Strategic Planning Committee

February 19, 2014

AGENDA

- 2014-15 Workplan Overview
- I-90 Active Traffic Management

2014-15 Committee Workplan

Key Decisions	Decision-Making Timeframe		
	1-6 Months	6-12 Months	12 Months +
I-90 Active Traffic Management	X		
Regional Tolling Partnership and Role	X		
Elgin O'Hare Western Access Aesthetics	X		
Environmental and Sustainability Policy (INVEST)	X		
IL 53/120 Study Interim Report	X		
Tolling Business Rules and Policies (SPC/CSC Joint Meeting)		X	
Freight Plan Update		X	
Non-tolled ramp review		X	
IL 53/120 BRAC Recommendations		X	
Innovative financing options		X	
Transit Planning and Land Use Evaluation			X
Expanded use of Oases			X
Supplemental revenue generation (land, towers, utilities, etc.)			X

MOVE ILLINOIS

The Illinois Tollway

DRIVING THE FUTURE

Active Traffic Management on the Jane Addams Memorial Tollway (I-90)

February 19, 2014

I-90 Rebuilding and Widening Project Goals

- Improve mobility and reduce congestion
- Deliver a 21st century, state-of-the-art corridor linking Rockford to O'Hare
- Accommodate transit options for the first time in the agency's history
- Feature flexible infrastructure to add new "smart" features as needed
- Incorporate the latest technologies available to enhance roadway safety

I-90 Corridor Planning Team

Participants

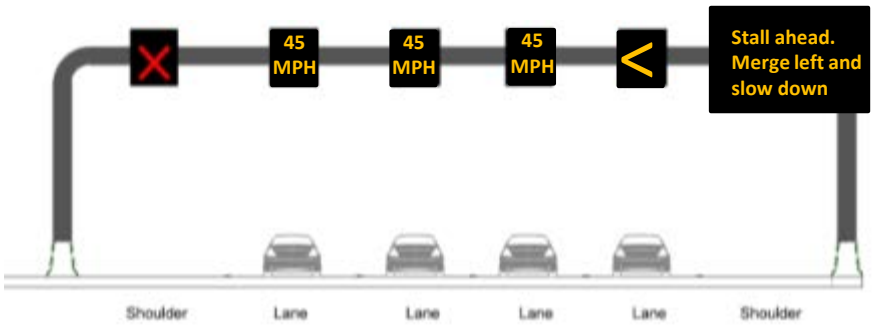
- Illinois State Police
- Tollway Maintenance and Traffic Operations, Planning and Engineering
- PACE
- Traffic Engineer CDM Smith
- I-90 Consultant Team

Collaborative Process

Team recommends active traffic management (ATM) on I-90 from Barrington Road to the Kennedy

What is Active Traffic Management (ATM)?

- **High-tech gantries placed every half mile that provide real-time information to alert drivers to:**
  - Nature and status of traffic incidents ahead
  - Ability to drive in the shoulder lanes
  - Advisory speeds
  - Proposed alternate routes
  - Real-time lane closures and traffic pattern changes
- **Helps facilitate the flow of cars to allow emergency vehicles to safely navigate the roadways and reach the incident scene more quickly**



Who else is using ATM?

Europe: multiple locations since 1970

Netherlands

Germany

England

Seattle: I-5 and others completed in 2010

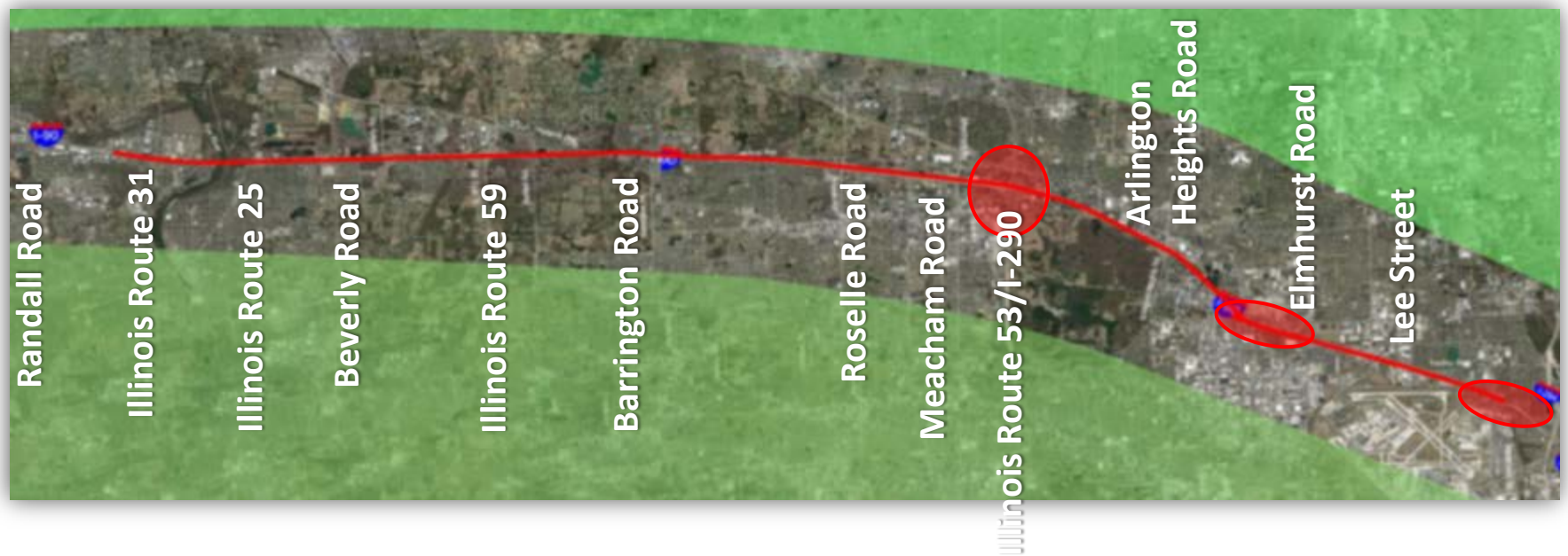
Minneapolis: I-35W completed in 2010 and I-94 completed in 2012

Planning stages:

- Georgia
- Oakland area: I-80
- Virginia: I-66 to be completed in 2015

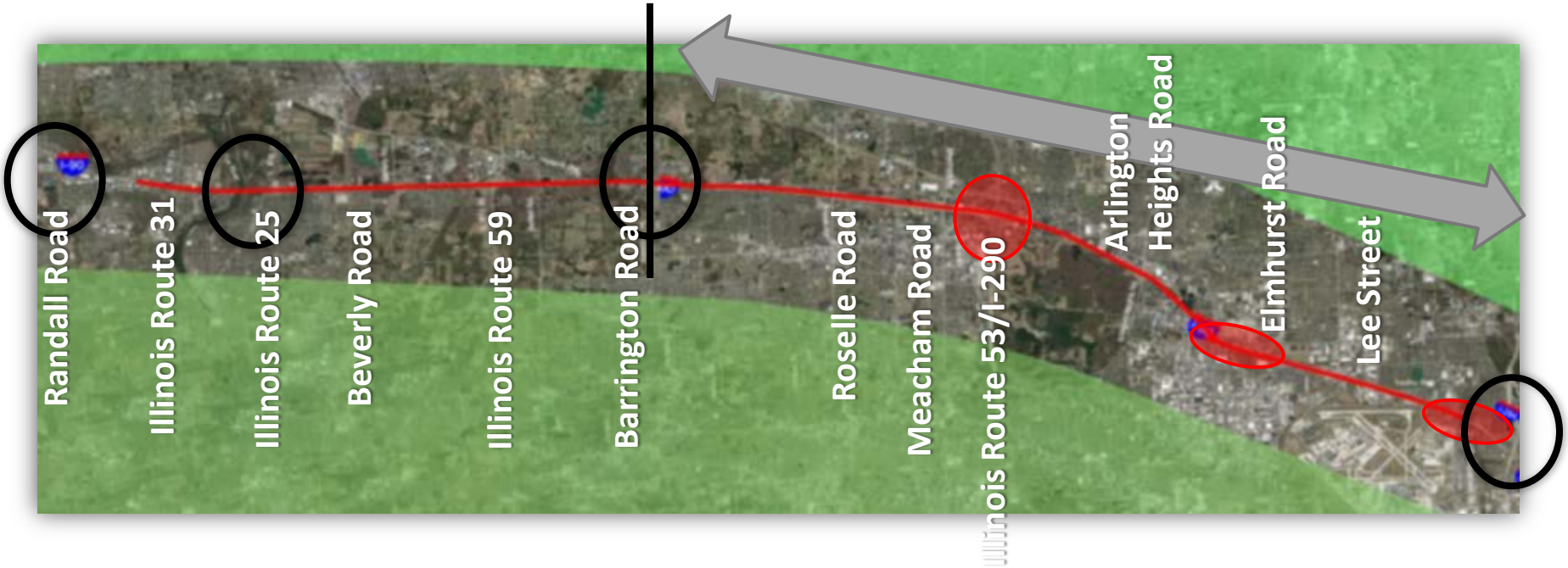
ATM with Bus in Preferential Lane

Why Kennedy to Barrington?



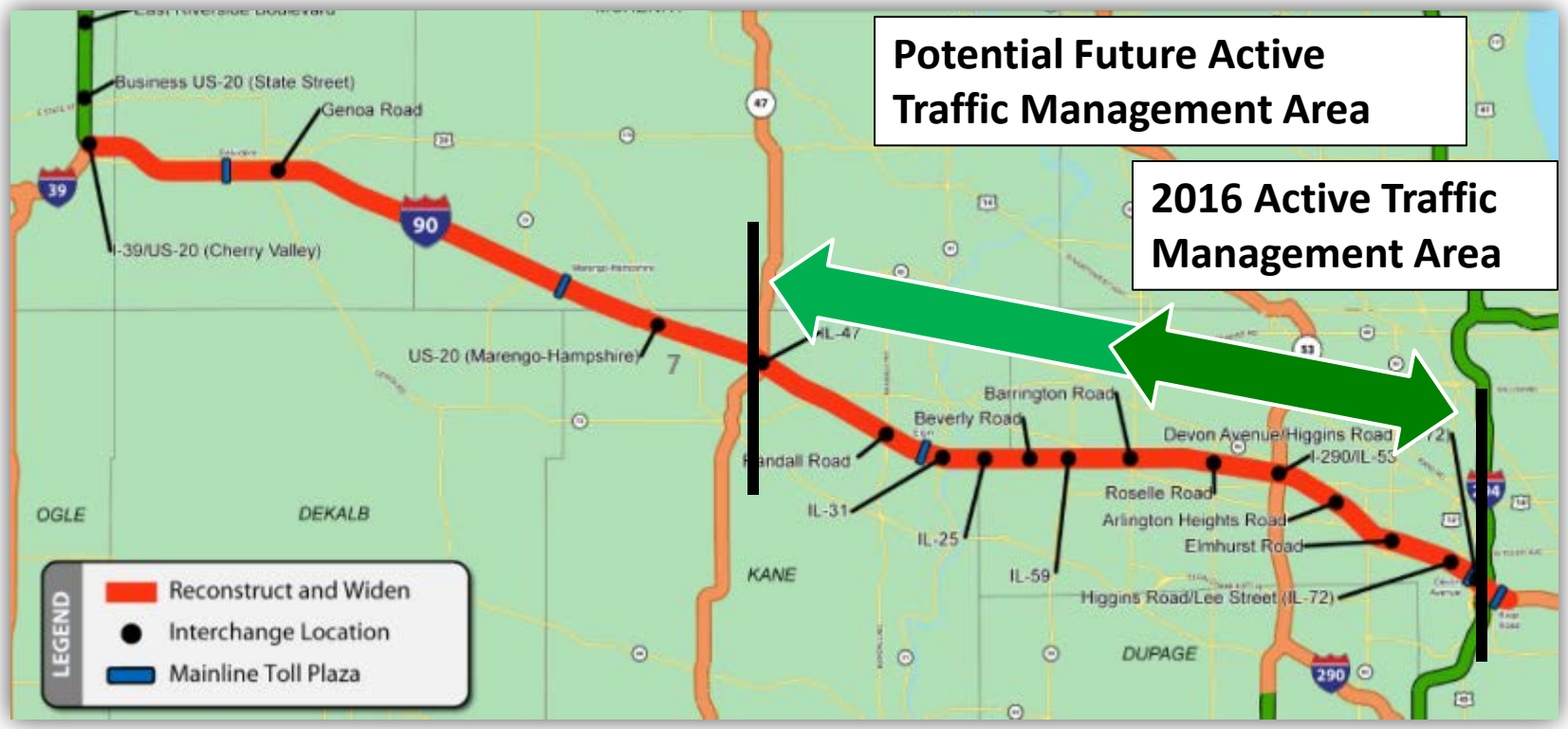
Congested areas

Why Kennedy to Barrington?

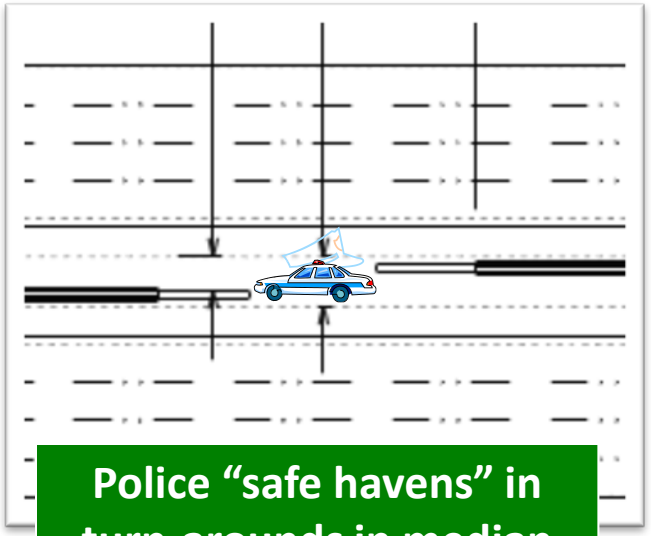


Park & Ride Location

Active Traffic Management Area

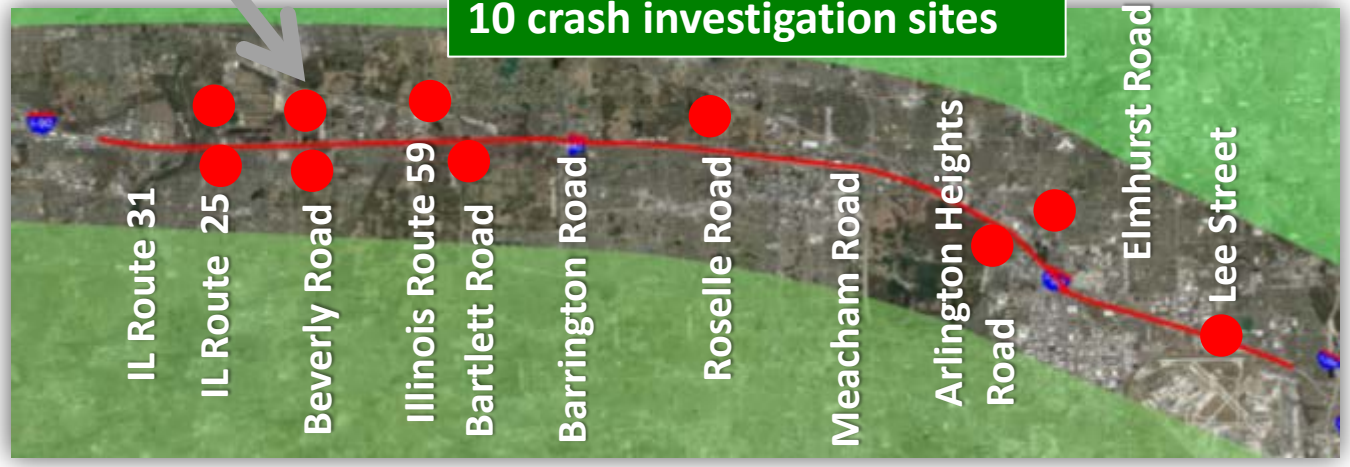


What about Illinois State Police?



Police “safe havens” in turn-arounds in median

10 crash investigation sites



Capital and Maintenance and Operations Costs

Cost	Item
$17.84 million	28 gantries from Barrington Road to the Kennedy Expressway
$436,800	Annual maintenance costs
$321,000	Annual operations costs
$757,800*	Total annual M and O cost
*offset by $532,800 in reduced I-90 maintenance patrol costs reassigned to other functions offering improved efficiencies in scheduled and routine maintenance	

Benefits

- **Improves mobility:**
  - 3 to 7 percent increase in average throughput during congested periods (Europe)
  - 3 to 22 percent increase in overall capacity (Europe)
- **Enhances roadway safety:**
  - 3 to 30 percent decrease in primary incidents (11 percent - WashDOT)
  - 40 to 50 percent decrease in secondary incidents
- **Facilitates transit:**
  - Tollway will manage the use of PACE bus on shoulder

Video here

Final “Smart” Corridor Vision

Cameras

Traffic sensors

ATM

Equipment shelters

Connected vehicle and redundant IT conduits

ITS conduits

Next Steps

- Get Board input and feedback
- Finalize gantry design – March 2014
- Implementation – 2015 and 2016
- Launch – late 2016

QUESTIONS?

Resources

Who else uses ATM?

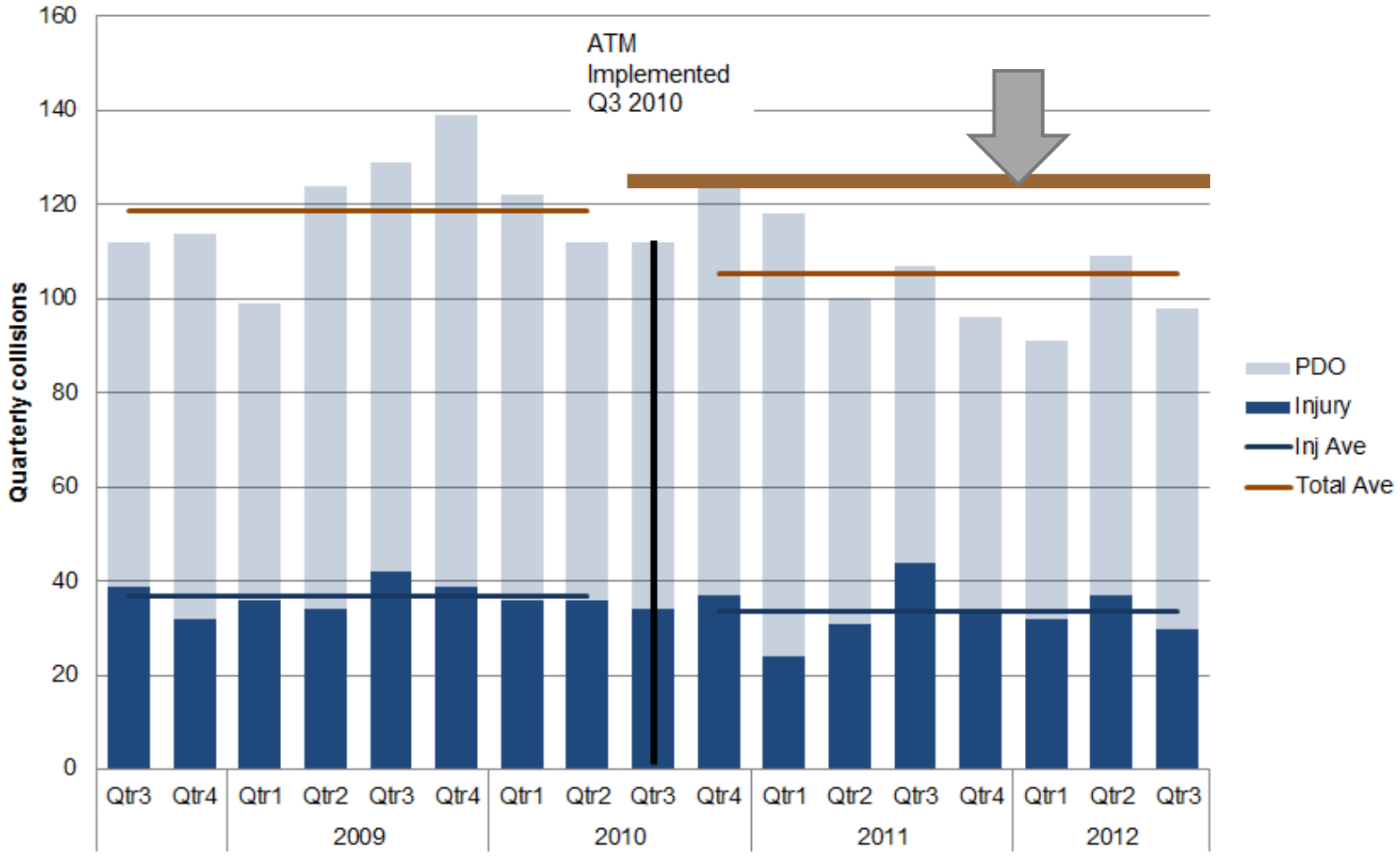
Aesthetic Options

Shoulder Options

Corridor Planning Council

Cost Breakdown

Washington DOT Crash Reduction



30 years in Europe

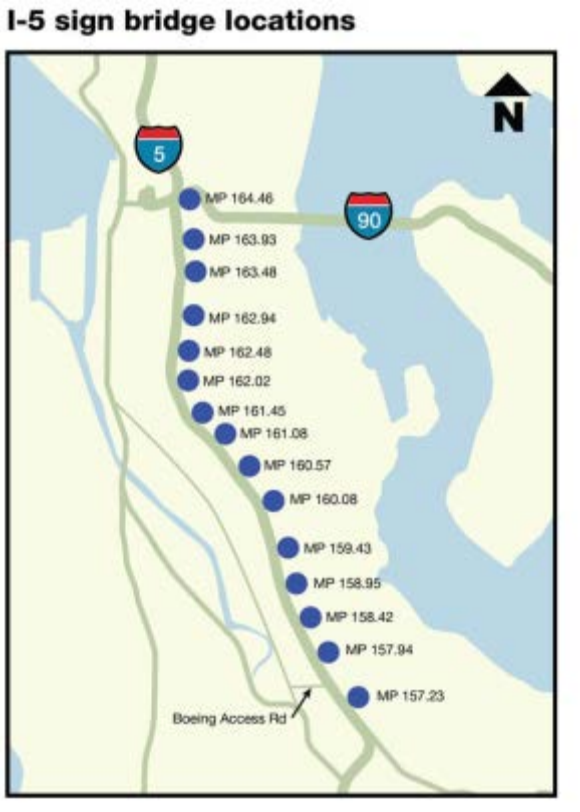
Benefits realized in Europe

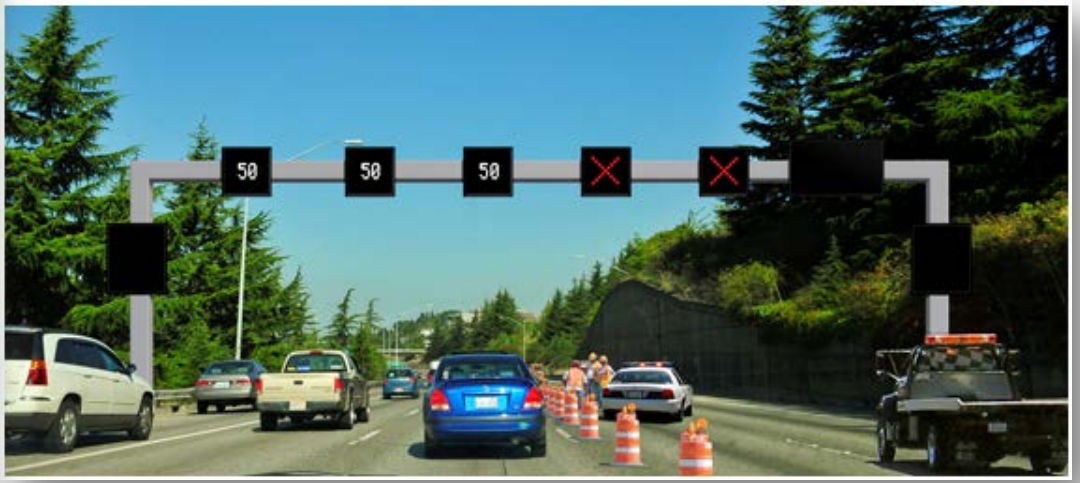
- An increase in average throughput for congested periods of 3 to 7 percent
- An increase in overall capacity of 3 to 22 percent
- A decrease in primary incidents of 3 to 30 percent
- A decrease in secondary incidents of 40 to 50 percent
- An overall harmonization of speeds during congested periods (reduces emissions - NOx in Netherlands saw a 20 to 30% decrease)
- Decreased headways and more uniform driver behavior
- An increase in trip reliability
- The ability to delay the onset of freeway breakdown

FHWA Benchmarking Study

- Denmark
- England
- Germany
- Netherlands

Who else is using ATM?





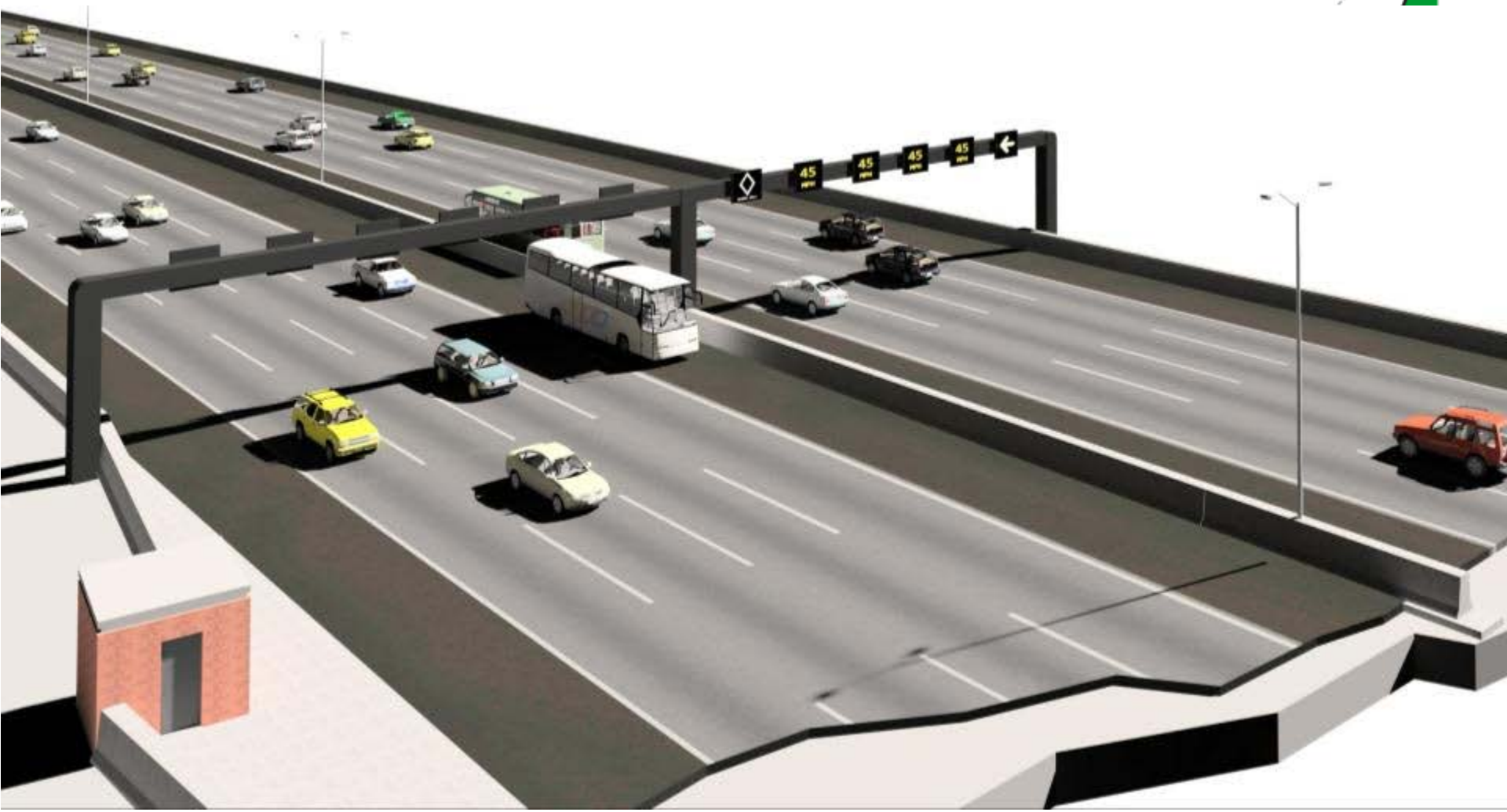
I-5 and others in Seattle – Washington DOT
Complete: August 2010

Aesthetic Options:

Vertical Member Truss

Aesthetic Options:

Monotube

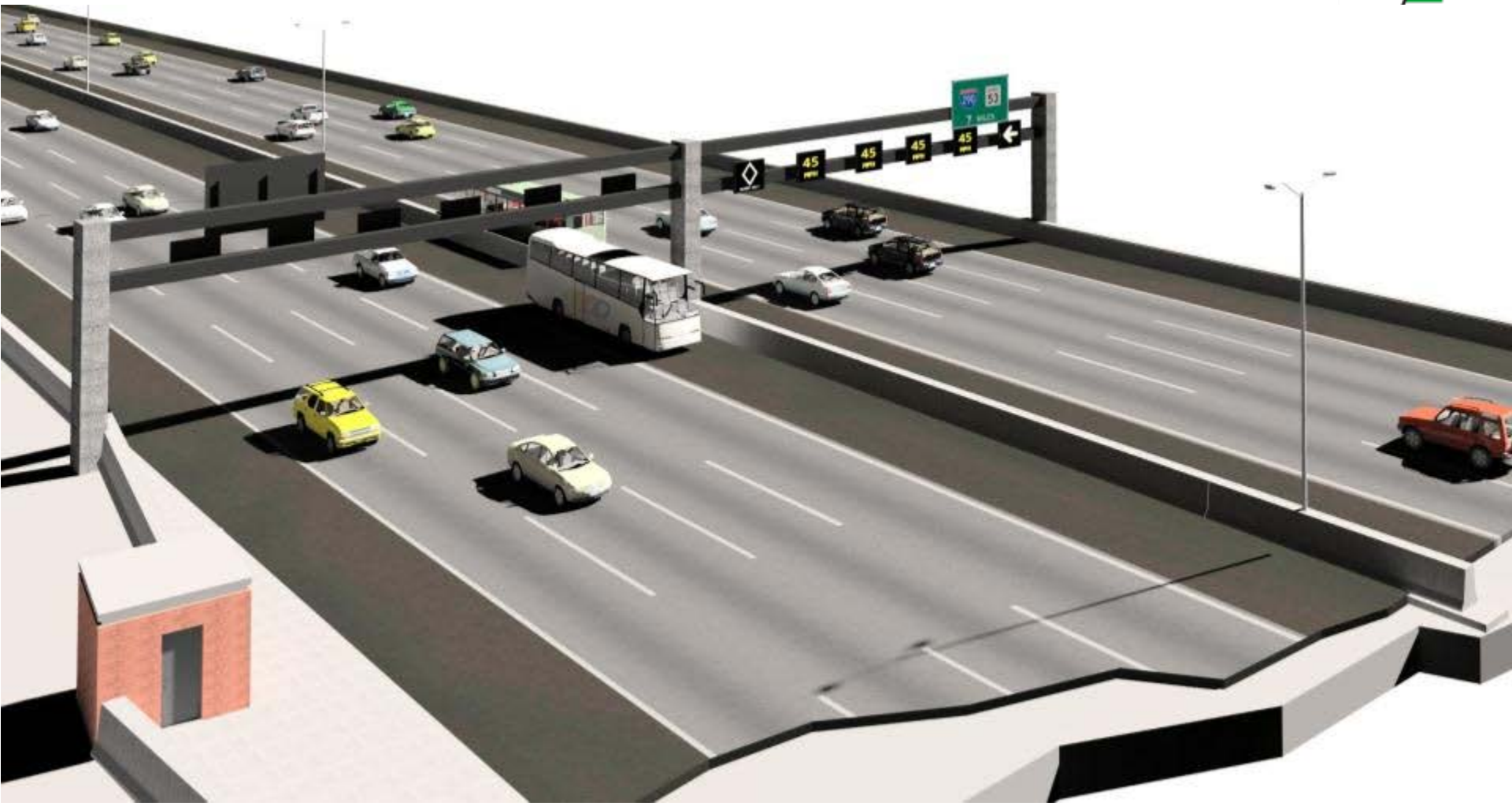


Aesthetic Options:

Monotube with Guidesigns

Aesthetic Options:

Precast with Monotubes



MOVE ILLINOIS

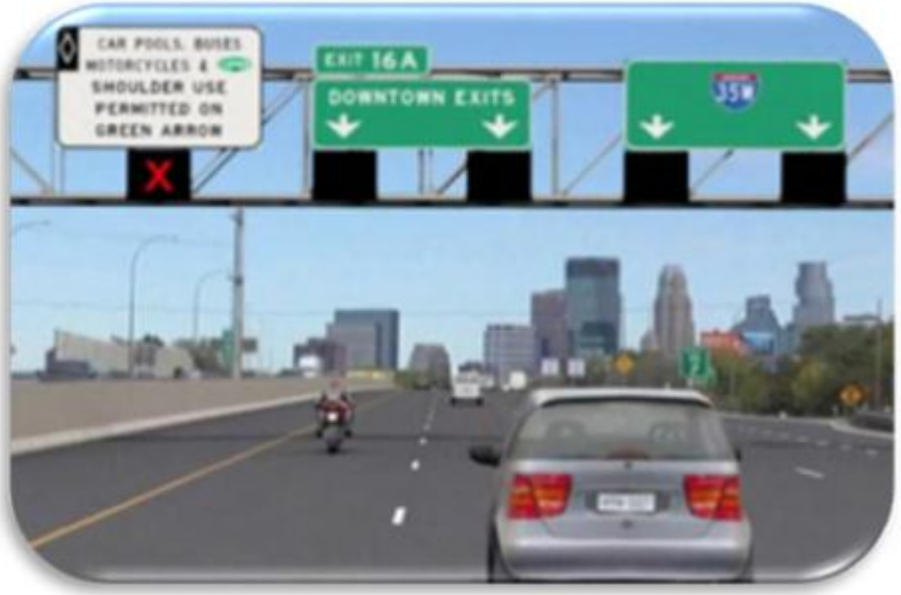
The Illinois Tollway

DRIVING THE FUTURE

SHOULDER OPTIONS

Bus on shoulder management options

I-55



Source: FHWA
MnDOT

Emergency Refuge Areas/Parking

Source: FHWA
Shoulder Use with Emergency Refuge Area
Massachusetts

Source: FHWA
Shoulder Use with Emergency Refuge Area
Great Britain

Bus on Shoulder (BOS)

Source: FHWA -- BOS in Minneapolis

Source: PACE
BOS operations on I-55.

High Occupancy Vehicle (HOV) Lane

Source: FHWA – HOV lane on I-405,
Orange County, California

Source: VDOT
Example of HOV Lanes in Virginia

Managed Lane

Source: FHWA
Illustration of Priced Dynamic Shoulder Lane (PDSL) on I-35W – Minneapolis, MN

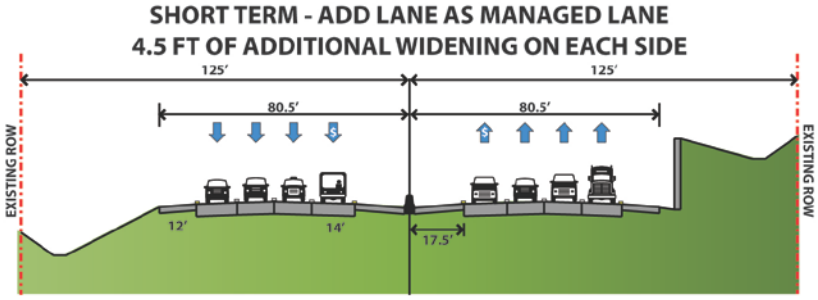
General Purpose Lane

Source: FHWA
I-66 in Virginia

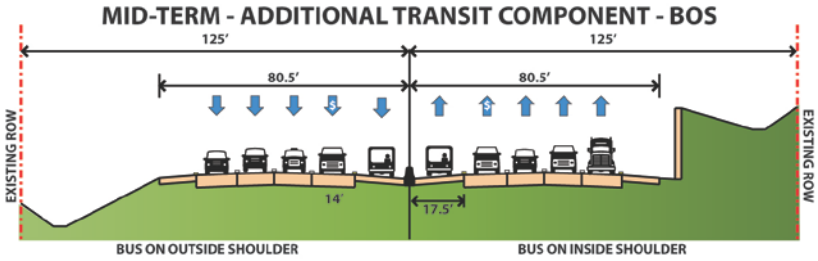
Source: FHWA
Germany

Short- to Long-Term Corridor Evolution

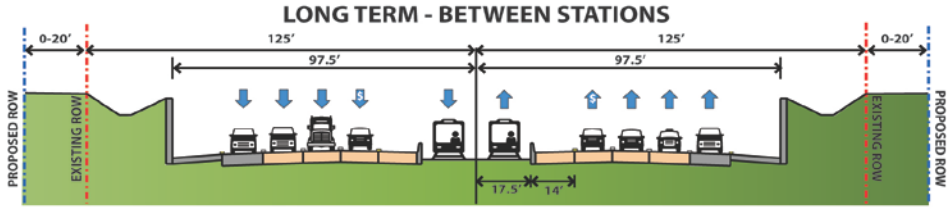
- **Short-Term:**
  managed lane



- **Mid-Term:**
  bus on shoulder service



- **Long-Term (between Stations):**
  median for fixed guideway transit.



Maintenance and Operations Costs

Additional Annual Maintenance and Operations costs:

Item	Cost (per Gantry per year)	Total Cost per Year (Assume 28 gantries)
Additional Inspection Cost (GEC)	$600	$16,800
Maintenance for Lane - Use Control Signals	$ 15,000	$ 420,000
	Total Maintenance	**$436,800**
Additional Staff (3)		$ 216,000
Utilities (Lane-use Control Signals)	$ 3,750	$105,000
	Total Operations	$321,000
Total Annual Operations And Maintenance Cost		**$ 757,800**

Offset by reduction of Zero Patrol Operation on I-90 @$532,800/year

Capital Costs

Capital Costs for ATM

Expenditures	2014	2015	2016	TOTAL
Current		$21,637,250	$13,667,510	$35,304,762
Proposed	**$225,000** West gantry foundations (8 @$28,125) in median (Elgin Plaza to IL 47) **$945,000** East gantry foundations (27 @ $35,000) in retaining walls (Kennedy to Elgin Toll) 9 of these are from Barrington to Elgin Toll Plaza at a cost of $315,000.	**$2,800,000** East Corridor gantries 28 gantries @$100,000 each	**$1,025,000** East corridor gantry foundations in median (Kennedy Expwy to Elgin Toll) (41 @ $25,000) **$12,320,000** East Corridor ATM equipment installation 28 ATM installations @ $440,000 each **$200,000** Contingency release for DCM to prepare design plans **$325,000** East corridor gantry foundations in median (Barrington to Elgin Toll) (13 @ $25,000)	**$17,840,000**
Total Proposed	**$1,170,000**	**$2,800,000**	**$13,870,000**	**$17,840,000**