

# Corridor Advisory Group and Task Force Meeting #18

*July 30, 2014*





- Introduction **5 min**
- Public Meeting #3 Recap **10 min**
- Blue Line Vision Study Update **30 min**
- Round 3 Evaluation to date **30 min**
- Noise Analysis Overview **30 min**
- Aesthetics – existing context exhibits **10 min**
- Geometrics **5 min**
- Next Steps **5 min**





- Bicycle and pedestrian workshop summary
- Blue Line Vision Study update
- Geometrics concept
- Air quality scope
- Aesthetics
- Pedestrian safety

# I-290 PLANNING PROCESS AND SCHEDULE



## CTA Blue Line Vision Study

STAKEHOLDER INVOLVEMENT & AGENCY INPUT

*Data Collection  
(Needs Analysis)*

*Purpose  
& Need*

*Alternatives  
Development &  
Evaluation*

*Preferred  
Alternative*

Fall  
2009

2010

2011

**We Are  
Here**

2014

Summer  
2015





- **Comment Review and Responses**
- **Round 3 evaluations:**
  - Travel performance, operations
  - Geometry
  - Detailed main drain hydraulic analysis
  - Noise: existing conditions noise monitoring, Traffic Noise Model development
  - Air Quality: Data collection, MOVES model development
  - Railroad right of way evaluation (ongoing)
  - CTA Blue Line vision study coordination



- October 7 & 8, 2013
  - Approximately 400 people attended
- Comment summary
  - Alternatives
  - Transit
  - Safety
  - Lane management, Tolling
  - Funding, construction staging
- Senator Harmon and Lightford town hall meetings (October 2013, April 2014).







## Benefits

- Multi-modal: includes transit, highway and bike & ped improvements
- Access to additional 146,000 jobs
- \$685,000 daily user productivity savings
- Up to 40% travel time savings in peak periods
- Overall corridor safety improvements

## Costs

- Majority of the cost to reconstruct existing facility
- Facility condition alone warrants reconstruction



- Impact avoidance:
  - No crossings to be removed
  - Stays within the 'trench'
  - Right side ramps shield mainline traffic noise
- Sensitivity analyses of:
  - Stand alone transit improvements
    - Alignments, termini
  - I-290 Add-lane vs. no add-lane
  - Combination modes
  - Managed lanes, pricing

*Refined design and traffic information needed for social, economic and environmental studies.*  
Round 3



# PUBLIC MEETING #3 - TRANSIT



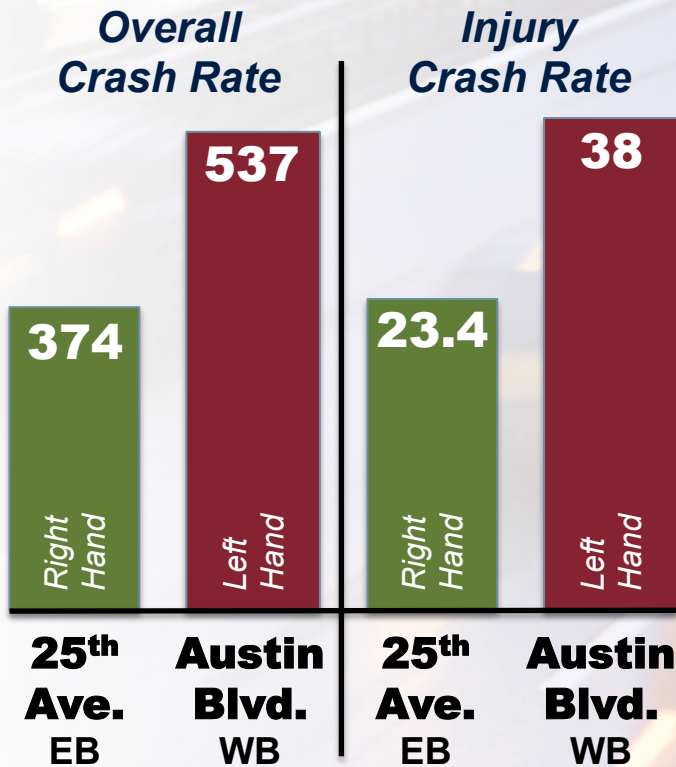
- Hard initial look at transit only options
- Can't force mode shifts
- Blue Line Extension
  - Heavy rail less benefit at relatively high cost
  - Express bus on reconstructed shoulder as initial strategy



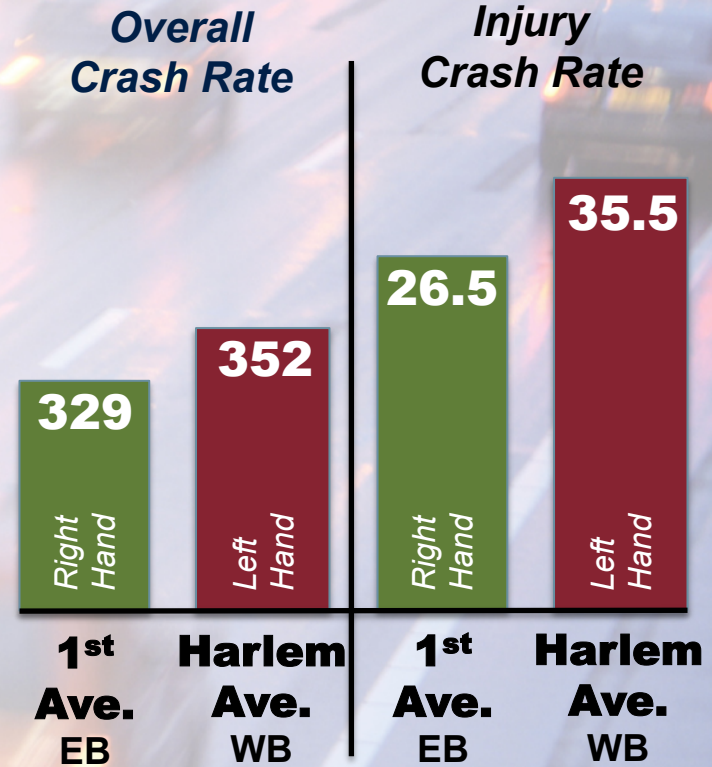


## I-290 Crash Rates

### At Lane Drop



### Not at a Lane Drop







## 11' Lane widths

- Proposed between 1<sup>st</sup> Avenue & Central Avenue
- Two left most lanes only (each direction)
- Overall safety performance improvement with 11' lane

### Round 3: more detailed safety analysis:

- Evaluate utilization of CSX/CTA ROW
- Test various lane & shoulder width combinations
- Refine recommendation



## Lane management & tolling

- Managed Lanes – National Trend
- Increase efficiency of existing infrastructure

## Funding, construction staging

- Funding options, joint funding opportunities
- Staging options

***Similar comments at Senator Harmon & Lightford town hall meetings.***





# ***CTA Blue Line Forest Park Branch Feasibility/Vision Study Recommendations***

**Carole Morey, CTA Chief Planning Officer  
Presenting in coordination with IDOT  
I-290 CAG Meeting July 30, 2014**



## Purpose of the study

- **The 55-year old Forest Park Branch is beyond its useful life**
  - Evaluate existing conditions and infrastructure options
  - Evaluate markets and service options
  - Conduct outreach to project stakeholders
  - Identify policy and funding options
  - Coordinate planning with IDOT for I-290 corridor



# Study Area



## CTA Blue Line Vision Study Area



### Legend

-  Blue Line/Station Access
-  Pink Line/Station Access
-  IL Prairie Path Multi-Use Trail
-  River
-  Green Line/Station Access
-  Metra Line/Station
-  Study Area Boundary





## Minimal upgrades have been completed as needed

- Special Trackwork: crossovers & switches recently upgraded (except Lathrop)
- Signals: recently upgraded

## Remaining elements beyond useful life and severely worn

- Track: contaminated ballast, deteriorated ties, poor drainage, worn rail
- Stations: over 50 years old, only 4 of 12 are accessible, narrow platforms
- Structures: approaching end of useful life
- Traction Power: substation, cabling, third rail, etc require upgrading
- Communications System: warrants technical improvements
- Maintenance Shop: approaching end of useful life; inadequate track configuration and capacity





## Complete reconstruction/modernization for the Forest Park branch

- Maintain existing entrance locations
- Improve customer experience
- Improve infrastructure
- Improve terminal site

Maintain existing service

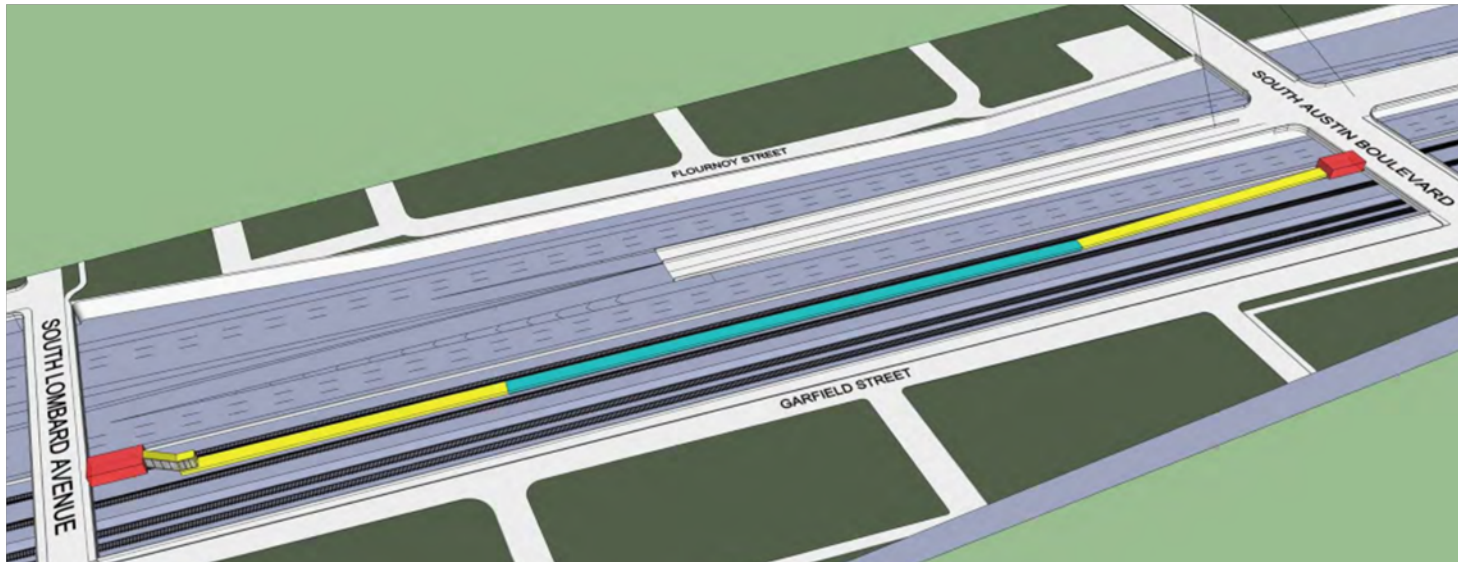
Work with IDOT on corridor improvements



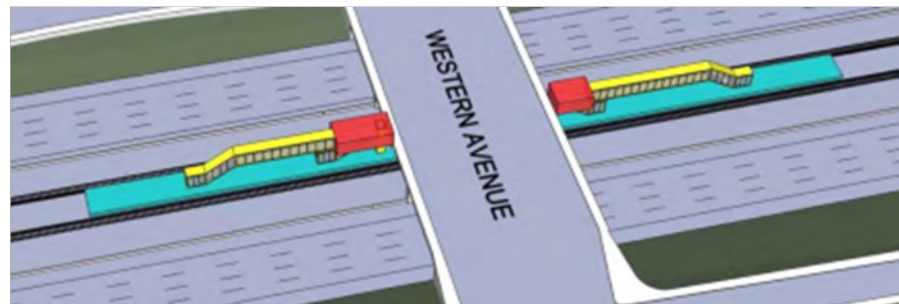
# Maintain Existing Entrance Locations



- **Retain double and triple entry station entrances**  
Harlem, Oak Park, Austin, Illinois Medical District, Racine, UIC-Halsted



- **Dual headhouses possible for single entry stations with bus connections**  
Cicero, Pulaski, Western





# Improve Customer Experience: Conceptual Rendering

CTA BLUE LINE VISION STUDY



**DRAFT**

- ADA accessible
- Landscaping
- Pedestrian crossings/refuges
- Station entrance design and locations
- Reduced noise via station design
- Bike racks



# Improve Customer Experience: Conceptual Rendering

CTA BLUE LINE VISION STUDY



DRAFT



- **Wider Platforms**

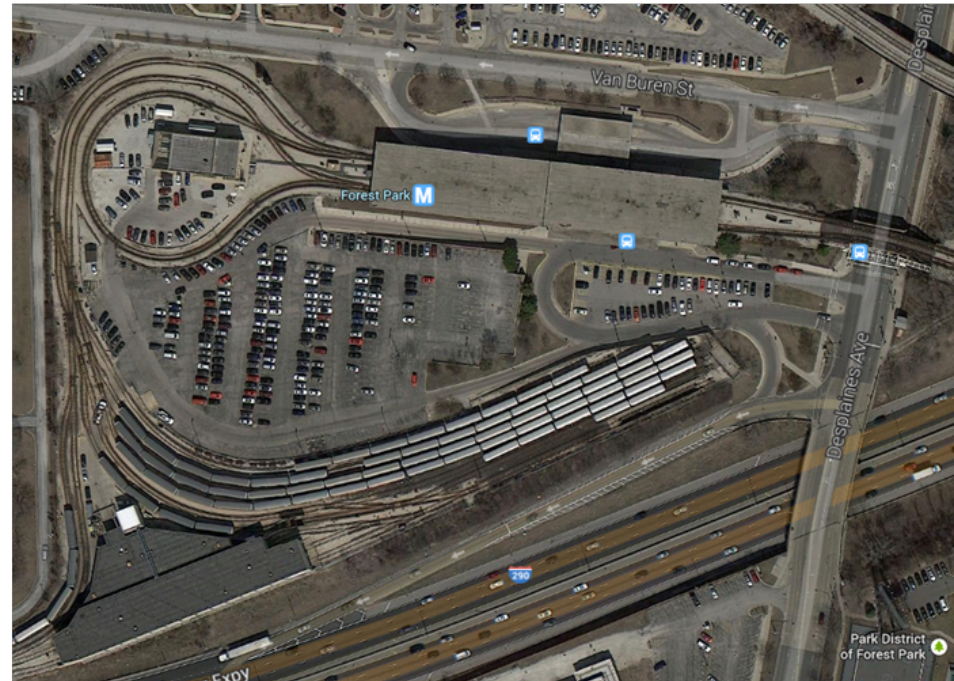
- **Shelter/weather protection**



# Improve Terminal Site

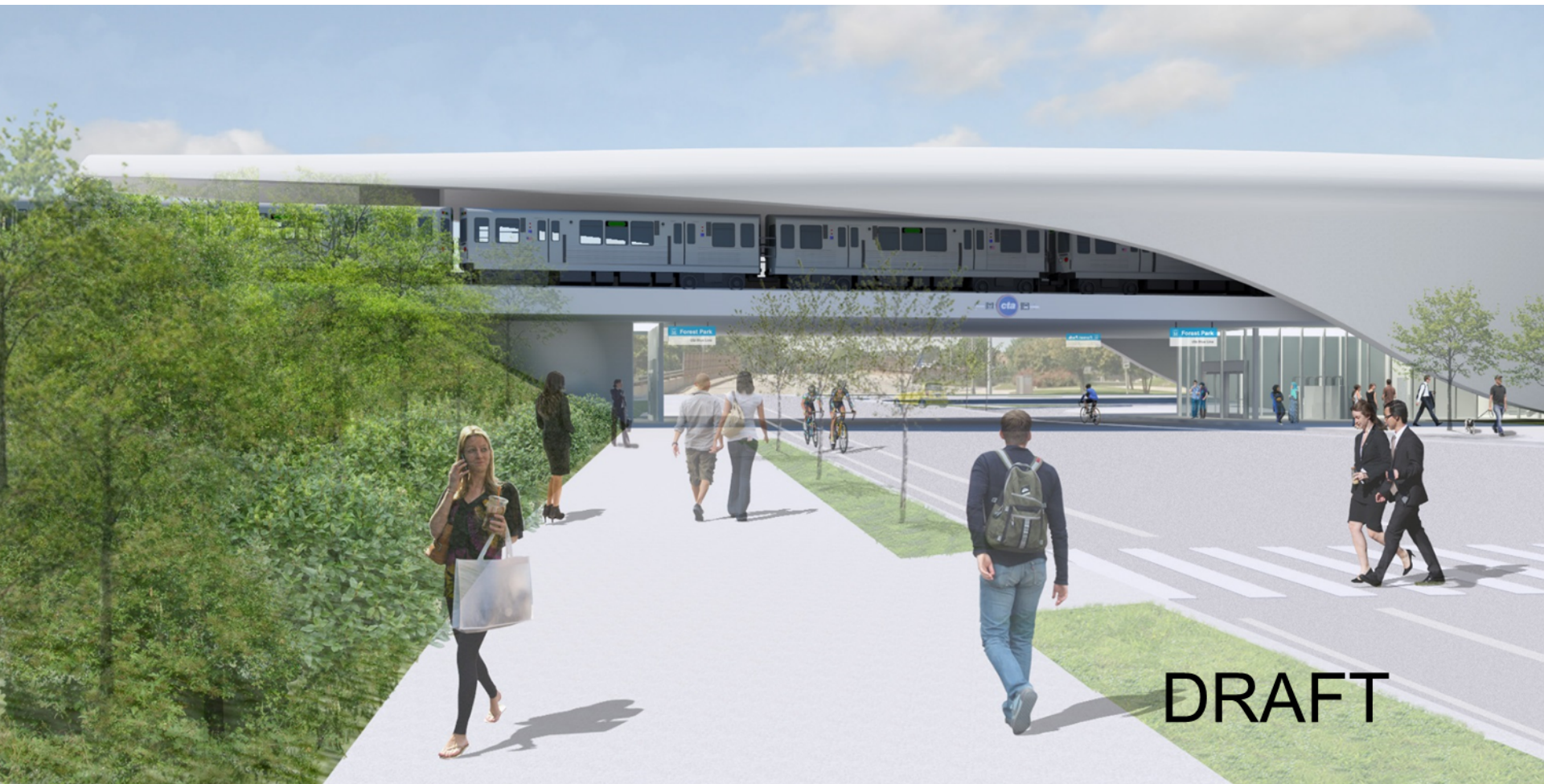


- **Redesign Forest Park terminal, yard, and shop within current parcel**
- **Improve site circulation**
  - **Bike and pedestrian access to the terminal**
  - **Highway and traffic flow around the terminal**
- **Meet increased yard and shop needs**
  - **Inadequate fleet storage**
  - **Inadequate shop size**
  - **Improve yard configuration**



# Forest Park Terminal Station – Conceptual Rendering

CTA BLUE LINE VISION STUDY







## • Long-term

- Bring service speeds up to state-of-good-repair
- No 3<sup>rd</sup> track or express service
  - Already serves as west side express due to current station spacing
- Remove stations closed in 1970s

## • Short-term (immediate)

- CTA continues to perform interim slow zone maintenance work on branch, which began in spring 2014
  - 5 nights/week, occasional weekends
  - From Clinton to Forest Park, but focusing on west end of branch



- **Continue to work with IDOT on corridor improvements**
  - **Coordinate on overhead bridges to improve stations and access from street**
  - **Project may be segmented into stations and track**
  - **Potential for coordinating long term cost savings for both projects**
  - **Provide transit alternative during highway construction**



# Summary of Overall Recommendations

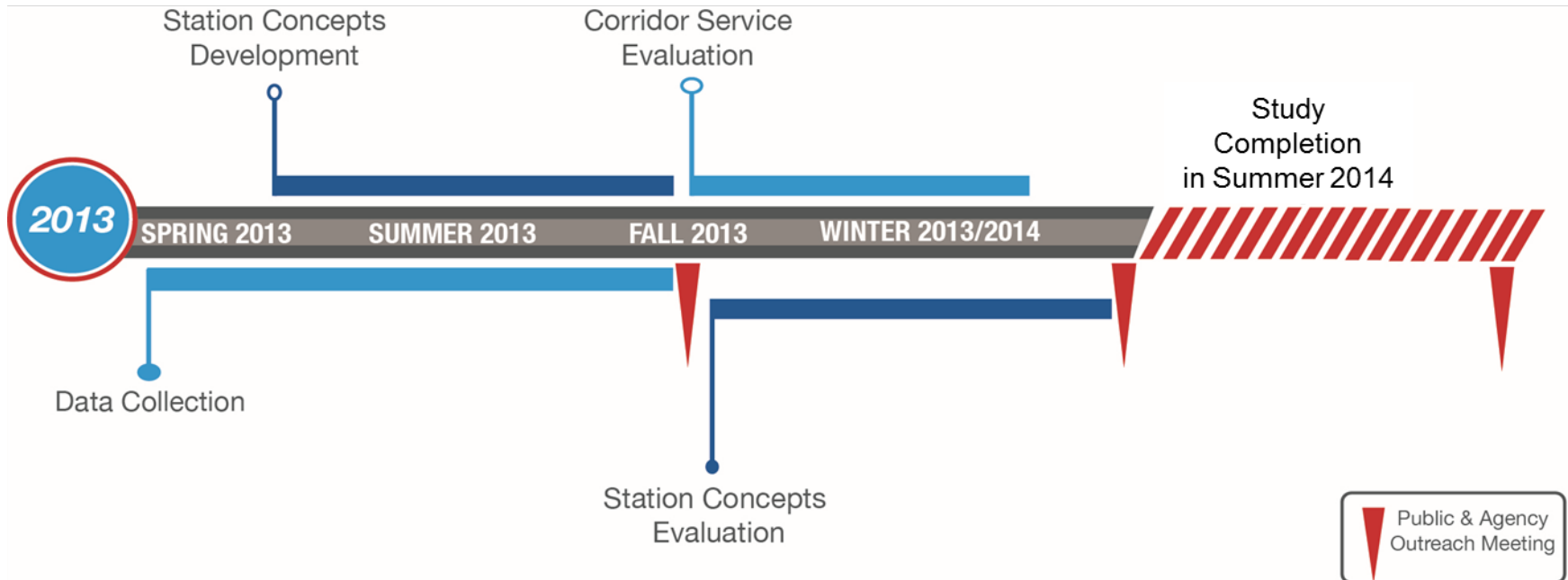


- **Complete reconstruction/modernization for the Forest Park branch**
  - **Maintain existing entrance locations**
  - **Improve customer experience**
  - **Improve infrastructure**
  - **Improve terminal site**
- **Maintain existing service**
- **Work with IDOT on corridor improvements**

# Next Steps



- Present results to public in coordination with IDOT I-290 Public Hearing
- Continue to evaluate funding options and project phasing



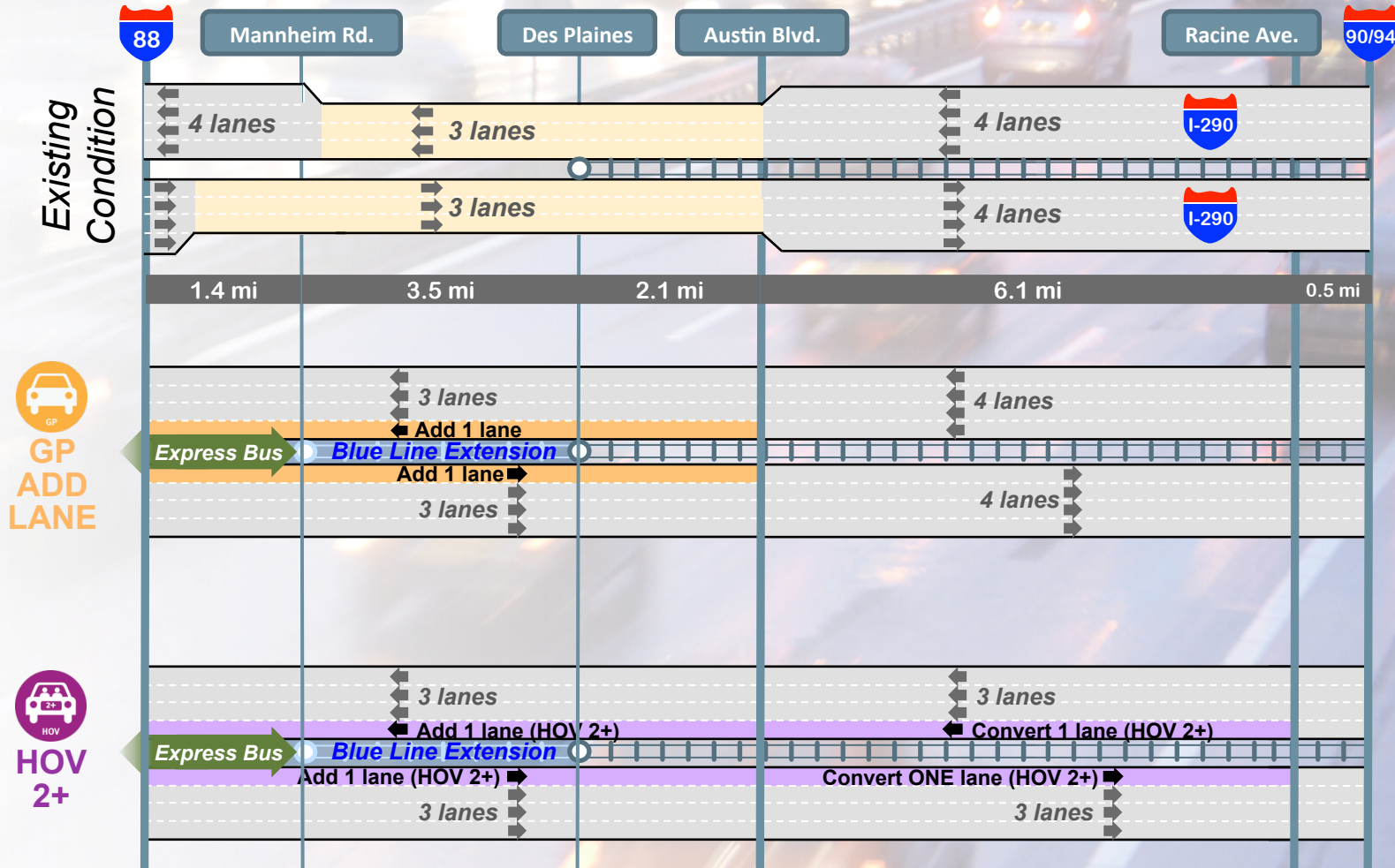




- Time frame: Summer 2014 to Spring 2015
- Data to be presented over multiple CAG meetings:
  - CAG Meetings #18, #19, #20
  - One on one meetings
- Round #3 topics:
  - Blue Line Vision Study results
  - Geometry, drainage
  - Travel performance, environmental effects
  - Cost
  - Aesthetics
  - Funding/Financing
  - Construction Staging Scenarios

**GOAL:**  
***Move from  
four concepts  
to a Preferred  
Alternative***

# ALTERNATIVES CARRIED FORWARD

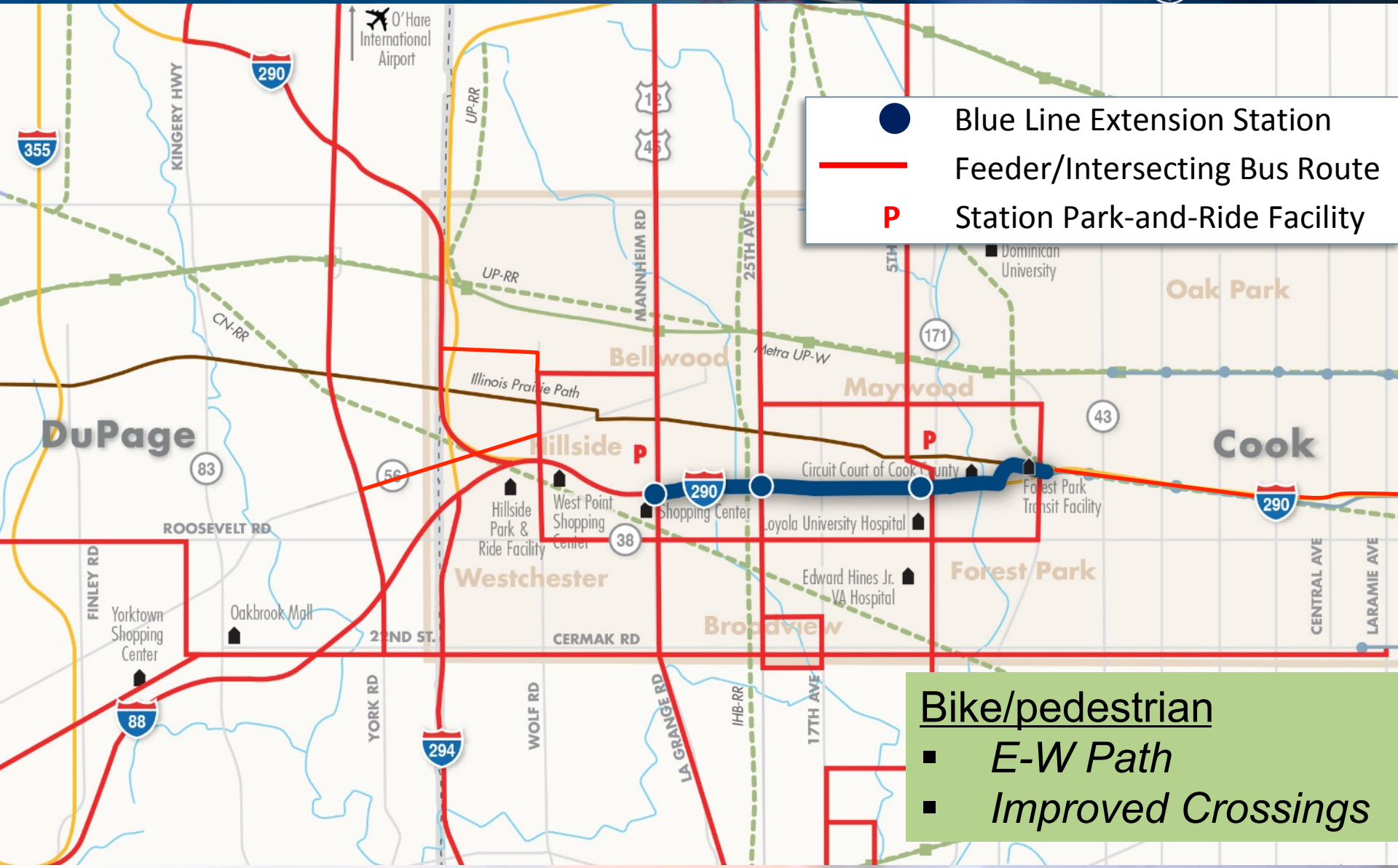




# ALTERNATIVES CARRIED FORWARD



# TRANSIT FEATURES



**Bike/pedestrian**

- *E-W Path*
- *Improved Crossings*



# ROUND 3 EVALUATION: ADT



- 2012 ADT: 176,000 to 217,000
- I-290 2040 No Build Alt.:  
+7% increase over 2012 ADT

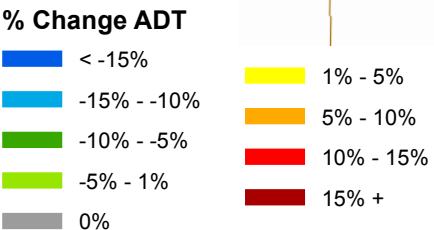
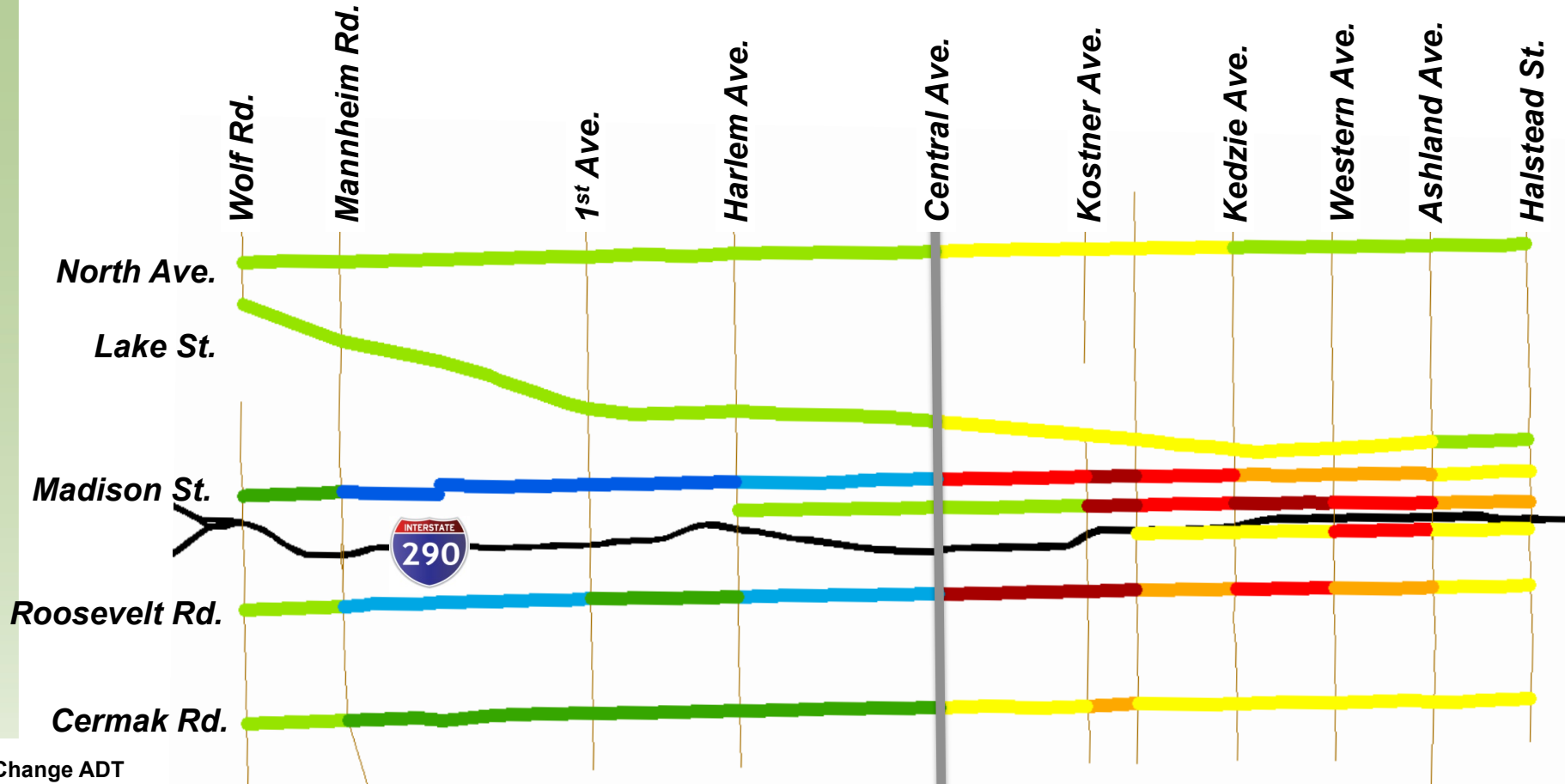


ADT	2040 No Build	GP Lane	HOV 2+	HOT 3+	HOT 3+ & TOLL
I-290	186,000 – 233,000	189,000 - 240,000	182,000 - 227,000	196,000 - 252,000	157,000 - 208,000
Average Change	----	+9%	+3%	+11%	-7%

- Decreases in ADT on links other than I-290:
  - 75% on arterials
  - 25% on expressways

# ROUND 3 EVALUATION: ARTERIAL TRAFFIC

## General Purpose Lane

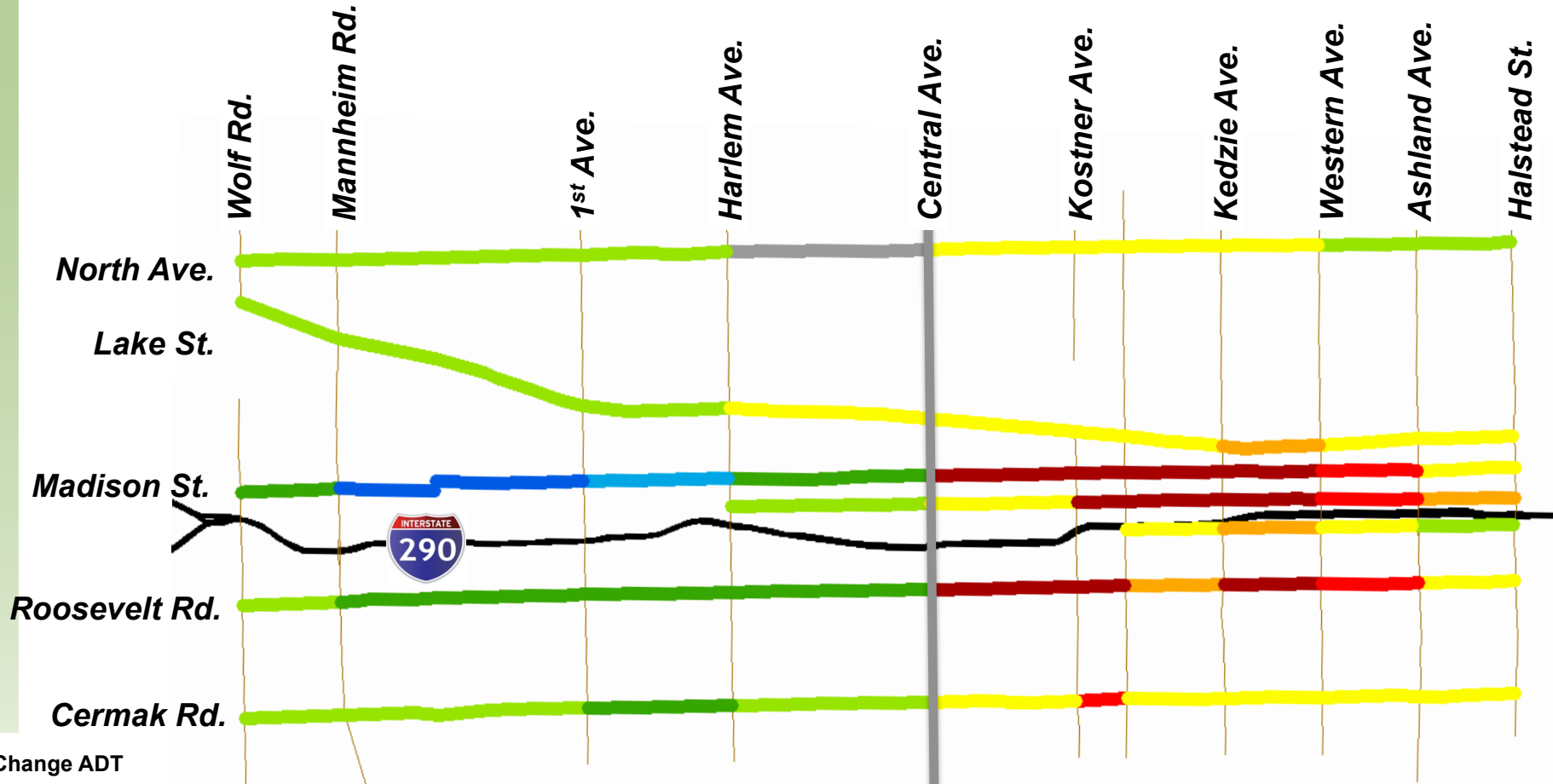


**Average Daily Traffic Change from 2040 No-Build**



# ROUND 3 EVALUATION: ARTERIAL TRAFFIC

## HOV 2+ Lane

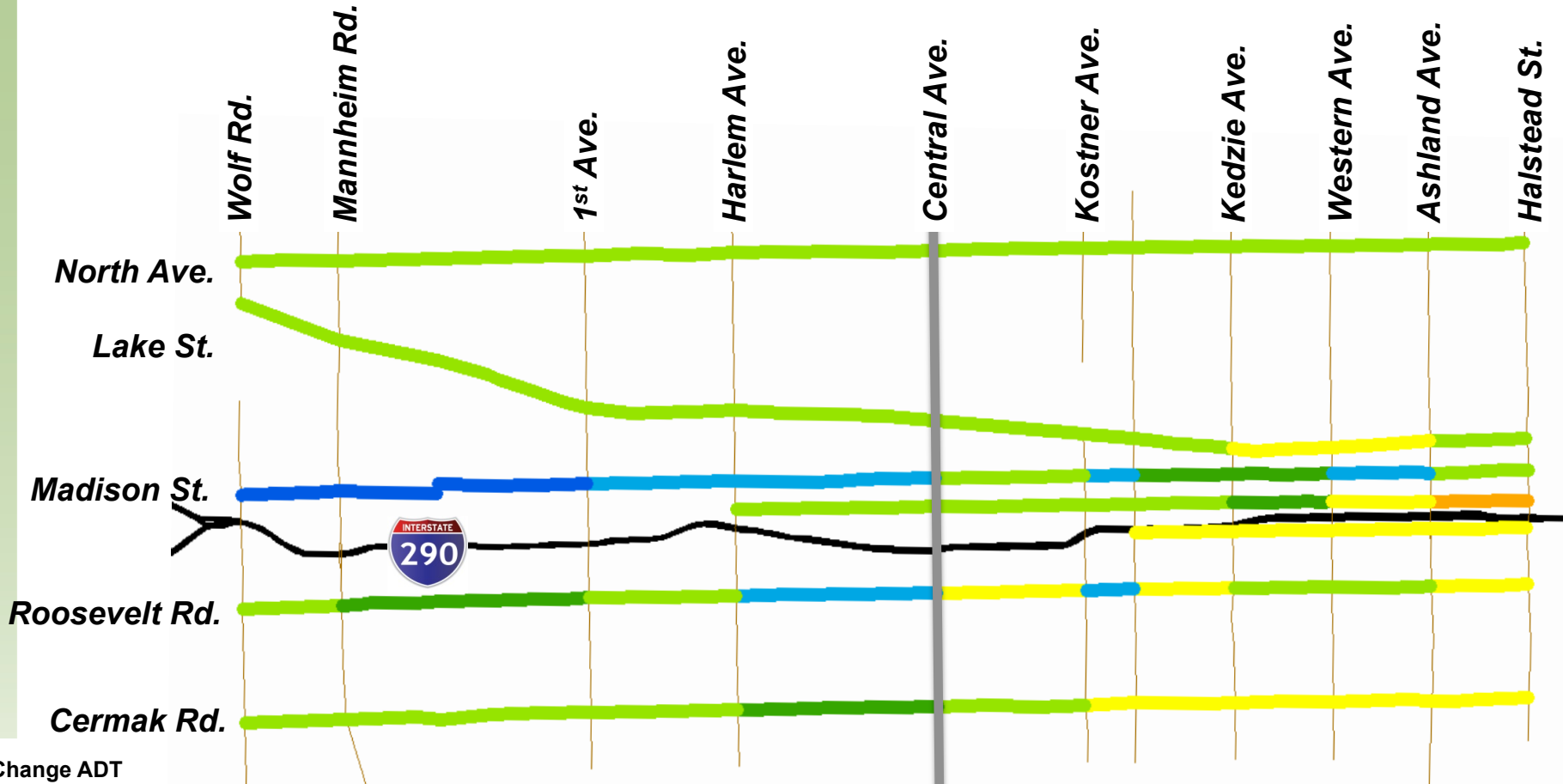


Average Daily Traffic Change from 2040 No-Build

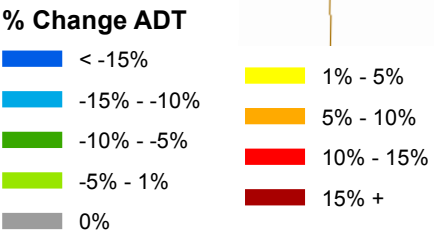
- % Change ADT**
- < -15%
  - -15% - -10%
  - -10% - -5%
  - -5% - 1%
  - 0%
  - 1% - 5%
  - 5% - 10%
  - 10% - 15%
  - 15% +

# ROUND 3 EVALUATION: ARTERIAL TRAFFIC

## HOT 3+ Lane



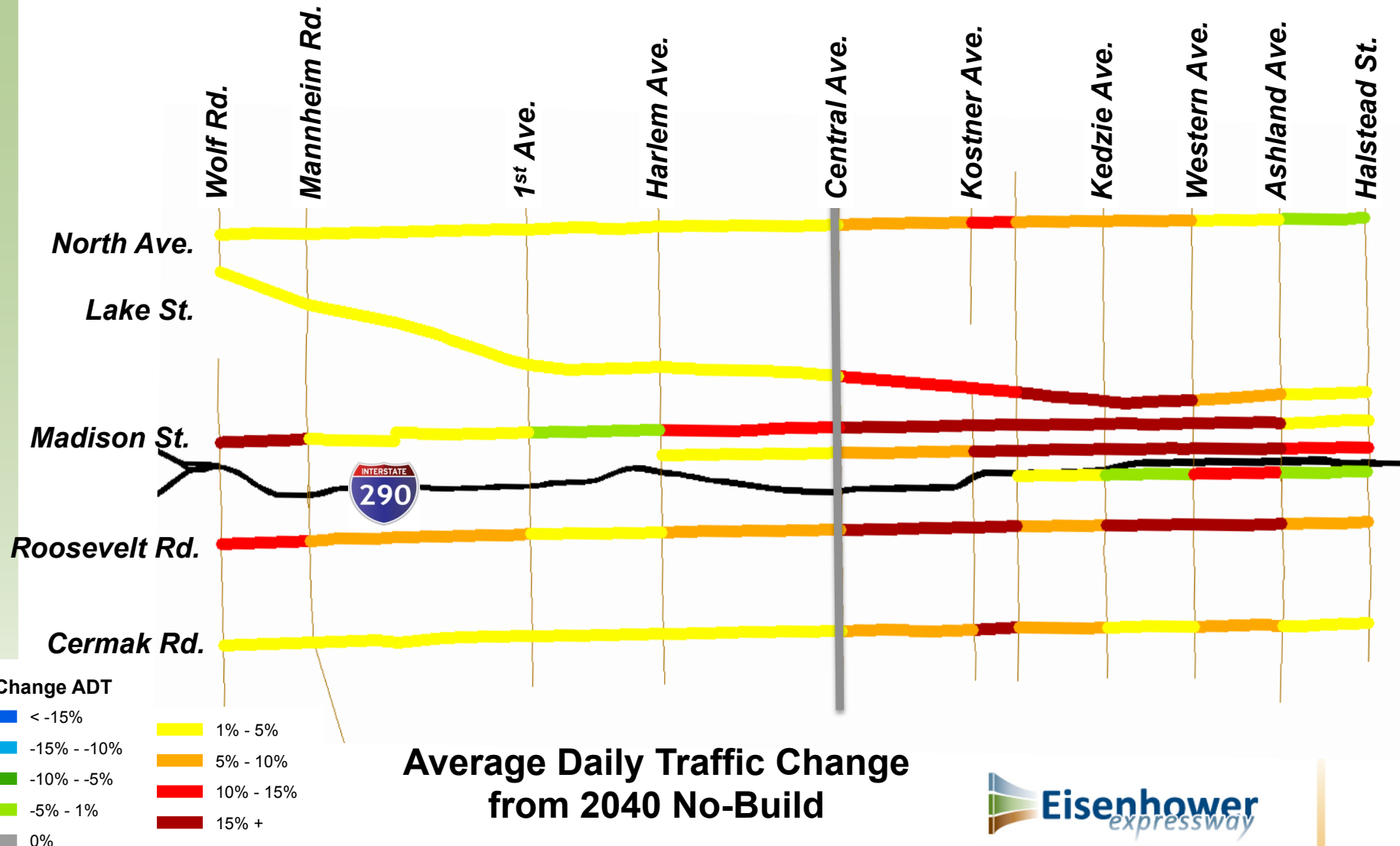
Average Daily Traffic Change from 2040 No-Build



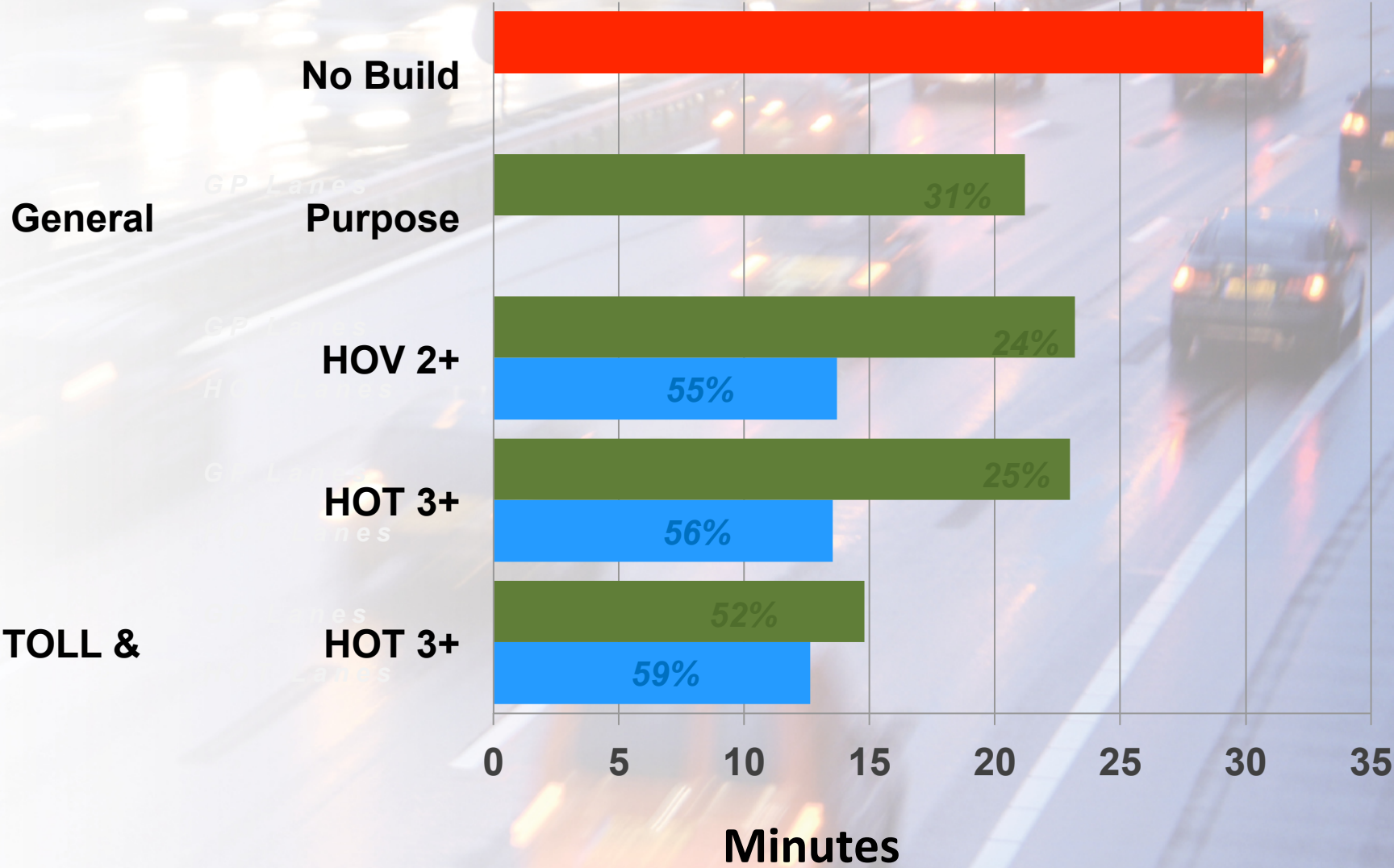


# ROUND 3 EVALUATION: ARTERIAL TRAFFIC

## HOT 3+ Lane & Toll



# ROUND 3 EVALUATION: TRAVEL TIMES







## Overall Safety: I-290, Arterials, Transit

GP Lane	HOV 2+	HOT 3+	HOT 3+ & TOLL
-5.37%	-7.49%	-8.15%	-6.80%

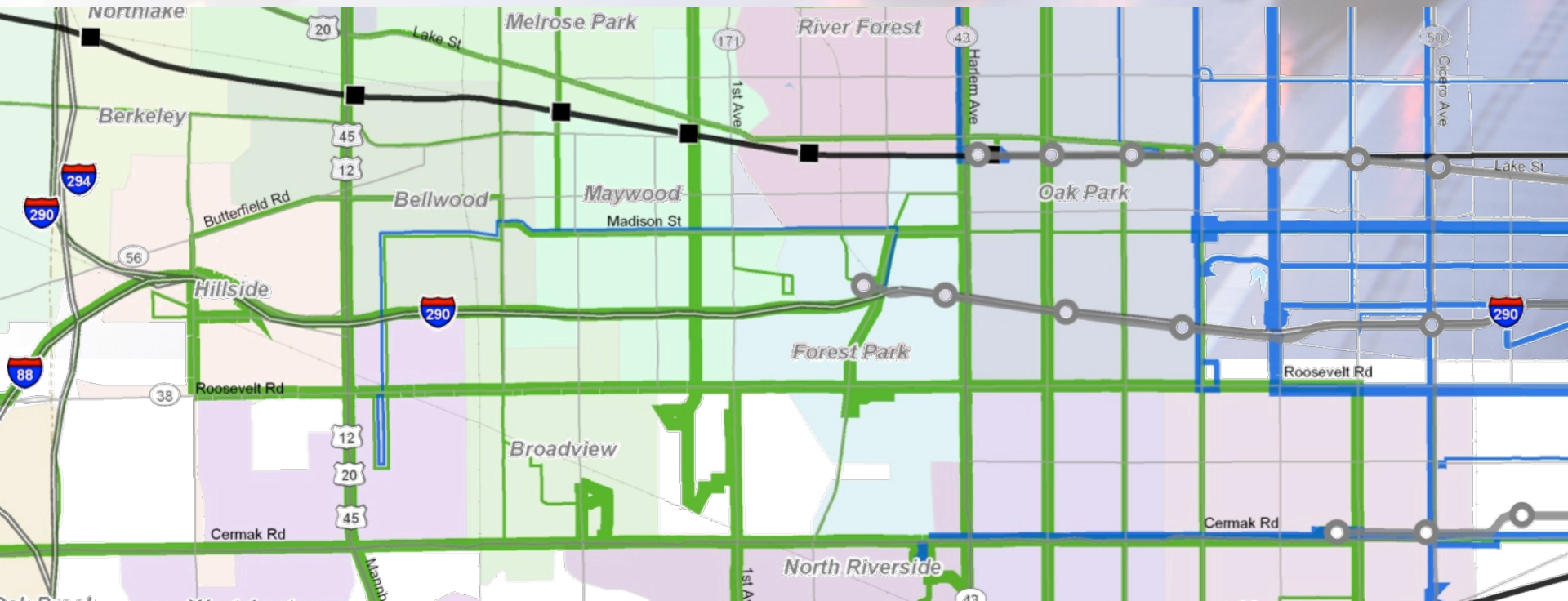
- **GP Lane Lowest Performer**
  - *2<sup>nd</sup> Best arterial performance*
  - *Lowest person throughput relative to ADT*
- **HOV 2+ Second Best Performer**
  - *Second best person throughput relative to ADT*
- **HOT 3+ Best Performer** (followed by HOV 2+)
  - *Best arterial safety performance*
  - *Highest person throughput relative to ADT*
- **HOT 3+ & Toll Lane**
  - *Best expressway safety due to lower ADT*
  - *Worst arterial safety performance*

# ROUND 3 EVALUATION: CORRIDOR TRANSIT RIDERSHIP



## E-W Daily Corridor Transit Ridership Trip Change (bus and rail)

GP Lane	HOV 2+	HOT 3+	HOT 3+ & TOLL
+2,760	+440	+2,780	+6,670







## ■ Construction costs:

### – Round 2 cost estimate:

- *Replace in kind: \$1.3 B*
- *Build alts: \$1.5 B to \$1.6 B (without Blue Line extension)*
- *Cost of additional lane: 16% to 19% of overall cost (\$230M to \$290M)*
- *Cost of transit accommodations: approx. \$30M*

### – Cost estimates to be refined as Round 3 advances

- *Refined mainline & interchange geometrics*
- *Drainage*
- *ITS*



## ■ Daily Vehicle Hours of Travel Changes:

GP Lane	HOV 2+	HOT 3+	HOT 3+ & TOLL
-23,132	-10,530	-18,998	-20,550

## ■ Productivity Savings:

- Assuming \$24/hr. Value of Time
- NCHRP Report 456 Guidebook for Assessing the Social and Economic Effects of Transportation Projects

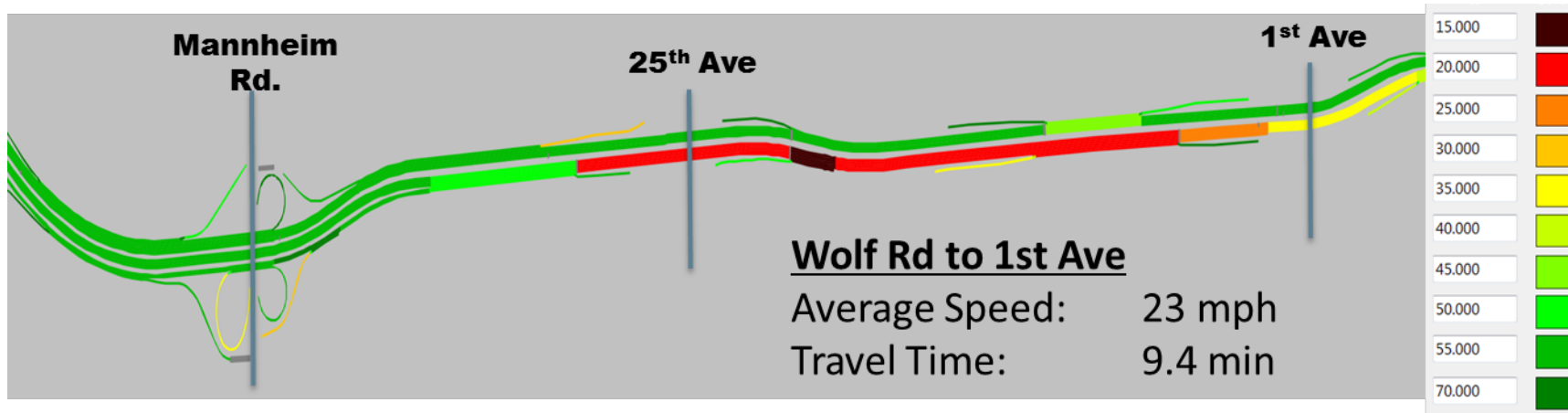
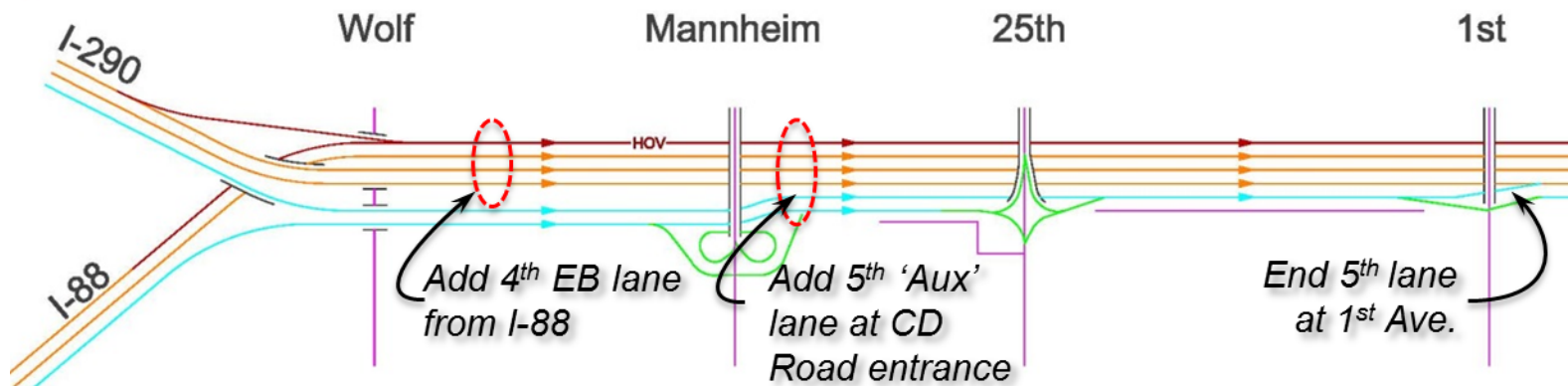
- Annual benefit in 2040 - \$92 to \$203 Million
- Project benefit\* - \$1.7 to \$3.8 Billion
- Productivity savings only
- Does not consider toll revenues

\* Assuming 2020 for full completion and 20 year benefit period



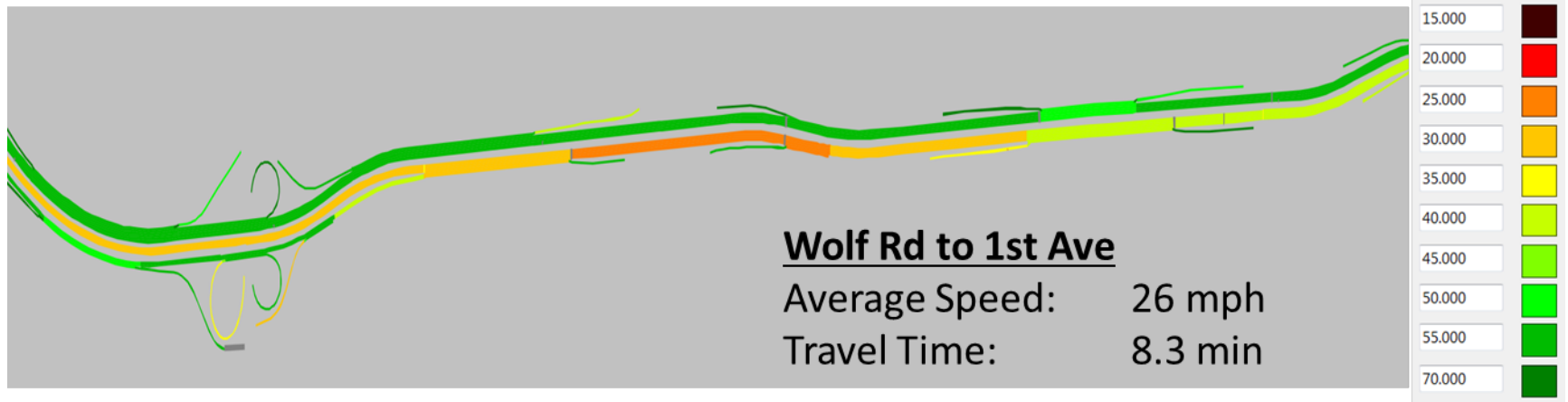
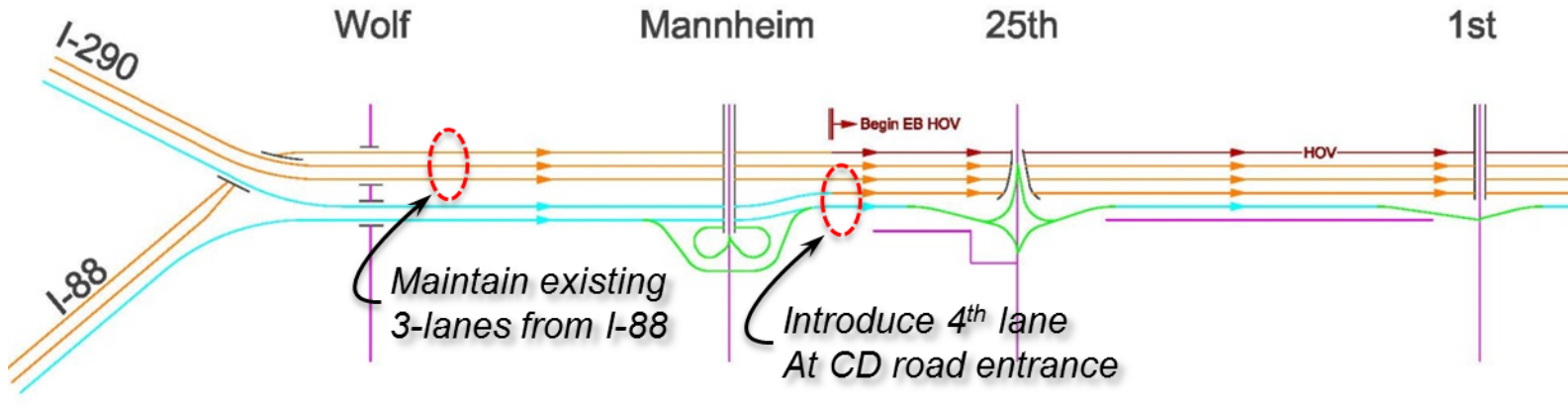
# GEOMETRY & OPERATIONS: MAINLINE WEST END

## West end, original eastbound lane concept



# GEOMETRY AND OPERATIONS: MAINLINE WEST END

## West end, revised eastbound lane concept





# GEOMETRY & OPERATIONS: INTERCHANGE PERFORMANCE



Interchange	AM Peak		PM Peak	
	Delay <sup>1</sup>	Queue <sup>2</sup>	Delay <sup>1</sup>	Queue <sup>2</sup>
25 <sup>th</sup> Avenue	0%	-21%	-11%	-41%
1 <sup>st</sup> Avenue	-90%	-83%	-91%	-84%
DesPlaines Avenue	<i>CTA B.L.V.S. Concept Under Evaluation</i>			
Harlem Avenue	-48%	-41%	-80%	-55%
Austin Boulevard	-14%	-13%	-13%	-14%
Central Avenue	-5%	-15%	-12%	-13%
Laramie Avenue	-22%	-12%	-33%	-2%
Cicero Avenue	-59%	-41%	-83%	-70%

1. Combined NB & SB peak period delay

2. Combined NB & SB peak period maximum queues



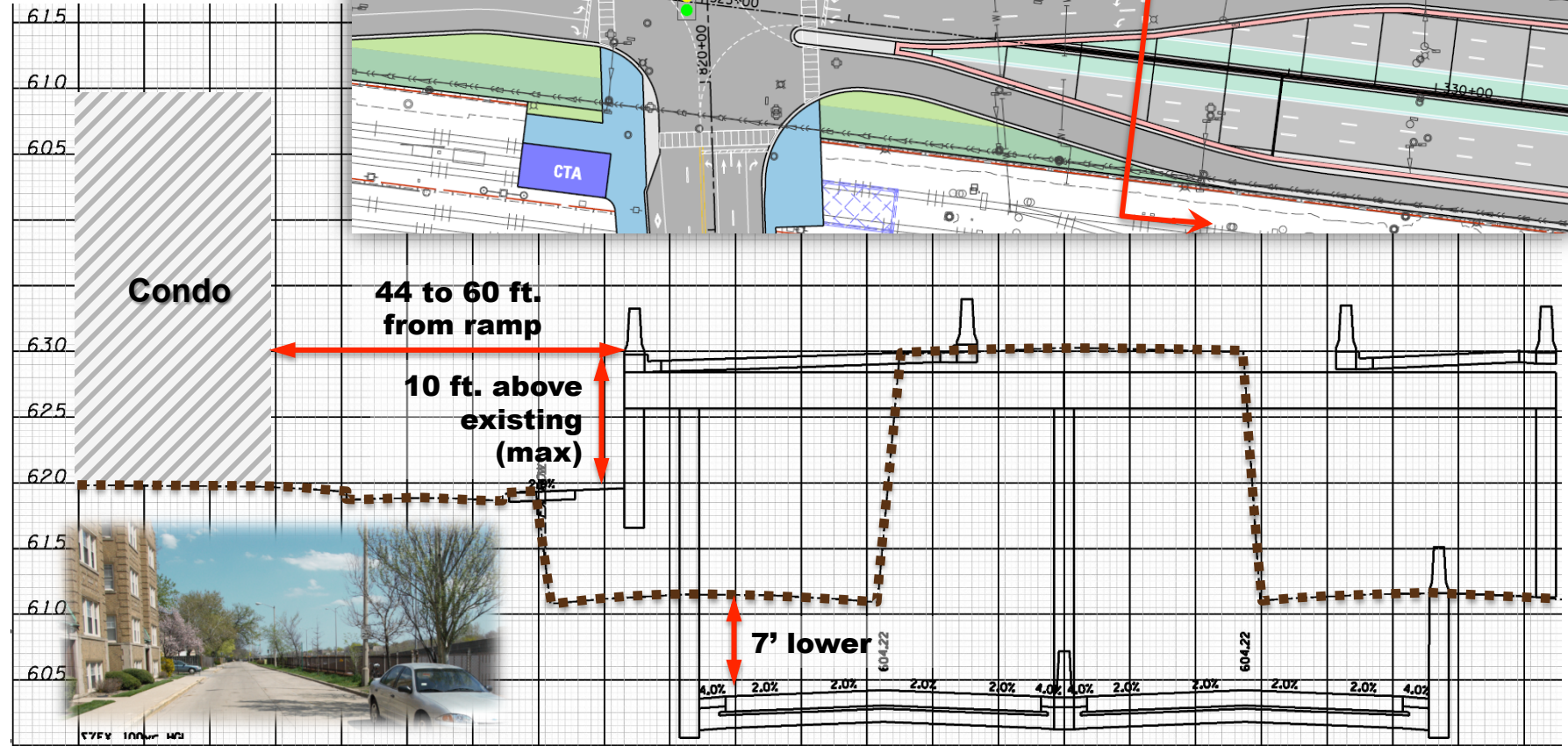
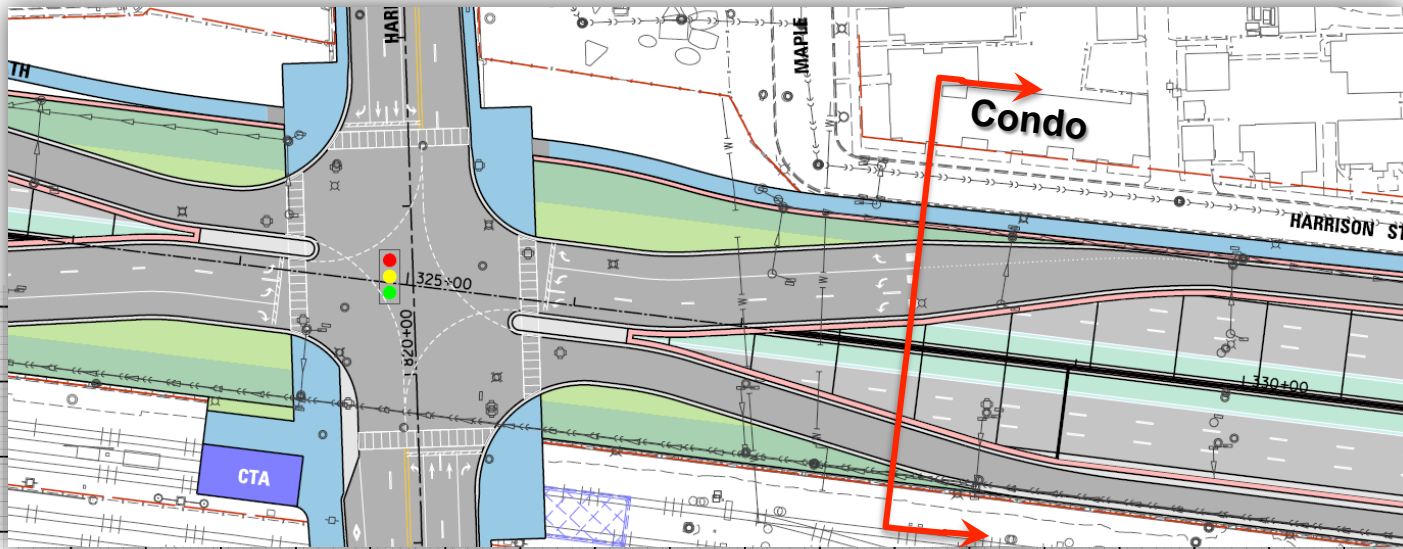
- **Recent flooding events resulted I-290 closures**
- **Off-site over-flow identified near 25<sup>th</sup> Avenue**
- **Trunk sewer capacity re-evaluated this spring**
- **Issues identified:**
  - West of DesPlaines River – 25<sup>th</sup> Avenue, 17<sup>th</sup> Avenue, 9<sup>th</sup> Avenue, 1<sup>st</sup> Avenue
  - East of DesPlaines River – CTA/CSX crossings, Austin/Central ramps
- **Drainage concepts include:**
  - West of DesPlaines River - Intercept and detain off site drainage at 25<sup>th</sup> Ave
  - East of DesPlaines River - Underground storage vaults
- **Allows for Mainline lowering:**
  - between 7 and 9 feet near Harlem Avenue
  - 4 feet at Austin Boulevard



# GEOMETRY & OPERATIONS: PROFILE REFINEMENTS



- **Harlem Ave. Interchange** (similar at Austin Blvd.)



# GEOMETRY & OPERATIONS: AUSTIN BLVD TEMPORARY EASEMENT



## ■ New Shared Use Path Connection to Columbus Park

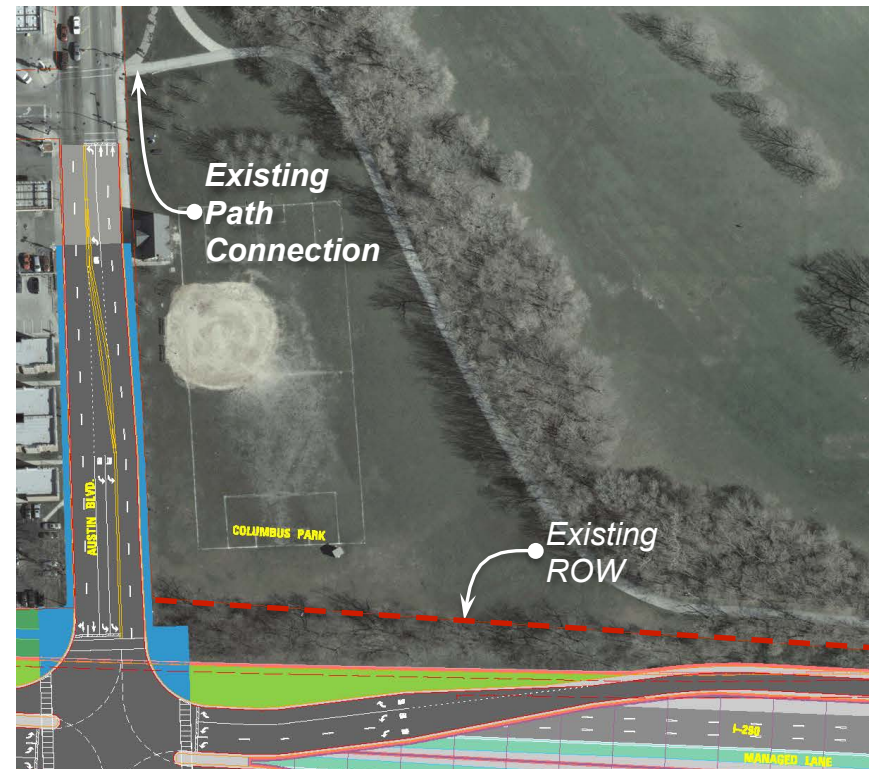
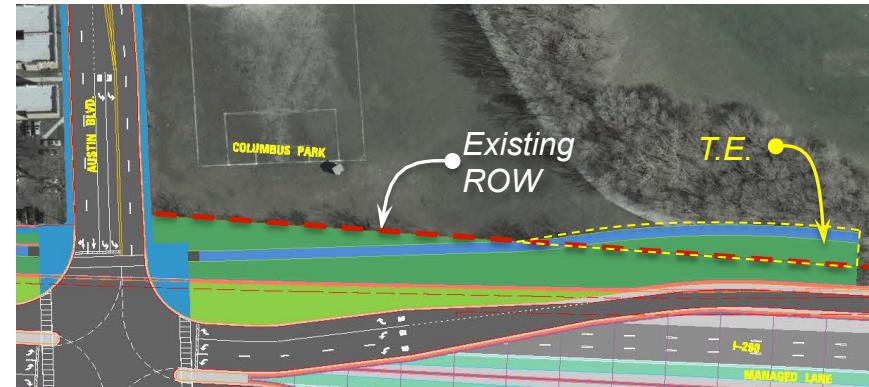
- Would require approximately 0.3 acres of Temporary Easement (T.E.)

**OR**

## ■ Utilize existing path connection at Harrison St.

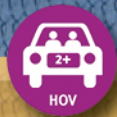
- Would require no T.E.
- Connection via sidewalks along Austin Boulevard.

*No direct impacts to any other park or 4(f) resource*





# Traffic Noise Analysis





# HOW IS TRAFFIC NOISE MEASURED?

- Measured in a-weighted sound levels (dB(A))
  - Approximates the human ear's sensitivity
- Traffic noise is reported as the peak hourly equivalent noise level, not a peak momentary noise level.

Sound Level Change	Acoustic Energy Loss	Relative Loudness Change
-3 dB	50%	Barely Perceptible Change
-5 dB	70%	Readily Perceptible Change
-10 dB	90%	Half as loud as original

*Human Perception of Sound Level Change*

## Federal Highway Administration (FHWA)

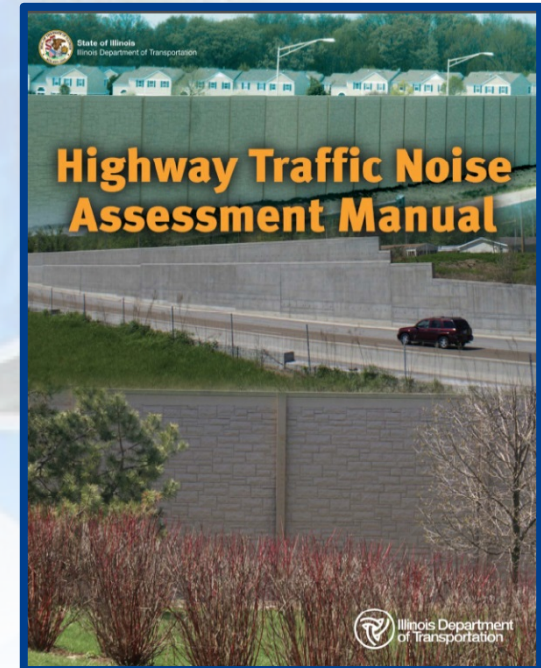
- 23 CFR 772

## IDOT

- IDOT Policy – BDE Manual Section 26-6

## State Guidance Document

- IDOT Highway Traffic Noise Manual



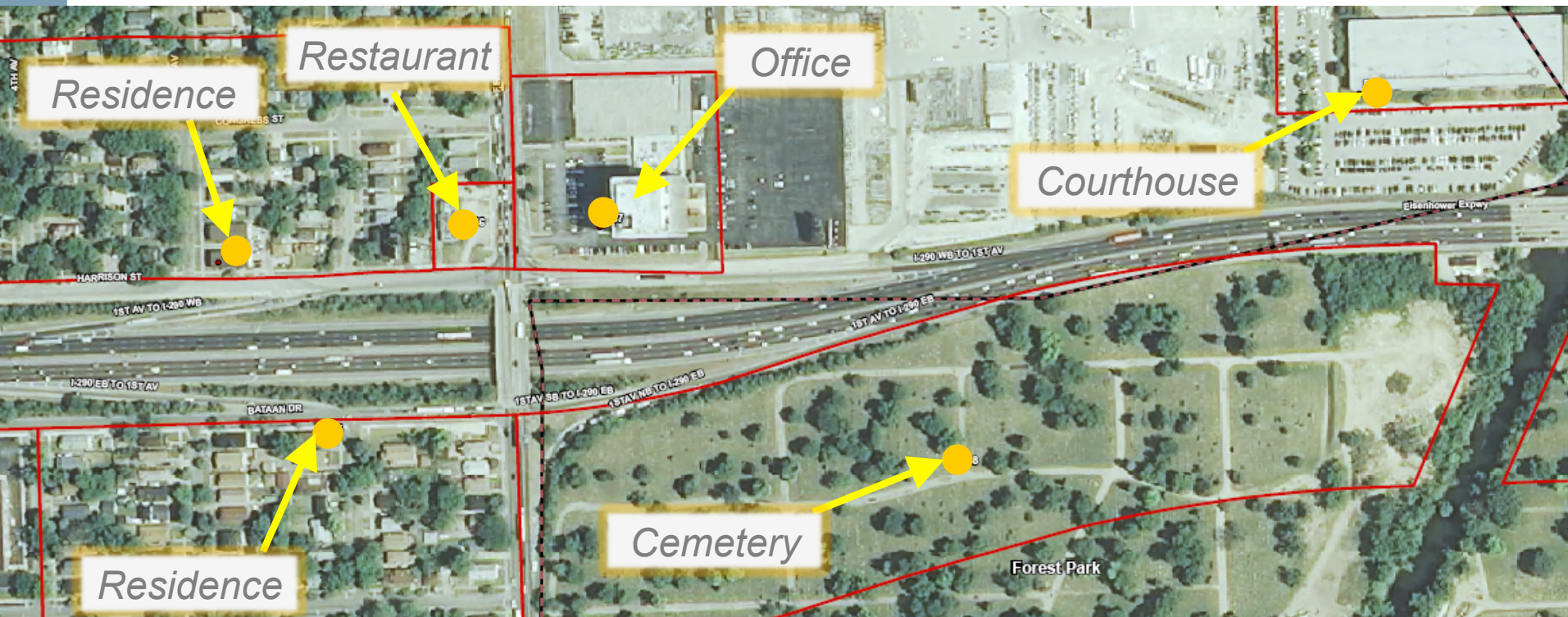
<http://www.dot.il.gov/environment/HTNAMManual.pdf>



## 1 Identify noise receptors

A receptor is a worst-case, outdoor area of frequent human use that is analyzed for noise impacts due to the project.

*Nearly 300 representative receptors were identified for this section of I-290, representing thousands of locations*



## 2 *Predict Traffic Noise at Representative Receptors*

- Predicted traffic noise levels using the FHWA Traffic Noise Model (TNM)
  - Existing year noise with existing I-290 conditions
  - 2040 No Build noise if I-290 were not improved
  - 2040 Build noise if I-290 were improved (four alternatives)

### *What factors affect noise levels?*





## 3 *Field Noise Monitoring*

### Measure existing noise conditions

- Selected receptors
- Time-weighted average
- Meter is field calibrated prior to use, annually calibrated in a laboratory

### Noise levels and traffic volumes used to validate existing scenario noise model

- Monitoring data does not define impacts or abatement

# 4 *Determine Traffic Noise Impacts*

## FHWA Noise Abatement Criteria (NAC)



### Two methods to determine impacts:

- Absolute noise level reached
- Substantial noise increase (greater than 14 dB(A)) from existing levels



## 5 *Abatement Analysis*

Usually noise barriers,  
typically noise walls.

To be implemented,  
noise barriers must be:

**“Feasible” AND  
“Reasonable”**



## *Feasibility Criteria*

To be “feasible,” a barrier must:

### Be Constructible

- Safety, Maintenance, Drainage and Utilities

### Reduce Traffic Noise

- Reduce noise by at least 5 dB(A) at one *impacted* receptor





## *Reasonability Criteria*

### **Reduce Traffic Noise.**

- Reduce traffic noise by 8 dB(A) for at least one *benefitted* receptor

### **Be Cost Effective.**

- Cost of wall vs. benefitted receptors

### **Support by those who Benefit from the Barrier.**

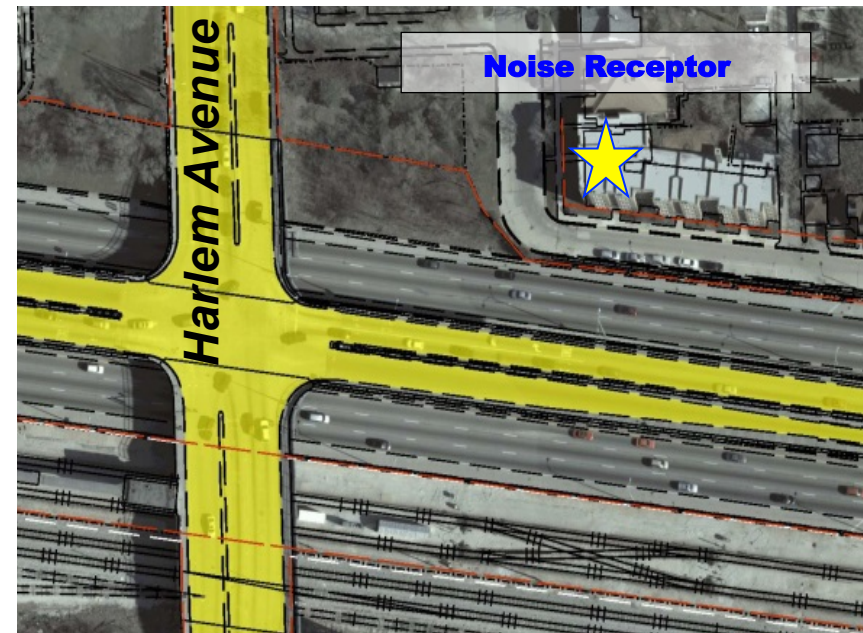
- “Viewpoints” solicitation
- Over 50% of votes in favor of barrier

## Purpose

- Determine relative noise level change between left-hand & right-hand ramps
- Does not define traffic noise impacts

## Assumptions

- Evaluated relative noise levels at condo located in north east quadrant of Harlem Avenue
- Same traffic volumes used to focus on effects of ramp design & location



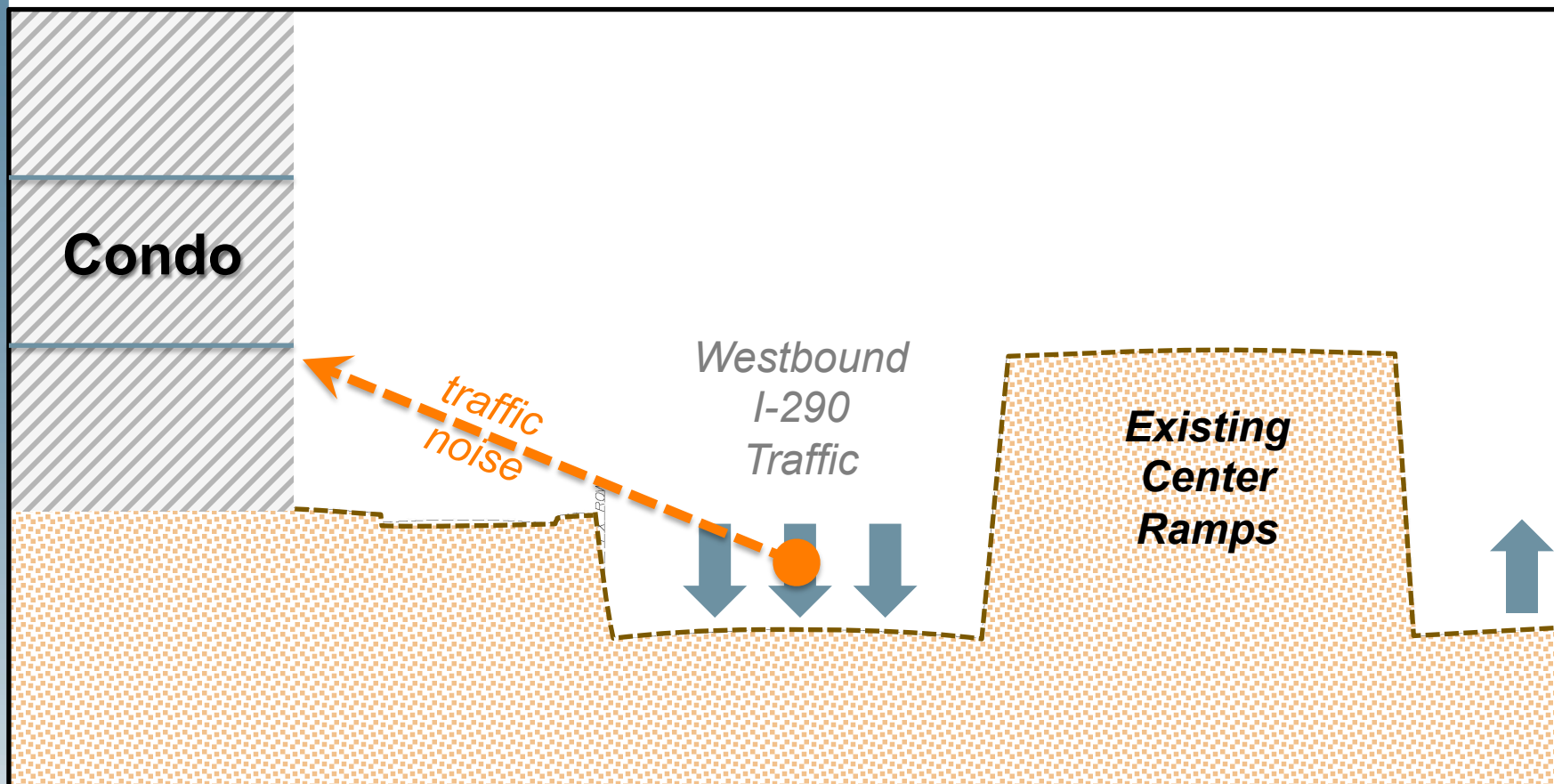


## Key Findings

- Perceptible overall noise level reduction at ground floor with *right hand ramps* vs. left hand ramps
- Mainline I-290 traffic noise is primary noise source
- Proposed ramp retaining wall provides greatest benefit by shielding mainline traffic
- Mainline noise contribution decrease up to -10 dB(A) for first floor of receptor



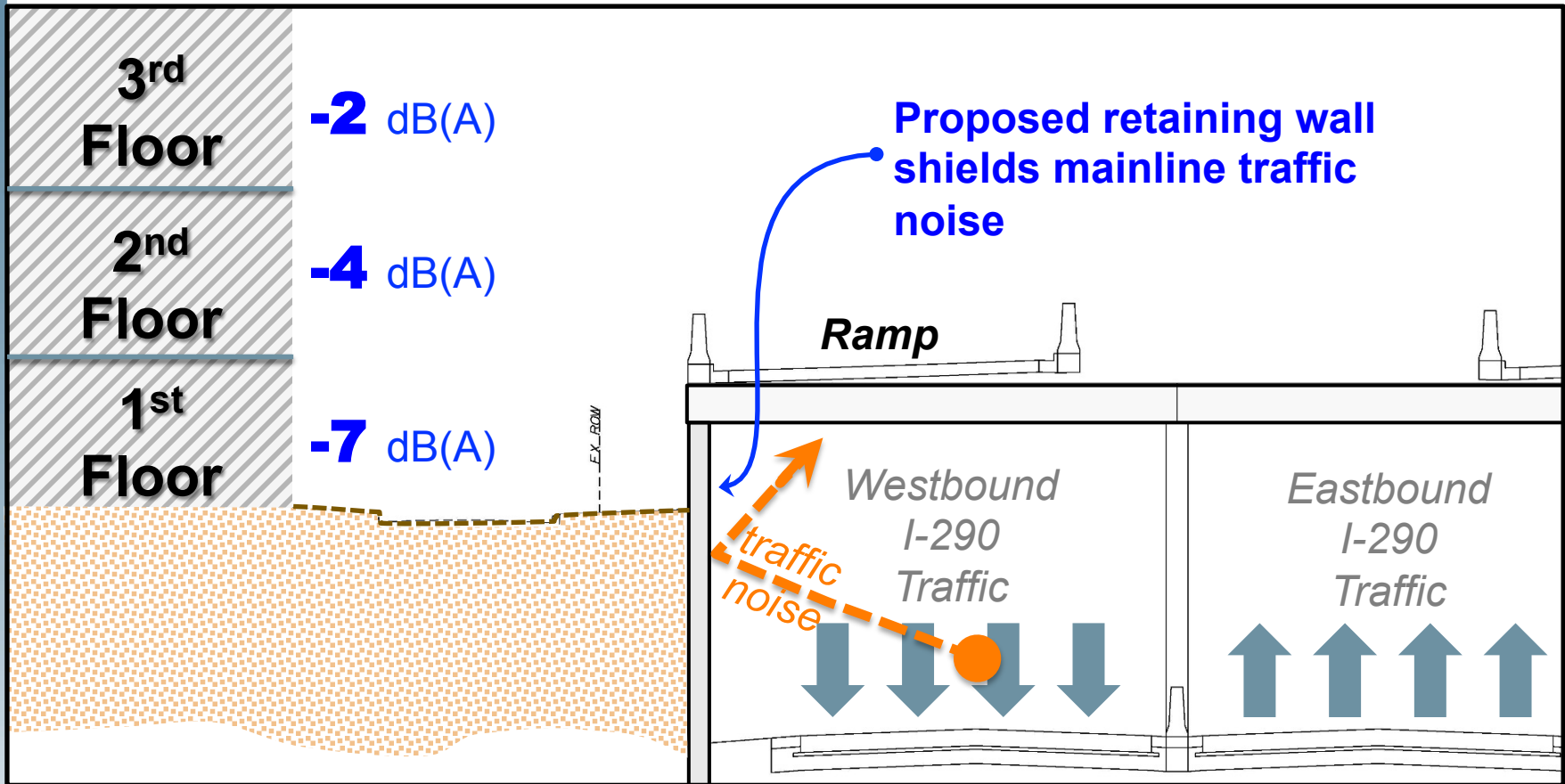
- Existing conditions





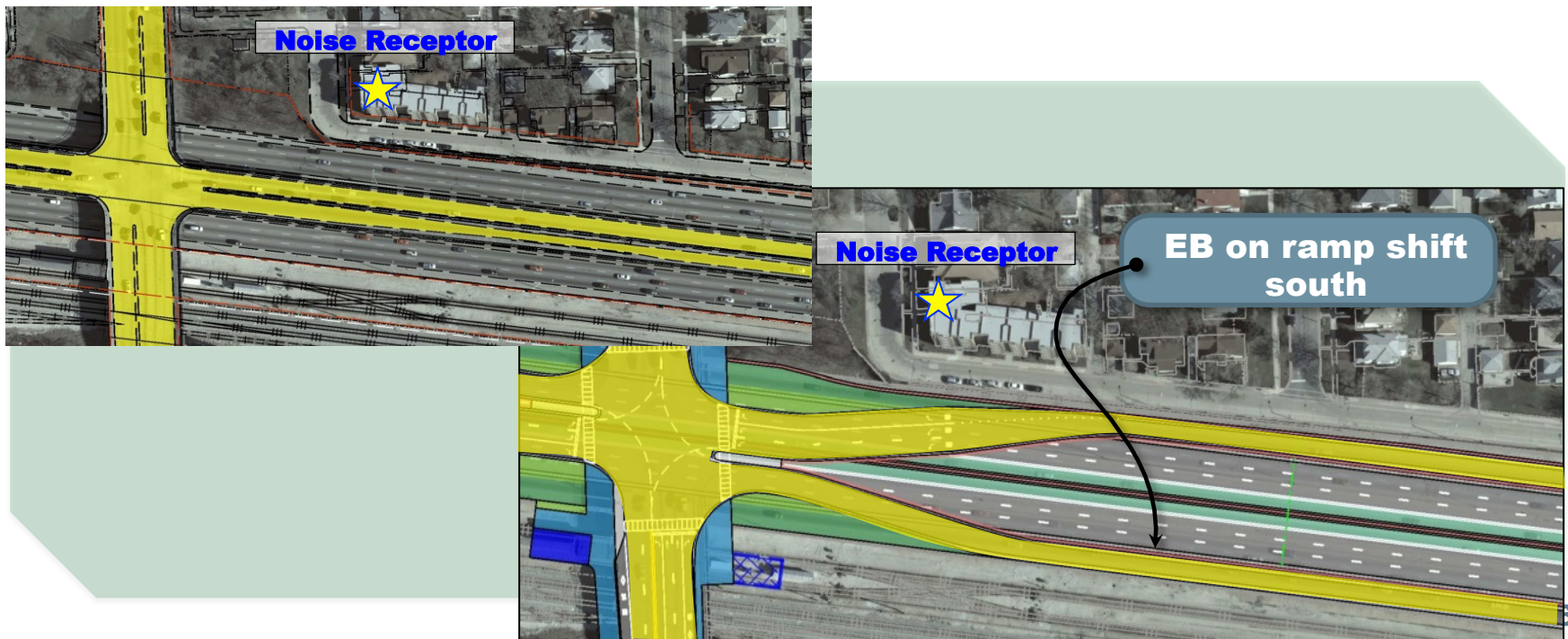
# RAMP GEOMETRY SENSITIVITY ANALYSIS

- Proposed right-hand ramp configuration



## Key findings:

- Right hand ramps shift higher volume ramp *away* from receptor
- Ramp only noise contribution decreases up to -8 d(B)A for first floor, -1 dB(A) for third floor.





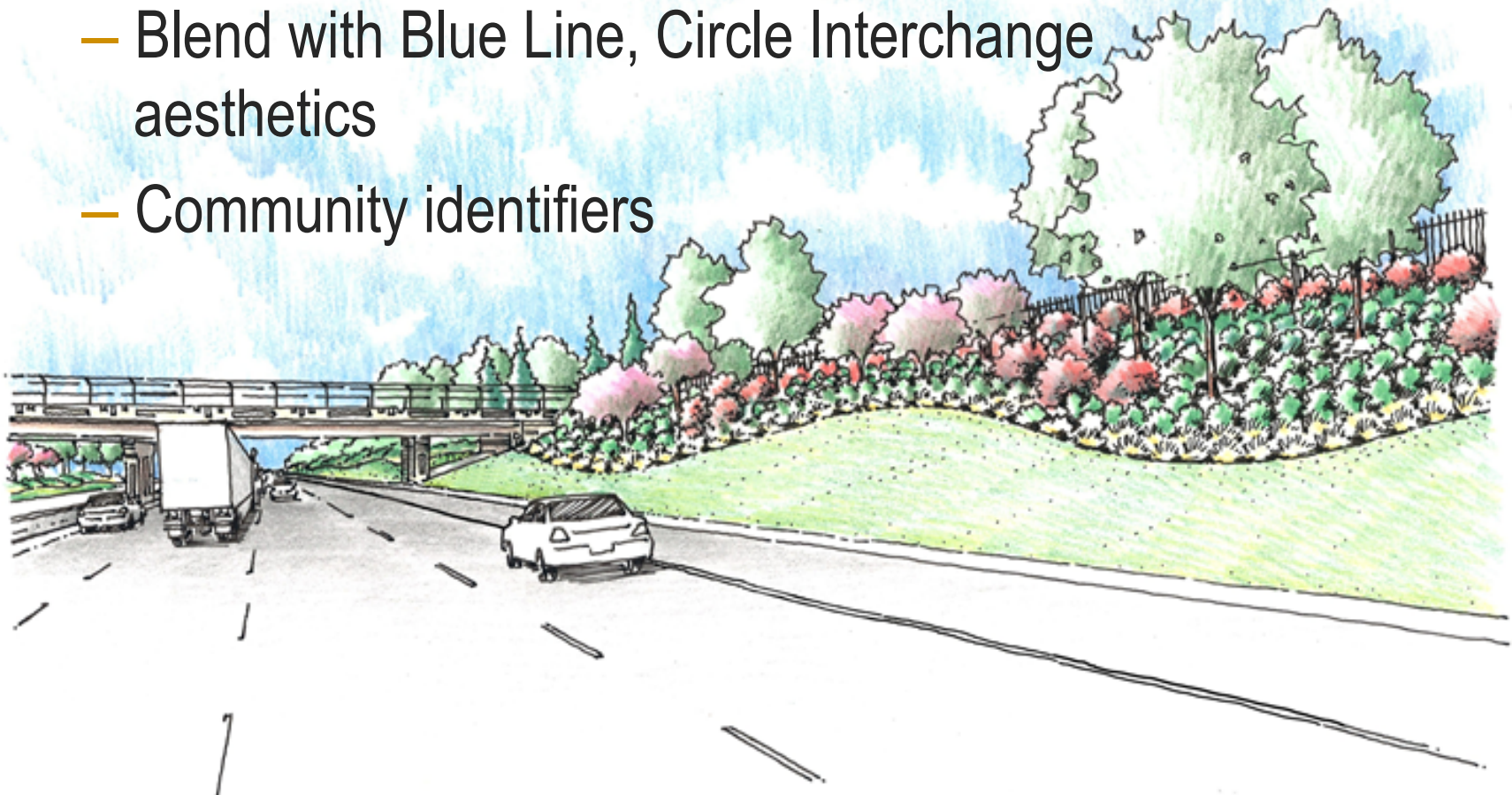
# NOISE ANALYSIS NEXT STEPS

- Existing and No Build modeling and validation
- Agency coordination to refine geometry
- Model Build Alternatives and determine impacts
- Abatement analysis
- Results expected by Spring 2015

**Next Step**

## Mainline I-290 Aesthetics

- Perspective of expressway and transit users
- Blend with Blue Line, Circle Interchange aesthetics
- Community identifiers







## Local cross-road aesthetic coordination

- Community perspectives
- Coordinate with each community, individually
- Start with current proposed layout
  - Wider sidewalks, lighting, pedestrian fencing (complete streets)
- Identify stakeholder aesthetic preferences
- Coordinate design
- Identify cost participation and
- Maintenance requirements
- Identify grant opportunities



## Design materials:

- Plan & Profile entire reconstruction section
- Individual Geometric Packages
  - Full size plan and profiles
  - Mainline Cross-sections
  - Interchange Cross-sections

## Aesthetics materials

- Existing contextual base maps
- Existing corridor photo log





- Starting point for discussion
- Process: *review and refine*
- Seeking input on:
  - Scope of improvements
  - Local connections
  - Local facilities (utilities, drainage)
  - Aesthetic/enhancement opportunities

**Series of individual meetings to be scheduled during round 3**



## CAG Meeting #19 - September

Additional Round 3 data, stakeholder feedback

## One on One Meetings





**Thank You**