

I-80/94 BORMAN EXPRESSWAY

Transportation Systems Management and Operations (TSMO)

October 19, 2021

Junell O'Donnell, Parsons
Dan Prevost, Parsons
Craig Moore, Parsons

FLEXROAD
LESS STOP. MORE GO.

1

AGENDA

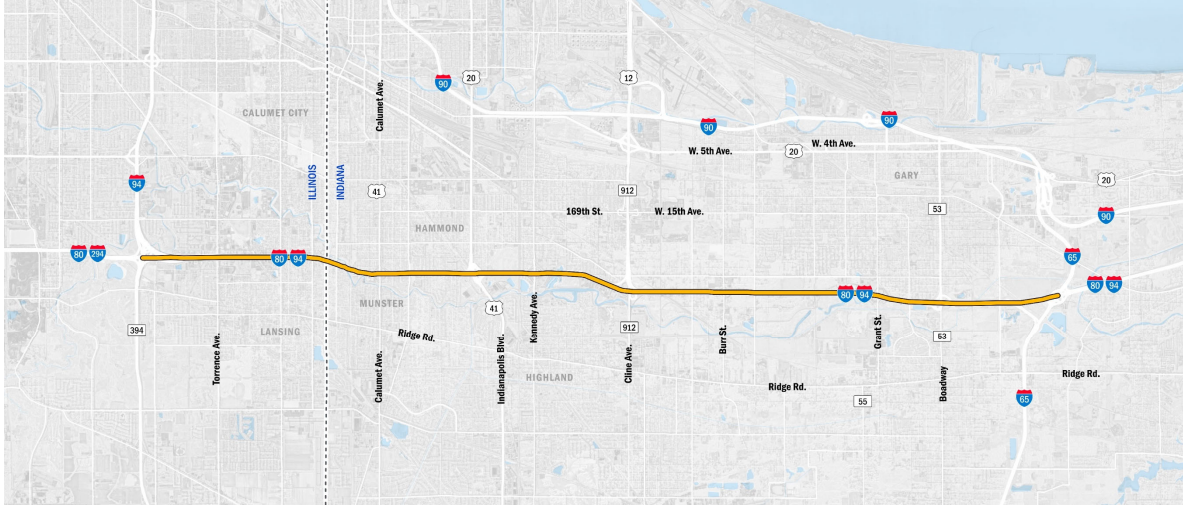
- Study Area and Goals Recap
- What is TSMO?
- TSMO Strategy Evaluation
- Next Steps

FLEXROAD LESS STOP. MORE GO. © 2021 INDOT

2

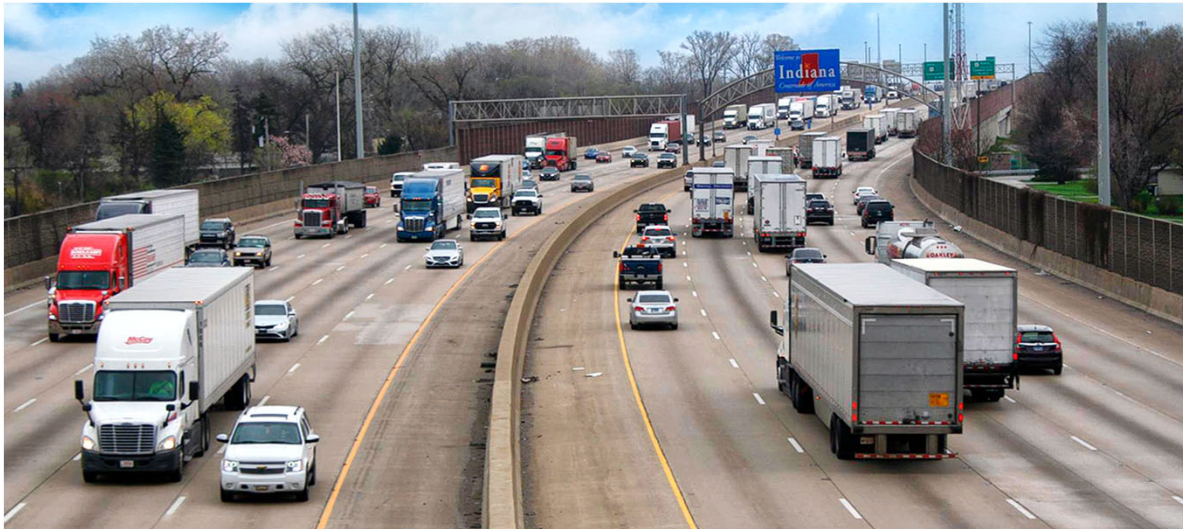
The Borman Expressway

IL 394 to I-65



3

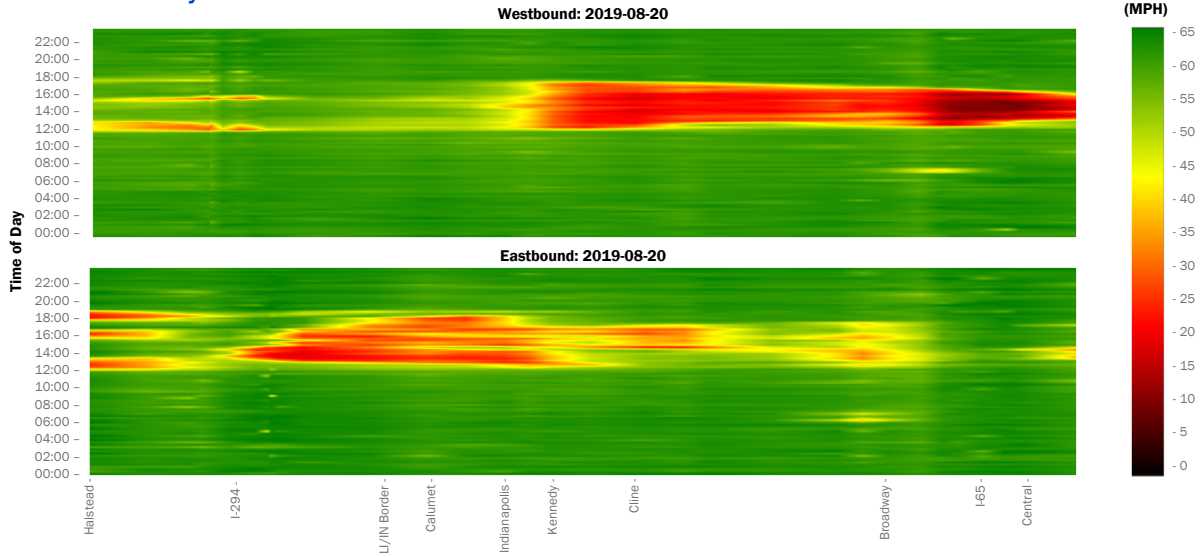
The Borman Expressway



4

Current Conditions

Traffic – Weekly Incident

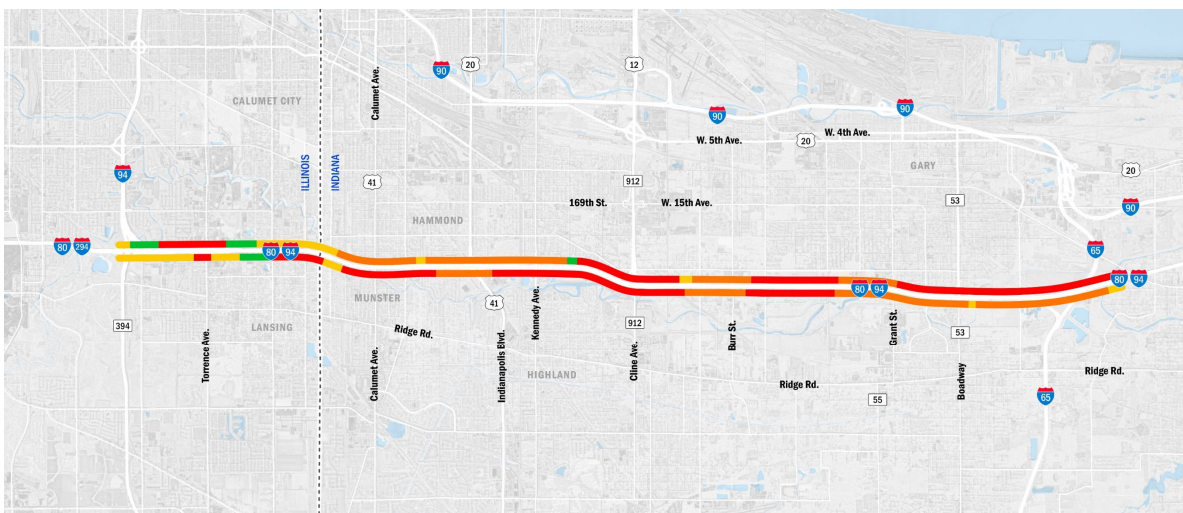


5

Current Conditions

Safety

- █ Crash Frequency Below Statewide Average
- █ High Crash Severity Locations
- █ Crash Frequency Above Statewide Average
- █ High Crash Frequency Location



6



QUESTION #1

What do you think are the biggest problems in the corridor?



What We Heard

- 100+ comments
- Problem areas and issues identified
- Issues identified:
 - Weaving motorists
 - Volume of traffic
 - Trucks in left lanes
 - Interchange specific issues
 - Continuous construction/lane closures



What We Did

- Incorporated feedback into Purpose and Need document

The full Draft Purpose and Need is available on the project's website.

FlexRoad

A New Approach at INDOT

- Strategic Approach
- Congested Urban Corridors
- First Comprehensive TSMO Study

What is TSMO?

Transportation Systems Management and Operations

- A set of strategies that focus on operational improvement
- Get the most out of the existing transportation facilities.
- Real-Time Monitoring and Response
- Flexibility: Demand-Responsive Roadways



9

Initial Strategies Summary

- Dynamic Shoulder Lanes/Hard Shoulder Running
- Variable Speed Limits
- Ramp Metering
- Queue Warning
- Work Zone Management
- Behind the Scenes Strategies



10



QUESTION #2

What do you like/dislike about the strategies? Are there other strategies that you think we should be considering?



What We Heard

- People wanted:
 - Keep trucks and cars separate
 - Greater speeding enforcement
- People liked:
 - Ramp metering
 - Dynamic shoulder lanes
 - Drainage, debris, and emergency space issues noted
 - Queue warning and work zone management



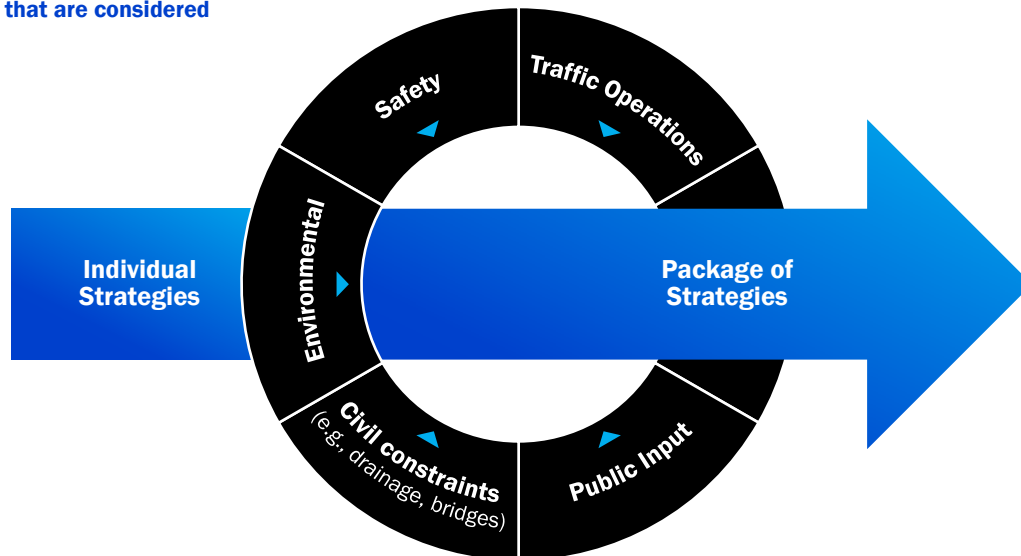
What We Did

- Continued development of TSMO strategy details
- Developed performance measures
- Analyzed shoulder issues for DSL

11

Identifying an Integrated Solution


Factors that are considered




12

TSMO Strategy Development and Evaluation


What we've been doing




Traffic Analysis




Literature Research



Engineering Evaluations - Drainage, etc.



Cost Estimation




Environmental Impact Analysis

13

Alternatives Grouping

A Blend of Approaches and Strategies

Strategies	
Traffic Operations	<ul style="list-style-type: none"> Ramp Metering Dynamic Shoulder Lanes Variable Speed Limits
Traffic Safety	<ul style="list-style-type: none"> Queue Warning System Variable Speed Limits Lane Control
Traffic Event Management	<ul style="list-style-type: none"> Computer Aided Dispatch (CAD) Integration Towing & Recovery Incentive Program Maintenance / Emergency Response CCTV Access Center to Center Interfaces CCTV Enhancements
Infrastructure Improvements	<ul style="list-style-type: none"> Guide Sign Enhancements Geometric Improvements (EB ramp to I-65)



Purpose and Need Goals and Objectives

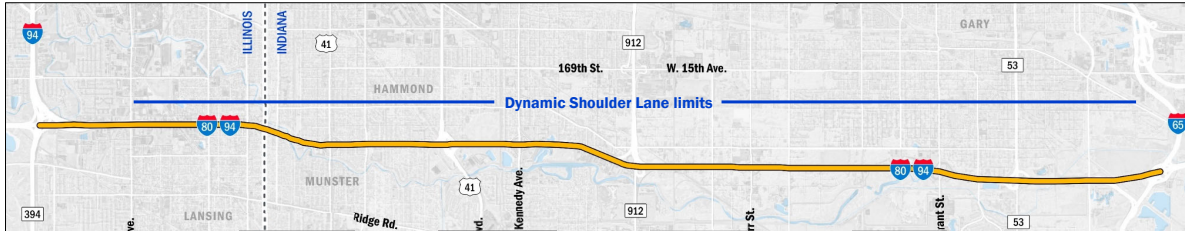
- Alleviate Congestion
- Increase Safety
- Increase Reliability
- Optimize Efficiency

14



Traffic Operations – Dynamic Shoulder Lane (Inside Shoulder)

Enables the use of shoulders as travel lanes based on congestion levels or in response to incidents



Travel Time	Average Speed	Travel Time Reliability	Study Area	Safety	Cost
7 minutes saved	10 mph faster during peak periods	25 minutes with strategy 31 minutes without strategy	9% reduction in vehicle hours traveled	Reduced congestion-related crashes	\$45-90 million

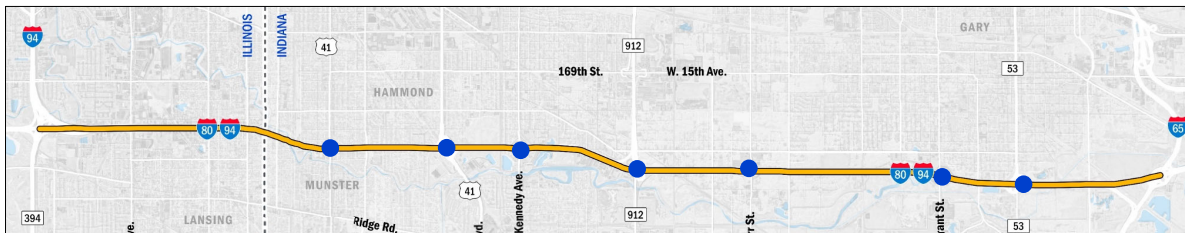
15



Traffic Operations – Ramp Metering

Controls the flow of traffic at entrance ramps to break up platoons and facilitate smooth/safe merging.

Ramp Metering Sites = ●



Travel Time	Average Speed	Travel Time Reliability	Study Area	Safety	Cost
3 minutes saved	0 mph faster during peak periods	28 minutes with strategy 31 minutes without strategy	0% change in vehicle hours traveled	Reduced congestion-related crashes; Safer merging operations	\$3-5 million

16



Traffic Operations – Variable Speed Limits

Temporarily reduces the speed limits in order to smooth traffic flow and reduce secondary accidents.

Variable Speed Limit Gantries =



Travel Time	Average Speed	Travel Time Reliability	Study Area	Safety	Cost
<1 minutes saved	3 mph faster during peak periods	31 minutes with strategy 31 minutes without strategy	5% reduction in vehicle hours traveled	Reduced congestion-related crashes	\$30-35 million

17

Traffic Operations Combinations

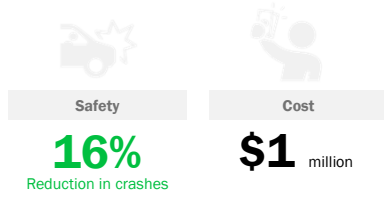
Dynamic Shoulder Lanes + Other Strategies

	Dynamic Shoulder Lanes	Dynamic Shoulder Lanes + Variable Speed Limits	Dynamic Shoulder Lanes + Ramp Metering	Dynamic Shoulder Lanes + Ramp Metering + Variable Speed Limits
Travel Time	7 minutes saved	8 minutes saved	8 minutes saved	8 minutes saved
Average Speed	10 mph faster	11 mph faster	11 mph faster	11 mph faster
Travel Time Reliability (95% Travel Time)	25 minutes	23 minutes	23 minutes	23 minutes
Study Area Vehicle Hours Traveled	9% reduction	9% reduction	8% reduction	9% reduction
Safety	++	+++	+++	++++
Cost	\$45-90 million	\$50-95 million	\$48-75 million	\$55-100 million

18

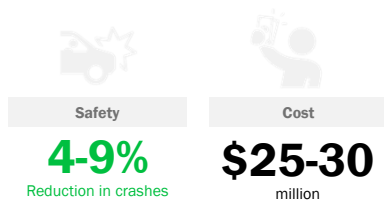
Traffic Safety – Queue Warning

Warns drivers of slowdowns ahead



Traffic Safety – Lane Control

Controls lane usage by alerting drivers to which lanes are open



Traffic Event Management

- Computer Aided Dispatch (CAD) Integration
- Towing & Recovery Incentive Program (TRIP)
- Maintenance / Emergency Response CCTV Access
- Center to Center Interfaces
- CCTV Enhancements



Event Management Strategies

Minor Event

Example: fender bender
1 lane closed for 60 minutes
700 hours of total delay

Clear incident 5 minutes faster
100 hours of delay avoided per event (14% reduction)

Event Management Strategies + Dynamic Shoulder Lane (DSL)

Clear incident 5 minutes faster + open DSL
500 hours of delay avoided per event (71% reduction)

Major Event

Example: overturned semi-truck
2 lanes closed for 120 minutes
11,500 hours of total delay

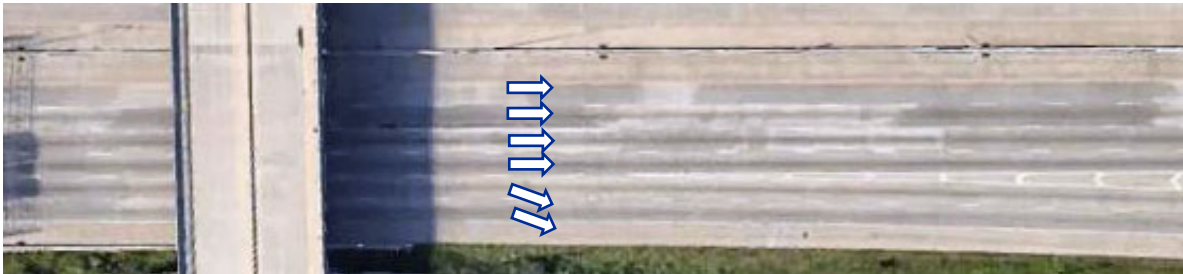
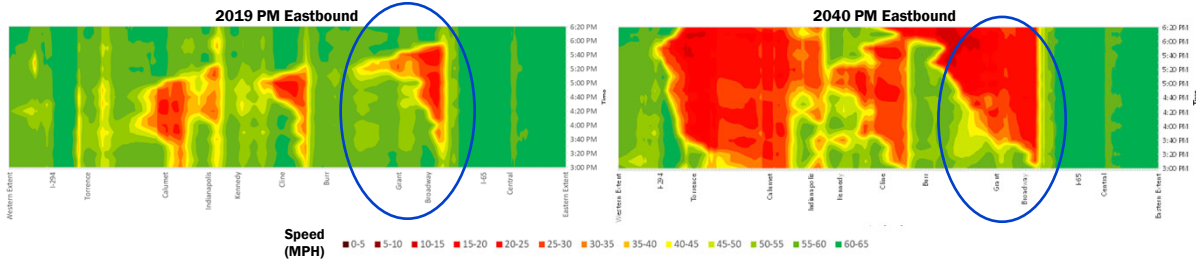
Clear incident 1 hour faster
1,900 hours of delay avoided per event (17% reduction)

Clear incident 1 hour faster
6,100 hours of delay avoided per event (53% reduction)

21

I-65/Broadway Geometric Improvements

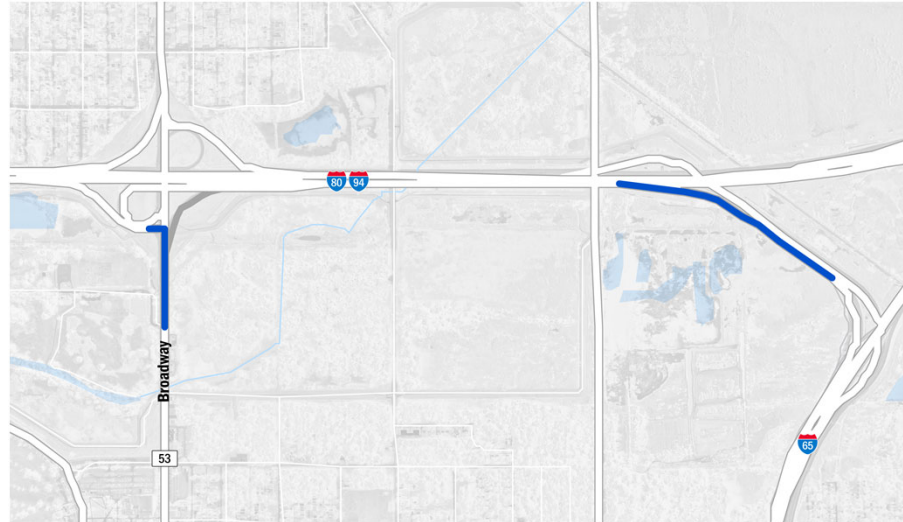
Existing Geometry



22

I-65/Broadway Geometric Improvements


Cost
\$3 million



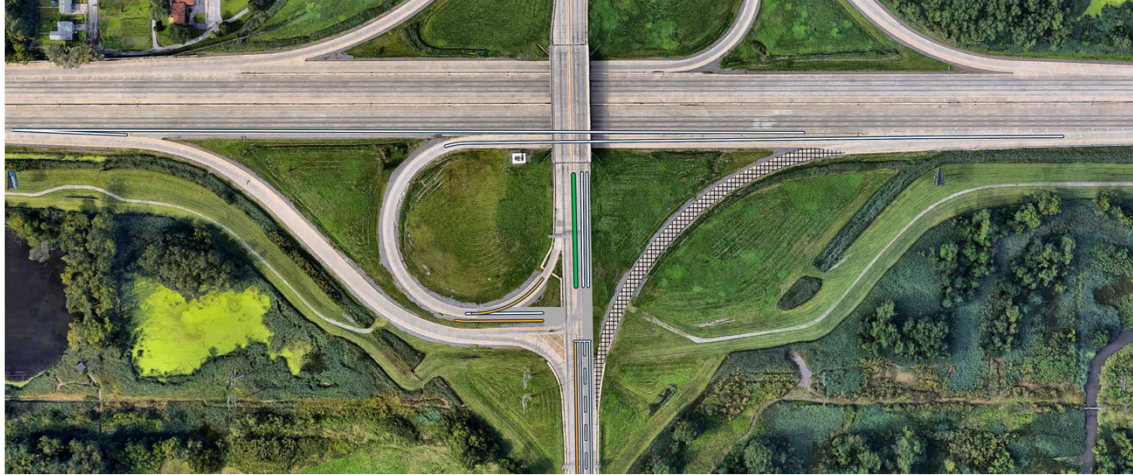
23

I-65/Broadway Geometric Improvements



24

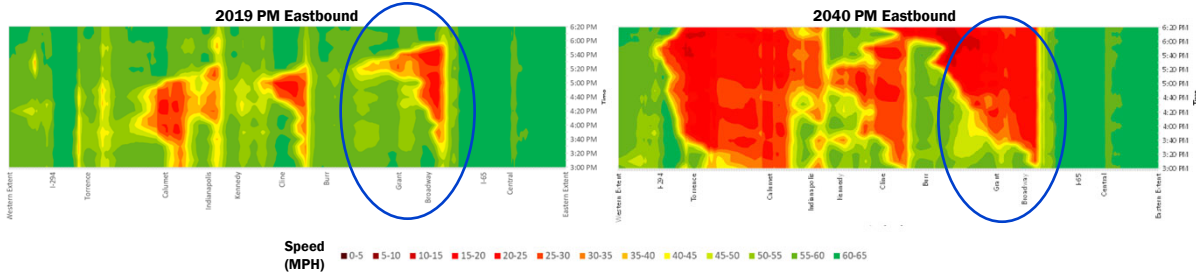
I-65/Broadway Geometric Improvements



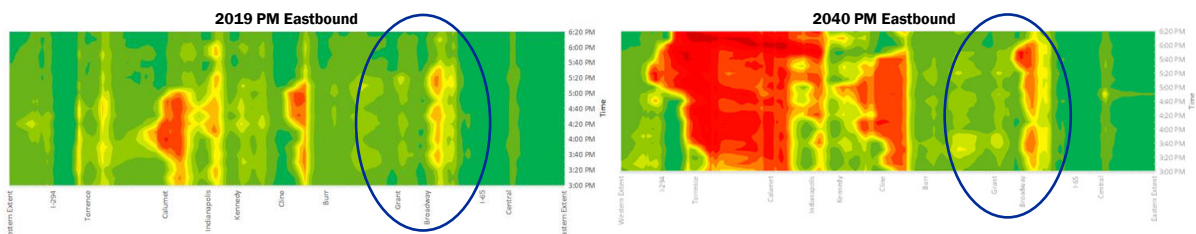
25

I-65/Broadway Geometric Improvements

Existing Geometry



Proposed Geometry



26

Questions for the Public



What do you think
about the strategies
/results?



Are the benefits
worth the costs?



What additional
factors need to be
considered?
Any specific
concerns?

27

Next Steps

Gather/evaluate
feedback

Develop packages

Identify packages that
we recommend being
carried forward

28

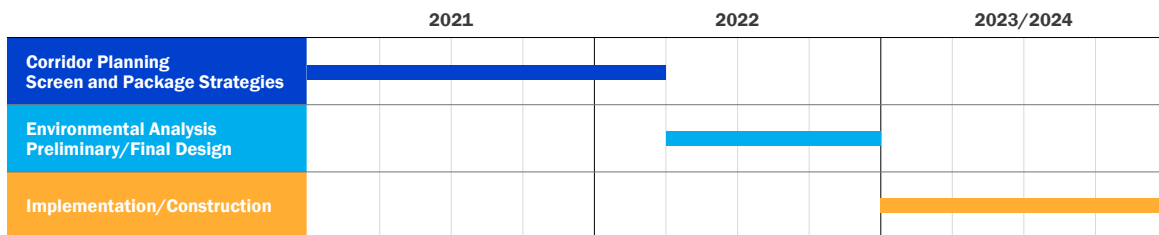
Study Process and Schedule

Planning & Environment Linkages (PEL) Process



PEL products that will be carried into NEPA:

- Draft Purpose and Need
- High Level Environmental Evaluation
- Agency Coordination
- Public Outreach
- Alternatives Screening

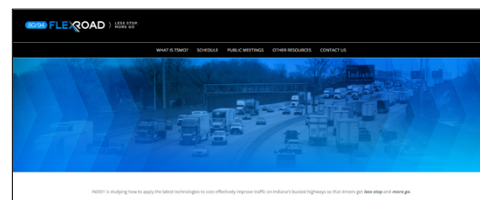


29

How Can You Get Involved

Your Feedback Makes the Study Better

- Learn
 - Tonight
 - Project Website: www.indianaflexroad.com
- Provide Feedback
 - Purpose and Need
 - Strategies
- Stay Up To Date
 - Sign up for email updates
- Share With Others
 - Friends, neighbors, organizations



30



QUESTION #3

**What groups or organizations should we be reaching out to?
How can we spread the word effectively?**



What We Heard

- Truckers/trucking organizations
- Emergency services
- Local schools/Churches



What We Did

- Met with Indiana Motor Truck Association and added them to Community Advisory Committee
- Continued outreach to schools/churches for awareness
- Briefed local leaders through NIRPC
- Attended Hammond Hispanic Resource Fair October 9th

THANK YOU

indianaflexroad.com

FLEXROAD
LESS STOP. MORE GO.

INDIANA DEPARTMENT OF TRANSPORTATION