

Visioning Stakeholder Workshop *Introduction*

November 29, 2018



Background

- Traffic volumes continue to grow in the Des Moines Metropolitan Area (exacerbated by incidents and construction)
- Desire to manage roadways in the Des Moines Metro Area holistically
- Leverage capacity on adjacent or parallel networks and/or by promoting the use of transit to move greater numbers of people using fewer vehicles
- Couple strategies with less capital intensive infrastructure improvements

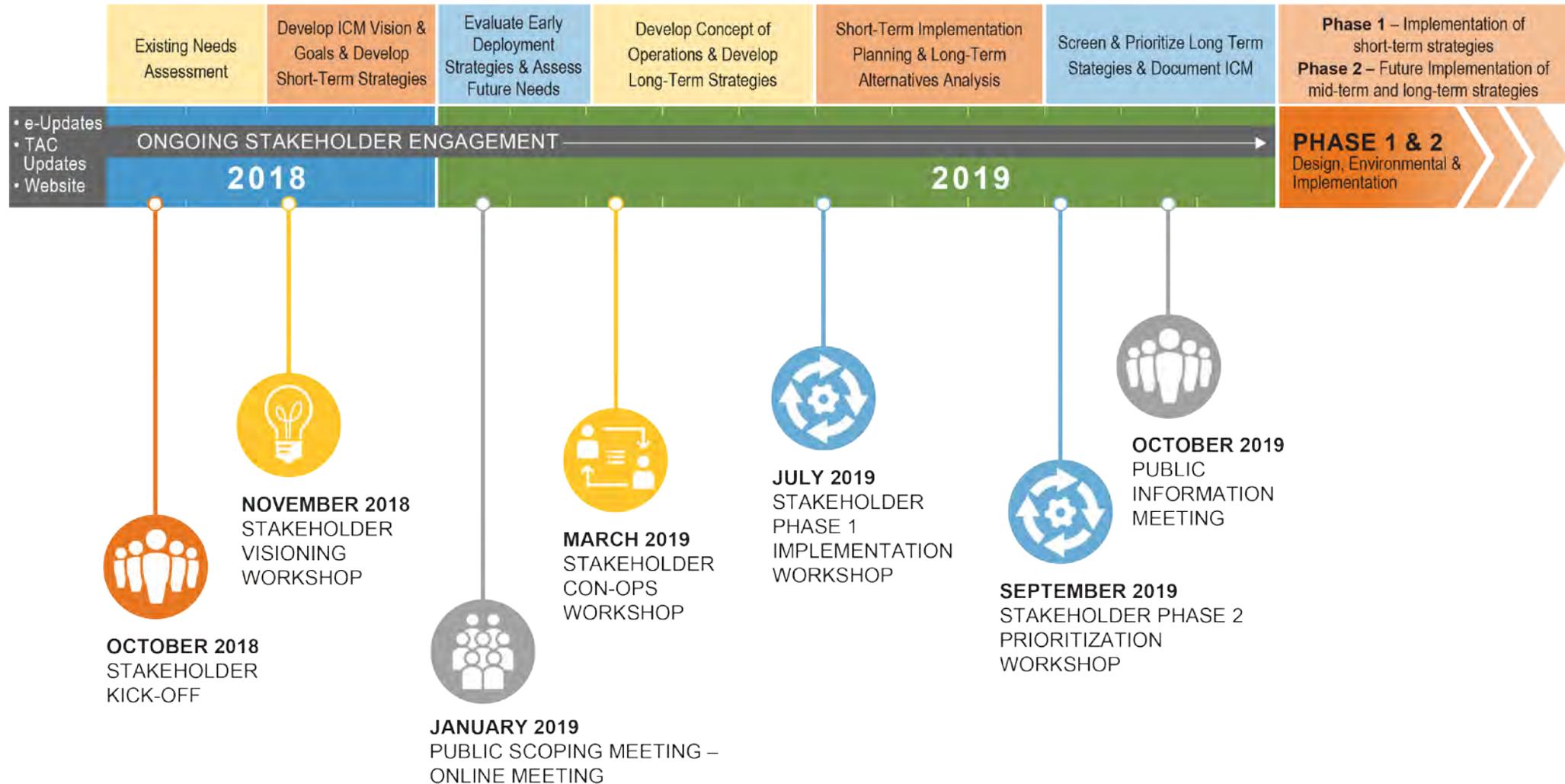
ICM Concept

- Framework for multi-modal, multi-jurisdictional coordination to deliver a safer, more reliable, and more convenient transportation system for all users
- Based on proactive, integrated management and operation of a regional transportation system
- Delivered in a cost-effective manner compared to traditional infrastructure capacity expansion projects

Technical Approach

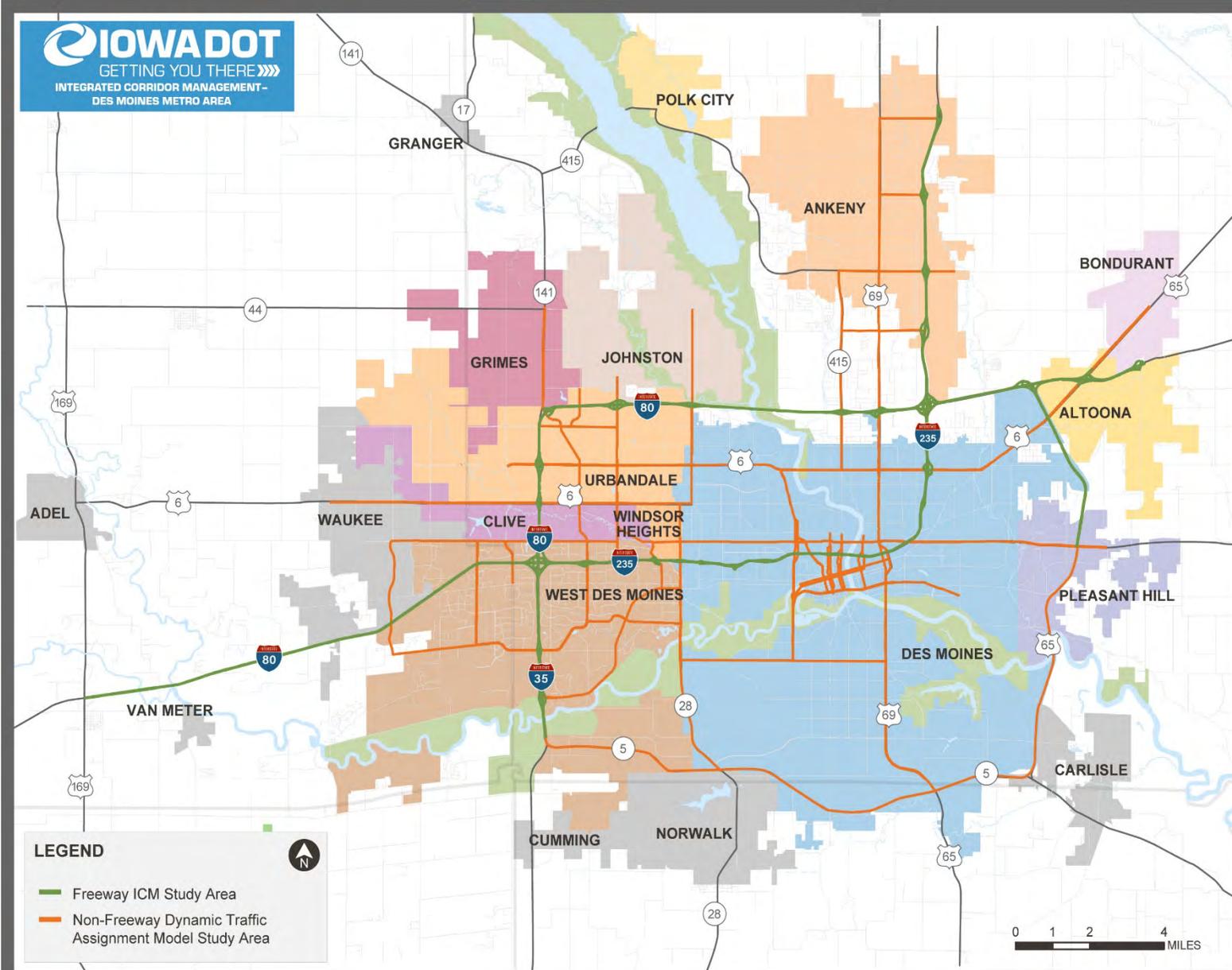
- Initial step in planning the Des Moines Metro ICM system.
- Based on a standard process
- Informed by stakeholder input and collaboration
- Validated through a comprehensive understanding of current and future operational needs
- Identifies feasible opportunities to cooperatively operate regional transportation system holistically

Key Activities and Timeline



Project Boundaries

- I-80 - US Hwy 169 (Desoto) to 1st Avenue (Bondurant/Altoona)
- I-35 - Iowa 5 (West Des Moines) to 36th Street (Ankeny)
- US 65 - I-80 to Iowa 163 (Pleasant Hill)
- Selected parallel and connecting arterials to the roadways above.



Key Outcomes

PHASE I

Implementation of short-term strategies

- Existing Conditions Report
- Vision, Goals, Objectives and Performance Measures
- Short-Term Strategy Definitions
- Program Level Concept of Operations
- Project Level Concept of Operations
- Implementation Plan

PHASE II

Future implementation of mid-term and long-term strategies

- Future Conditions Report
- Mid-to-Long Term Strategies Definitions
- Program Level Concept of Operations Update
- Project Level Concept of Operations Update
- Implementation Plan Update

Existing Conditions

November 29, 2018

Study Methods

- Analyze safety, mobility, and reliability data
- Create performance measures and data visualizations
- Establish near-term conditions (Good – Fair – Poor)

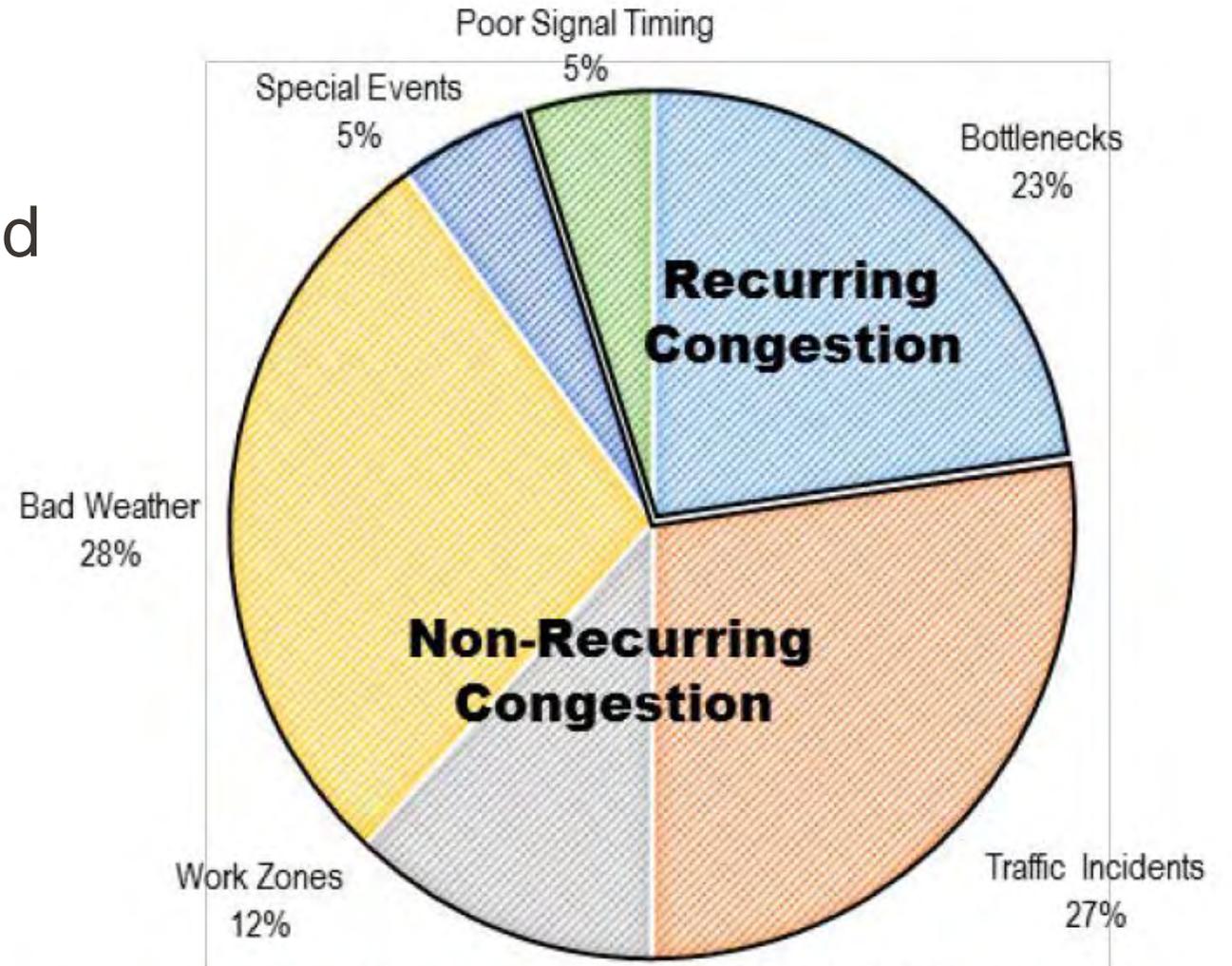
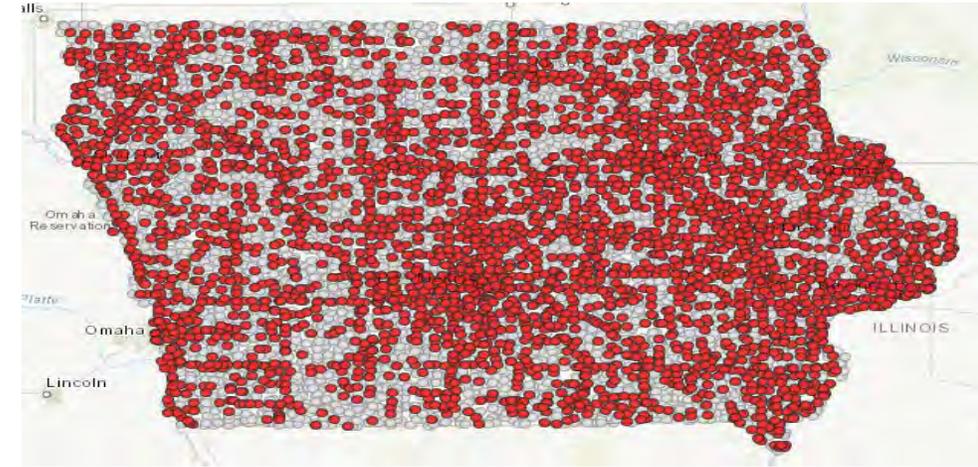


FIGURE 1. IOWA SOURCES OF CONGESTION, 2013-2015

Data Available

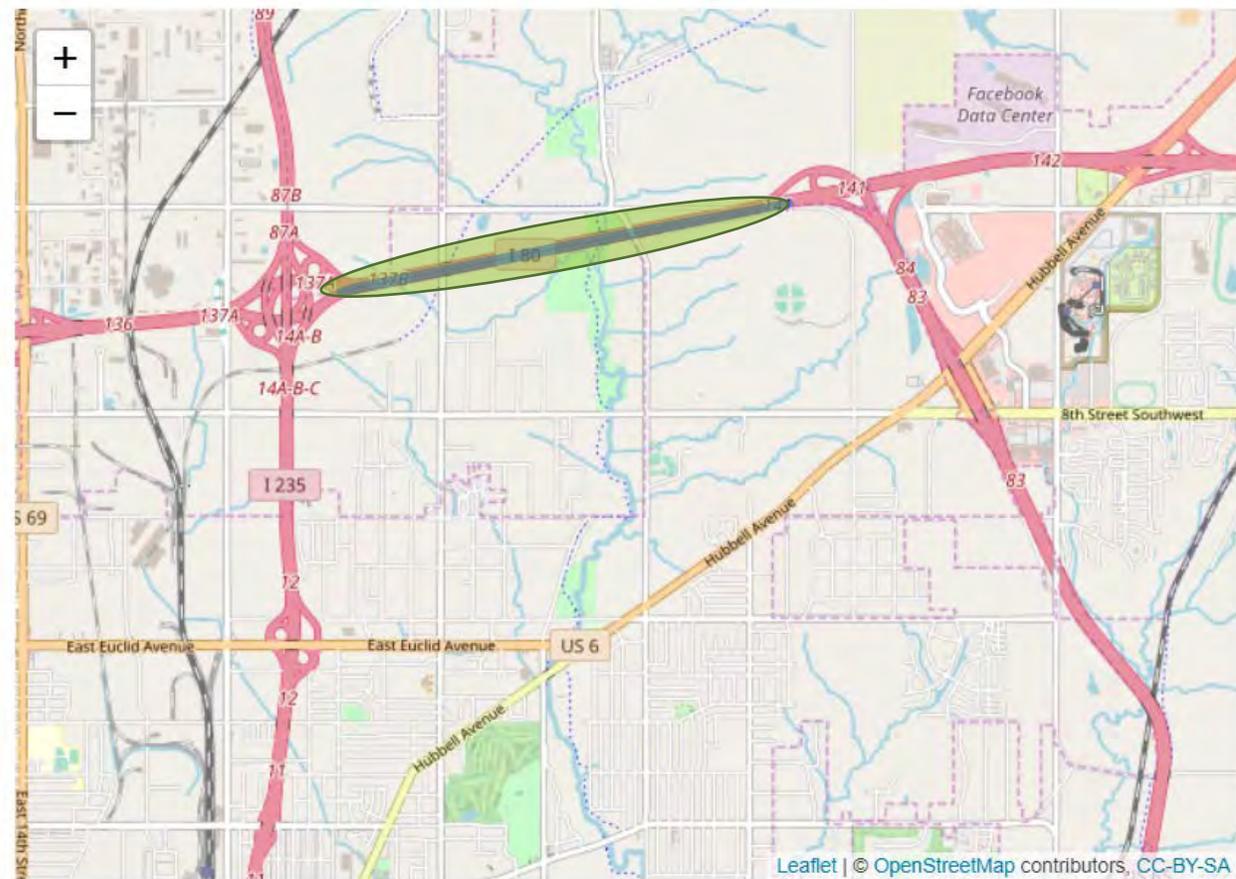
- Probe Vehicle speed data – Inrix – 2013 to 2017
- Crash Data – Iowa's Crash Analysis Tool – 2008 – 2017
- Incident Data – Iowa Advanced Traffic Management System event log – 2016 – 2017
- Weather Data - National Weather Service – 2008 – 2017

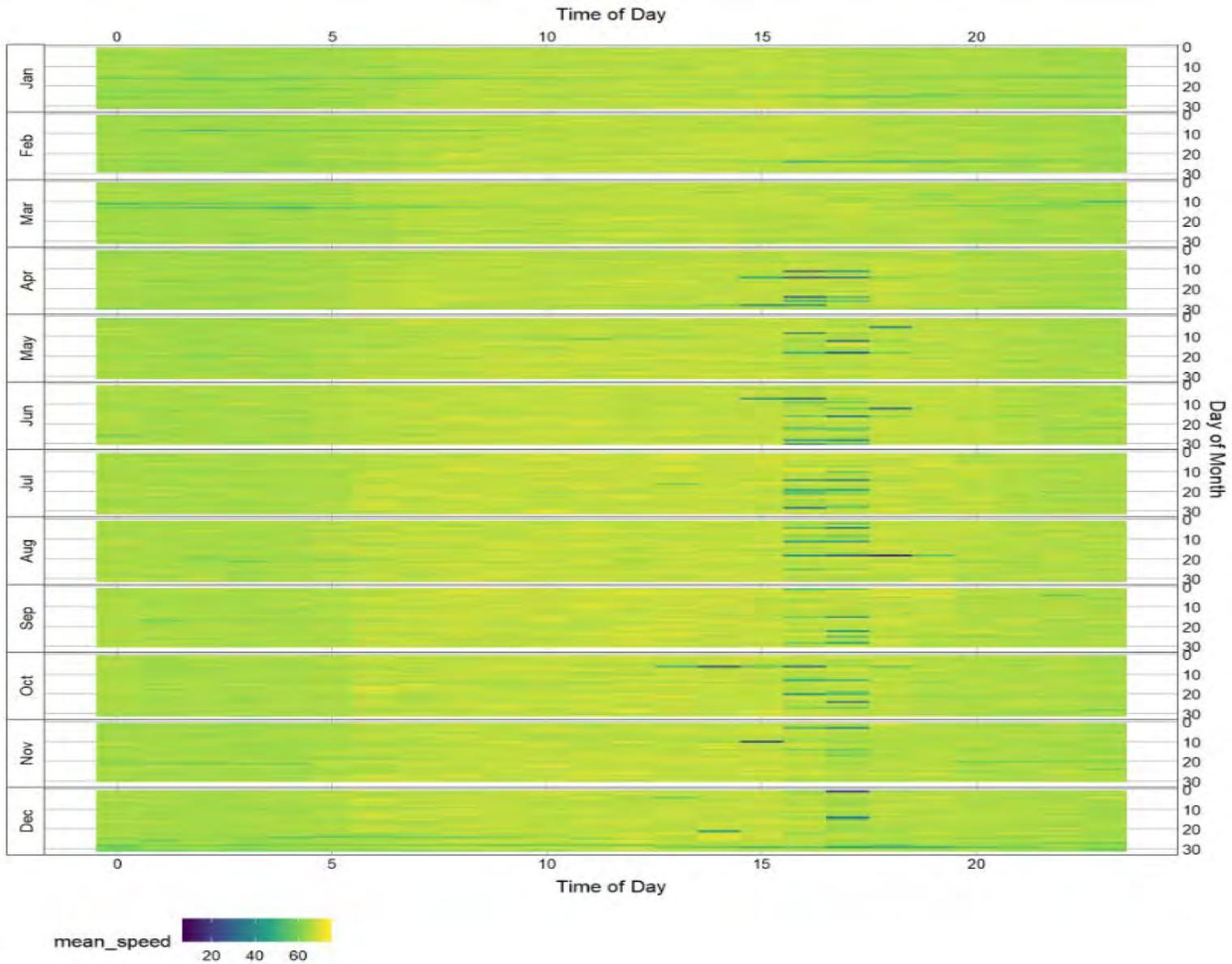


Data Visualization Approach

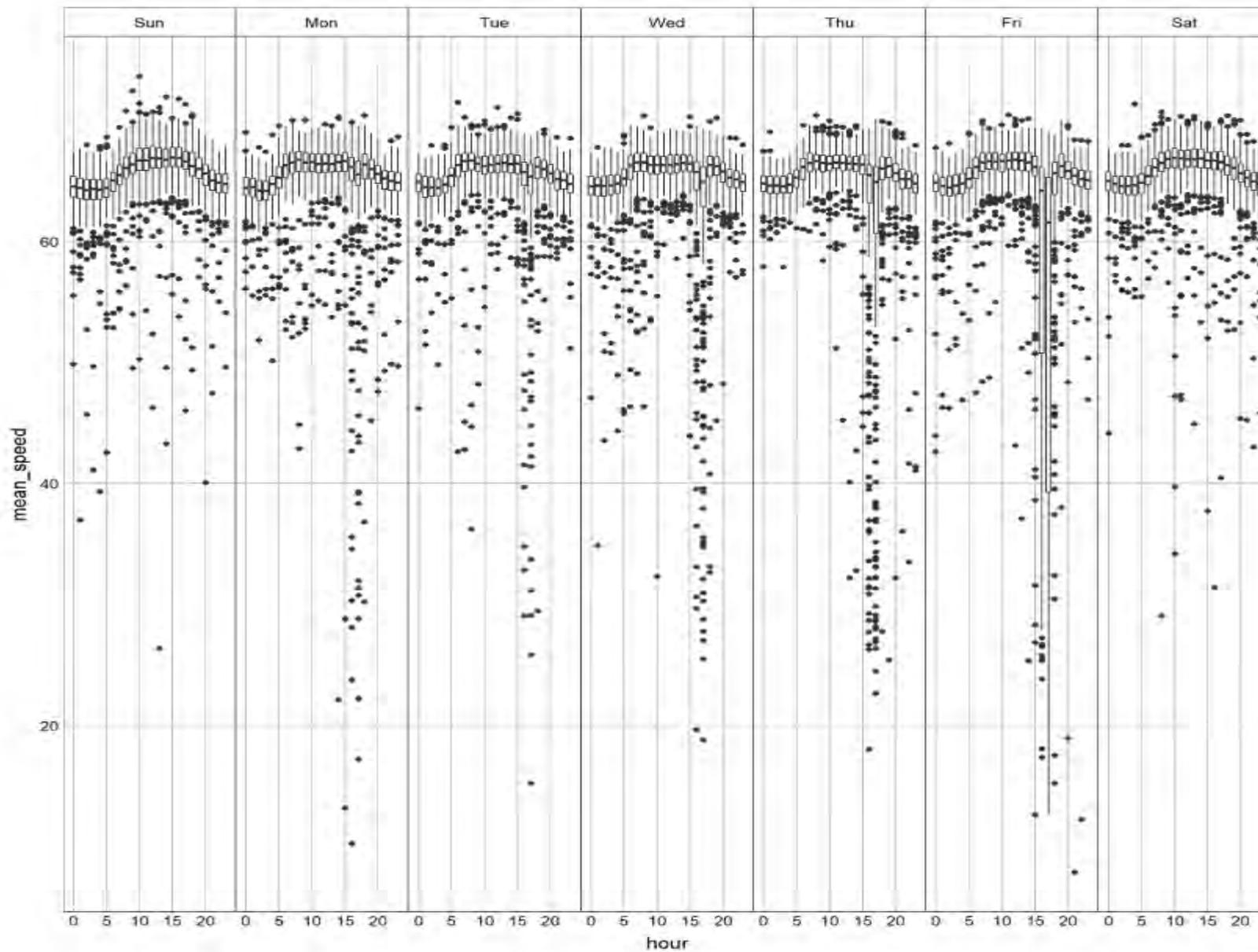
Eastbound Segment of I-80

- East of complex system junction
- Traffic approaching US 65 exit to Altoona



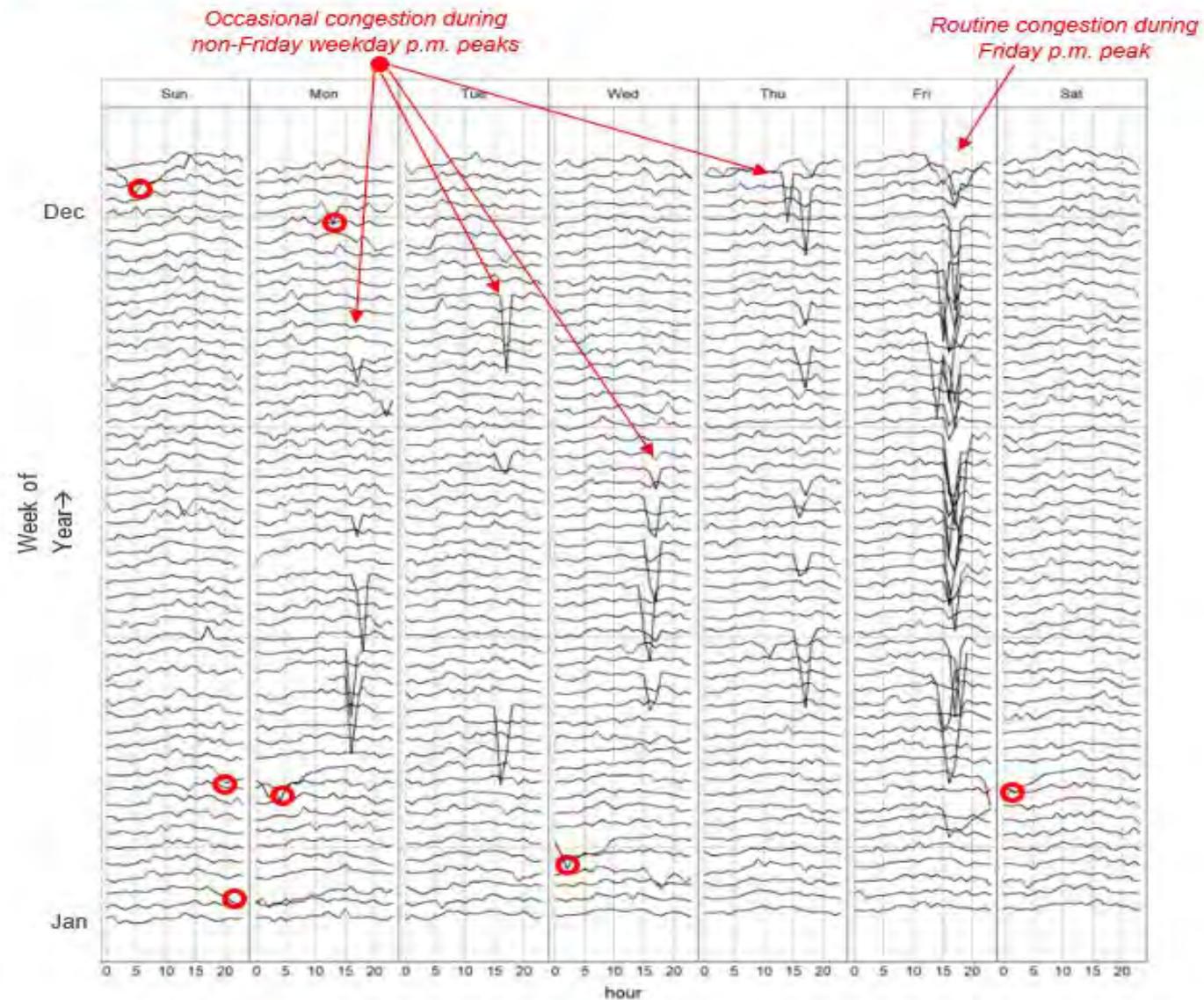


Data Visualization Approach



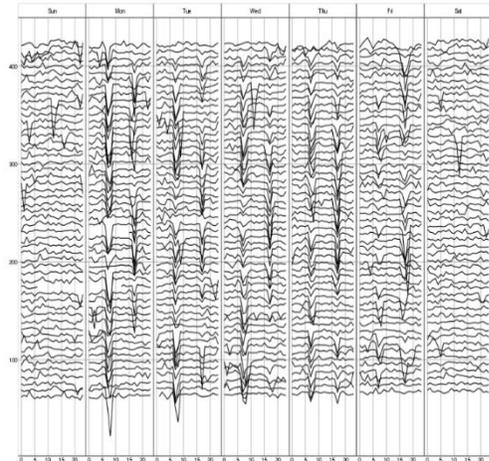
Data Visualization Approach

○ Non-recurring congestion event

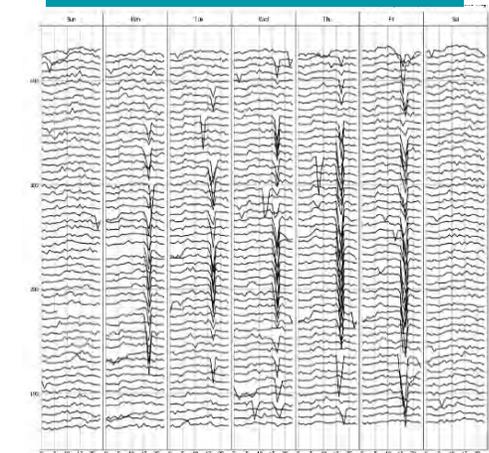


Data Visualization Approach

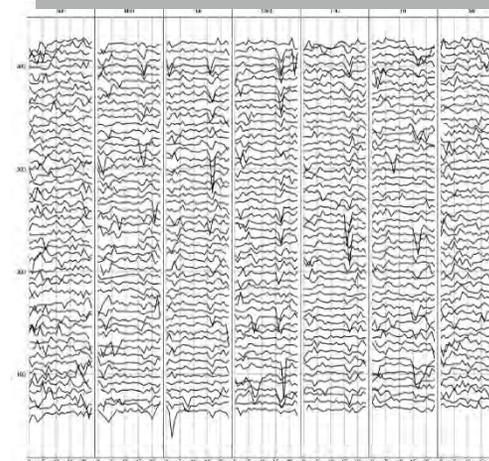
I-235 EB @ 73rd St
TMC 118P04649



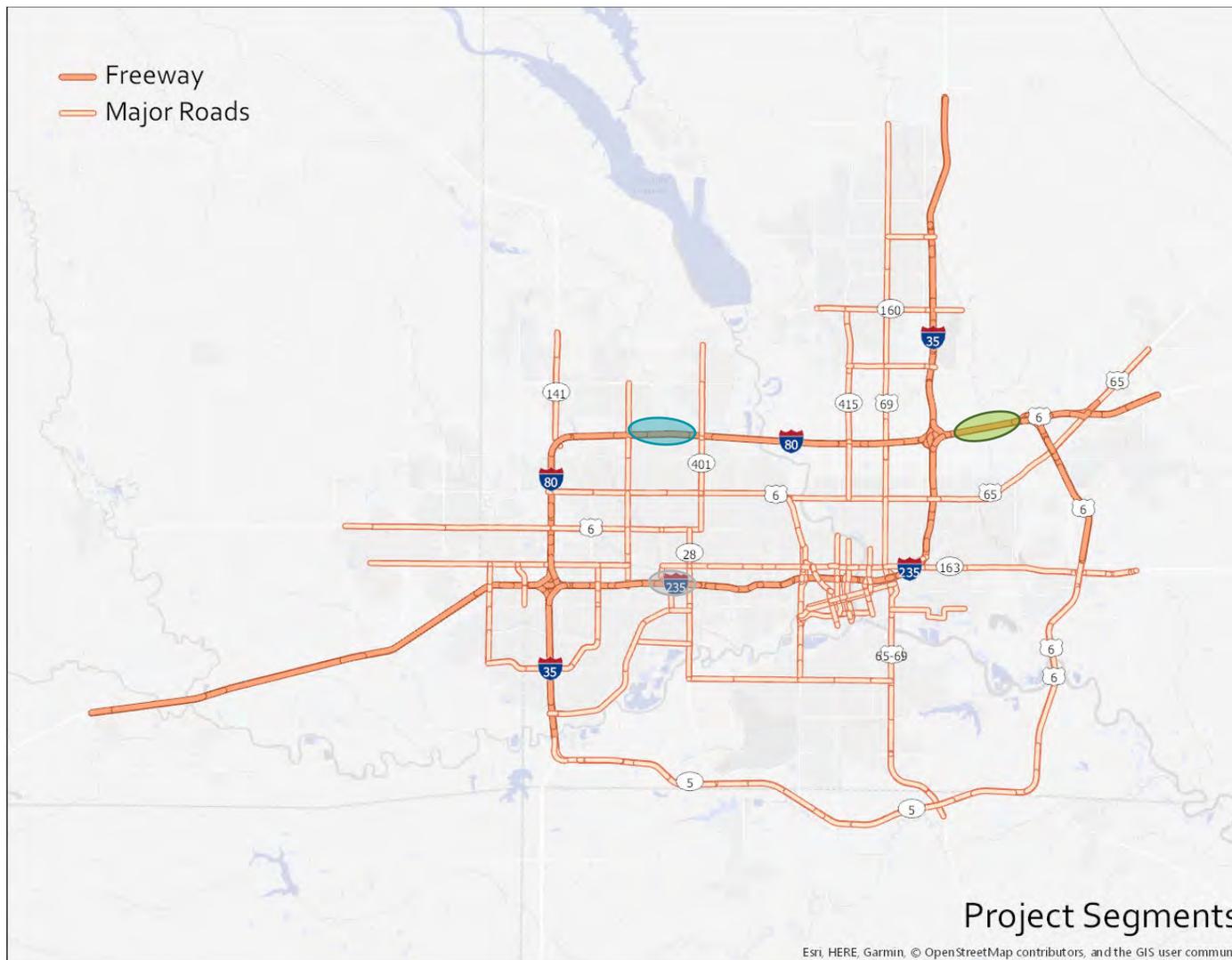
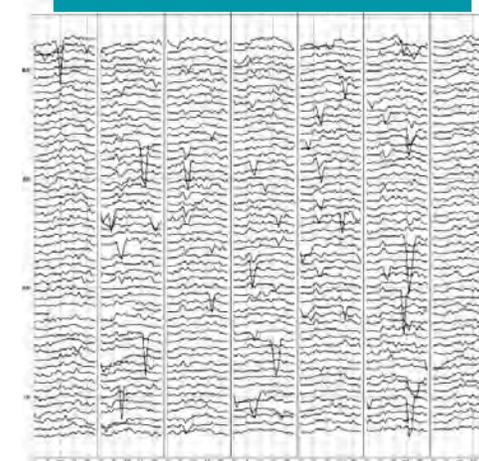
I-80 EB, 86th to Merle Hay
TMC 118+04624



I-235 WB @ 73rd St
TMC 118N04649



I-80 WB, 86th to Merle Hay
TMC 118-04623



Data Visualization Approach

Key Measures

Safety

Mobility

Reliability

Safety: Crash Cost

- **Green** – PDO
- **Yellow** – Possible Injury
- **Orange** – Minor Injury
- **Maroon** – Major Injury
- **Red** - Fatal



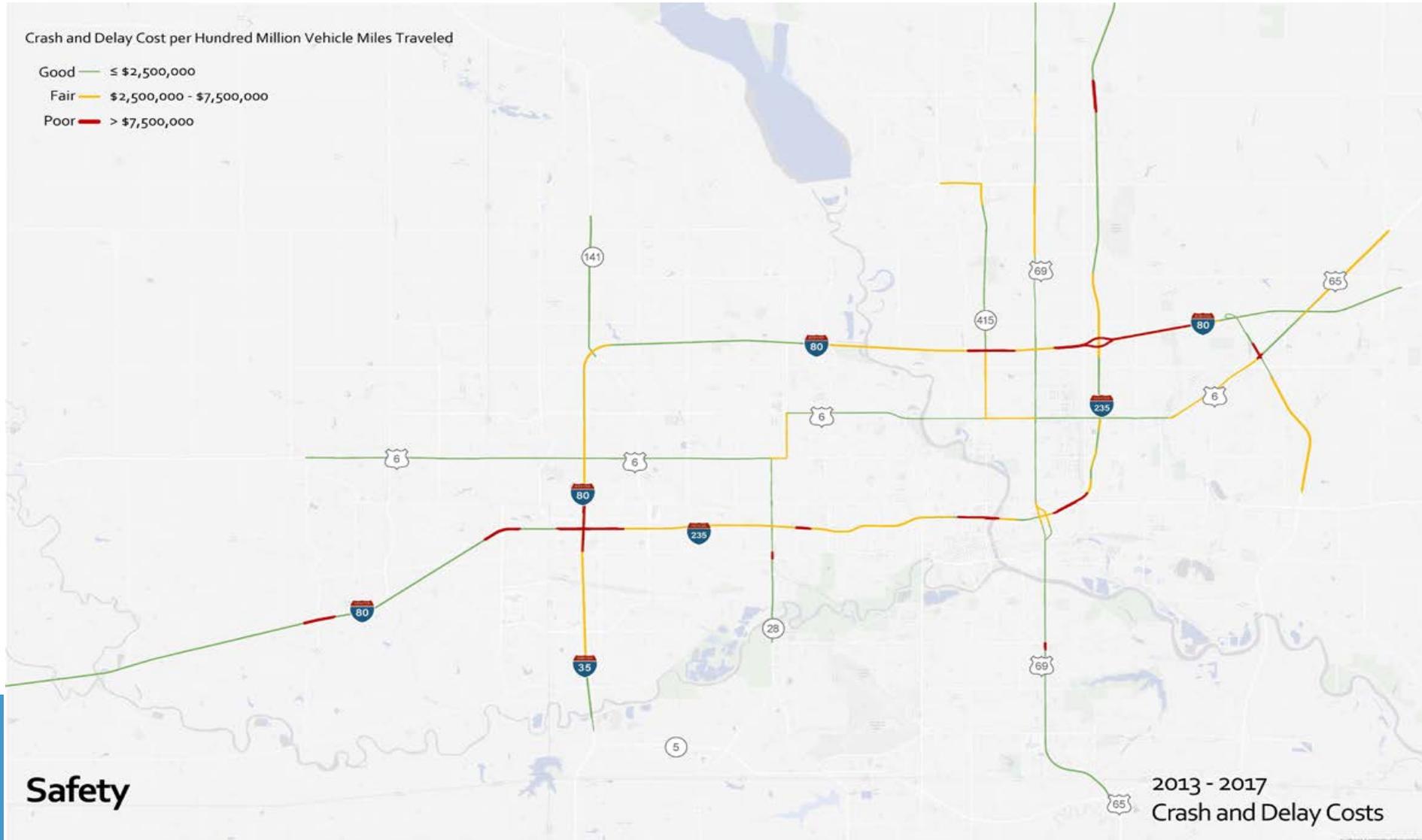
I-80 EB / WB – Northeast Junction to US 65

Safety: Crash Cost

- Non-freeways have more severe crashes per exposure
- Interstate crashes lead to unexpected drops in speed
- Impact
 - Risk of secondary crash
 - Delay to upstream vehicles



Safety: Crash Cost



Mobility: Peak Hour Speeds

Primary Freeway

- Speed limits range between 55 mph and 70 mph in study area
- **Metric: Difference between speed limit and average speed in peak**

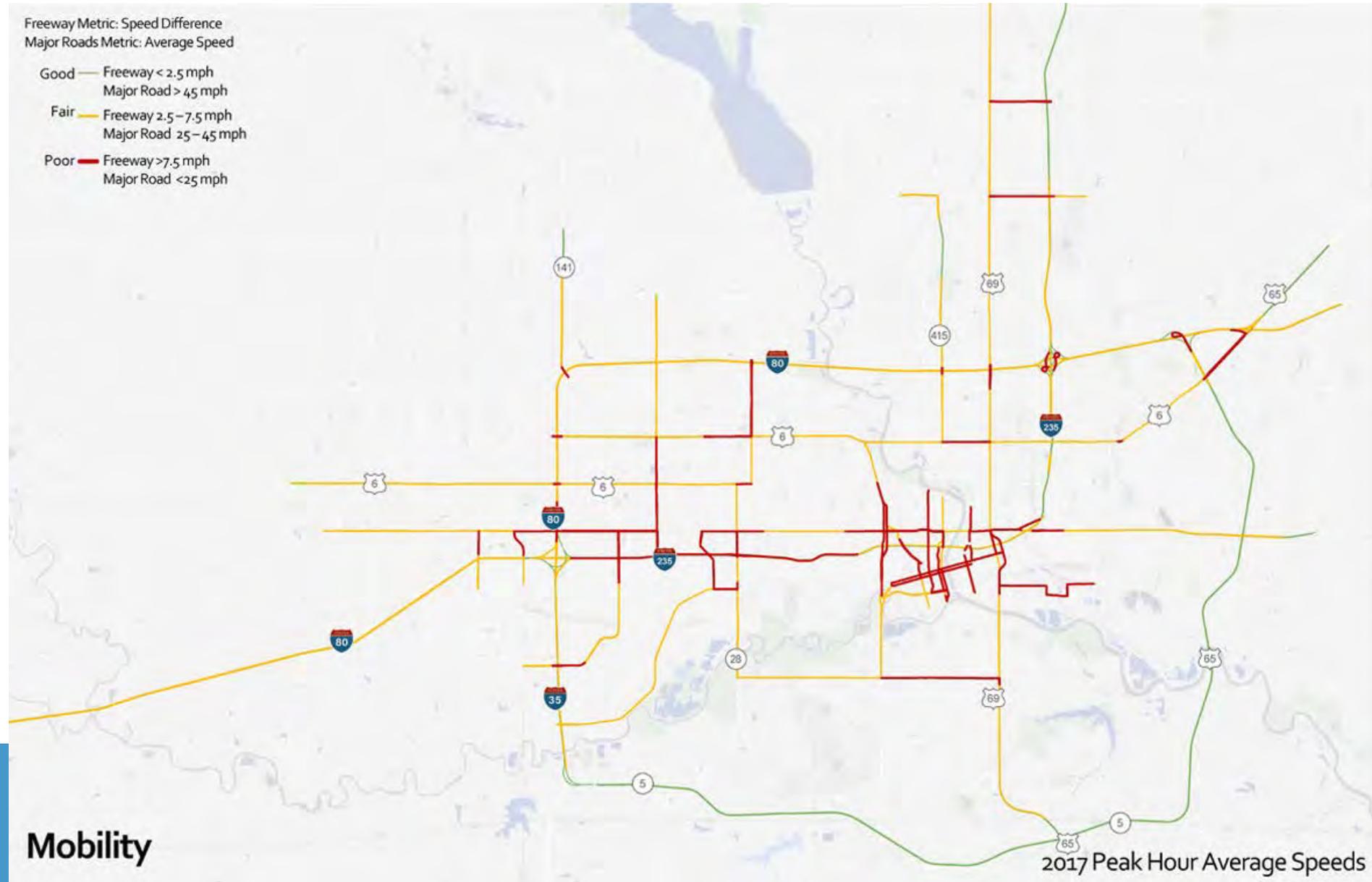
Secondary Major Roads

- Ranges from highways to downtown streets
- Speeds show closer relationship to traffic signal spacing than speed limits
- **Metric: Average speed in peak**

Mobility: Peak Hour Speeds

Freeway Metric: Speed Difference
Major Roads Metric: Average Speed

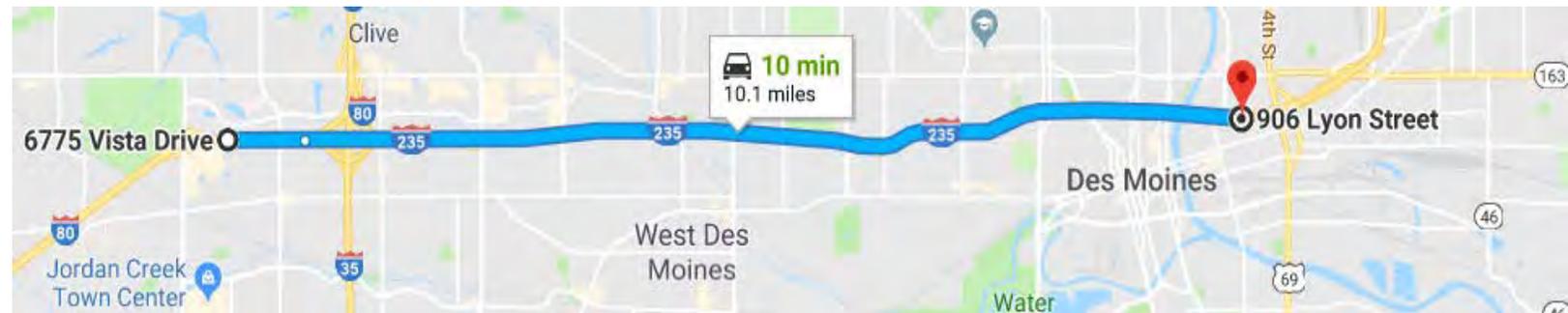
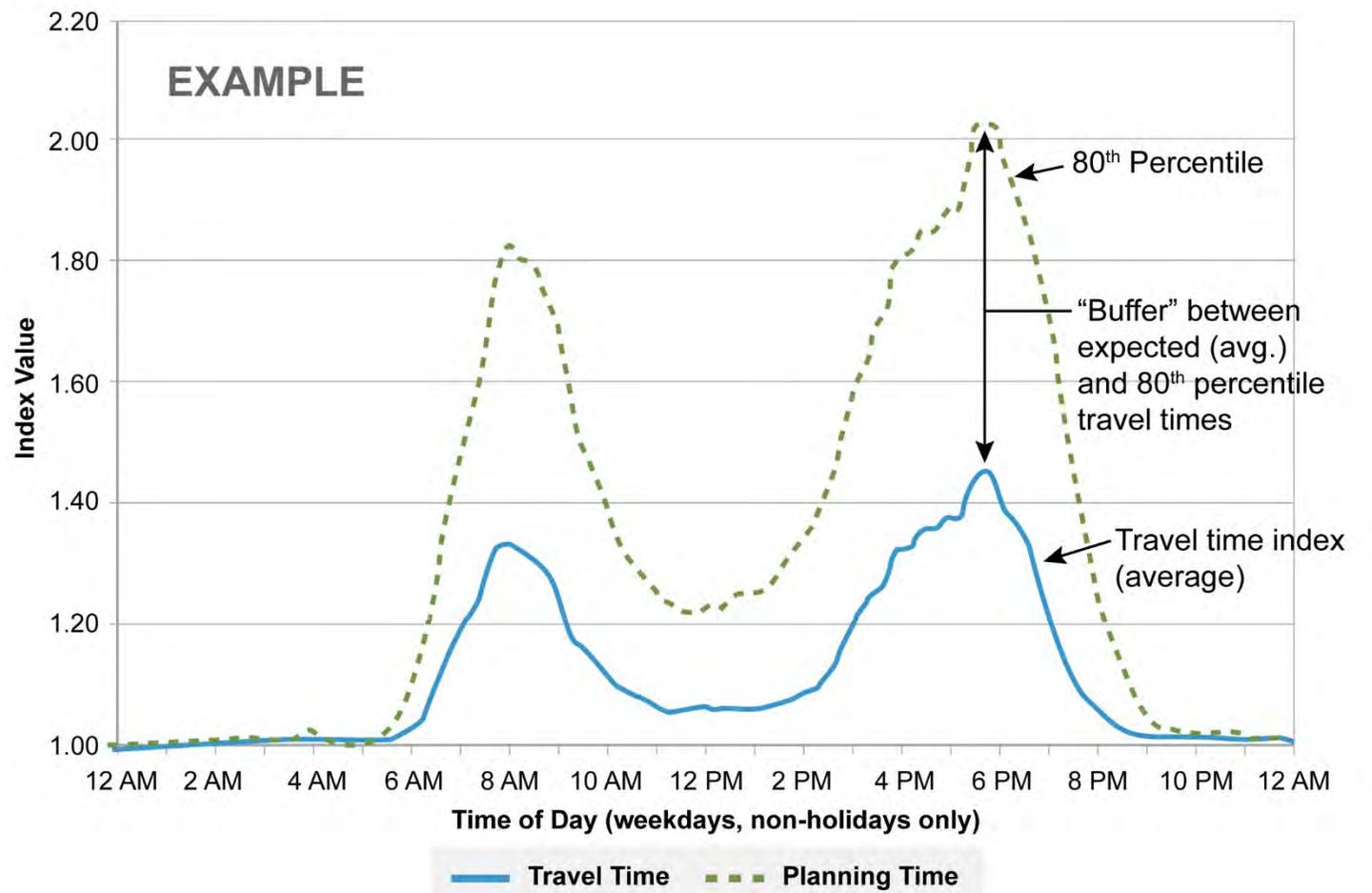
- Good — Freeway < 2.5 mph
Major Road > 45 mph
- Fair — Freeway 2.5 – 7.5 mph
Major Road 25 – 45 mph
- Poor — Freeway > 7.5 mph
Major Road < 25 mph



Reliability

Metric: Level of Travel Time Reliability (LOTTR)

- Typical day commute, 10 minute drive
- If LOTTR = 1.5, then plan for 15 minutes to avoid being late to work one day a week



Reliability: LOTRR

LOTRR
Good < 1.2
Fair 1.2 - 1.5
Poor > 1.5



Public Transportation

Data - Route level ridership data, span of service and frequency, Vanpool/carpool usage, park and ride lot usage.

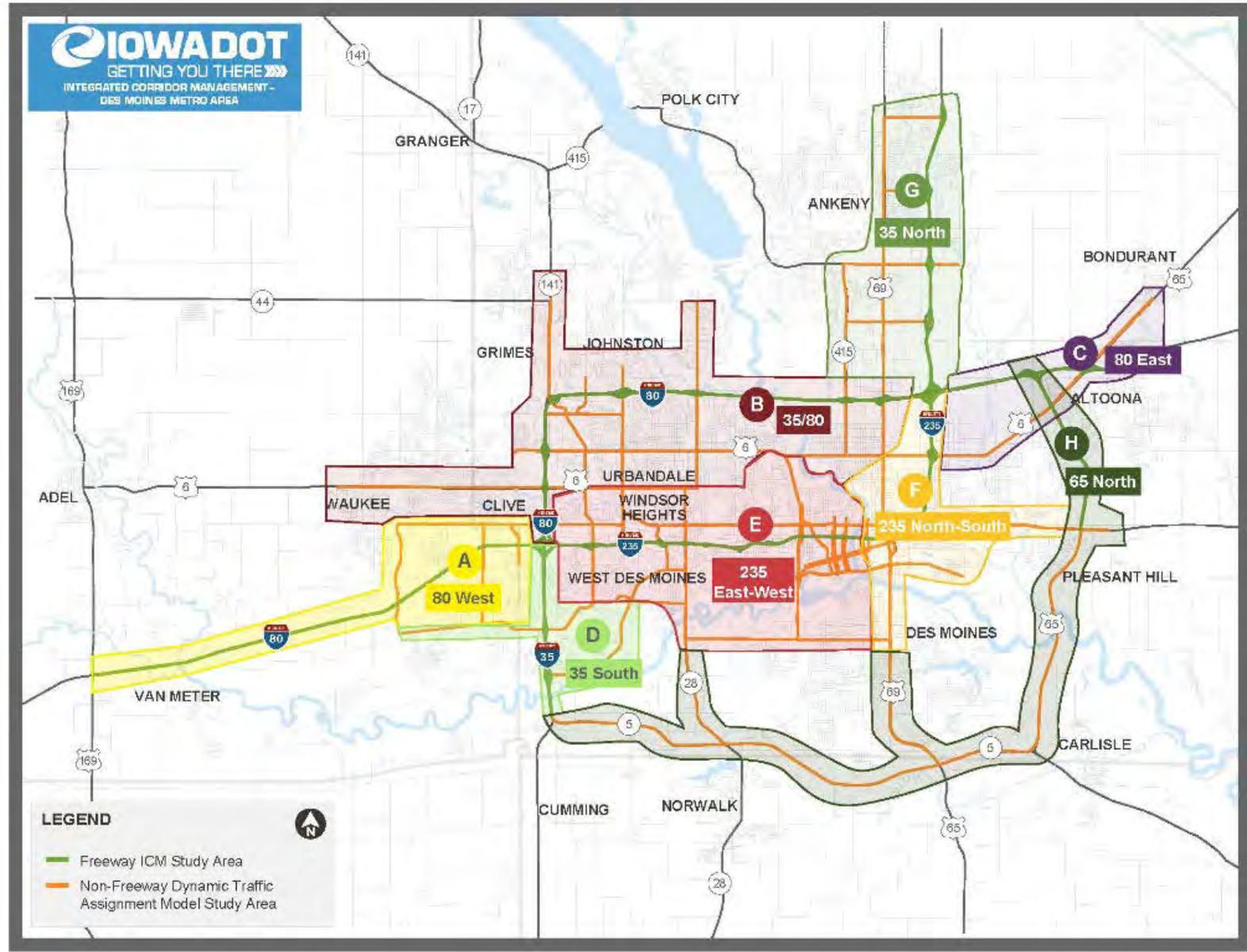
DART

- 112 buses
 - 15,686 unlinked passenger trips – Average weekday
- 94 Vanpool
 - 195,658 Annual unlinked trips

HIRTA

- 52 Directly Operated Demand Response
- 25 Purchased Demand Response
 - 296,490 Annual Unlinked Trips

Existing Conditions Exercise



Existing Conditions Exercise

KEY ISSUES

- Averaged metrics across corridors
- Compared corridors relatively
 - One slice – Not of concern to users
 - Full pie – Major concern

	PRIMARY FREEWAYS				SECONDARY FREEWAYS		
	Safety	Mobility	Reliability	Incidents	Safety	Mobility	Reliability
A 80 West							
B 35/80							
C 80 East							
D 35 South							
E 235 East-West							
F 235 North-South							
G 35 North							
H 65 North							



Minimal Concern to Users



Some Concern to Users



Major Concern to Users



Greatest Concern to Users

Existing Conditions Exercise – Your Turn

Name _____ Organization _____



KEY ISSUES

Rate each key issue in the boxes provided with a number (1=Minimal Concern to Users, 2=Some Concern to Users, 3=Major Concern to Users, 4=Greatest Concern to Users). Please provide any additional comments.

		PRIMARY		SECONDARY		
A 80 West	Safety		Comments:	Safety	Comments:	
	Mobility			Mobility		
	Reliability			Reliability		
	Incidents			Incidents		
B 35/80 North-South	Safety		Comments:	Safety	Comments:	
	Mobility			Mobility		
	Reliability			Reliability		
	Incidents			Incidents		
C	Safety		Comments:	Safety	Comments:	
	Mobility			Mobility		

KEY ISSUES

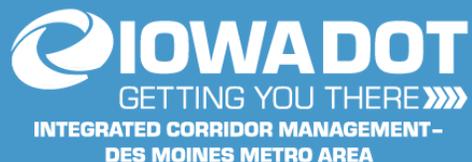
Rate each key issue in the boxes provided with a number (1=Minimal Concern to Users, 2=Some Concern to Users, 3=Major Concern to Users, 4=Greatest Concern to Users). Please provide any additional comments.



		PRIMARY		SECONDARY		
A 80 West	Bike/Ped		Comments:	Bike/Ped	Comments:	
				Parking		
	Weather			Weather		
	Public Transport			Public Transport		
	Special Events			Special Events		
	Other			Other		
B 35/80 North-South	Bike/Ped		Comments:	Bike/Ped	Comments:	
				Parking		
	Weather			Weather		
	Public Transport			Public Transport		
	Special Events			Special Events		
	Other			Other		
C	Bike/Ped		Comments:	Bike/Ped	Comments:	
				Parking		
	Weather			Weather		

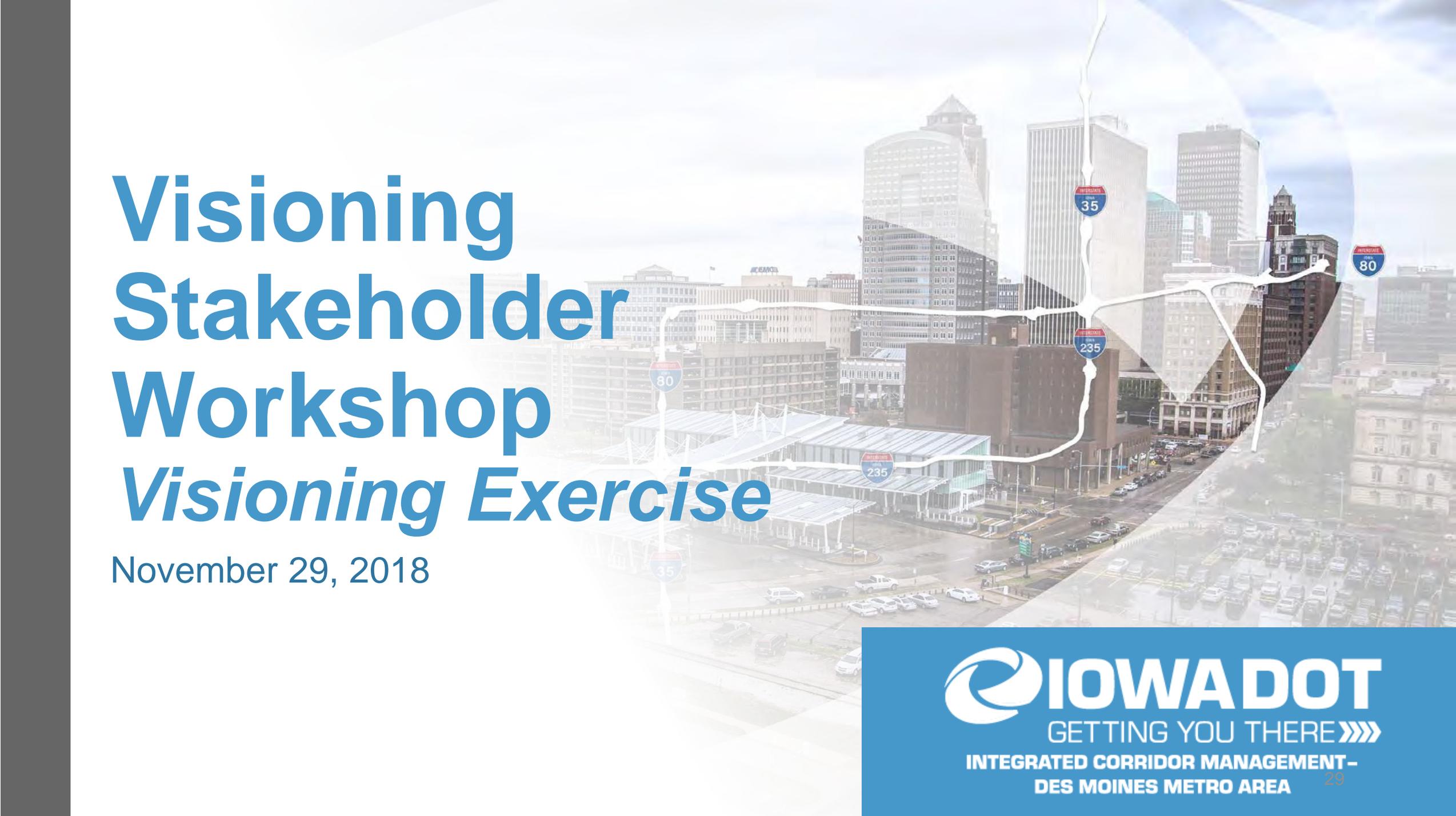
Side 1: Your reaction to the data and value (1 – low concern; 4 – high concern)

Side 2: Your input to categories we have not measured and your value of that category (1 – low concern; 4 – high concern)



Existing Conditions Exercise – Your Turn

- **Complete the insert**
- **Collaborate with your table if desired**
- **Submit your completed exercise by this afternoon before you leave**



Visioning Stakeholder Workshop *Visioning Exercise*

November 29, 2018

Defining the Des Moines ICM Vision Statement

Vision Statement Definition Process

Other ICM Vision Statements

Other planning activities
Vision Statements

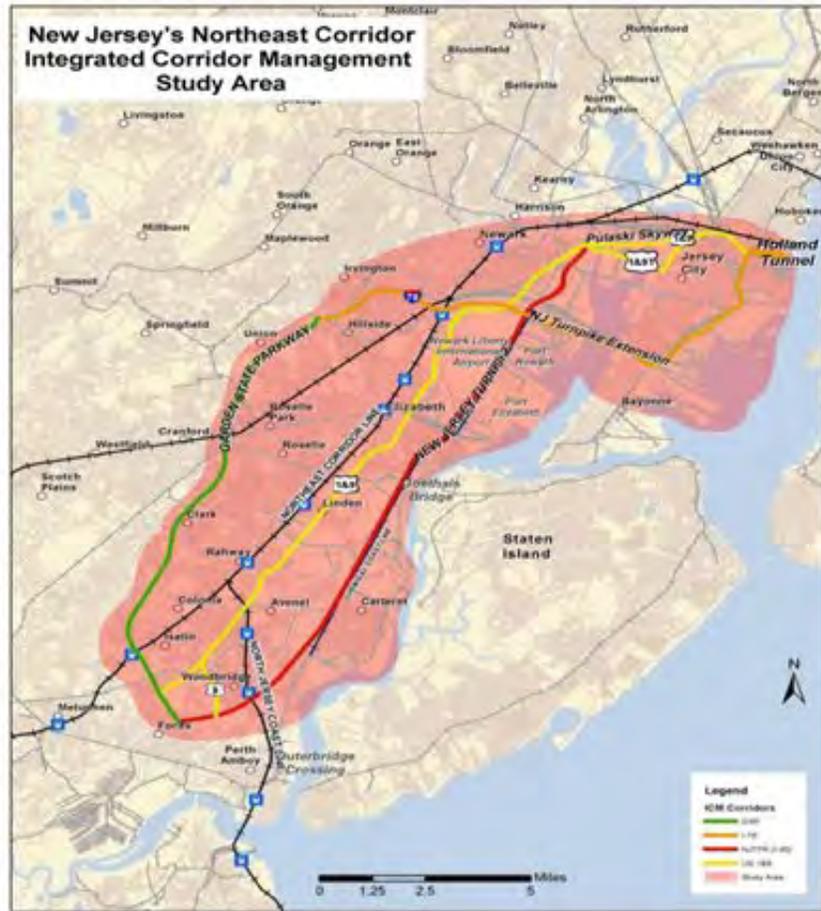
Stakeholder Input

Des Moines

Integrated Corridor Management
Vision Statement

Other ICM Vision Statements

New Jersey Northeast (NJNE) ICM



“To align the relevant transportation system management processes in the NJNE Corridor region to develop and implement integrated, balanced, responsive, efficient, effective, and equitable programs and systems. These are expected to:

- Actively reduce congestion
- Address traveler demand
- Monitor and control traffic
- Improve the mobility, reliability, and safety of all transportation system users in the corridor

Niagara International Transportation Technology Coalition (NITTEC) ICM

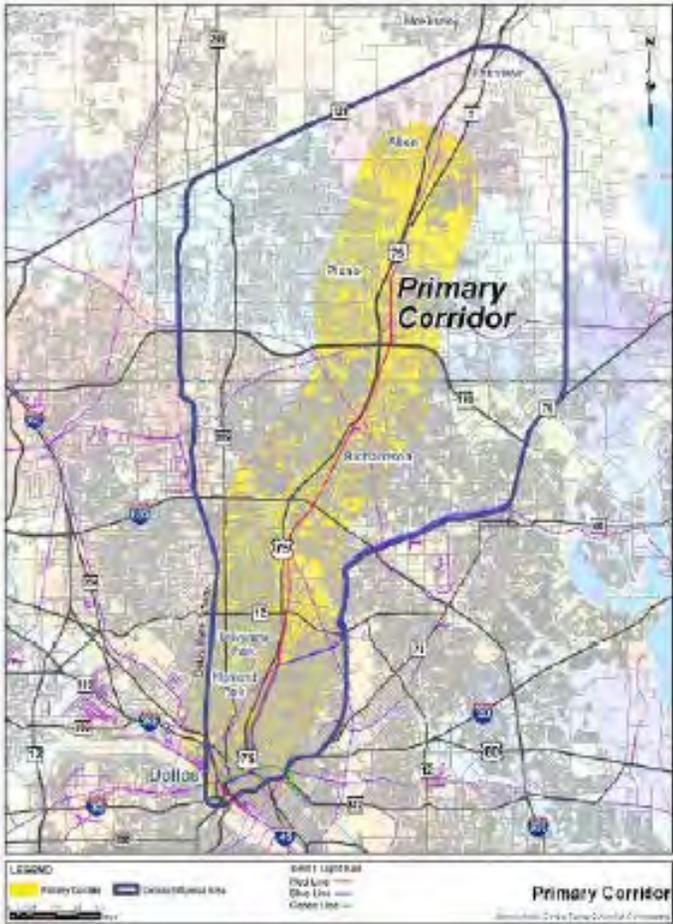


“Improved mobility through integrated management of transportation assets - freeways, arterials, transit, managed lanes - in the Niagara Frontier Corridor.”

• Example Goals

- Agency Coordination C2C is functioning among all transportation related agencies in the corridor
- Travel Time - Reduce the variation in travel times experienced by travelers throughout the corridor by 25 percent
- Mobility - Maximize the free flow of traffic and reduce congestion

US-75 – Dallas ICM

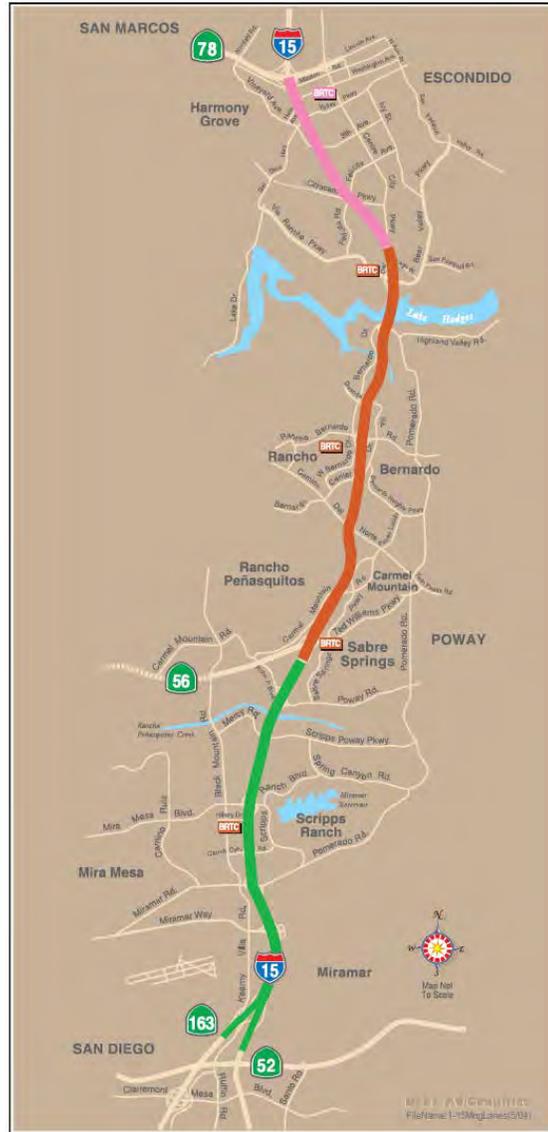


“Operate the US-75 Corridor in a true multimodal, integrated, efficient, and safe fashion where the focus is on the transportation customer.”

Example Goals

- Increase corridor throughput
- Improve travel time reliability
- Improved incident management

San Diego I-15 ICM



The San Diego I-15 ICMS transportation corridor will be managed collaboratively and cooperatively through ongoing partnerships among SANDAG, Caltrans, MTS, NCTD, CHP, and the Cities of San Diego, Poway, and Escondido.

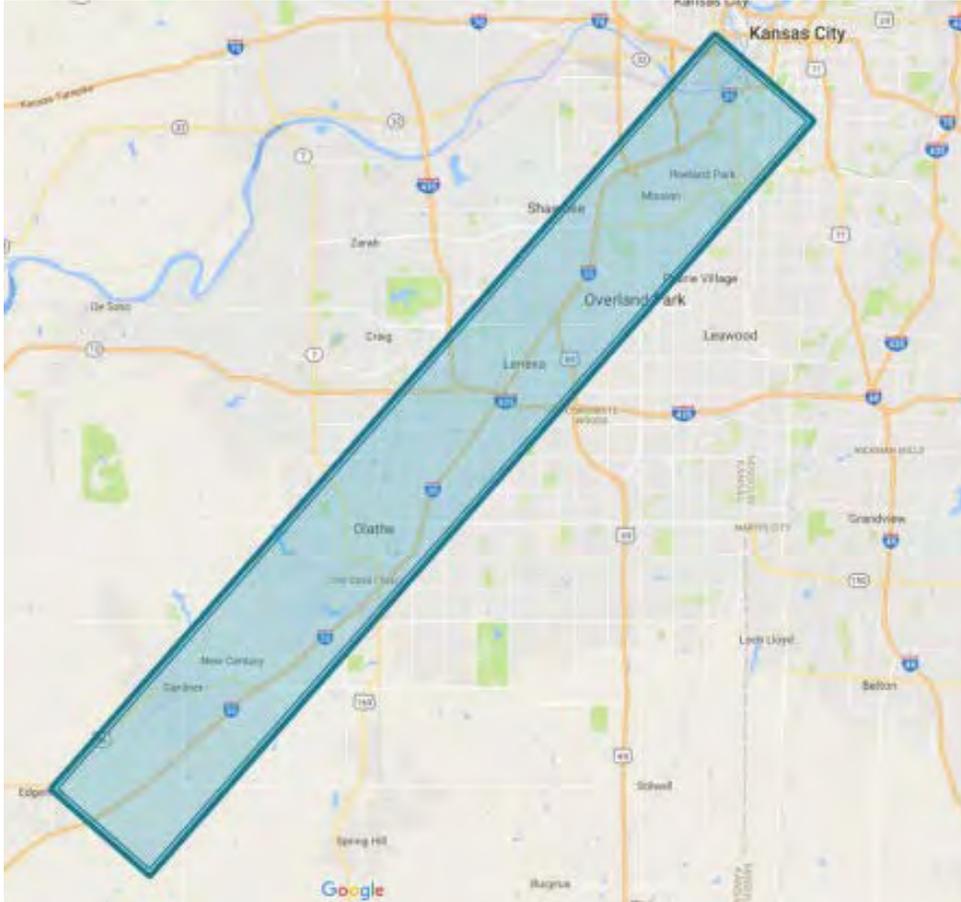
Within approximately the next five years, the corridor will give travelers the opportunity to make seamless and convenient shifts among modes and among the corridor's networks to complete their trips. Enhanced mobility for people, goods, services, and information will be achieved by further enhancing current levels of existing interoperability between field elements and through continued collaboration and cooperation among the corridor's institutional partners and their native functional environments or systems.

The ICMS is therefore focused on improving person- and vehicle-throughput, productivity, connectivity, safety, environmental compatibility, and enhancing accessibility to reach destination points in a reliable and timely manner.

I-394 Minneapolis ICM

In the future, travelers of the I-394 Corridor will be knowledgeable about the options and real-time conditions of the various routes and modes of travel throughout the corridor.....As a result, travelers throughout the I-394 Corridor will experience trips that match their expectations, reducing frustration, rushed driving, and general confusion.

I-35 ICM – Kansas City Metro Area



Goal

- Actively manage the corridor to provide reliable travel times for users.

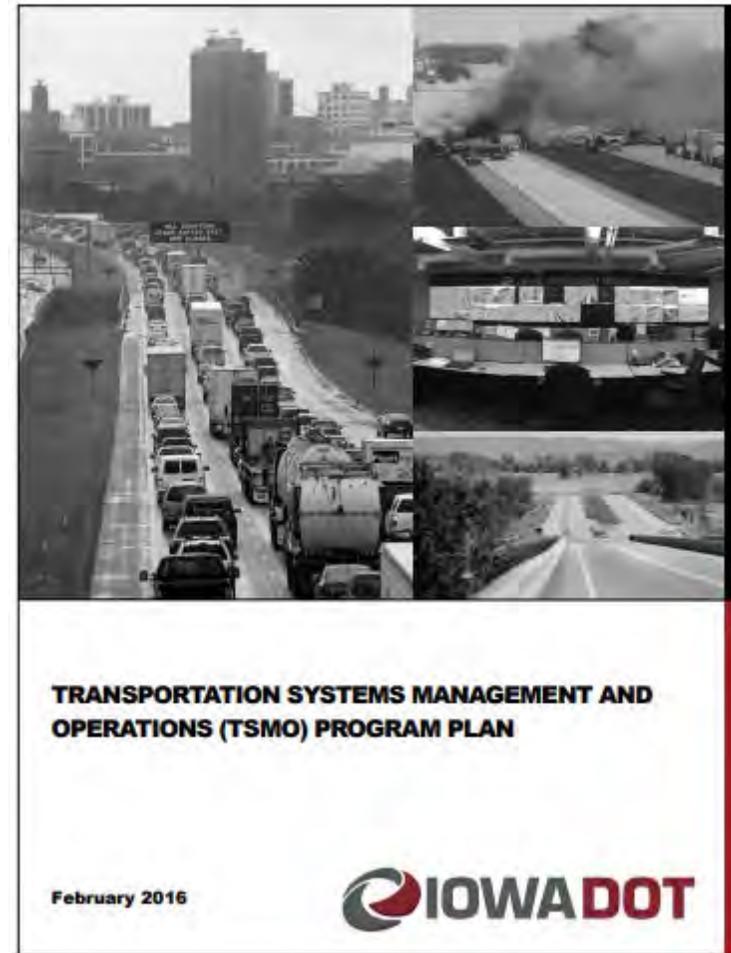
Actions

- Coordinate jurisdictional and modal responses to recurrent and non-recurrent congestion
- Actively broaden awareness of multimodal options and ways to reduce demand on our transportation system

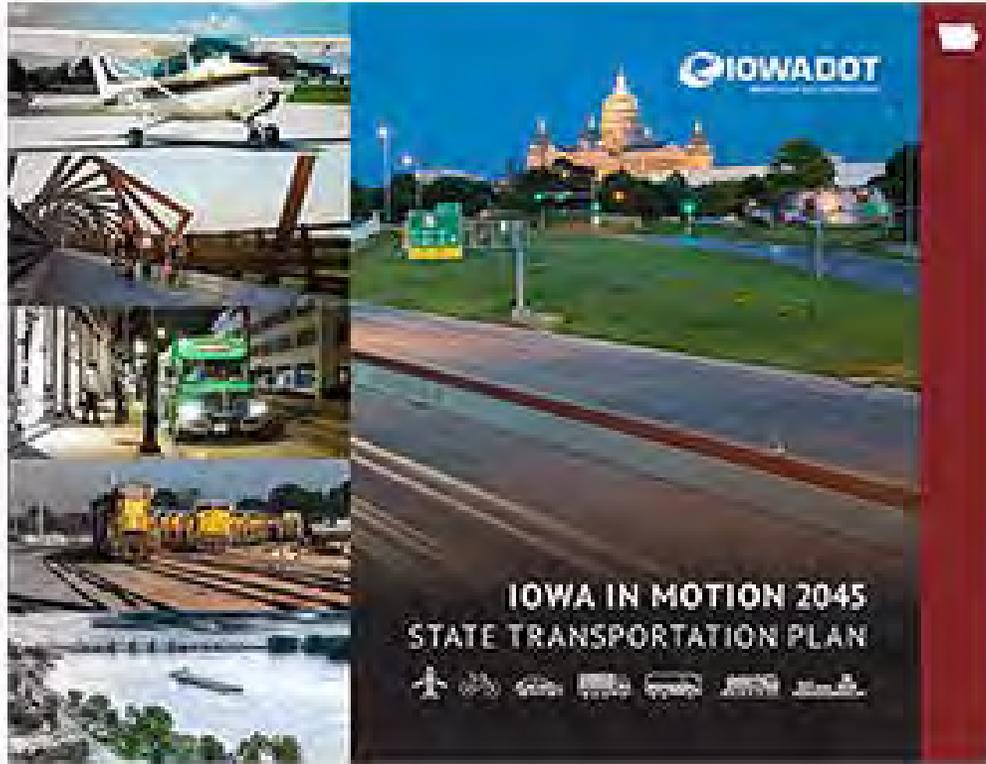
Other Iowa Vision Statements

Transportation Systems Management & Operations Program Plan

Iowa's transportation system is safe, efficient and reliable, supporting the state's environmental and economic health as a result of TSMO.



Iowa in Motion 2045 - State Transportation Plan



A safe and efficient multimodal transportation system that enables the social and economic wellbeing of all Iowans, provides enhanced access and mobility for people and freight, and accommodates the unique needs of urban and rural areas in an environmentally conscious manner. (Iowa Transportation Commission)

Mobilizing Tomorrow – A Transportation for a Greener Greater Des Moines

Greater Des Moines will be a collaborative, vibrant, and dynamic region of lasting value, equity, and diversity.

Goals

- Enhance multimodal transportation options.
- Manage and optimize transportation infrastructure and services.
- Improve the region's environmental health.
- Further the health, safety, and wellbeing of all residents in the region.



Defining a Vision Statement for the Des Moines ICM

Guiding Principles



- Future oriented
- Lead to a better future
- Represent stakeholder values
- Sets standards of excellence
- Rooted in the purpose and direction of the region
- Inspires stakeholder enthusiasm, collaboration, and commitment
- Reflects unique aspects of the region
- Ambitious

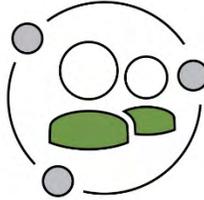
MOBILITY



+



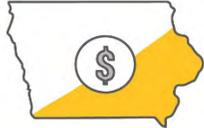
SAFETY



ACCESSIBILITY
(EDUCATION, EMPLOYMENT,
HEALTH CARE AND
COMMUNITY SERVICES)



**SYSTEM
PRESERVATION**



**REGIONAL
ECONOMIC
VITALITY**



**RESIDENTS
HEALTH AND
WELL-BEING**

COLLABORATION

**SYSTEM
MANAGEMENT**



ENVIRONMENTAL



+



RELIABILITY

**INTEGRATION AND
CONNECTIVITY**



SECURITY

**AGENCY
EFFICIENCY**



Visioning Stakeholder Workshop *Potential Strategy Identification*

November 29, 2018

Framing the Discussion of Potential Solutions

- **Foundational Components** - Supports a range of operational strategies and expansion of capabilities and regional coverage
- **Fundamental Tactics** - Expansion of traditional strategies likely already employed
- **Advanced and Active Tactics** - Allow systems to be managed dynamically and proactively
- **System Modifications** - Minor low cost modifications without adding significant infrastructure
- **Emerging Trends** – Technologies and operational strategies that continue to emerge



Foundational Components

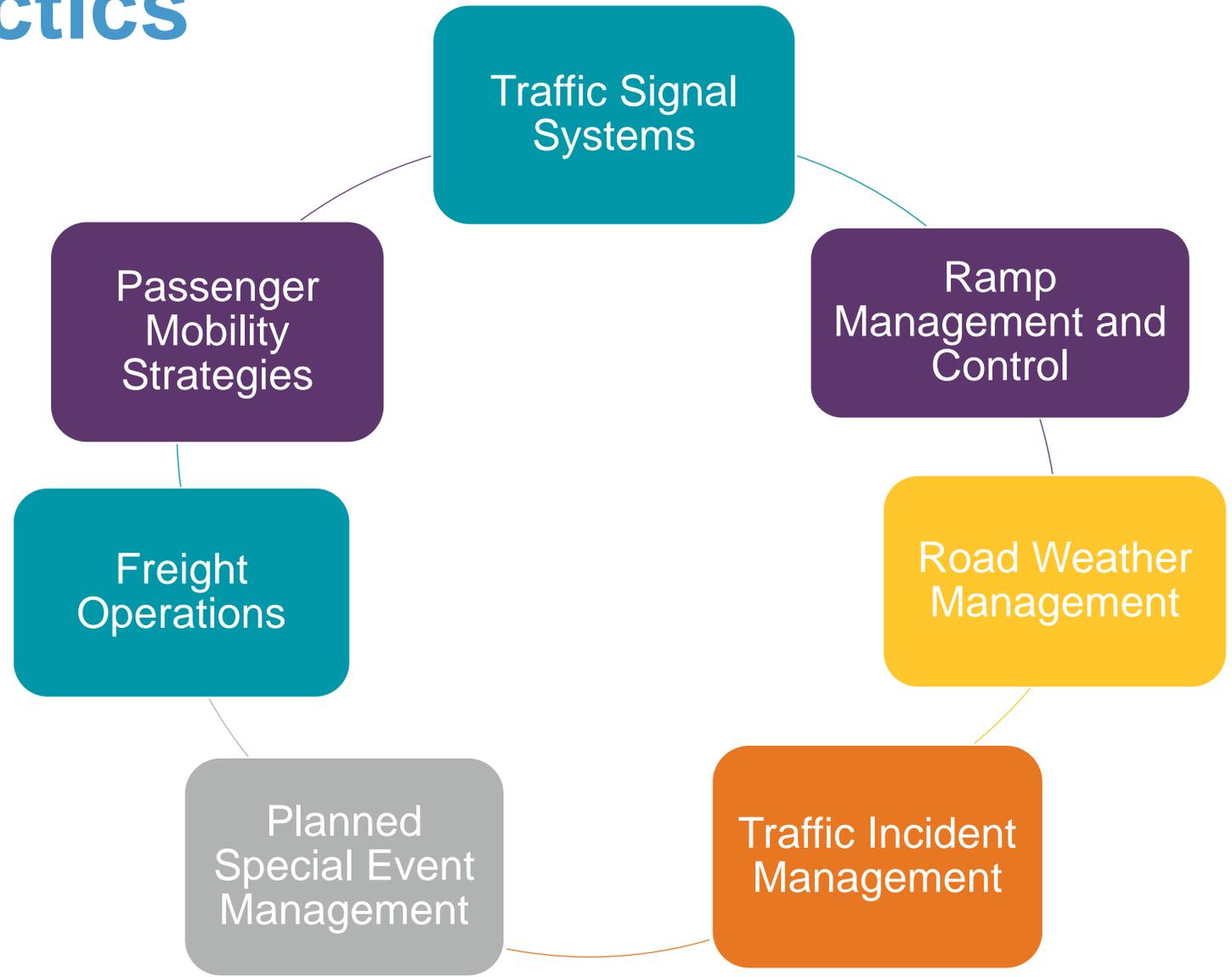
Supports a range of operational strategies and enables the expansion of capabilities and regional coverage.



Fundamental Tactics

Basic tactics that support operations:

- Mature technologies and operational strategies
- Commonly implemented nationally



Fundamental Tactics (cont.)

- **Traffic Signal Systems** - Organizing for the planning, maintenance, design, and operation of signalized intersections and traffic signal systems
- **Ramp Metering and Control** - Ramp metering, ramp closure, special use ramps, and ramp terminal treatments
- **Traffic Incident Management** - Planned and coordinated multi-disciplinary process to detect, respond to, and clear traffic incidents so that traffic flow may be restored as safely and quickly as possible
- **Weather Responsive Traffic Management (WRTM)** – Utilizing mobile road weather data (field devices and vehicles) for traveler information, traffic control, and winter maintenance activities

Fundamental Tactics (cont.)



Source: FHWA



Source: Des Moines Register



Source: KCCI

Planned Special Event Management

Advanced operations planning, stakeholder coordination and partnerships, developing a multi-agency plan, raising awareness of travel impacts, and coordinating agency services and resource sharing.

Work Zone Management

Minimize traffic delays, maintain motorist and worker safety, complete roadwork in a timely manner, and maintain access for businesses and residents.

Fundamental Tactics (cont.)

Passenger Mobility Strategies

- Bicycle & pedestrian facilities
- Carpooling flexible work hours
- Telecommuting
- Transportation Management Associations
- Vanpooling
- Trip reduction options



Source: National Association of City Transportation Officials



Source: American Public Transportation Association

Fundamental Tactics (cont.)

Passenger Mobility Strategies (cont.)

- Bus Rapid Transit
- Transit priority at signalized intersections, including queue jump
- Transit lanes
- Transit facilities
- Bus on shoulder
- Transit incentives



Source: Des Moines Metropolitan Planning Organization

Fundamental Tactics (cont.)

Freight Operations

- Gateway facilitation
- Driver identification and validation
- Compliance facilitation
- Weigh-in-Motion
- Freight status information
- Network status information



Advanced & Active Tactics

Advanced & Active Tactics

Active Traffic
Management

Managed
Lanes

Active
Demand
Management

Active
Parking
Management

Pedestrian
and Bicycle
Strategies

Advanced & Active Tactics



Active Traffic Management

- Part-Time Shoulder Use
- Adaptive Ramp Metering
- Adaptive Traffic Signal Control
- Dynamic Junction Control
- Contraflow Lane Reversal
- Dynamic Speed Limits
- Queue Warning
- Transit Signal Priority
- Dynamic Truck Restrictions
- Dynamic Rerouting

Advanced & Active Tactics (cont.)



Source: FHWA

Managed Lanes

- **Vehicle Eligibility** - Managed by allowing certain vehicles or restricting others; minimum occupancy is an example of an eligibility restriction
- **Access Control** - Access is limited for long stretches of the facility, minimizing turbulence in the flow of vehicles

Advanced & Active Tactics (cont.)

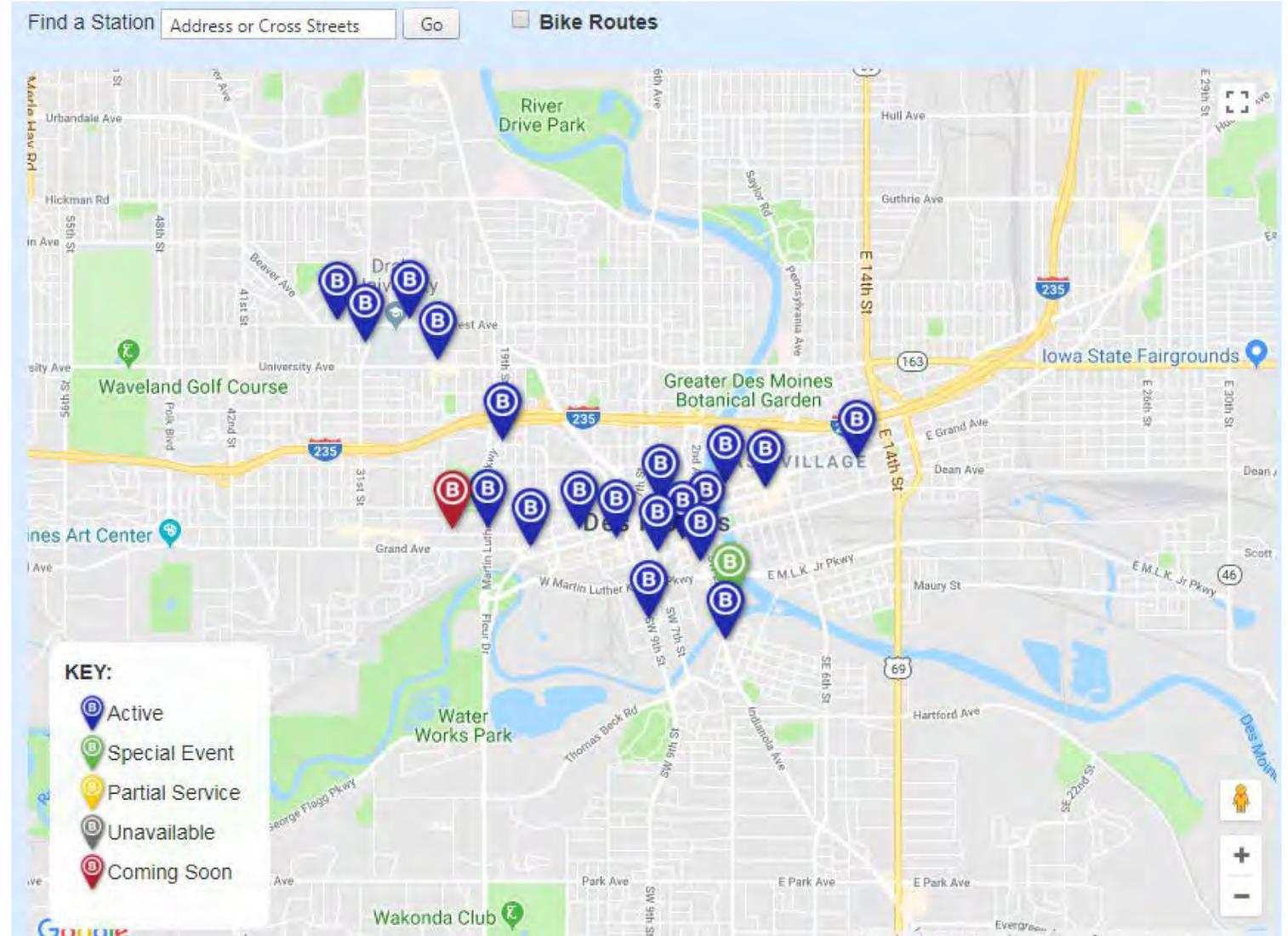


Active Demand Management

- Dynamic Managed Lanes
- Dynamic Ridesharing
- Dynamic Routing
- Dynamic Transit Capacity Assignment
- On-Demand Transit
- Predictive Traveler Information
- Transfer Connection Protection
- Fare Strategies
- Flexible Work Hours
- Real-Time Ridesharing

Advanced & Active Tactics (cont.)

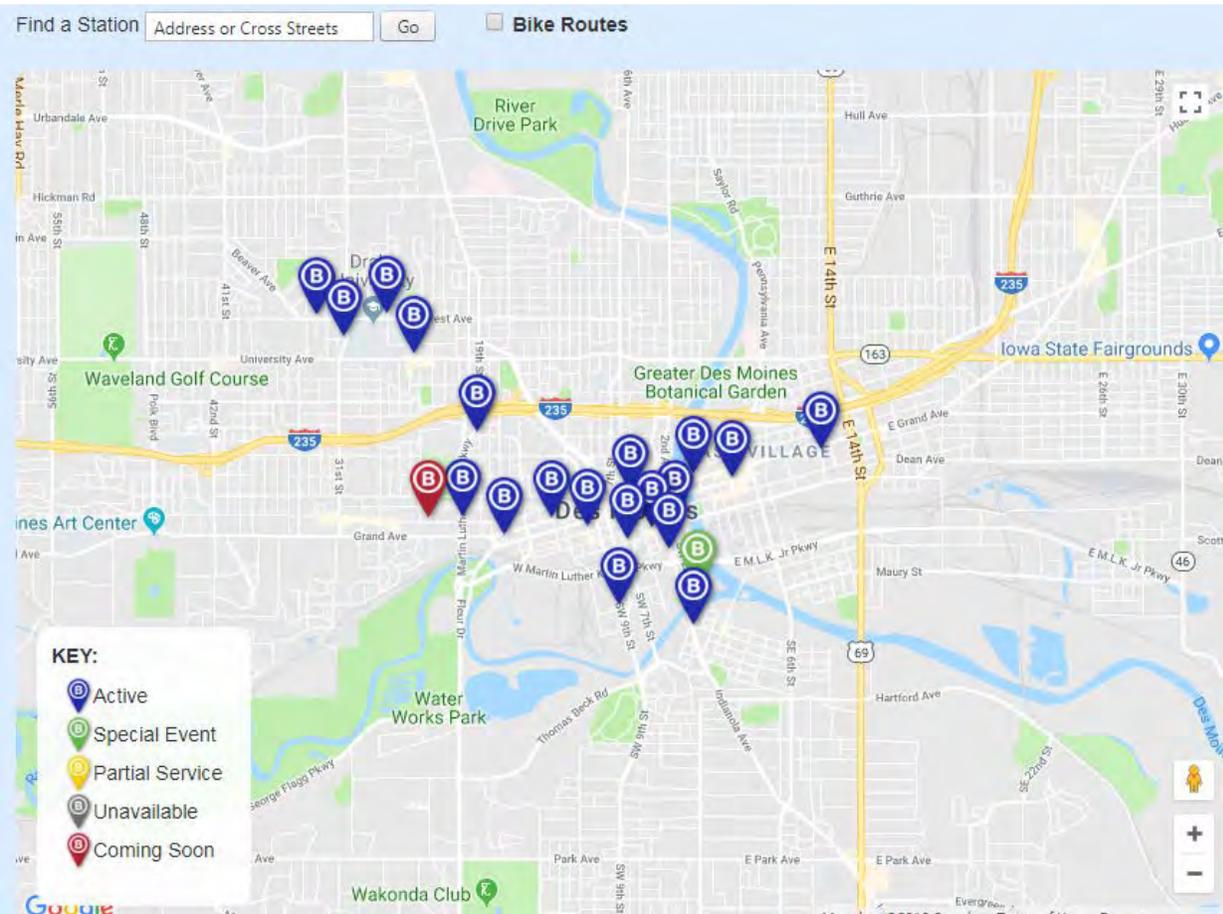
Active Parking Management - Strategies designed to direct drivers to available parking.



Advanced & Active Tactics (cont.)

Pedestrian and Bicycle Strategies - Technology and operational strategies to enhance pedestrian and bicycle mobility, and safety.

- Protected bike lane
- Bicycle and Pedestrian Education
- Bike Sharing



System Modifications

- **Acceleration/Deceleration Lanes** - Providing lanes for drivers to speed up or slow down in a space not used by high-speed through traffic
- **Access Management** - Proactive management of access points to land parcels adjacent to all manner of roadways. This includes access spacing, driveway spacing, turning lanes, median treatments, and right-of-way management
- **Bottleneck Removal** - Restriping, adding travel lane(s) for a short section by reducing lane widths and converting shoulders, adding lanes to accommodate entering and exiting traffic, and modifying ramps

System Modifications (cont.)

- **Collector/Distributor Roads** - Separating weaving sections and lane changing from the high-speed traffic on the freeway mainlines
- **Commercial Vehicle Accommodations** - Improving shoulder width and material, turning radii, and separating trucks from cars
- **Express Bus** - Longer distance commuter trips during peak operating periods with limited or no service during the mid-day; service can also be used for planned special events
- **Freight-Rail Improvements** - Freight rail relocation or infrastructure improvements to intermodal transportation centers, and rail crossing detection and warning improvements.

System Modifications (cont.)

Route 52
Valley West/Jordan Creek
Monday – Sunday Service
Platform E

Legend

- Timepoint
- ⊕ DART Central Station
620 Cherry Street
- Ⓟ Park & Ride Lot
- Direction of Travel (most trips)
- Direction of Travel (morning trips to Wells Fargo and Athene)
- Closed Door Service
- Select Trips



Source: DART

- **Intersection Improvements** - Improving signal timing, removing elements that hinder sight distance, and improving bicycle or pedestrian facilities at the intersection
- **Multi-Modal Transportation** - Combining strategies such as managed lanes, toll facilities, rail transit, and commute options into a corridor
- **Park and Ride Lots** - Parking facilities with connection to transit services that allow commuters to leave their vehicles while traveling to activity centers

System Modifications (cont.)



Source: I-95 Corridor Coalition

- **Ramp Configurations -**
Implementing new ramps, braiding pairs of ramps by physical grade separation or even closing ramps at problem locations
- **Crash Investigation Sites -**
Specifically designated and signed areas that provide a safe area where partially disabled vehicles, law enforcement, fire-rescue and other public service vehicles can be temporarily relocated

Emerging Trends



- **Automated Vehicles (AV)** – Conduct varying levels of the driving task under certain circumstances
- **Connected Vehicles (CV)** – Use of communication technologies to communicate between vehicles (vehicle-to-vehicle [V2V]), roadside infrastructure (vehicle-to-infrastructure [V2I])
- **Mobility on Demand and Transportation Network Companies** – Companies that pair passengers via websites and mobile apps with drivers who provide such services
- **Mobility as a Service** – Shift from personally-owned modes of transportation and towards mobility solutions that are consumed as a service
- **Smart City and Data Analytics** – Use of information and communication technologies (ICT) to enhance the quality and performance of services



Questions and Comments

Key Activities and Timeline

