

Iowa's I-80 P E L Study

Iowa's
Vision for
248 Miles of
I-80

TEAM
Conference
March, 2018



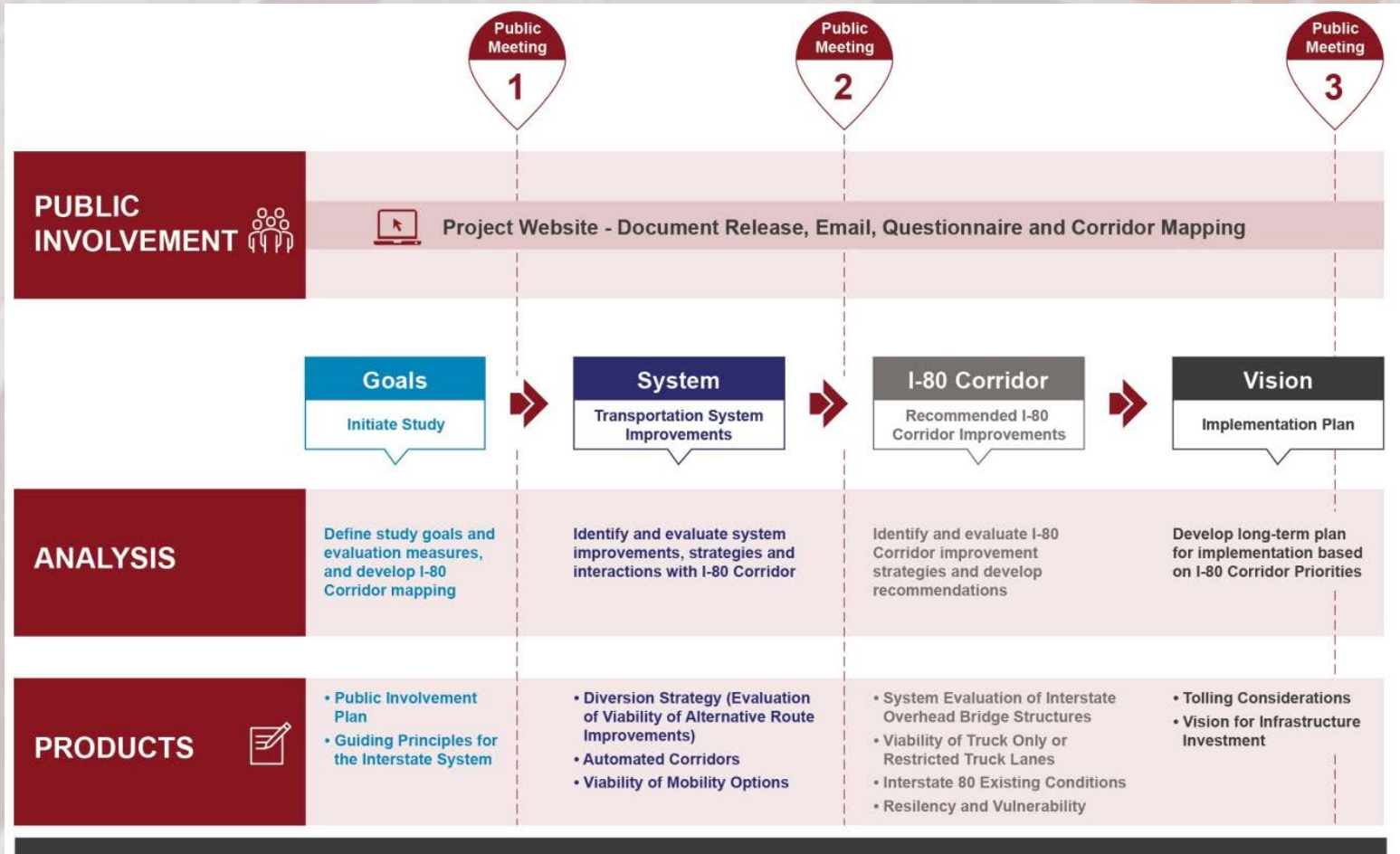
<https://iowadot.gov/interstatestudy>



The Project



Study Process



Study Team

- Overall M g m t./ Vision - Consult
- Tech M e m o s
 - P I Plan - DOT
 - Guiding Principles – DOT
 - Overhead Structures – DOT
 - Truck Only Lanes – DOT
 - A u t o m a t e d C o r r i d o r s – H D R
 - E x i s t i n g C o n d i t i o n s – H D R
 - R e s i l i e n c y & V u l n e r a b i l i t y - C H 2
 - M o d a l O p t i o n s – H g C o n s u l t
 - T o l l i n g C o n s i d e r a t i o n s – H g C o n s u l t

IOWADOT
SMARTER & SIMPLER CUSTOMER SERVICE

HOME
PEL STUDY REPORT
STUDY AREA MAP
PROJECT SCHEDULE
PUBLIC MEETINGS
SUBMIT A COMMENT
ADDITIONAL RESOURCES

I-80 PLANNING STUDY

PEL STUDY

The Iowa DOT is studying the Interstate 80 corridor statewide to evaluate safety, capacity, and infrastructure deficiencies in an effort to increase mobility across the interstate system. This study will follow the Planning Environmental Linkages (PEL) model, that allows the Iowa DOT to establish a vision and goals for the system; and also give the opportunity to study several improvement strategies early in the planning process. Some of the strategies will be eliminated in later planning phases, while the others may be carried forward. The study will also help the department prioritize segments of the interstate for further development. This planning study will serve as guidance for future improvements to I-80.

The analysis completed during this study will be documented within a series of technical memos, each encompassing a different topic or issue related to I-80 at a system level. As each document is completed, a link will be provided on this website to allow you the opportunity to review the recommendations and provide input regarding any conclusions. We appreciate your time in helping to shape the future I-80 system.

PUBLIC INVOLVEMENT PLAN

Because transportation projects can greatly affect a community, public input is extremely important. Public involvement opportunities allow interested individuals the chance to provide ideas and comments regarding the development of a transportation project. This I-80 Feasibility Study - Public Involvement Plan (PIP) is the guiding document for the public involvement process. The study's success hinges on communication and cooperation with the public, local communities, state and federal agencies. The PIP outlines how the Iowa DOT will communicate to stakeholders and the public throughout the study process.

[TECHNICAL MEMO](#) [MAP JOURNAL](#)

GUIDING PRINCIPLES FOR THE INTERSTATE SYSTEM

Guiding principles serve to support the development of the I-80 corridor across the state of Iowa. This technical memo will outline typical cross sections, vision, goals, and general philosophy of reconstructing the interstate. In some ways, many of the other analyses will feed into this document. It is anticipated that these principles will guide the development and reconstruction of the interstate into the foreseeable future.

[TECHNICAL MEMO](#) [MAP JOURNAL](#)

SYSTEM EVALUATION OF INTERSTATE OVERHEAD BRIDGE STRUCTURES

When the interstate was constructed, negotiations between the state and counties often decided which intersecting local roadways would be closed or cross the interstate by bridge. By 1960s' standards, these bridges were long enough to span a four-lane interstate, but as the system is rebuilt, replacement of the existing bridges to accommodate additional lanes will be required. This technical memo will analyze each bridge crossing on I-80 and determine which bridges are necessary for regional connectivity and which may cause undue hardship if the overhead structure is not replaced.

[TECHNICAL MEMO](#) [MAP JOURNAL](#)

Public Outreach

I-80 PLANNING STUDY

MEETING 1 (ONLINE)



I-80 PLANNING STUDY

MEETING 2 (ONLINE)



HOME

PEL STUDY REPORT

STUDY AREA MAP

PROJECT SCHEDULE

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ADDITIONAL RESOURCES

I-80 PLANNING STUDY

PUBLIC INVOLVEMENT

This webpage was designed to help keep you informed during the I-80 Planning Study and to provide a forum to hear and respond to your comments. Because transportation projects can greatly impact a community, public input is extremely important to help guide the process. Click on the links to the right to view the online public information meetings. We strongly encourage you to view these online meetings and provide any comments and feedback using the link provided. Your opinions will be considered throughout the process.

Public meetings

[Meeting 1 \(online\)](#) - July 15, 2016

[Meeting 2 \(online\)](#) - July 25, 2017

[Meeting 3 \(online\)](#) - Feb. 21, 2018

Meeting 4 (in person) - Summer 2018



Public Outreach



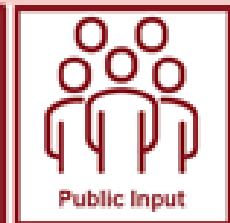
The screenshot shows the IOWADOT website for the I-80 Planning Study. The header includes the IOWADOT logo and the text "I-80 PLANNING STUDY". Below the header is a navigation menu with links for HOME, PEL STUDY REPORT, STUDY AREA MAP, PROJECT SCHEDULE, PUBLIC MEETINGS (highlighted), SUBMIT A COMMENT, and ADDITIONAL RESOURCES. The main content area is titled "PUBLIC INVOLVEMENT" and contains a paragraph explaining the purpose of the webpage: "This webpage was designed to help keep you informed during the I-80 Planning Study and to provide a forum to hear and respond to your comments. Because transportation projects can greatly impact a community, public input is extremely important to help guide the process. Click on the links to the right to view the online public information meetings. We strongly encourage you to view these online meetings and provide any comments and feedback using the link provided. Your opinions will be considered throughout the process." To the right of this text is a table titled "Public meetings" with the following entries:

Public meetings
Meeting 1 (online) - July 15, 2016
Meeting 2 (online) - July 25, 2017
Meeting 3 (online) - Feb. 21, 2018
Meeting 4 (in person) - Summer 2018

At the bottom of the page is the IOWADOT logo and the text "I-80 Planning Study".

Commenting on the I-80 Vision

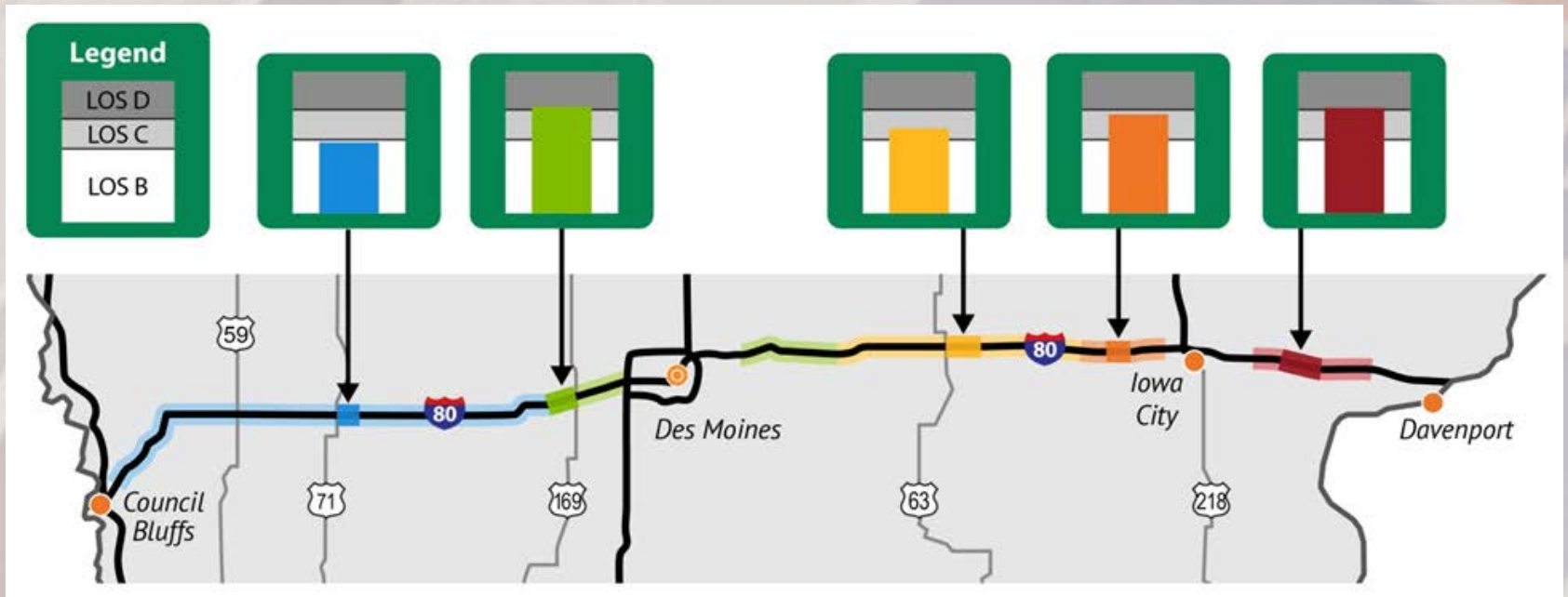
A study website has been instrumental in communicating with the public and receiving comments. Over 100 comments and 5,500 completed questionnaires have been received. Online information available for review includes public meetings and technical reports. Comments on the I-80 Vision can be submitted at <https://iowadot.gov/interstatestudy/home>.



Project Goals

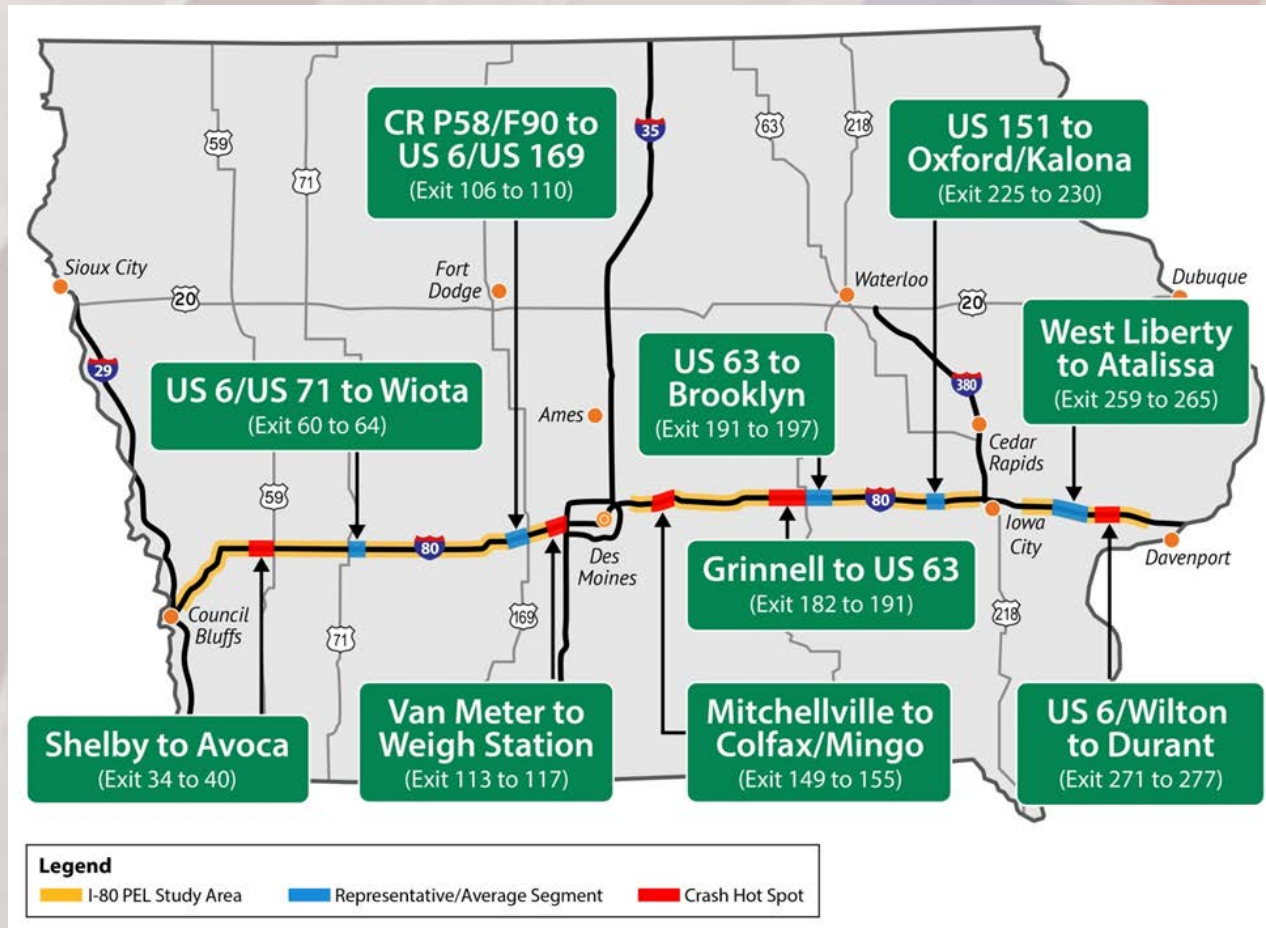
		Iowa in Motion 2045 - Statewide Goals			
		Stewardship	Modification	Optimization	Transformation
I-80 Goals and Objectives	Effectively Serve the Traveling Public		✓	✓	✓
	Maintain and Preserve Past Investments	✓			
	Adapt to Future Conditions		✓	✓	✓
	Invest in Iowa Economy		✓		✓
	Implement Improvements within Affordable Limits	✓	✓		

Goal 1 – Effectively Serve



2040 Traffic Levels-of-Service

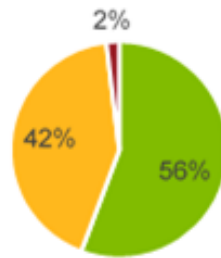
Goal 1 – Effectively Serve



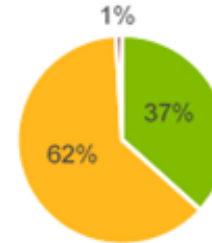
Existing Crash Hot Spots

Goal 2 – Maintain & Preserve

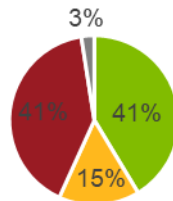
Pavement Conditions



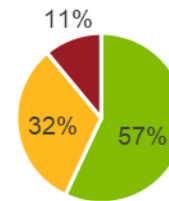
Bridge Conditions



Number of Horizontal Curves



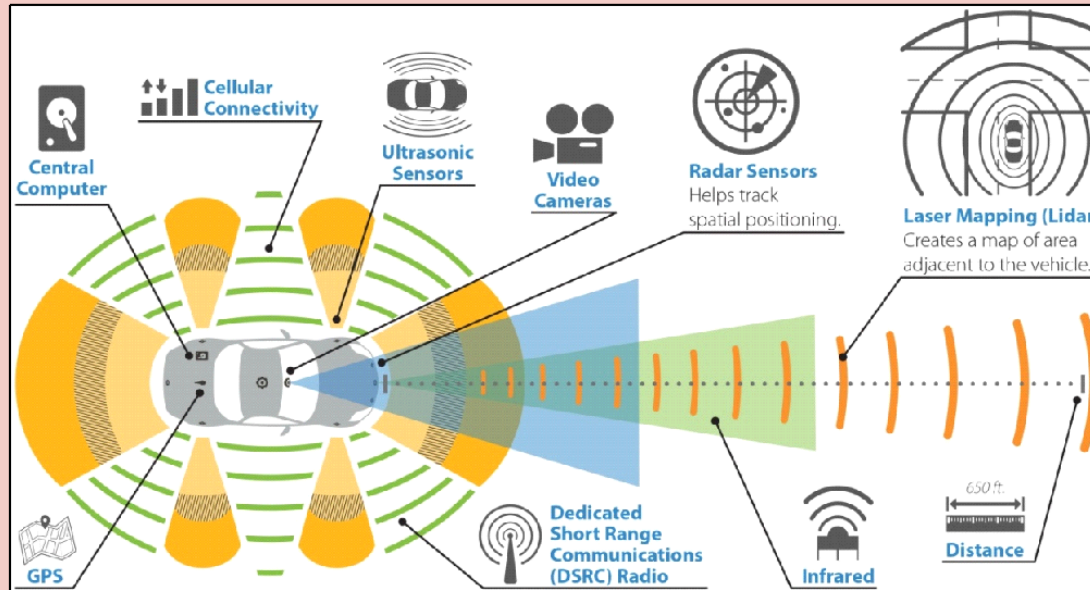
Number of Vertical Curves



Goal 3 – Adapt to Future

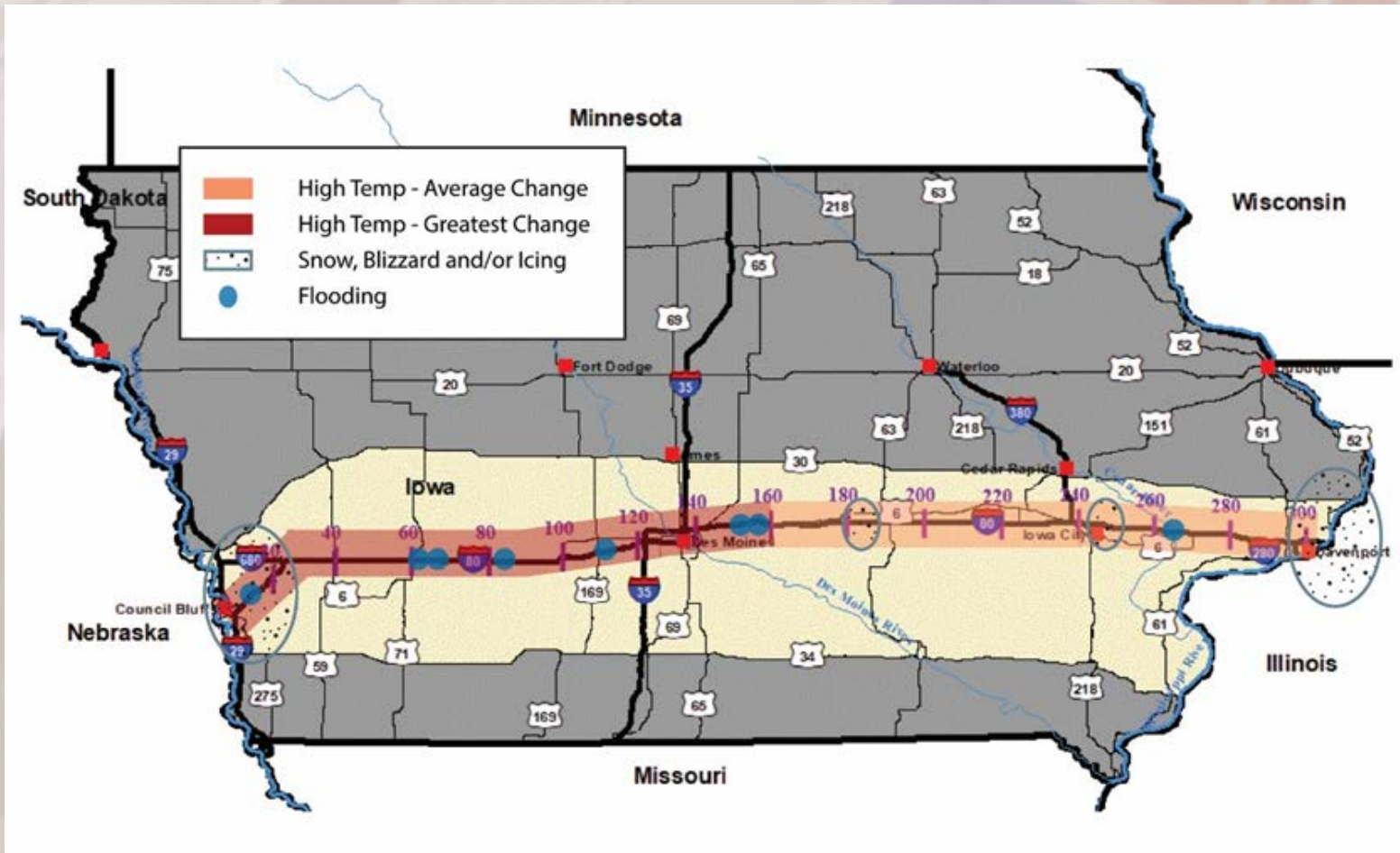
Understanding AV Technologies

An autonomous vehicle uses a number of technologies to operate the vehicle without human interaction. Global Positioning System (GPS) technologies, sensors, onboard computers and real-time communications with other vehicles and the roadside allow the vehicle to safely navigate itself.



Today, driverless cars have logged thousands of hours on American roads, but are not yet commercially available on a large scale.

Goal 3 – Adapt to Future



Climate Variability

Goal 4 – Invest in low a

Moving the Nation – Truck Freight Facts

- Trucks carried 65.5 percent of the nation's NAFTA freight in 2016.
- Trucks accounted for \$362 billion of the nation's imports (63 percent of the total) and \$338 billion of exports (68 percent of the total) in 2016.


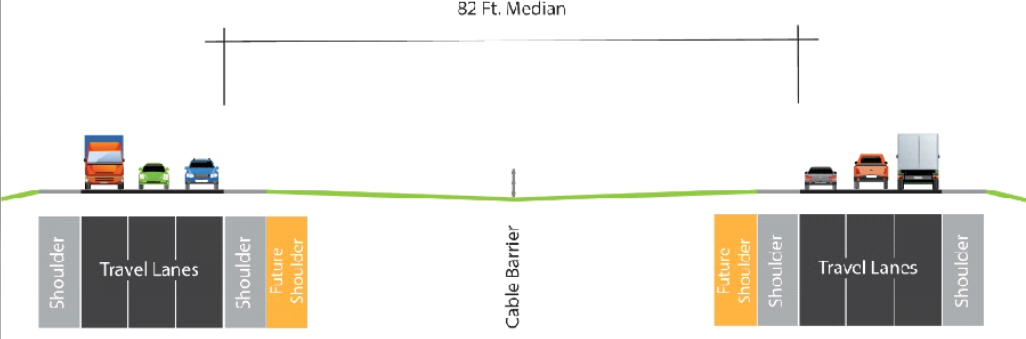


Trucks currently comprise between 28 and 39 percent of the traffic along rural I-80 in Iowa.

Goal 5 - Affordable

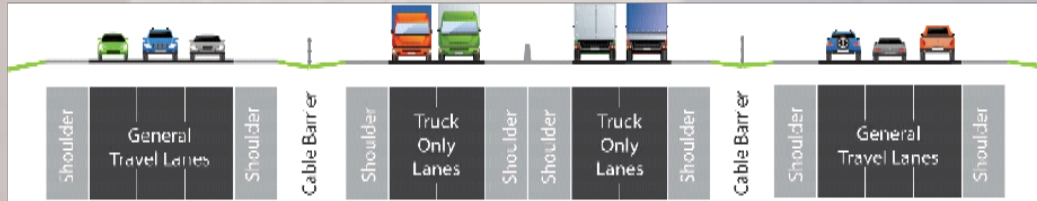
- Pay - As - You - Go State
- \$3- 4B - 20 years – 75%
- Federal Role – Tolling?

Improvement Strategies

General Roadway Widening Strategy 	
	
Description	Features
<p>Widen and improve the existing rural I-80 roadway along its current alignment. Additional general purpose travel lanes would be provided to meet future traffic demands. The new roadway would be configured to provide a more modern and safer roadway section, while maintaining all existing travel lanes during construction. Localized adjustments to the existing alignment would be provided to meet modern geometric design standards, improve resiliency, and as necessary, to avoid impacts to sensitive resources.</p>	<ul style="list-style-type: none"> • Six general purpose travel lanes. • Modern 75 mph design standard providing gentler horizontal and vertical curves. • Modern roadway section with wide depressed median, wider shoulders and expanded roadside. • Adaptability for future expansion of the roadway within the median. • Median cable barrier for cross-median crash protection. • Communications infrastructure for active traffic management.

Improvement Strategies

Truck-Only Lanes Widening Strategy



Description

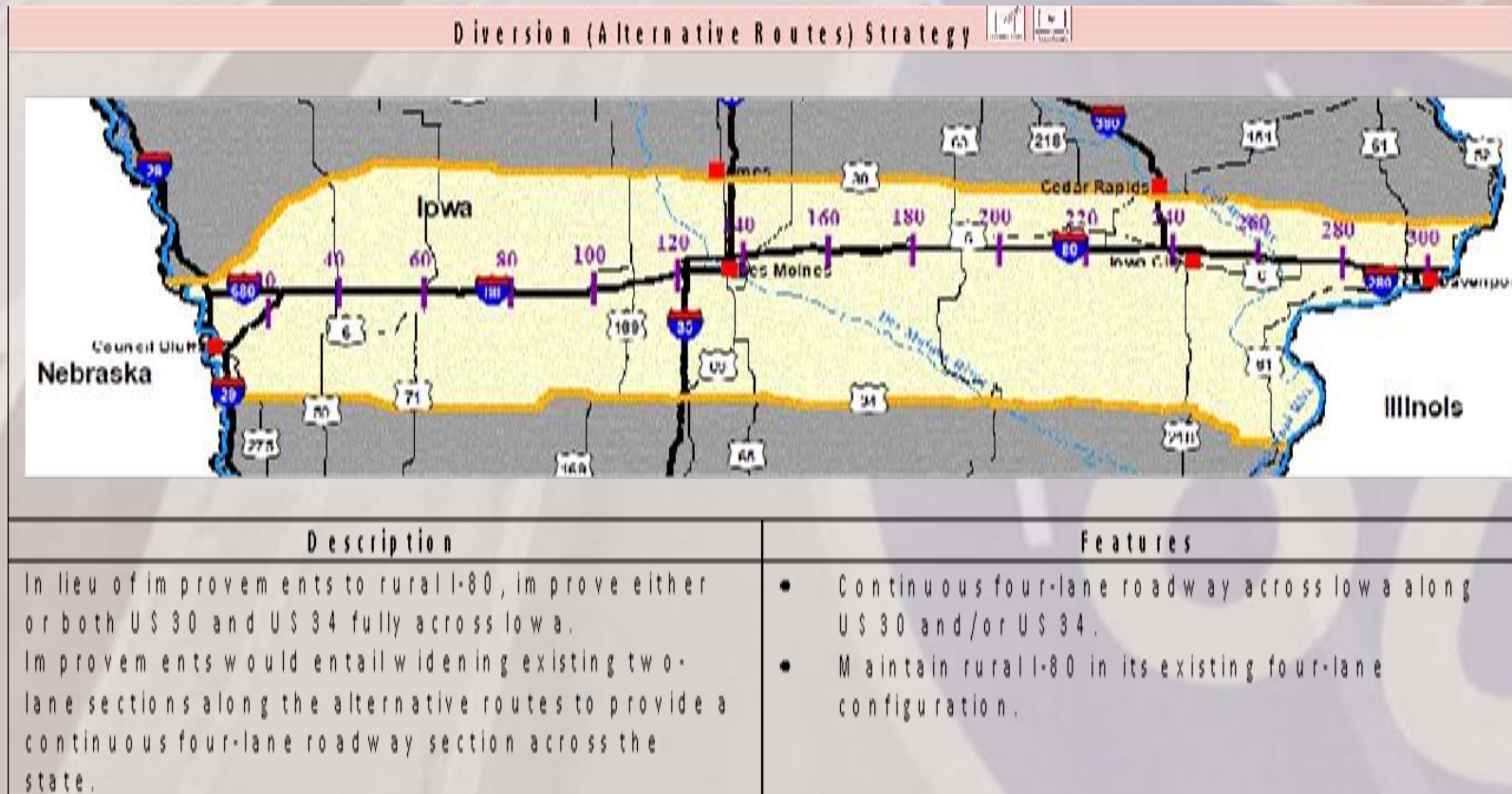
Widen and improve the existing rural I-80 roadway along its current alignment with a new roadway configuration providing exclusive truck lanes. Truck-only lanes in each direction would be located in the middle, separated by a safety barrier. General purpose travel lanes would be provided in each direction outside of the truck lanes. The new roadway would be configured to provide a more modern and safer roadway section, while maintaining all existing travel lanes during construction. Localized adjustments to the existing alignment would be provided to meet modern geometric design standards, improve resiliency, and as necessary, to avoid impacts to sensitive resources.

Features

- Four truck-only lanes, allowing heavier load limits and longer combination vehicles.
- Six general purpose travel lanes.
- Truck-only slip ramps at strategic locations.
- Direct connection truck-only ramps at major interchange locations.
- Modern 75 mph design standard providing gentler horizontal and vertical curves.
- Modern roadway section with wider shoulders and expanded roadside.
- Crash safety barrier for separation of truck-only lanes and general purpose lanes.
- Expanded and reconfigured truck rest areas, weigh stations and breakdown sites.
- Communications infrastructure for active traffic management.


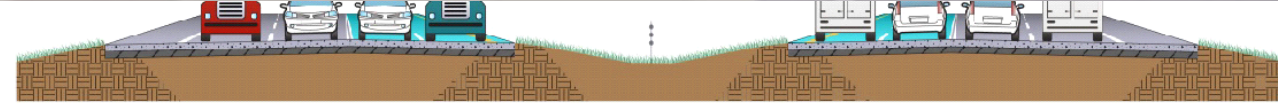
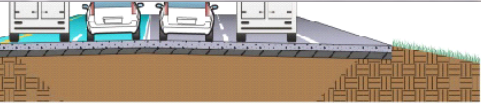
Truck - Only Lanes

Improvement Strategies



Diversion Strategies

Improvement Strategies

Automated Corridors Strategy 					
					
SHOULDER	GENERAL TRAVEL	AV LANES	AV LANES	GENERAL TRAVEL	SHOULDER
Description			Features		
<p>Develop the I-80 Corridor as a Smart Corridor to maximize the future benefits of autonomous vehicles. Instead of widening rural I-80 to address capacity and safety needs, utilize AV technologies to manage the traffic flow and operations, as traffic grows in the future and as compatible vehicles emerge within the nation's automobile fleet. The timing and extent of AV benefits are dependent upon the advancement of AV technologies by automobile manufacturers and the emersion of AV-compatible vehicles travelling along I-80.</p>			<p>Infrastructure-related AV features include:</p> <ul style="list-style-type: none"> • Roadway Section – Narrower lane width for AV-only lanes and narrower inside shoulder width. • Roadside Communications – Installation of Global Positioning System reference markers, machine-readable signs, and roadside communications equipment to monitor local traffic operating conditions and provide real-time safety information to AVs. • Pavement Design – Redesign of pavement thickness and construction methods specific to the AV traveling characteristics, such as lane centering and zero lane wandering. • Expandability – Expansion of the roadway section through the repurposing of the inside lane and shoulder for expanded traffic-carrying capacity. 		

Improvement Strategies

Modal Improvements Strategy



Description	Features
<p>Expand and improve the Corridor's multimodal system to meet future mobility needs. These modal improvements would include:</p> <ul style="list-style-type: none"> • Intercity Passenger Rail/High Speed Rail • Commuter Rail • Over-the-Road Bus • River Freight • Air Freight • Rail Freight • Park and Ride Facilities • Paratransit • Trails • Special Generator Services • Passenger Air Service 	<ul style="list-style-type: none"> • Implement the proposed Chicago-Quad Cities-Iowa City-Des Moines-Council Bluffs/Omaha intercity passenger rail project. • Provide new commuter rail passenger service within the state's future rail network. • Enhance existing regional bus service with more frequent and expanded service. • Invest in Iowa's waterways for expanded capacity and facilities. • Expand freight aviation services and facilities. • Expand the privately-owned rail network. • Enhance and increase park and ride facilities. • Expand paratransit services in the state. • Improve and expand the state's trail system. • Utilize special transit services for events. • Expand air facilities and passenger services.

Modal Improvements Strategy

Summary Evaluation

System Improvement Strategy	Corridor Goals and Objectives										Recommendation	
	Goal 1		Goal 2		Goal 3			Goal 4		Goal 5		
	Mobility	Safety	Maintenance	Modernize	AV Technologies	Climate Change	Federal Policy	Freight	Economic Benefits	Preservation		Equity
General Roadway Widening	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	Reasonable - Include
Truck-Only Lanes Widening	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	Unreasonable - Include elements
Diversion (Alternative Routes)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	Unreasonable - Eliminate
Automated Corridors	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	Unreasonable - Include elements
Modal Improvements	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	Unreasonable - Include elements

Legend	
✓	Good
✓	Moderate
✓	Poor

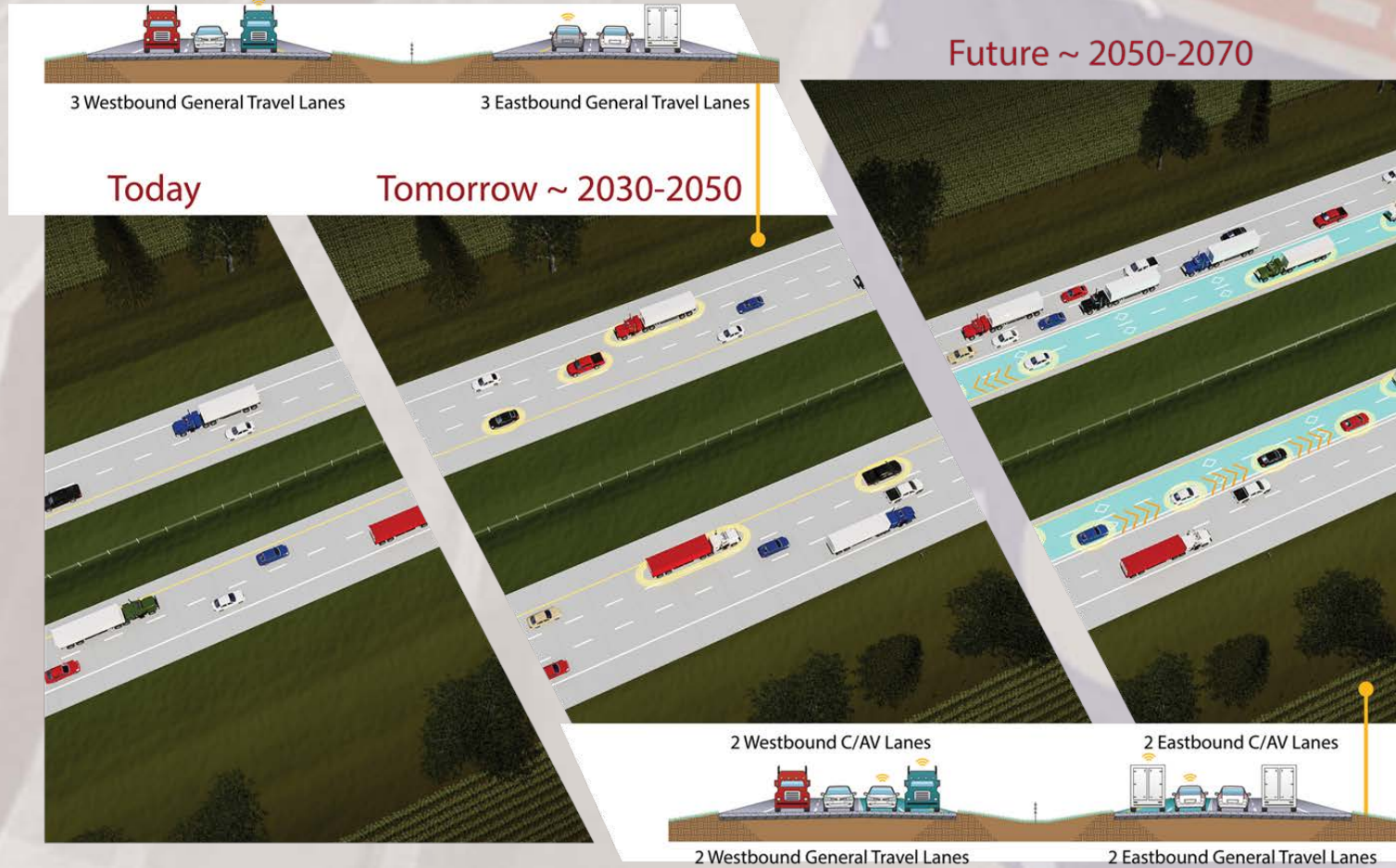
The Vision

Features of the I-80 Vision

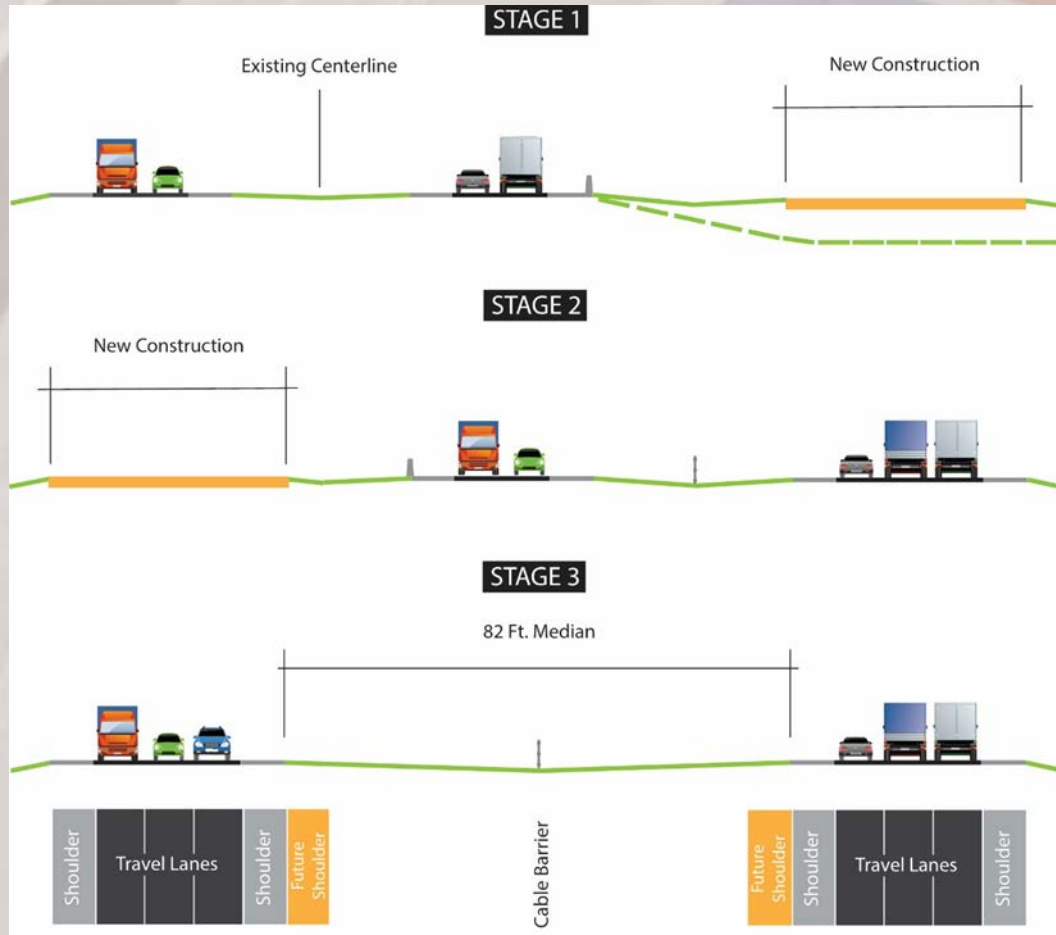
- Construction cost of \$2.99 billion (2017)
- A modern 75 mph design
- Expandable for long-term traffic growth
- Accommodates future vehicle technologies
- Maintains two lanes of traffic in each direction during construction
- Interchange improvements to serve future traffic growth and development
- Provisions for truck operations to improve overall traffic flow
- Improved and expanded rest areas and facilities
- Improved reliability for increased flood risks due to changes in weather trends



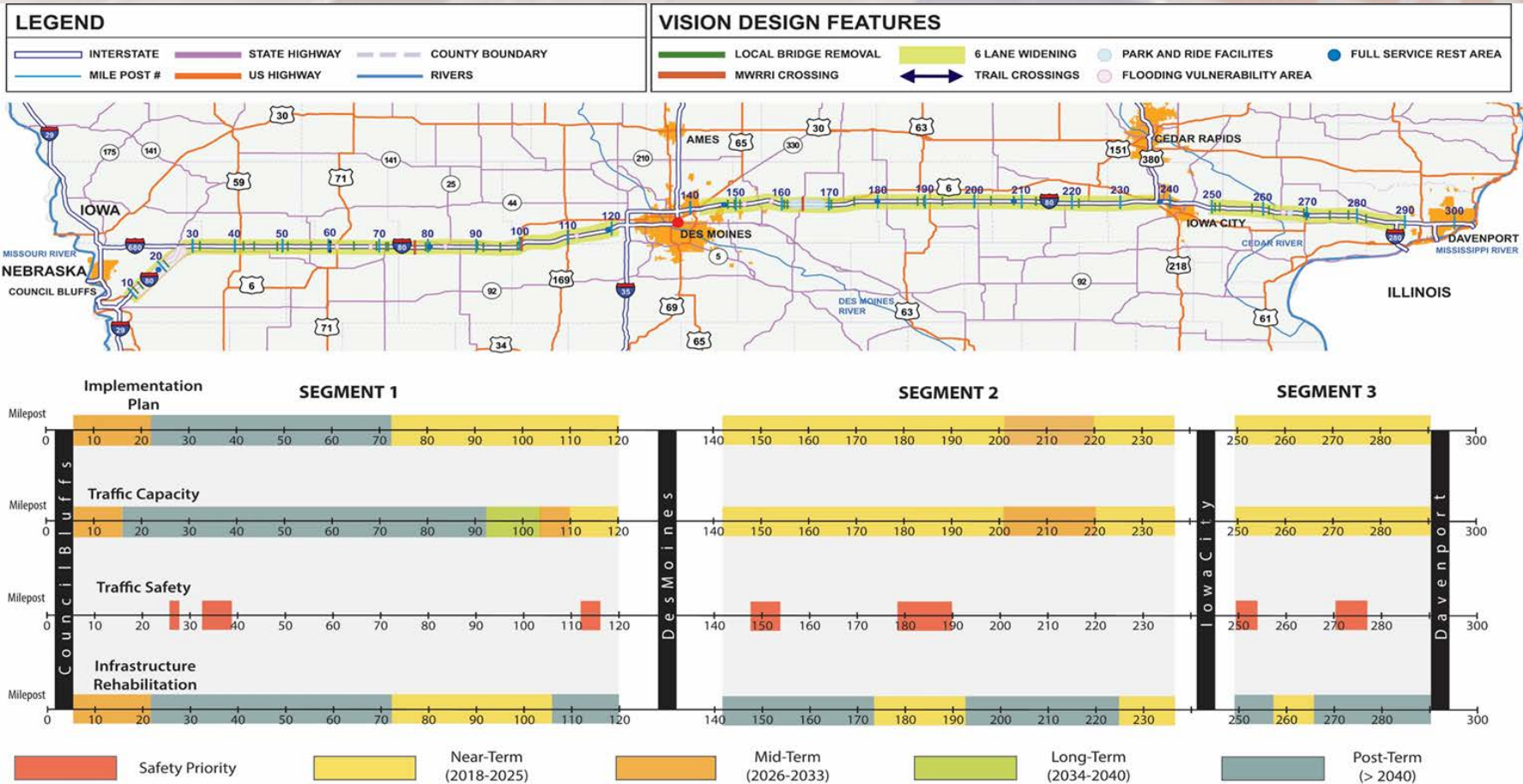
Six or Eight Lanes – Role of AV?



Construction Staging



Implementation Phasing



A Funding Option – Tolling?

Advantages of Tolling	Disadvantages of Tolling
<ul style="list-style-type: none">• Dedicated Revenue – Provides a new revenue source dedicated 100% to the Vision for financing of upfront construction.• Sustained Operations and Maintenance – Provides a new long-term revenue source for sustained I-80 operations and maintenance.• Accelerated Construction – Improvements would be completed sooner, offsetting inflationary escalations of costs.• Equity of Payment and Use – Only users of the project, regardless of in-state or out-of-state residency, pay for the project.• Service Reliability – As traffic increases, provides a funding source to pay for additional projects and infrastructure rehabilitation.	<ul style="list-style-type: none">• Debt Financing – Interest costs would be incurred for financing.• Traffic Diversion – Some traffic would divert to other highways to avoid paying a toll, potentially affecting the overall highway system.• Public/Stakeholder Acceptance – Some travelers may not be supportive of paying tolls for an improved I-80, in addition to current fuel taxes.• Authorization – Authority to enact tolls would require federal approvals and new state enabling legislation.• Administration Costs – Collecting tolls is not as cost efficient as fuel taxes.

A Funding Option – Tolling?

Vision Funding Option	Net Present Value (2017) of Benefit (\$000)					
	Travel Efficiency Benefits				Maintain and Rehab	Total
	VHT*	VMT*	Safety	Subtotal		
Existing Funding	\$3,663,715	-\$1,215,340	\$679,510	\$3,127,885	\$605,811	\$3,733,696
Toll Funding	\$4,166,254	-\$1,518,965	\$531,203	\$3,178,492	\$1,639,650	\$4,818,142

Economic Benefits of Tolling

Next Steps

- PEL Close Out – Vision & Public Hearing
- Crossover Bridges – Close?
- Safety Improvements
- Financing Decisions
- NEPA / Design First Segments

Lessons from Iowa

- ❑ PEL – Tailor Process to DOT Needs
- ❑ Consultant Selection
 - On-Call Contracts – Skills you need
 - Integration with DOT Staff
- ❑ Federal Uncertainties Create Opportunities??