Data-Infused Workflow for TMCs

ITS Texas – September 2022

Lance Ballard, P.E.

PREPARED FOR
MOBILITY MANAGEMENT CENTER

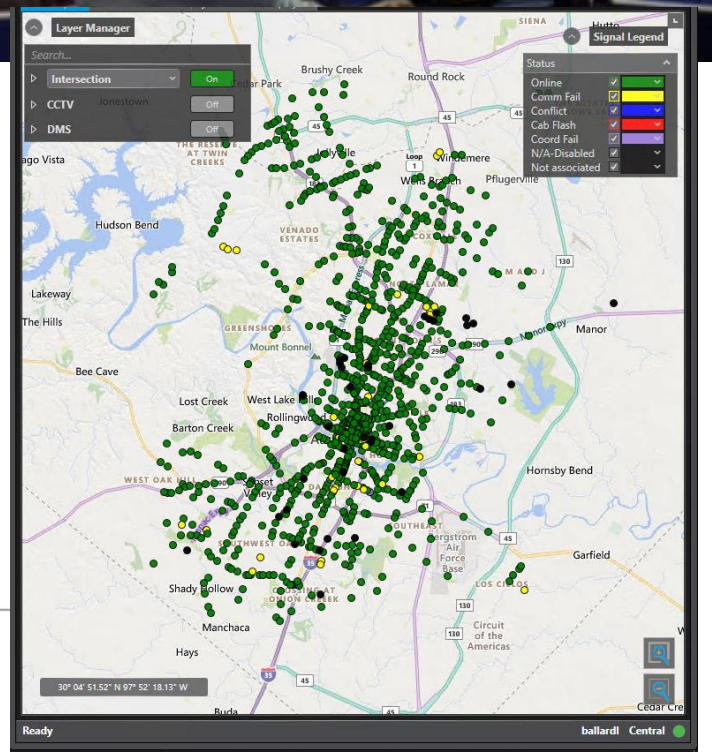
PREPARED BY
Kimley»Horn

Outline

- Mobility Management Center (MMC) Overview
- Cast Vision
- Infuse Data into Workflow
- Turn Data into Action
- Capture Benefits

Mobility Management Center - Overview

- Active management
- Maintenance management
- Dispatch technicians
- Event management
- Emergency response support
- Traveler information



1,100 SIGNALS

630 TRAFFIC CAMERAS

13 DYNAMIC MESSAGE SIGNS

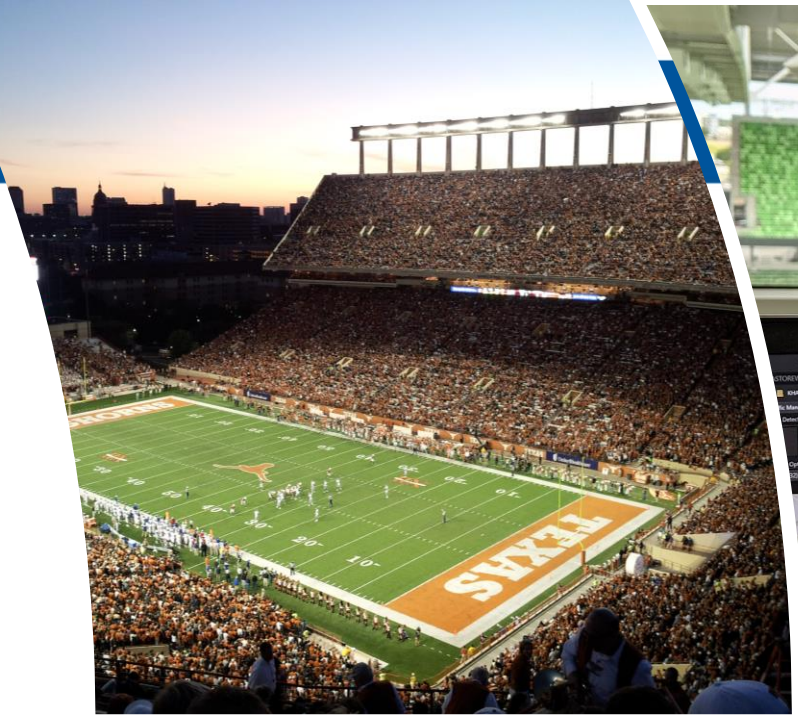
1,000 CITIZEN SERVICE REQUESTS/ MONTH

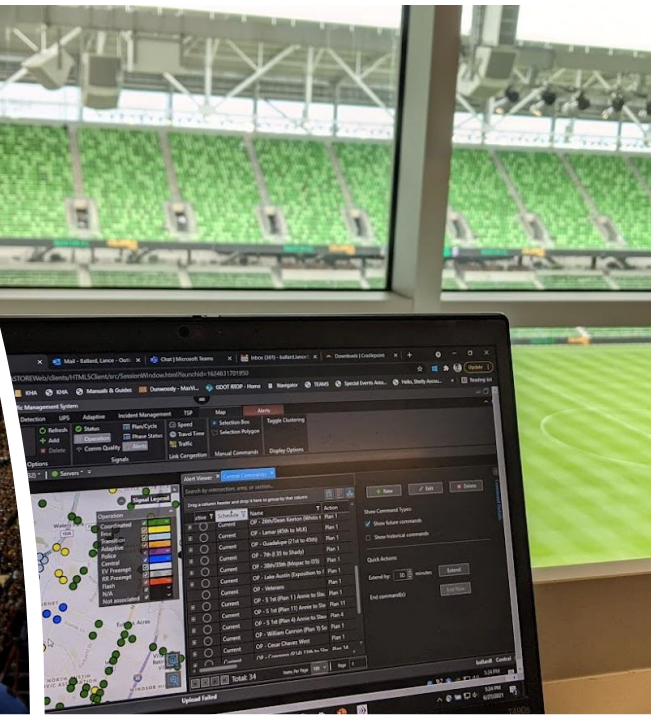
771 SCHOOL ZONE BEACONS

MOBILITY MANAGEMENT CENTER

Special Events

- **Adjust timings** >300 events/yr
- Major Events
  - SXSW
  - Austin City Limits
  - UT Football
  - Austin FC
  - Formula 1 US Grand Prix
- Expanding to incorporate more minor events





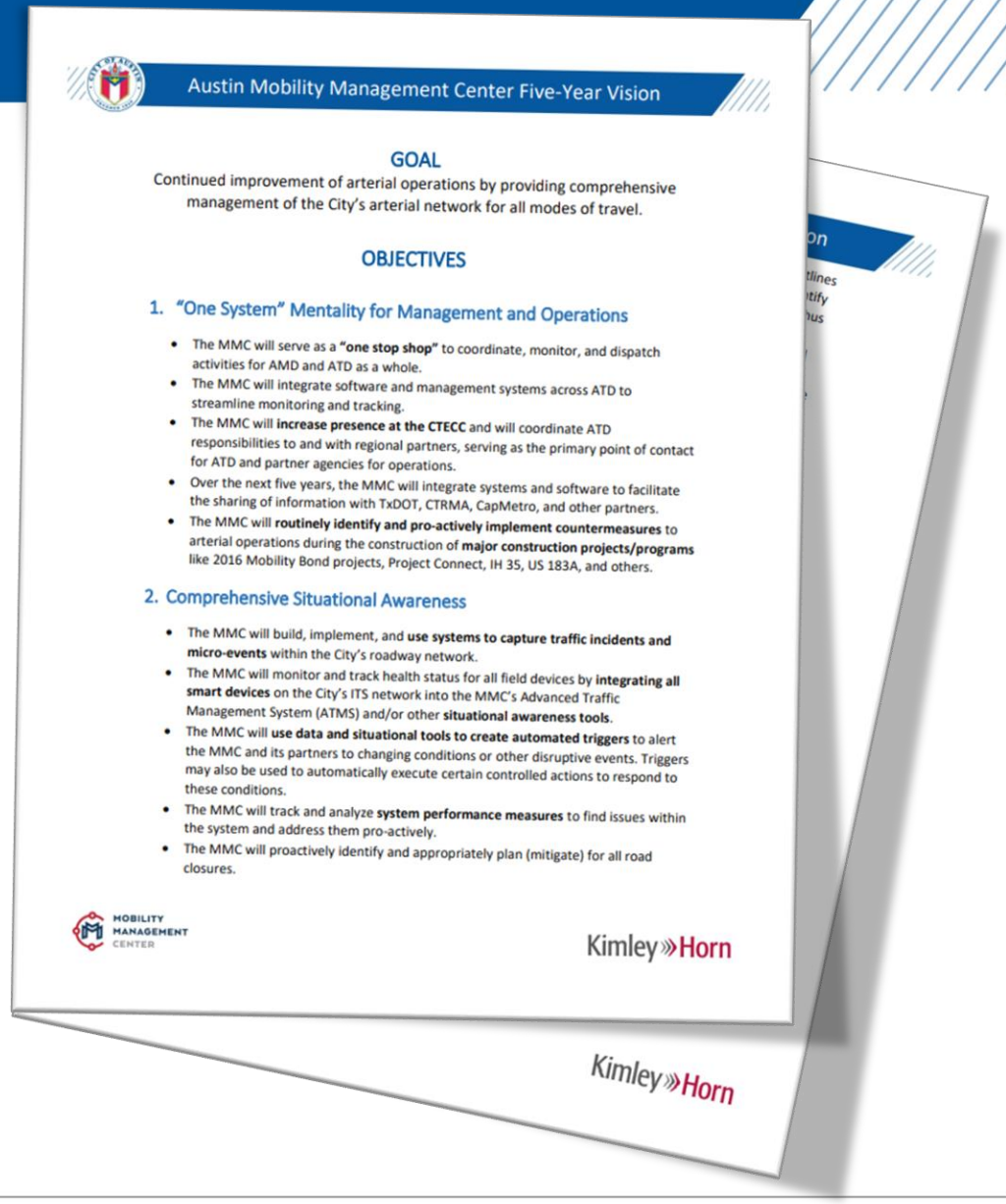
MMC 5-Year Vision

- Goal

  Continued improvement of arterial ops...
  ...for all modes

- Objectives

  1. "One System" Mentality
  2. Comprehensive Situational Awareness
  3. ***Transform Data into Action***
  4. Data Hub



Available Data

Data Tracker
Austin Transportation Department

austin 3·1·1

Asset Management & Service Requests

Third-Party Travel Data

INRIX IQ

Traction
A Kimley-Horn Software Solution

waze

AUSTIN FIRE

AUSTIN-TRAVIS COUNTY EMS

Texas Department of Transportation

Incidents

Signal & ITS System

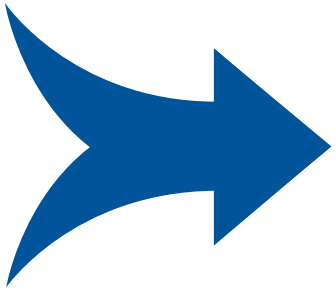
KITS
A Kimley-Horn Software Solution

ATSPM
Automated Traffic Signal Performance Measures

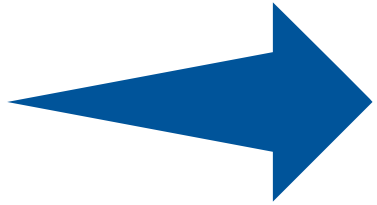
Data Infused Work Plan

Available Data

MMC Tasks



Dashboards and Data Tools



+ %

Signal Operational Improvements

Data Infused Work Plan

Data Infused Work Plan

DAILY

IDENTIFY NEW ISSUES

INRIX Signal Analytics

ACT ON ISSUES AND DOCUMENT THEM

COORDINATE AND MANAGE SCHEDULED ACTIVITIES

SHIFT SUMMARIES

Improve coordination/ hand-off and tracking outstanding tasks

Data Infused Work Plan

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WEEKLY

IDENTIFY TRENDS

Top 'X' lists of various issues types

Changes in KPIs

PREPARE FOR WEEK AHEAD

Upcoming Events

Scheduled Work

Major MMC Tasks (backlog, etc)

Data Infused Work Plan

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MONTHLY

LOOK BACK

Identify larger trends

Identify and address any lingering issues

Analyze SRs, WOs

Aggregate Metrics for AMD

Share Lessons Learned in Monthly Training

LOOK FORWARD

Upcoming Events

Major Tasks

Workload needs

Data Infused Work Plan

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INRIX Signal Analytics

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LOOK FORWARD
Upcoming Events

Major Tasks

Workload needs

NON-REGULAR

SEASONAL
Prepare for Daylight Savings, School Calendars

EVENTS
Integrate tasks into Data Tracker

Event Calendar

Pre-Planning

Debrief

Closeout

WEATHER EVENTS
Analyze locations with most frequent issues during storms

New Tools

Data Visualization

Power BI

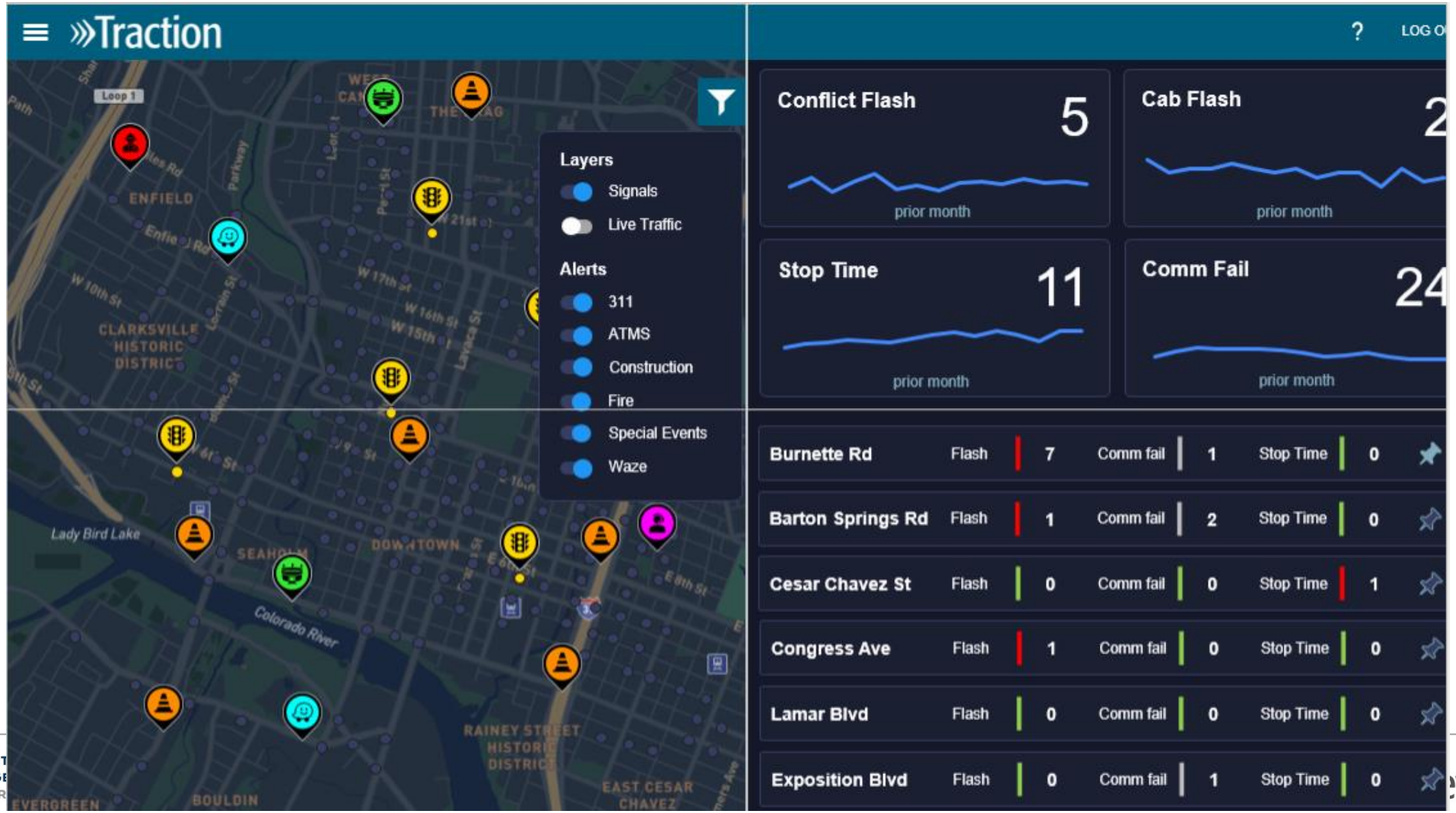
Third-Party Data Providers

INRIX IQ

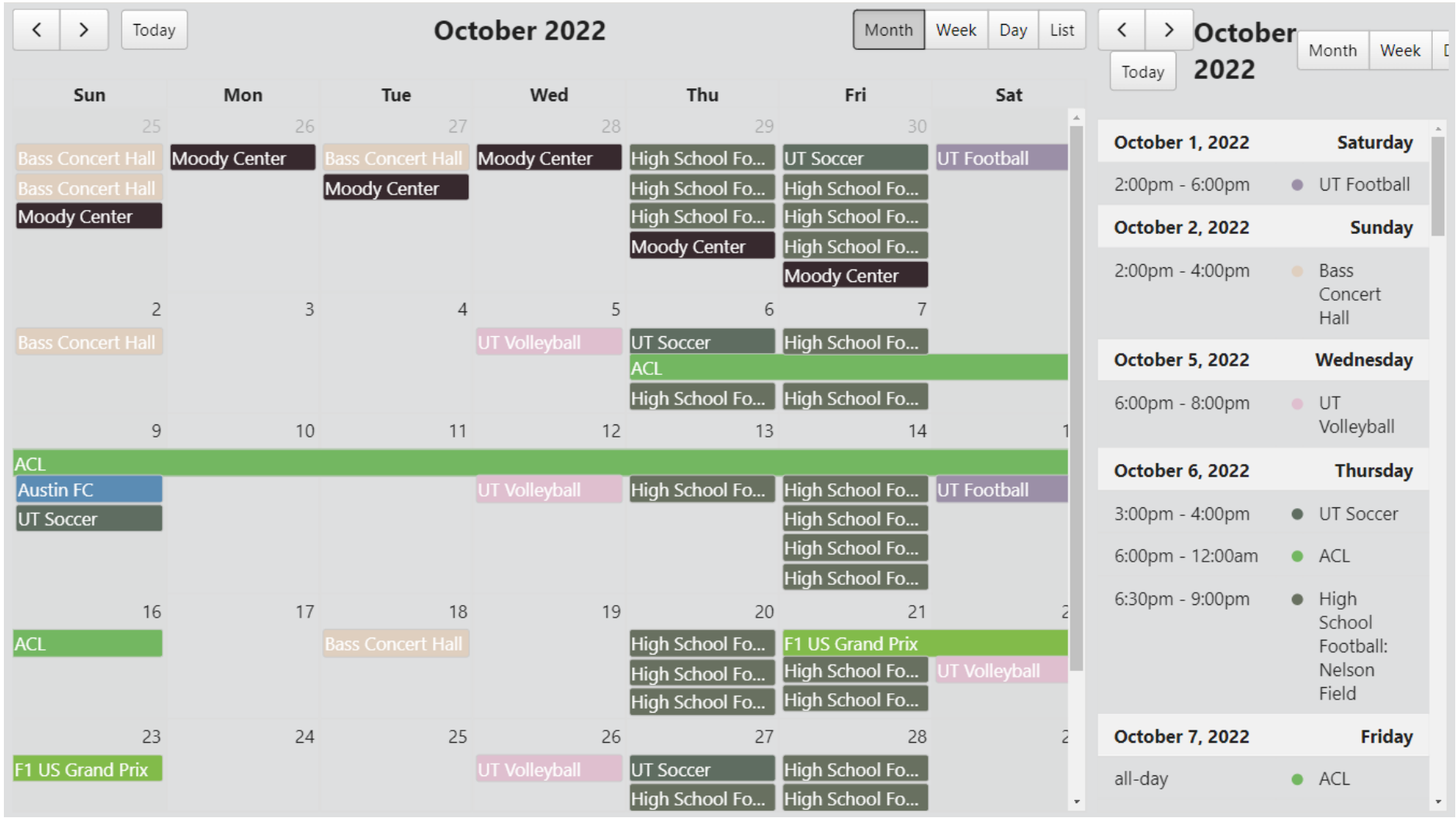
ATMS Integration

KITS
A Kimley-Horn Software Solution

Coming Soon – Situational Awareness Integration



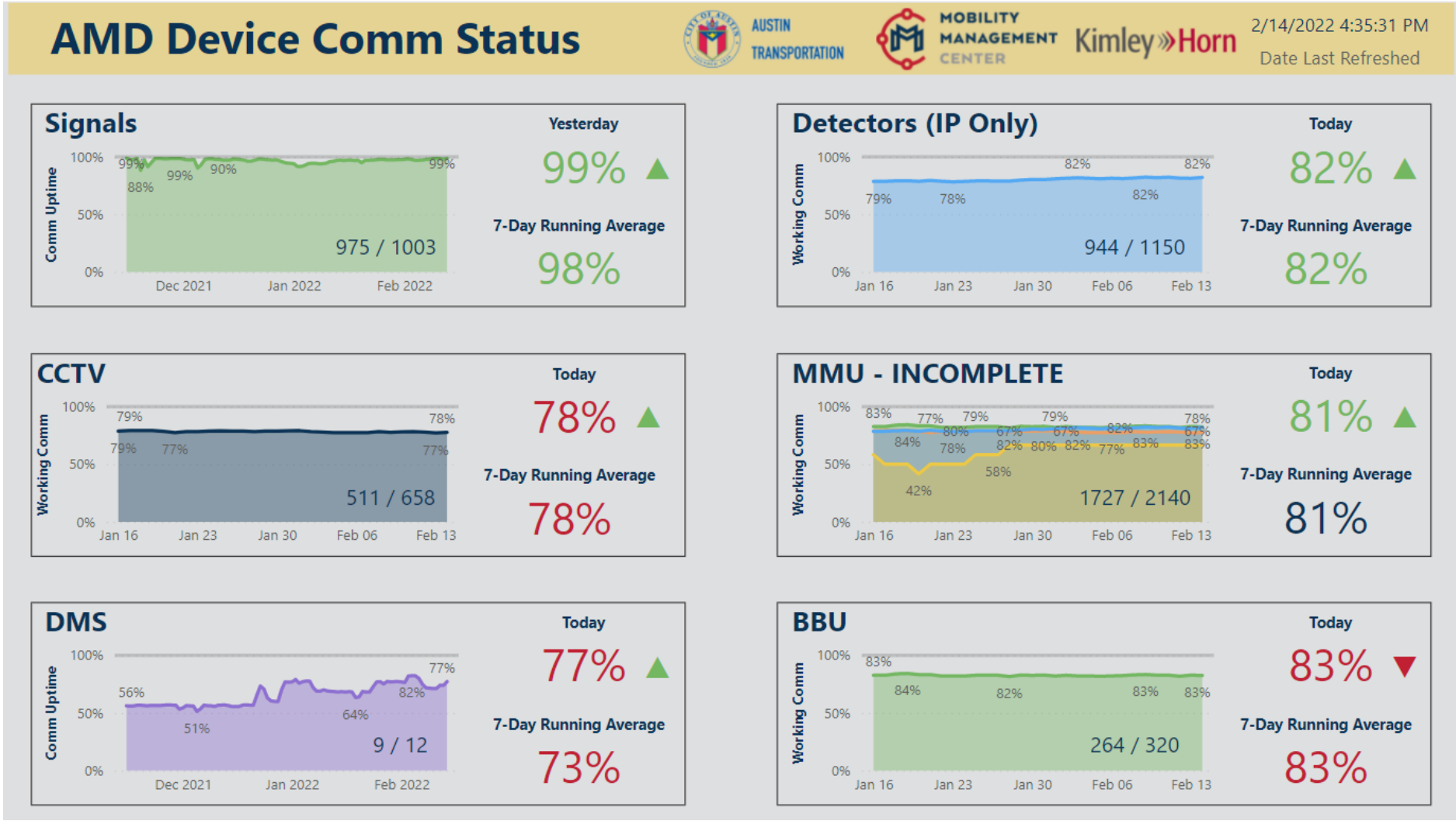
New Tools – MMC Calendar



MOBILITY MANAGEMENT CENTER

Kimley»Horn

New Tools – Identify ITS Device Issues



New Tools – Identify Trends in Issues

Top 10 SR Locations

AUSTIN TRANSPORTATION | MOBILITY MANAGEMENT CENTER | Kimley»Horn

7/25/2022 12:38:07 PM
Date Last Refreshed

Date

6/1/2022 – 7/24/2022

Reset

Source
All

Issue Type
All

Issue Descrip...
All

Flash Event?
- No
- Yes

Top N
- 5
- 10
- 20
- 50
- 100

Asset # or Name
Search

# SRs	Asset #	Name 1	Name 2	Total Days
14	14	AIRPORT BLVD	GUADALUPE ST	14
11	556	BURLESON RD	MC KINNEY FALLS PKWY	11
10	458	BURNET RD	GAULT LN	10
9	121	LAMAR BLVD	BARTON SPRINGS RD	9
9	271	SLAUGHTER LN	UNITED KINGDOM DR	9
8	409	CONGRESS AVE	STASSNEY LN	8
8	444	ALLANDALE RD	NORTHLAND DR	8
8	534	BURLESON RD	MONTOPOLIS DR	8
8	759	BRAKER LN	STONELAKE BLVD	8
8	994	AMHERST DR	PARMER LN	8
93				92

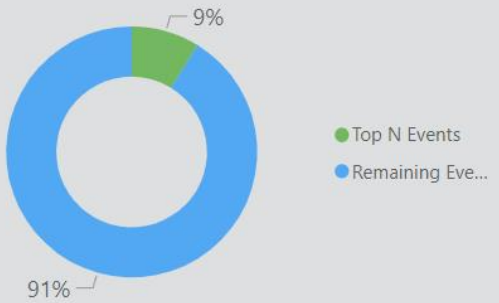
Top N Event Count

93

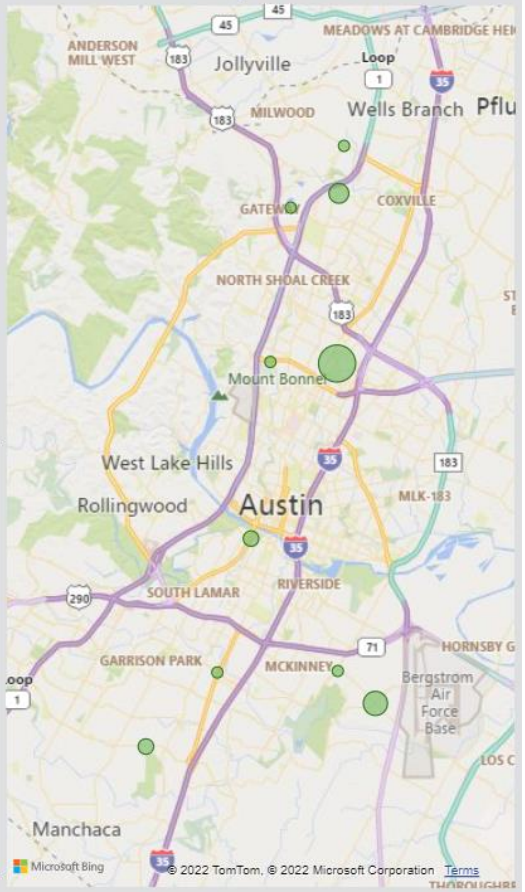
Total Event Count

1055

Top N Events as Percentage of Total



Citizen Service Requests



New Tools – Identify Operational Issues

INRIX IQ Signal Analytics

2022-07-29

All Licensed 2022-07-29

Intersections	Approaches	Movements	Corridors
919	3,060	7,714	15

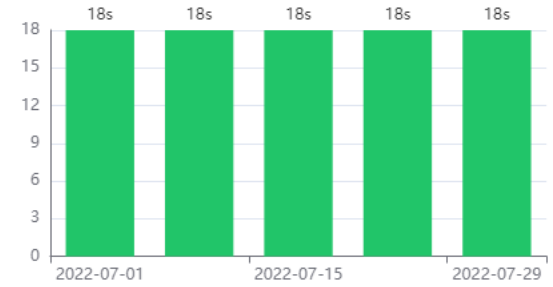
Intersections 2022-07-29

Total Control Delay		4wk Average	Change
4,518.9h	vs	4,238.4h	+ 6.62%

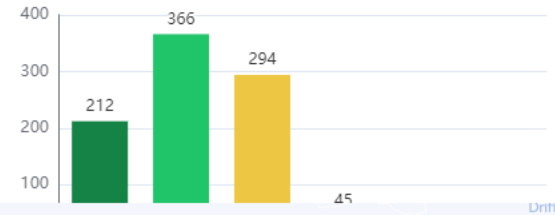
Average Control Delay per Vehicle 2022-07-29

Total Control Delay		4wk Average	Change
18s	vs	18s	0%

Avg Control Delay per Vehicle



Intersection Counts by LOS



Intersections: Top 5 Control Delay Issues 2022-07-29 24 Hours

Worsened Control Delay (Total)		4-wk Avg		2022-07-29		Change	
1	Howard & McCallen Pass	335h	C	504.4h	D	+169.3h	+50.5%
2	West Howard Lane & North Lamar Boulevard	292.7h	D	407.7h	D	+115.1h	+39.3%
3	East Parmer Lane & McCallen Pass	373.9h	C	469.6h	D	+95.7h	+25.6%
4	West Howard Lane & Center Line Road	137.7h	B	228.6h	C	+90.9h	+66%
5	West Howard Lane & Metric Boulevard	177.8h	C	262.3h	C	+84.5h	+47.5%

Worsened Control Delay (Per Vehicle)		4-wk Avg		2022-07-29		Change	
1	Howard & McCallen Pass	31s	C	47s	D	+16s	+50.5%
2	West Howard Lane & North Lamar Boulevard	37s	D	52s	D	+15s	+39.3%
3	West Howard Lane & Center Line Road	17s	B	28s	C	+11s	+66%
4	West Howard Lane & Metric Boulevard	23s	C	34s	C	+11s	+47.5%

Corridors: Top 3 Corridor Issues 2022-07-18 2022-07-25 Weekdays

Worsened Travel Times		4-wk Avg		Current Week		Change	
1	W Slaughter EB	9m	C	10m	D	+1m	11.3%
2	Airport SB	14.1m		14.9m	D	+47s	5.56%
3	W Parmer WB	10.2m	C	10.3m	C	+10s	1.72%

Worsened Travel Time Index		4-wk Avg		Current Week		Change	
1	S Cameron SB	1.43x	C	1.73x	D	+0.29x	20.4%
2	E Parmer EB	1.39x	C	1.65x	D	+0.26x	19.1%
3	W Slaughter EB	1.41x	C	1.51x	D	+0.10x	7.31%

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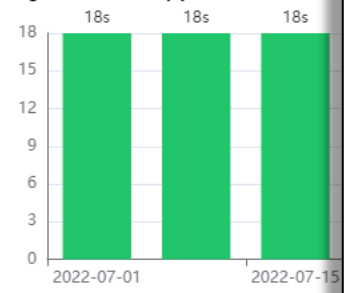

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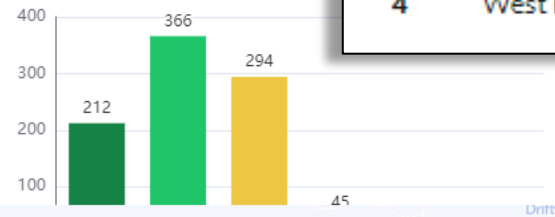

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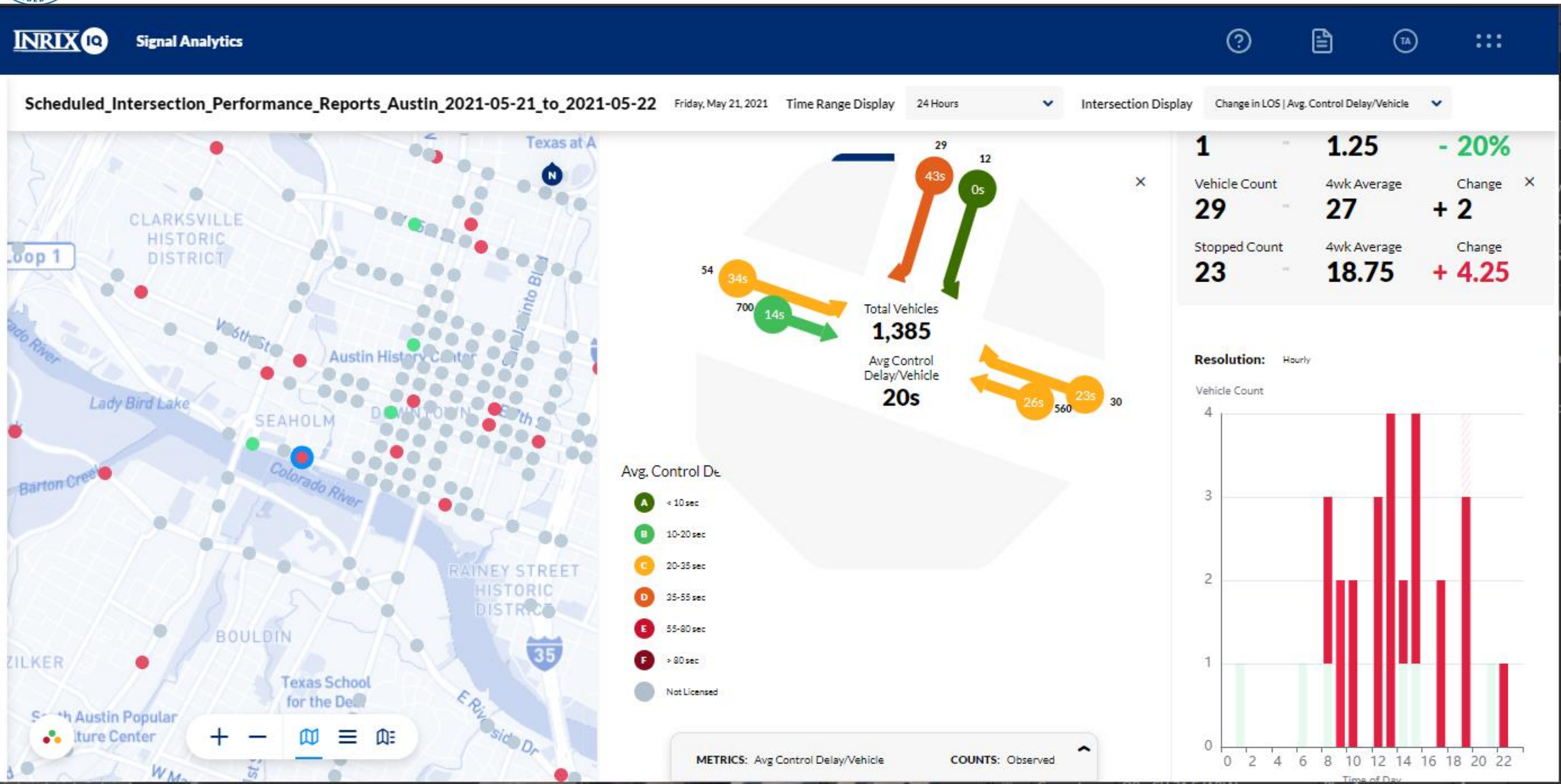


MMC Actions Process

Identify Problems

A few hours per week

Investigate Issues

Senior operator

Implement Changes

Signal Timing

Congestion Management

Equipment/Detection Repairs

Track Actions

Excel online

Measure Improvement

Before/After delay

Road user cost

Assume time of effectiveness

MMC Actions

AUSTIN TRANSPORTATION | MOBILITY MANAGEMENT CENTER | Kimley»Horn

7/28/2022 12:53:30 PM
Date Last Refreshed

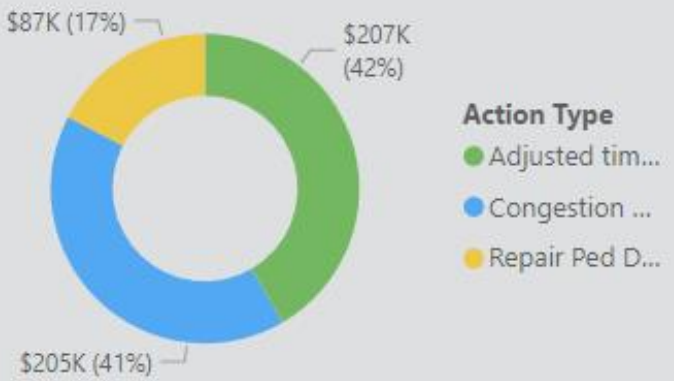
Issue Resolved Date
1/10/2022 7/13/2022

Action
All

Source
All

Status
All

Total Benefit by Action Type



Target Movement Avg % Delay Improvement
30%

Total Intersection Avg % Delay Improvement
9%

Target Movement Weighted Avg Delay Improvement
16 sec

Total Intersection Weighted Avg Delay Improvement
3 sec

Target Movement Impacted Trips
2M

Total Intersection Impacted Trips
10M

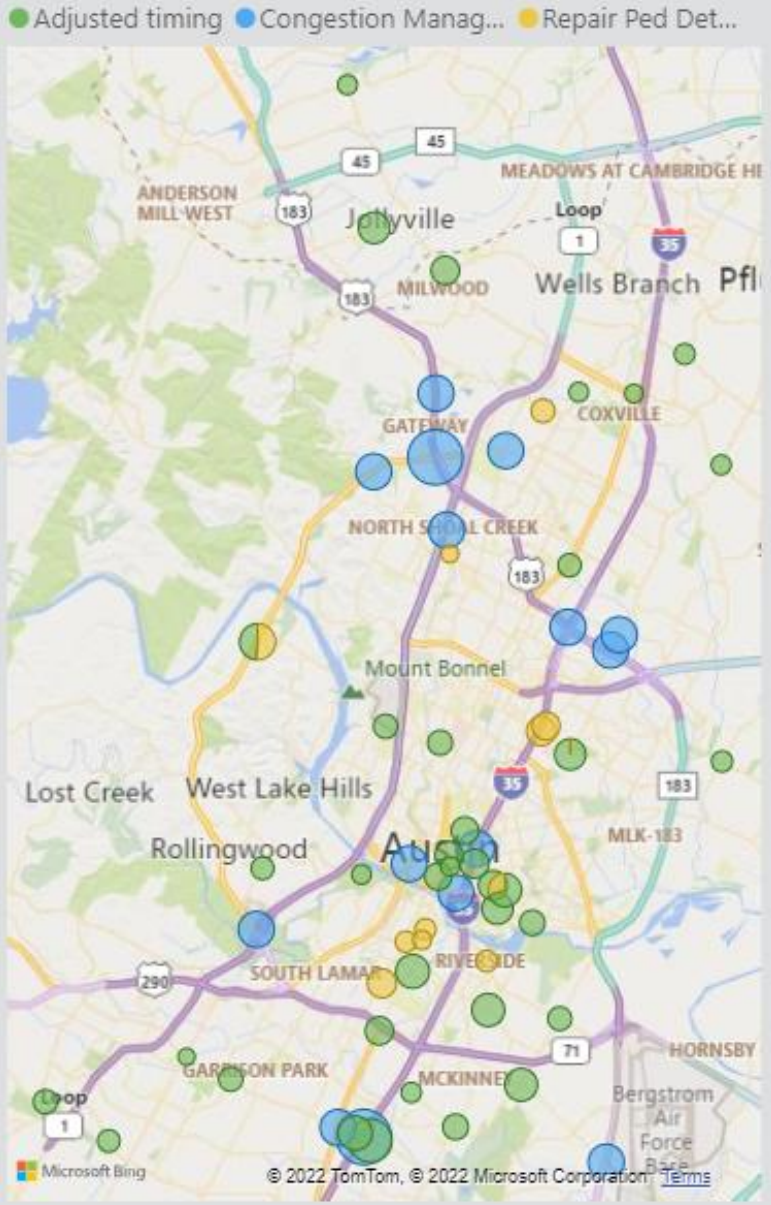
Target Movement Passenger Vehicle Benefit
$428K

Total Intersection Passenger Vehicle Benefit
$499K

Avg Target Movement Benefit per Action
$5.78K

Avg Intersection Benefit per Action
$6.83K

Action Locations by Category and Impact



Capture Benefit – Tell the Story

AUSTIN JOURNAL

www.ite.org ENGINEERING NEWS IS THE BEST - Since 1903

PROACTIVE USE OF SMART CITY DATA IMPROVES TRAFFIC CITY-WIDE

The Austin Mobility Management Center (MMC) has used smart city data to find and fix traffic problems across the City.

In just 6 months, this program has impacted over 10M trips and generated $500,000 in delay savings to travelers.

Final Thoughts

- Cast a Vision and Goals for your TMC
- Your data may be more accessible than you think
  - See what data you have or could get
  - Use that data to get to your goals
- Track benefits everywhere you can
- Tell your story!

Thanks!

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