# Des Moines Integrated Corridor Management

September 30, 2021

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HDR wsp

## What is Integrated Corridor Management?

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## What is Integrated Corridor Management (ICM)

## ICM Program Elements


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## Project Goals


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## Collaboration is key

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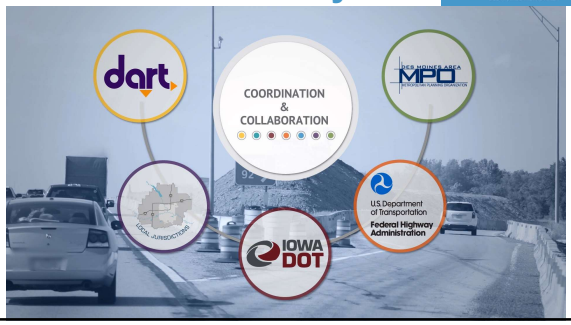

## Working Groups

**Stakeholders meet quarterly to work on ICM issues for one of three focus areas:**




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## Why ICM?

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## Why ICM for Des Moines Metropolitan Area?

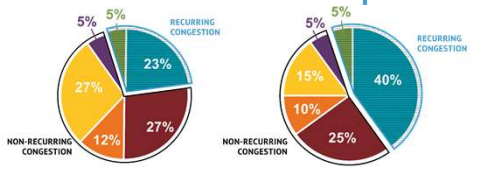


Figure 1. Iowa Sources of Congestion, 2013-2015




Figure 2. National Sources of Traffic Congestion, 2005 (Cambridge Systematics, 2005)

Special Events · Work Zones · Poor Signal Timing · Bad Weather · Bottlenecks · Traffic Incidents

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## Identified Issues

| Northwest | Northeast | Southwest | Southeast |
|---|---|---|---|
| Weaving issues | No access/limited access across median | Weather | Infrastructure connectivity |
| Poor/outdated signal timing | Short merge segments | Bottlenecks (drop lanes) | Pedestrian mobility improvements |
| Traffic impacts on arterials adjacent to interstate | Bottlenecks | Arterial signal coordination | Upgrade Highway 5 |
| | Queueing onto interstate | High speeds into congestion | |
| | Heavy traffic | High demand/limited capacity on Mix Master | |
| | Lack of turn lanes | Transit service/park-and-ride access | |

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## ICM Approach

FULLY INCORPORATED
PARTIALLY INCORPORATED

| | | Preferred Bundle |
|---|---|---|
| Fundamental Technology | Basic/Enhanced Traffic Data & Communication | ● |
| | | ● |
| Event Management | TIM, Work Zone, Special Events | ● |
| Freeway Traffic Management | Active Traffic Management | ● |
| Arterial Traffic Management | Traffic Signal Coordination and Control | ● |
| | Parking Management | ◐ |
| Traveler Information | Enhanced Traveler Information | ◐ |
| Infrastructure Enhancement | Location Specific Infrastructure Enhancement | ● |
| Travel Demand Management | Public/Private Travel Management | ● |
| Public Transportation Management | Transit Operations Enhancement | ◐ |
| | Transit Preferential Treatment | ◐ |

### Capital Cost Comparison

**Preferred Bundle**

Major Reconstruction Costs: $439 M
NEW ICM Costs: $452 M

TOTAL COSTS: **$0.9 B** by 2050

**Versus**

**BUNDLE 1: Aggressive Freeway Build**

- Build out of congestion strategy focused on freeways
- TOTAL COST: **$2.8 B**
- **Add'l Cost: $1.9 B**

**BUNDLE 4: Balanced**

- Build as usual with some ICM
- TOTAL COST: **$2.3 B**
- **Add'l Cost: $1.4 B**

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# Deploying ICM for Des Moines

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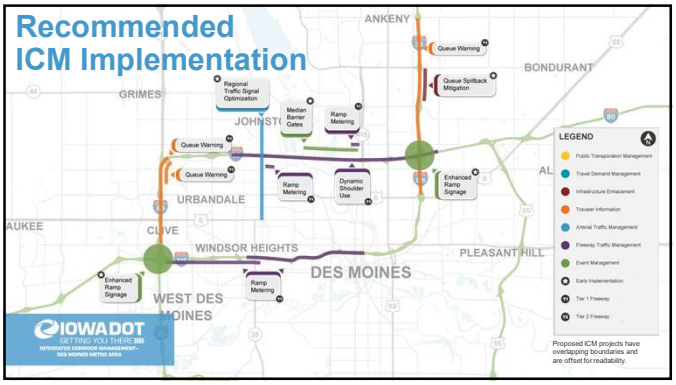
## Recommended ICM Implementation

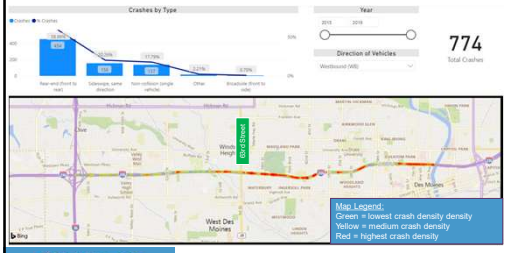



## Ramp Metering

Description

The use of traffic signals installed on freeway on-ramps balance demand and capacity, maintain optimal operations, and improve safety. On-ramp traffic is metered based on mainline speeds, volumes, and density and ramp conditions. Ramp signals can be roadside or overhead.


## Observed Crashes on I-235 from 2015-2019, Westbound




- Most dense crash clusters for westbound vehicles located east of 63rd Street
- High density clusters present downstream of westbound entrance ramps
- Rear-end and sideswipe crashes account for 80% of westbound crashes

## On-Ramp Disruption Example

**Location**: 73rd Street onto EB I-235

- Example of on-ramp platoon disrupting freeway flow


## On-Ramp Disruption Example

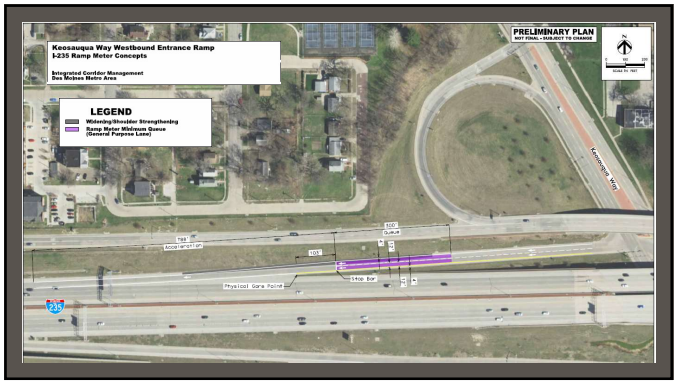
## I-80/I-235 between Jordan Creek Pkwy and Des Moines River (2050)

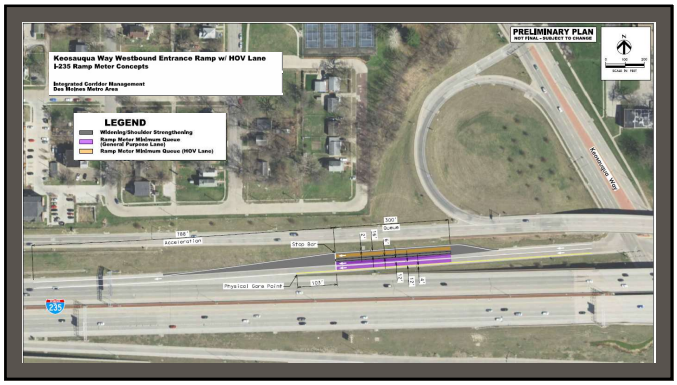

- 5 percent reduction in demand needed in WB AM Peak
- 10 percent reduction in demand needed in EB AM/PM Peak
- 15 percent reduction in demand needed in WB PM Peak

Ramp meter location

Auxiliary lane addition

Section of freeway with additional capacity

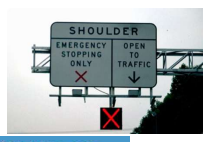


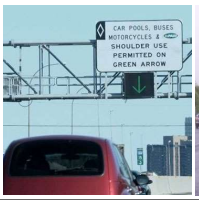




## Dynamic Shoulder Use

Description

The use of electronic signs to dynamically utilize the roadway shoulder as a travel lane during certain periods of time. These periods may be fixed or variable based on congestion, incidents, or other conditions. The shoulder use may be restricted to certain types of vehicles (transit) or open to all traffic.





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## Queue Warning

Description

The use of electronic signs to warn drivers of slowing and/or stopped vehicles ahead. The signs can be portable/temporary or fixed/permanent depending on the need (temporary construction versus recurring congestion). Dependent on the roadway configuration, signs can be roadside or overhead. Queue warning is often implemented with lane use control and/or dynamic speed advisories.



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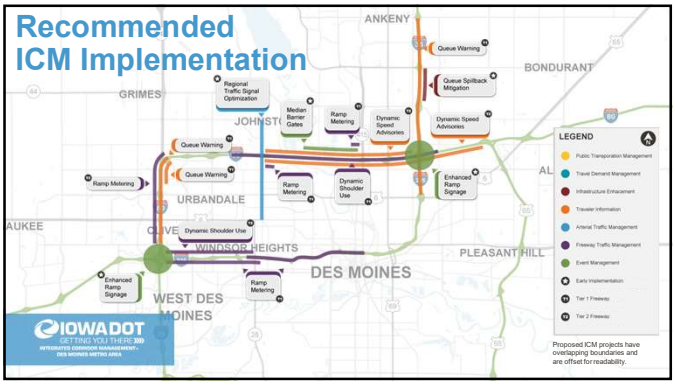
## Recommended ICM Implementation

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## Non-Freeway

- Traffic Signal Controls
- Infrastructure Enhancements
- Transportation Demand Management

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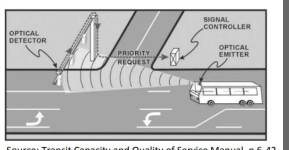
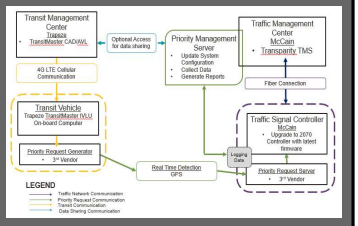
## Transit Signal Priority

- University Avenue – Route 3

**Figure 8-4: Optical Infrared Bus Detection Concept**




Source: Transit Capacity and Quality of Service Manual, p 6-42

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## ICM Lessons Learned

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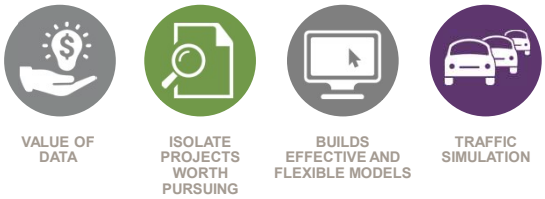
## Lessons Learned: Stakeholders

| | | | | |
|---|---|---|---|---|
| DOT Districts | DOT Bureaus | TMC | Cities | MPO |
| EMS / First Responders | Transit | Freight / Oversized Vehicles | Business Community | Bike / Ped Advocates |

## Lessons Learned: Data Analysis



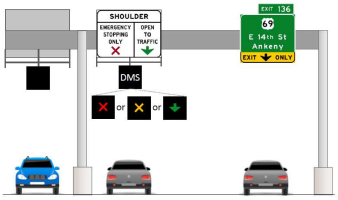
VALUE OF DATA

ISOLATE PROJECTS WORTH PURSUING

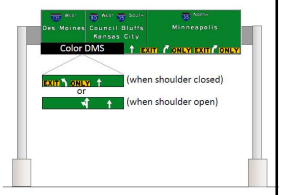
BUILDS EFFECTIVE AND FLEXIBLE MODELS

TRAFFIC SIMULATION

## Lessons Learned: Infrastructure + Technology




Static Sign & Butterfly/OH Combo Truss




Static Sign & OH Truss

## Questions?

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