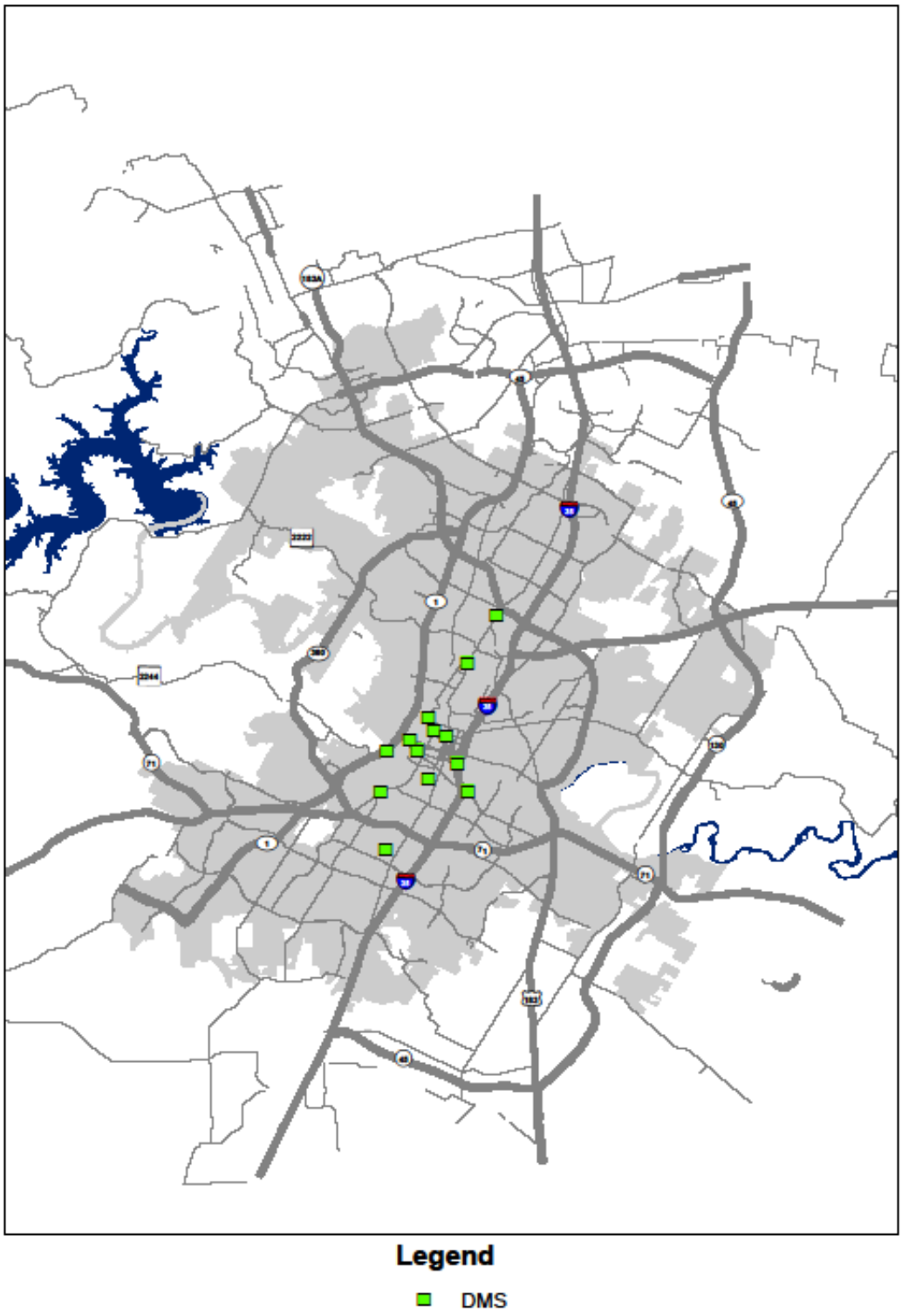

Figure A5 – City of Austin Dynamic Messaging Sign Locations

Appendix B: Special Events for 2017

This Appendix identifies the cultural, sporting, and VIP (Very Important Person) visit events that the TMC engaged with in 2017, in Table B1. All of these significantly impact the city because of major road closures or very high traffic demand in concentrated areas. Some events overlap, and/or span multiple days, and this table does not account for the advance days that the TMC staff plan on an upcoming event.

Table B1: Special cultural and sporting events for 2017

Date(s) of event	Event	Days
1/16/2017	Martin Luther King Jr. March	1
1/20/2017	March for Justice	1
1/21/2017	Women's March	1
2/18-2/19/2017	Austin Marathon	2
3/10-3/19/2017	SXSW	10
5/24/2017	Blues on the Green	1
5/29/2017	LifeTime TriCapTex	1
6/9/2017	Republic of Texas Rally	1
6/14/2017	Blues on the Green	1
7/4/2017	July 4 Fireworks	1
7/12/2017	Blues on the Green	1
8/2/2017	Blues on the Green	1
8/3-8/4/2017	Wizard of Oz	2
8/5/2017	Circuit of the Americas (COTA) Concert - Incubus	1
8/10-8/11/2017	Wizard of Oz	2
8/29/2017	VIP visit: President of the United States	1
9/2/2017	University of Texas (UT) Football	1
9/8/2017	COTA Concert - Green Day	1
9/9/2017	UT Football	1
9/20/2017	COTA Concert - Depeche Mode	1
10/6-10/15/2017	Austin City Limits	6
10/7/2017	UT Football	1
10/20-10/22/2017	COTA F-1	3
10/21/2017	UT Football	1
11/11/2017	UT Football	1
11/15/2017	VIP visit: Vice President of the United States	1
11/24/2017	UT Football	1
12/8-12/9/2017	COTA Winter Wonderland	2
12/12-12/14/2017	Ballet Austin Nutcracker	3
12/14-12/23/2017	Trail of Lights	10
12/31/2017	New Year's Eve Fireworks	1