



I-84 HARTFORD PROJECT

Open Planning Studio #4 The Lyceum

September 22, 2015



Presentation Outline

1. Project background
2. Overview of alternatives
3. Preliminary traffic analysis
4. Alternatives screening
5. Construction considerations
6. Next steps
7. Upcoming outreach



Project Background

I-84 Project Background

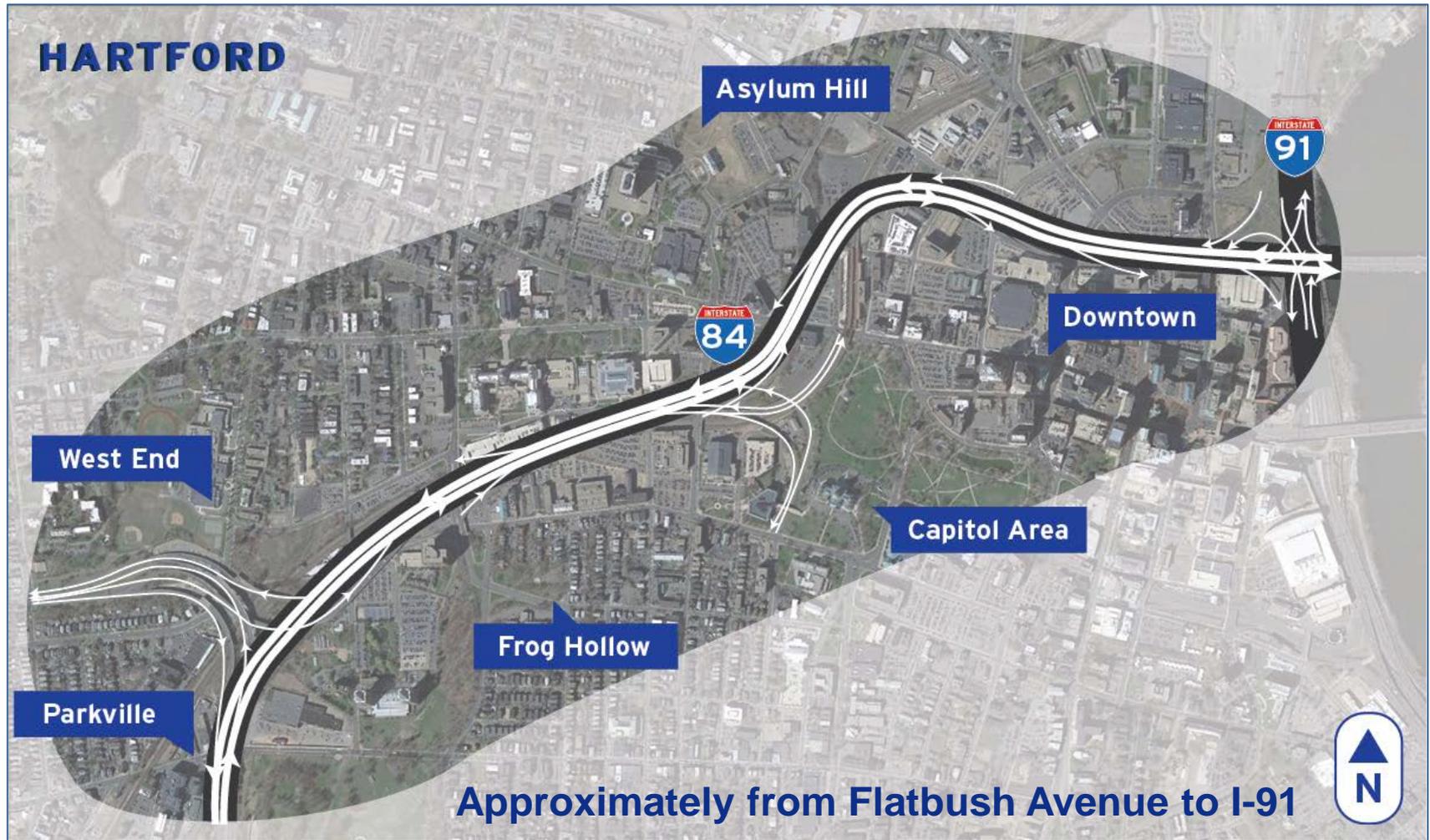
- Rail line built in 1830s
- East-west expressway
- I-84 built in 1960s
 - Designed to avoid impacting rail
 - Prior to NEPA
- Soon after, many realized that its effect on Hartford was not all positive
- Now, have opportunity to rethink the previous design



“The impact of the I-84 freeway upon the physical environments into which it was introduced has been both dramatic and overwhelming.” - 1970 CTDOT & FHWA



Where is the Project?



Why is it Needed?

- Bridge structural deficiencies
- Operational and safety deficiencies
- Mobility deficiencies



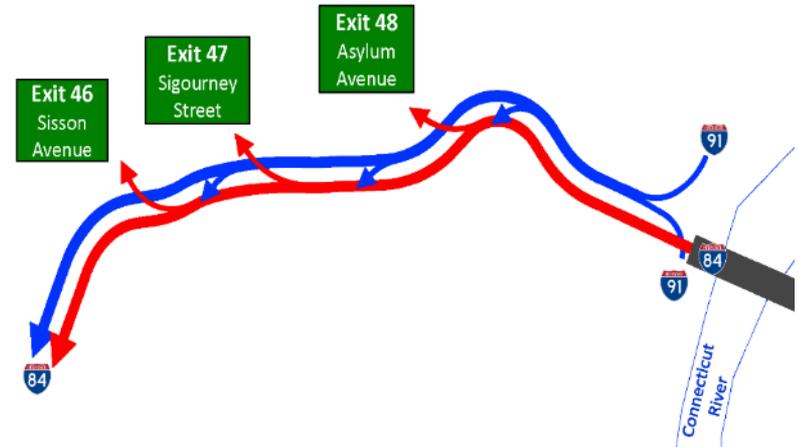
Bridge Structures (Viaduct)

- Reaching end of lifespan
- Cost of repairs = \$60M since 2004
- An additional \$60M over next 5 years
- Bridges are safe; deterioration will continue



Operations and Safety

- Eight full / partial interchanges
- Weaves
- Lane drops
- Sharp curves
- High crash rates



Mobility: Moving People and Goods

- Designed for 55,000 vehicles per day
- Carries 175,000 vehicles per day
- Freight volumes are above national average
- Need for improved pedestrian and bicyclist connections
- Transit, parking are also considerations



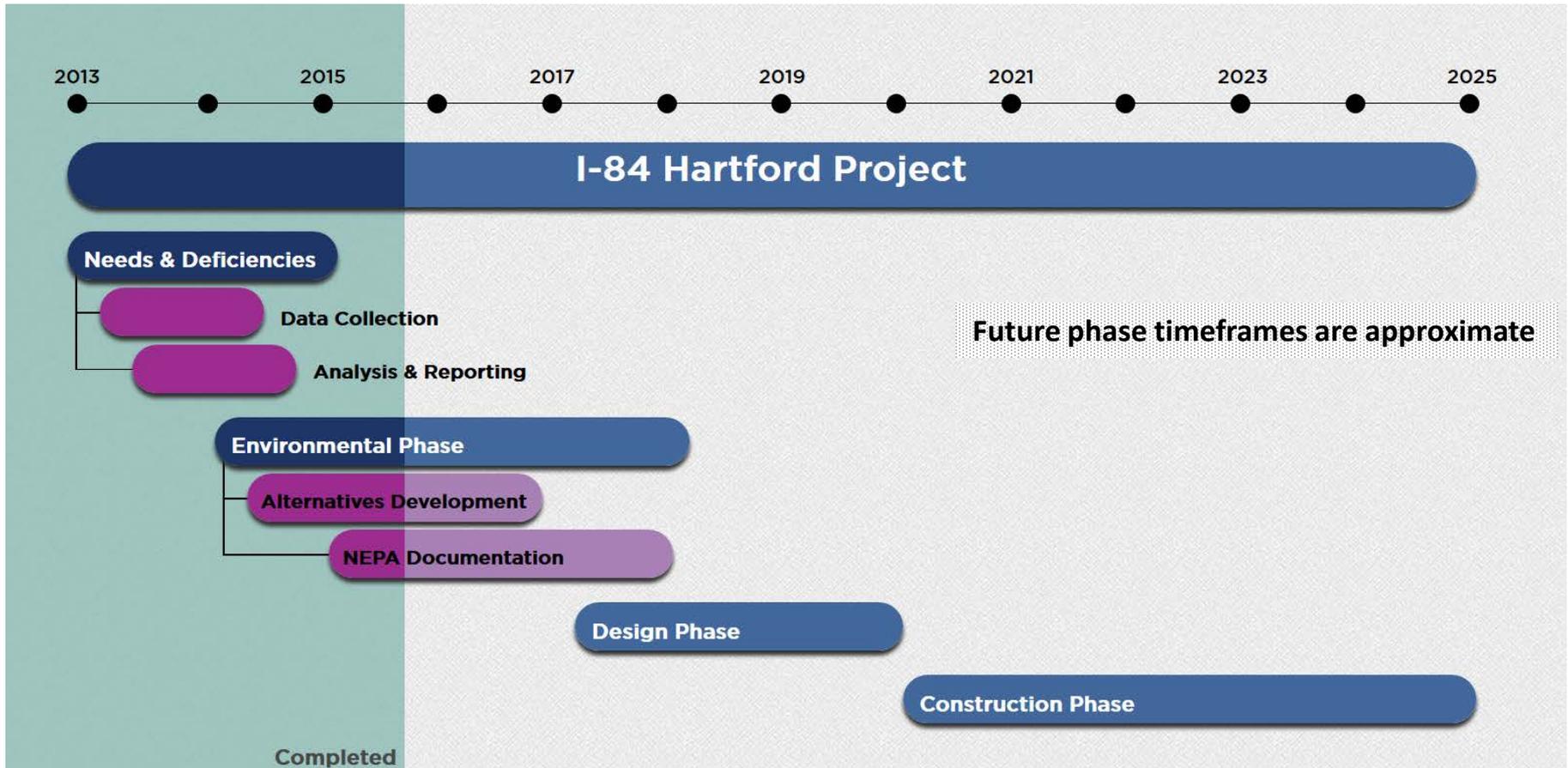
Mobility: A Balanced Approach

- On I-84 - maximize safety and efficiency
- On city streets - enable safe and comfortable access for all users (Complete Streets)



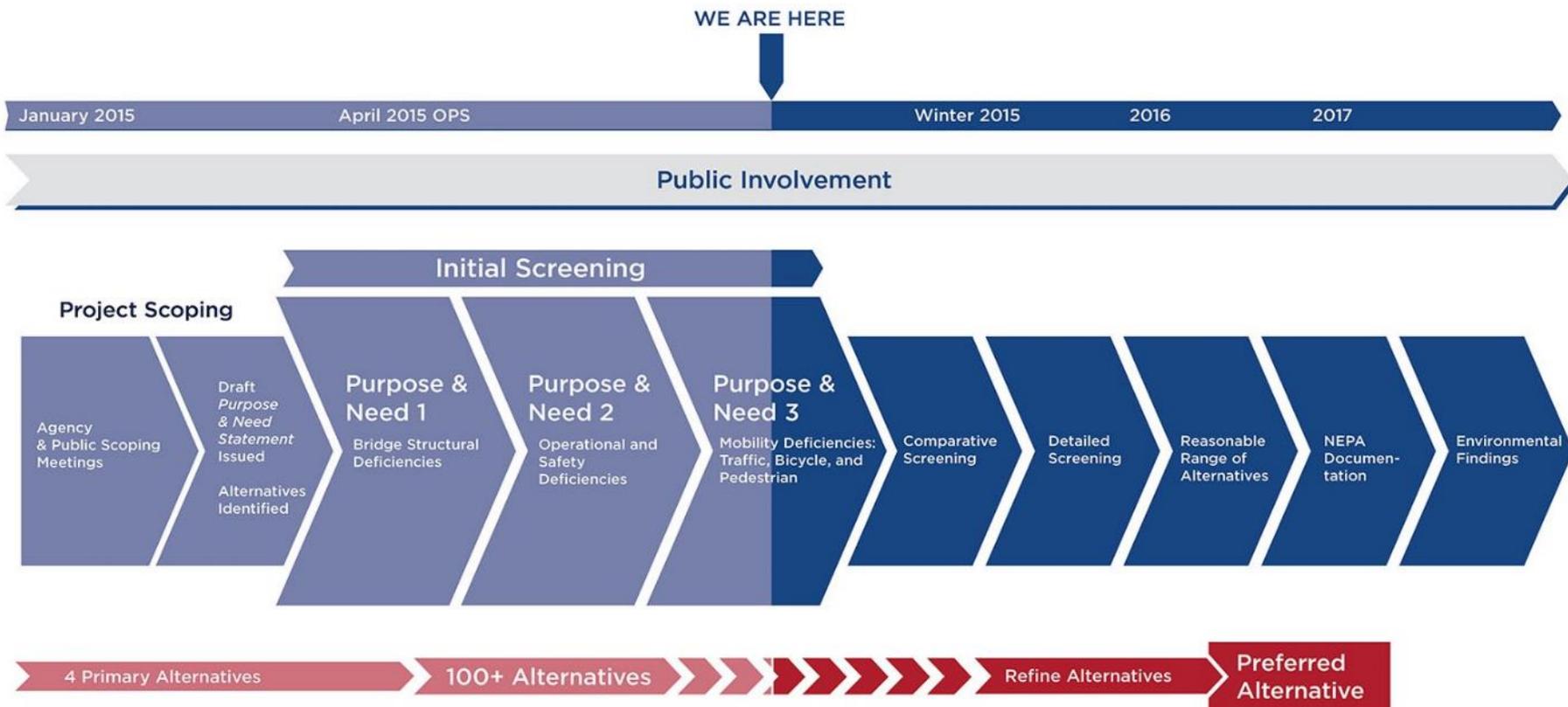


Project Schedule





Environmental Phase Schedule



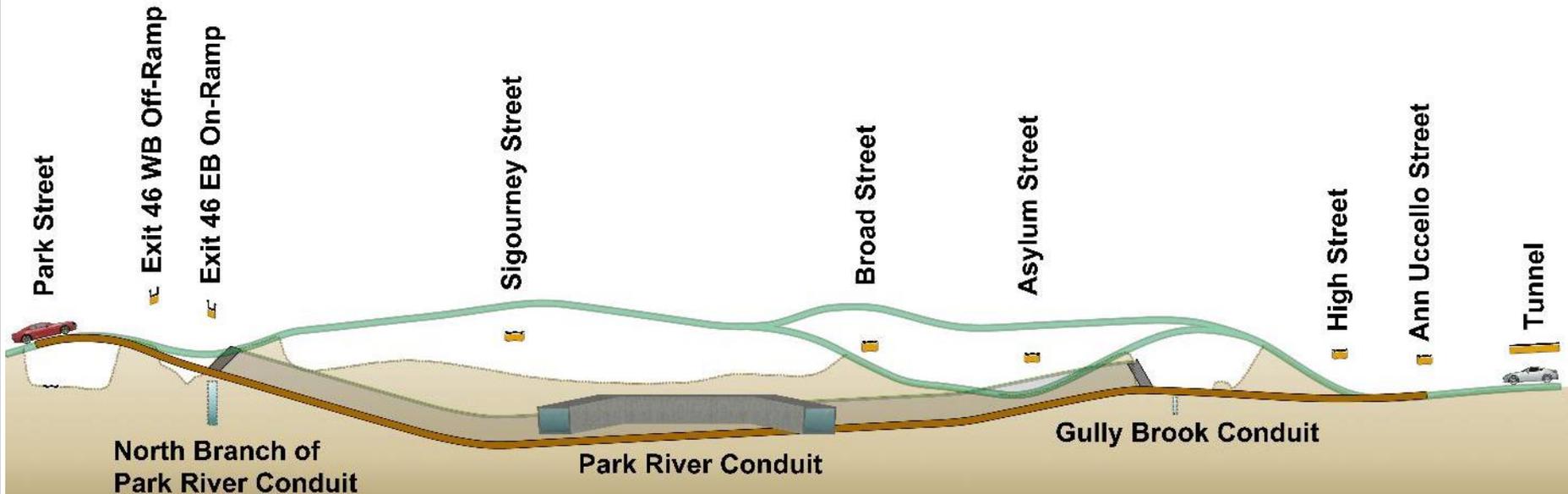


84

Overview of Alternatives

Mainline Alternatives

- Alternative 1: No-Build Green
- Alternative 2 (elevated) Blue
- Alternative 3 (lowered) Yellow
- Alternative 4 (tunnel) Brown

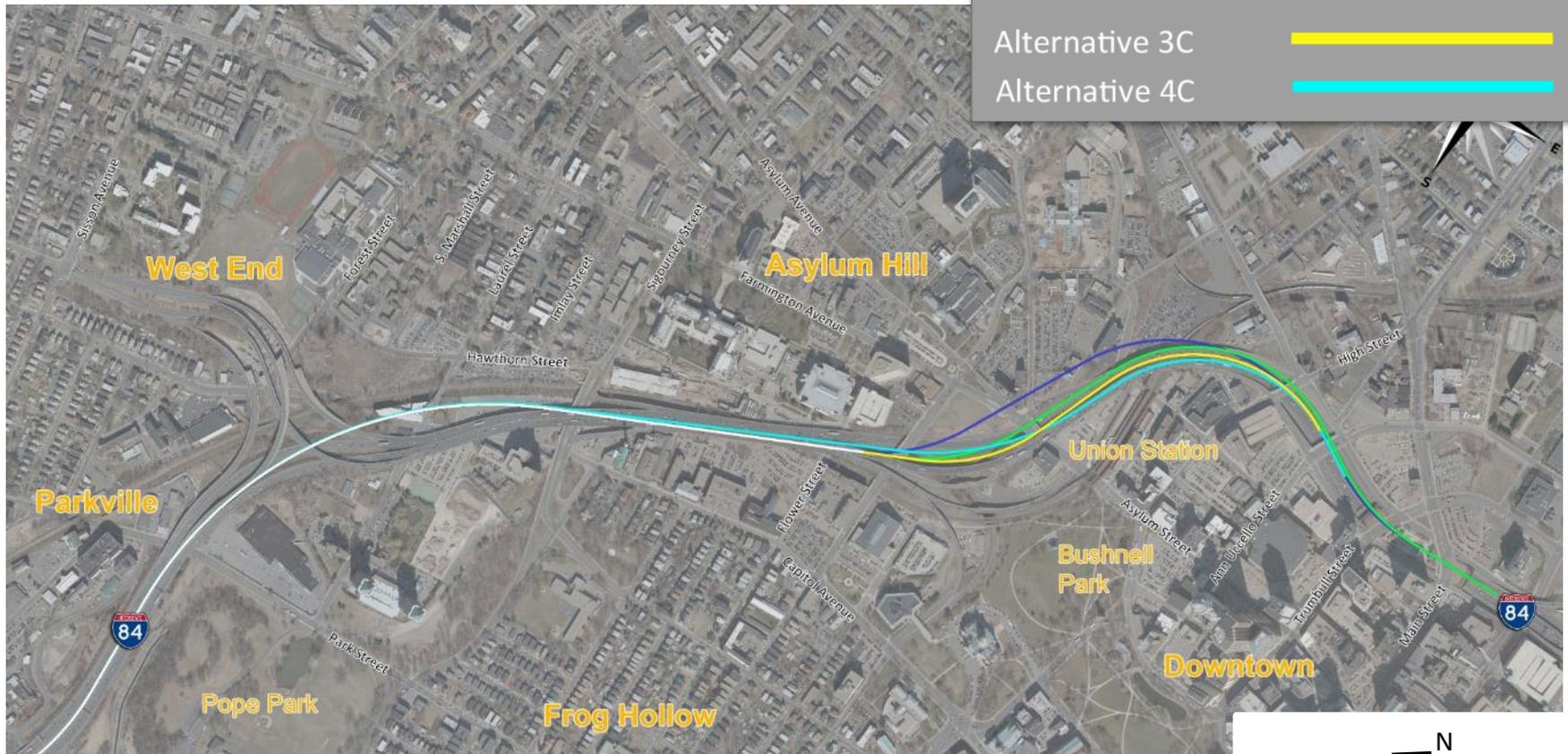




Mainline Alternatives

Legend

- Alternatives 2A/3A 
- Alternative 3B 
- Alternative 3C 
- Alternative 4C 

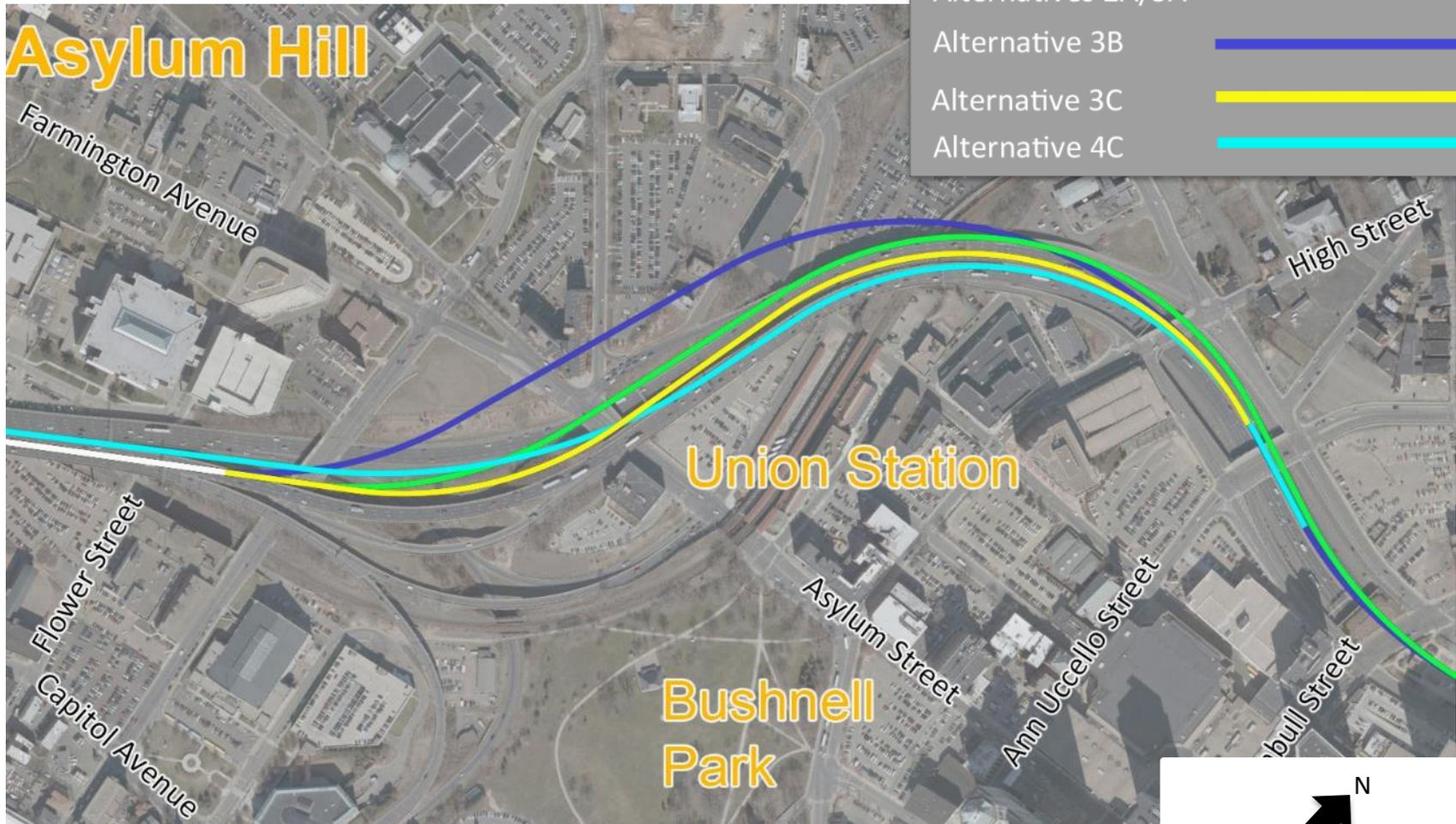




Mainline Alternatives

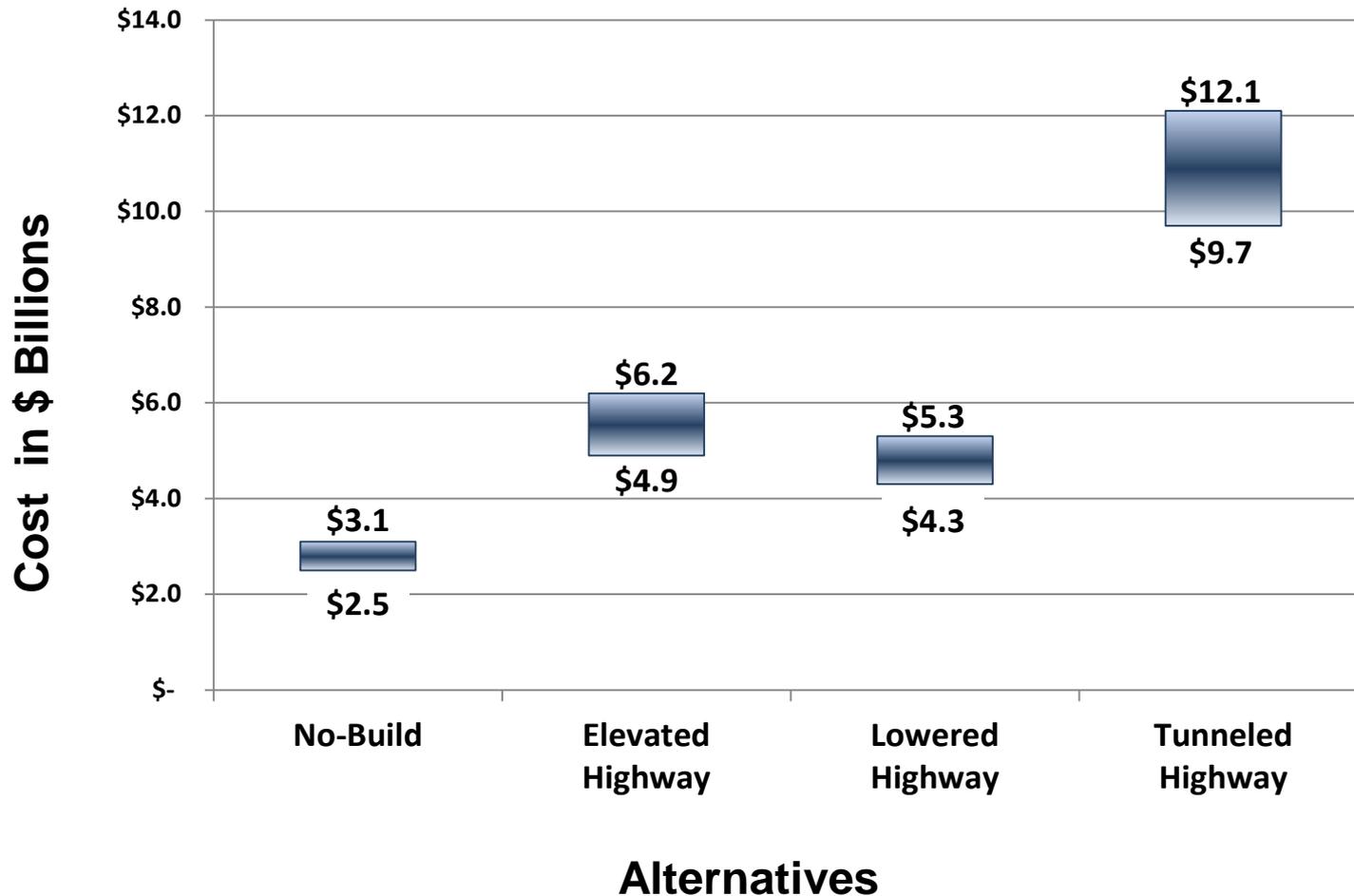
Legend

- Alternatives 2A/3A 
- Alternative 3B 
- Alternative 3C 
- Alternative 4C 





Cost Estimates





Preliminary Traffic Analysis

Initial Screening

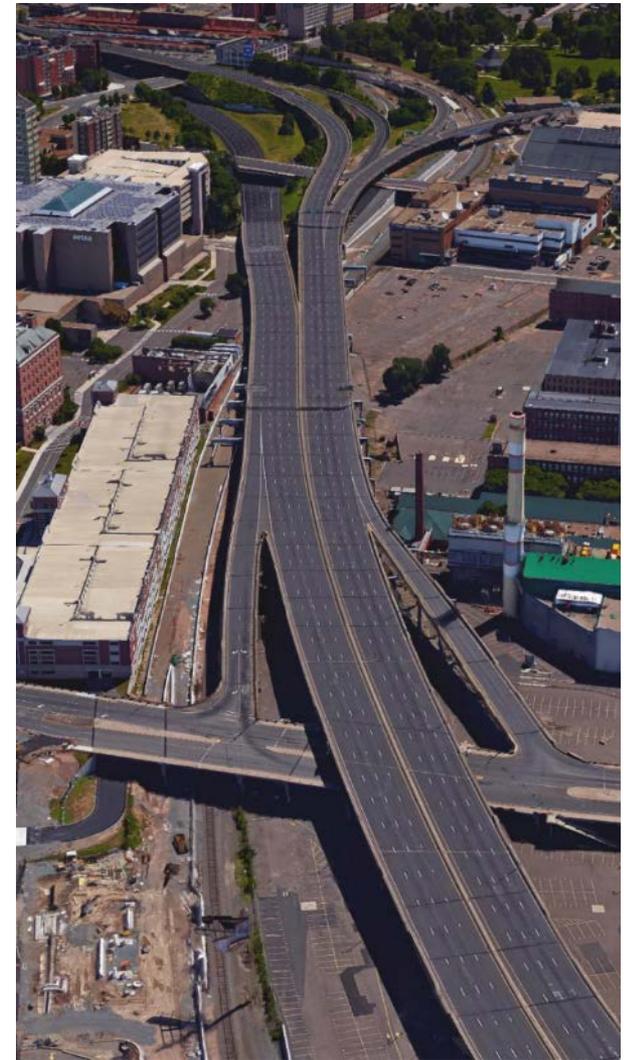
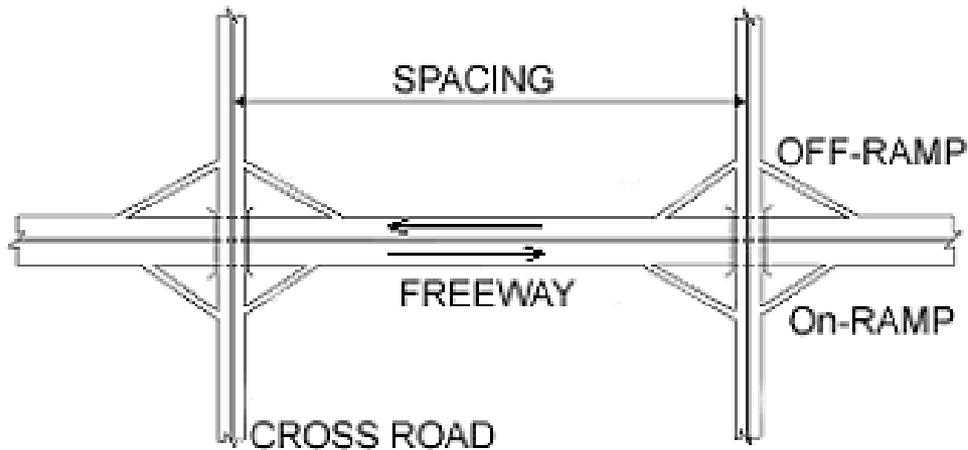
Using Purpose and Need

Alternative	Options west of Sigourney	Options east of Sigourney
2A (elevated)	10	3
3A, 3B, 3C (lowered)	10	12
4 (tunnel)	1	1



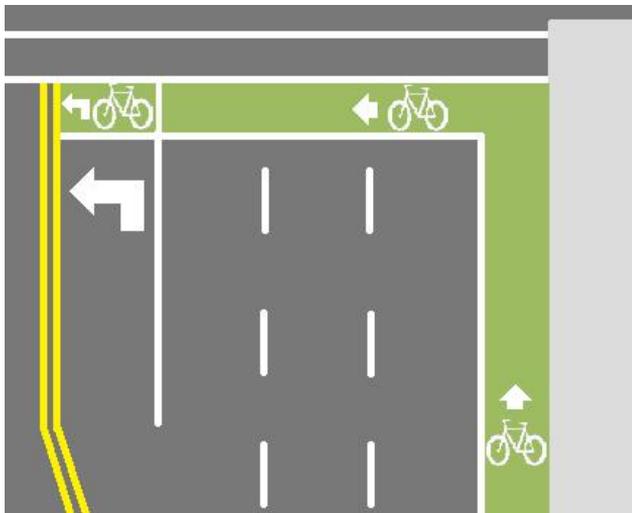
Mainline Analysis

- Interchange spacing
- Lane balance / continuity
- Weave distances



Preliminary Intersection Analysis

- Minimize roadway widths
- Optimize signal operations
- Pedestrian / bicyclist-friendly
- Good / fair / poor





Bicyclist and Pedestrian Analysis

- CRCOG pedestrian and bicycle counts
- City, regional, and special interest plans
- Users
 - Bicycle, Pedestrian, and Transit Working Group
 - Stakeholder and public meetings
 - Open Planning Studios
 - Website commenters

Bicyclist and Pedestrian Analysis

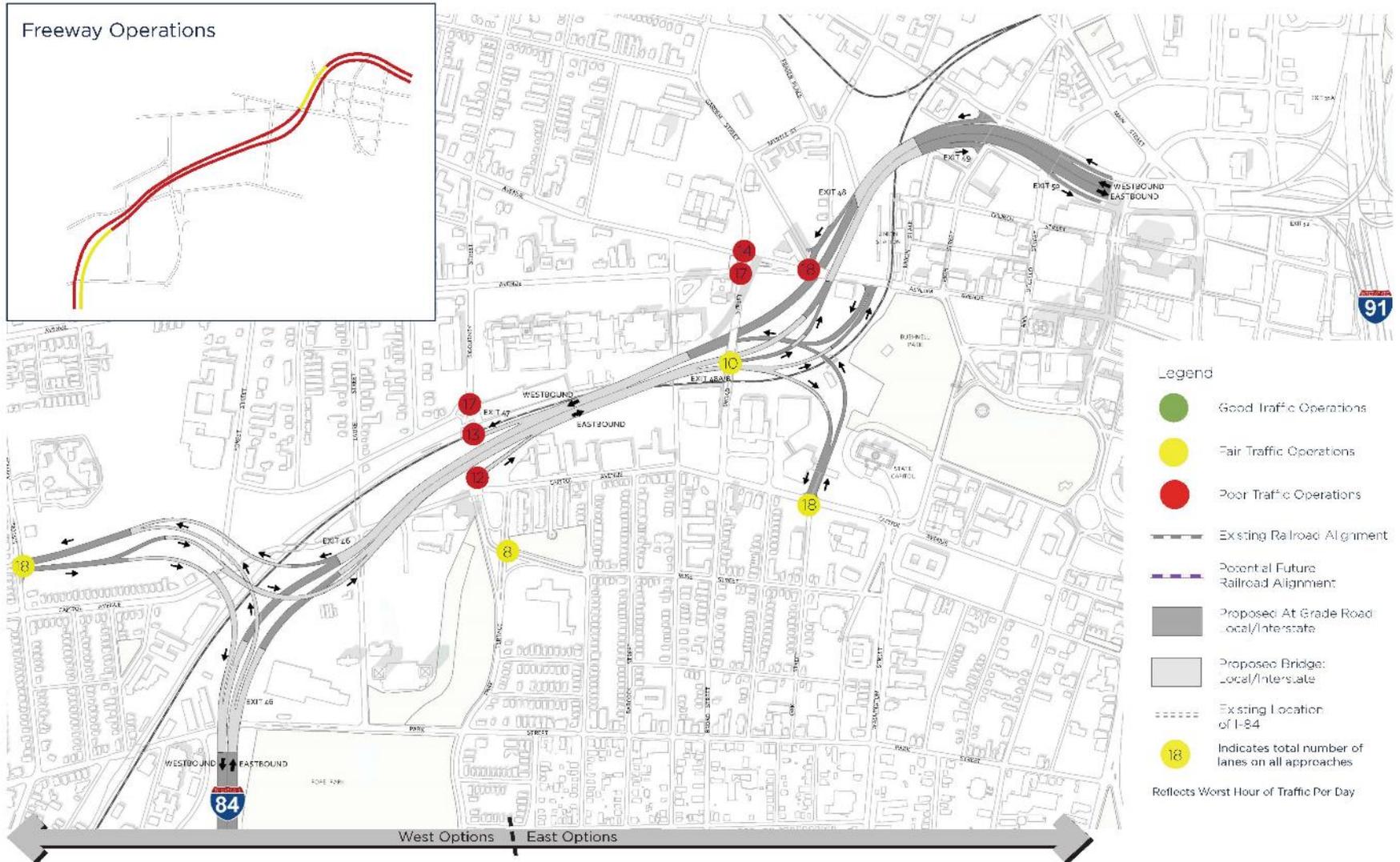
- Incorporating data and information into the traffic model
- Balancing intersection lanes with walkability / bikeability





EXISTING CONDITIONS

Intersection Operation

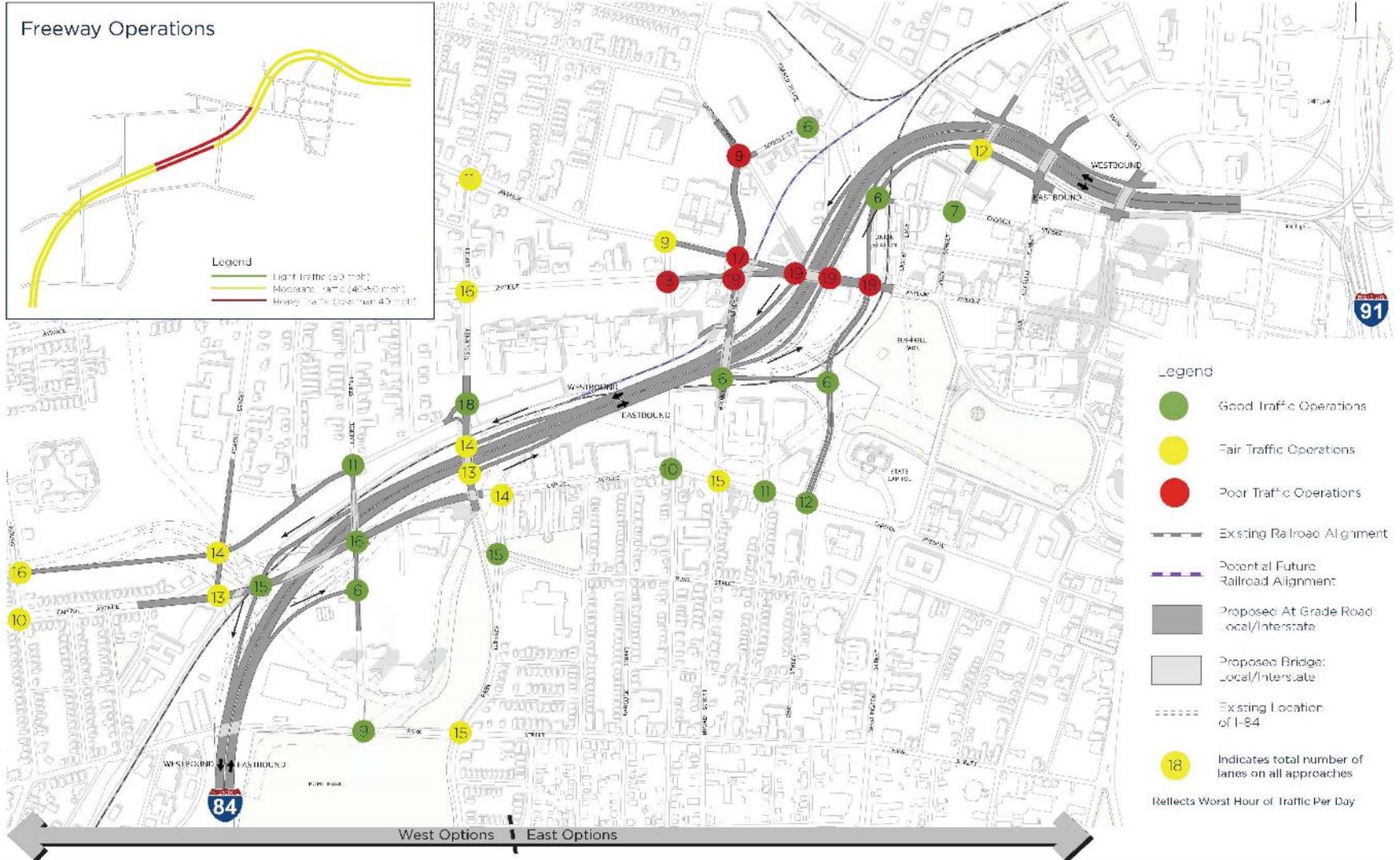




PRELIMINARY TRAFFIC ANALYSIS

ALTERNATIVE 3A: W3-2/E2 (S) Lowered

Intersection Operation



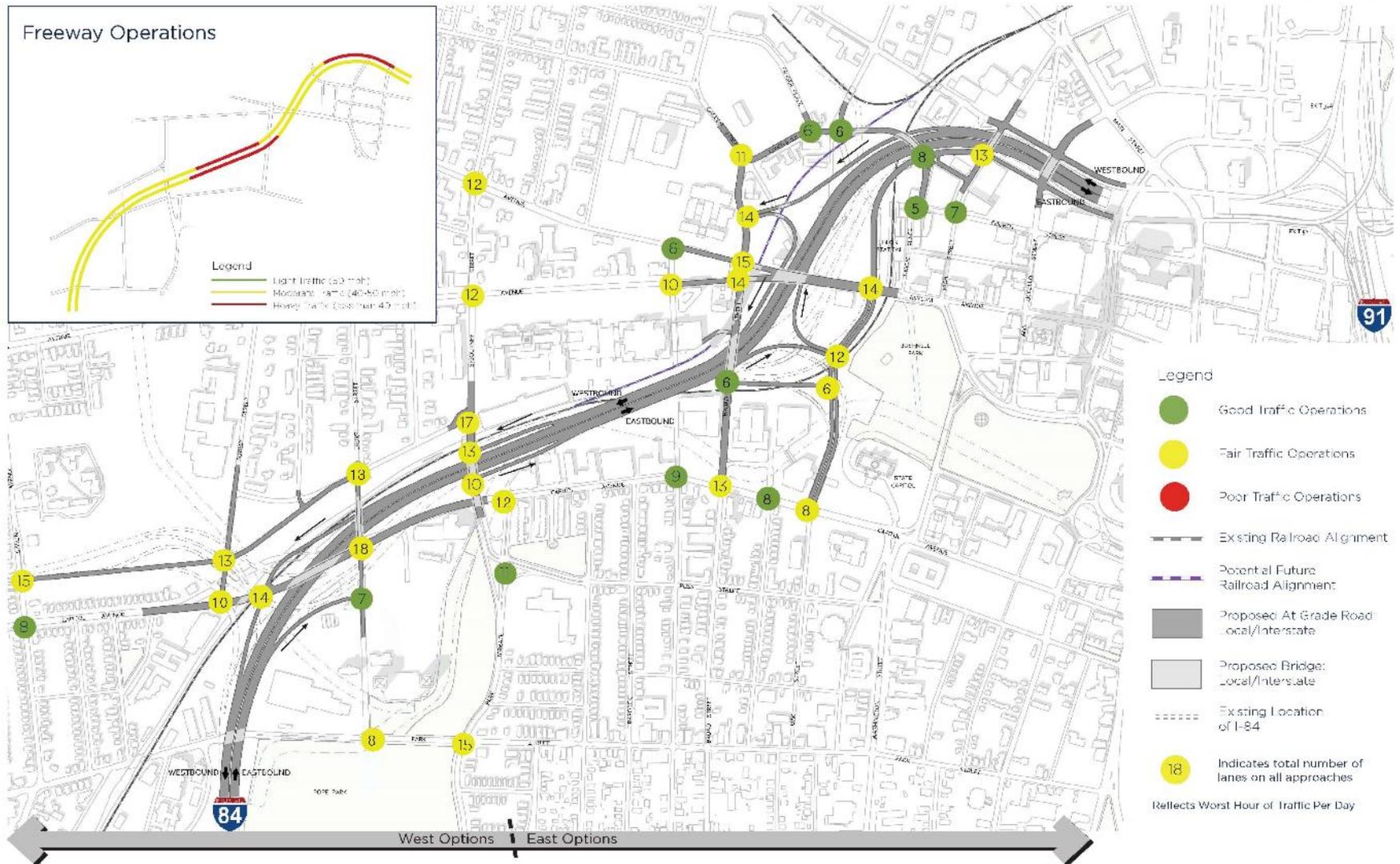
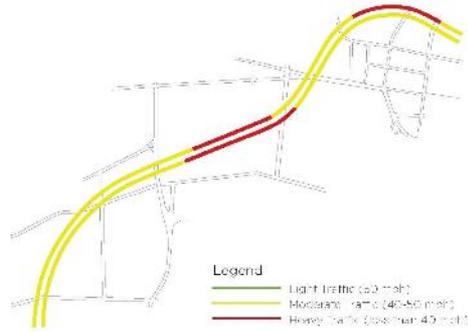


PRELIMINARY TRAFFIC ANALYSIS

ALTERNATIVE 3B: W3-2/E2 (S) Lowered

Intersection Operation

Freeway Operations

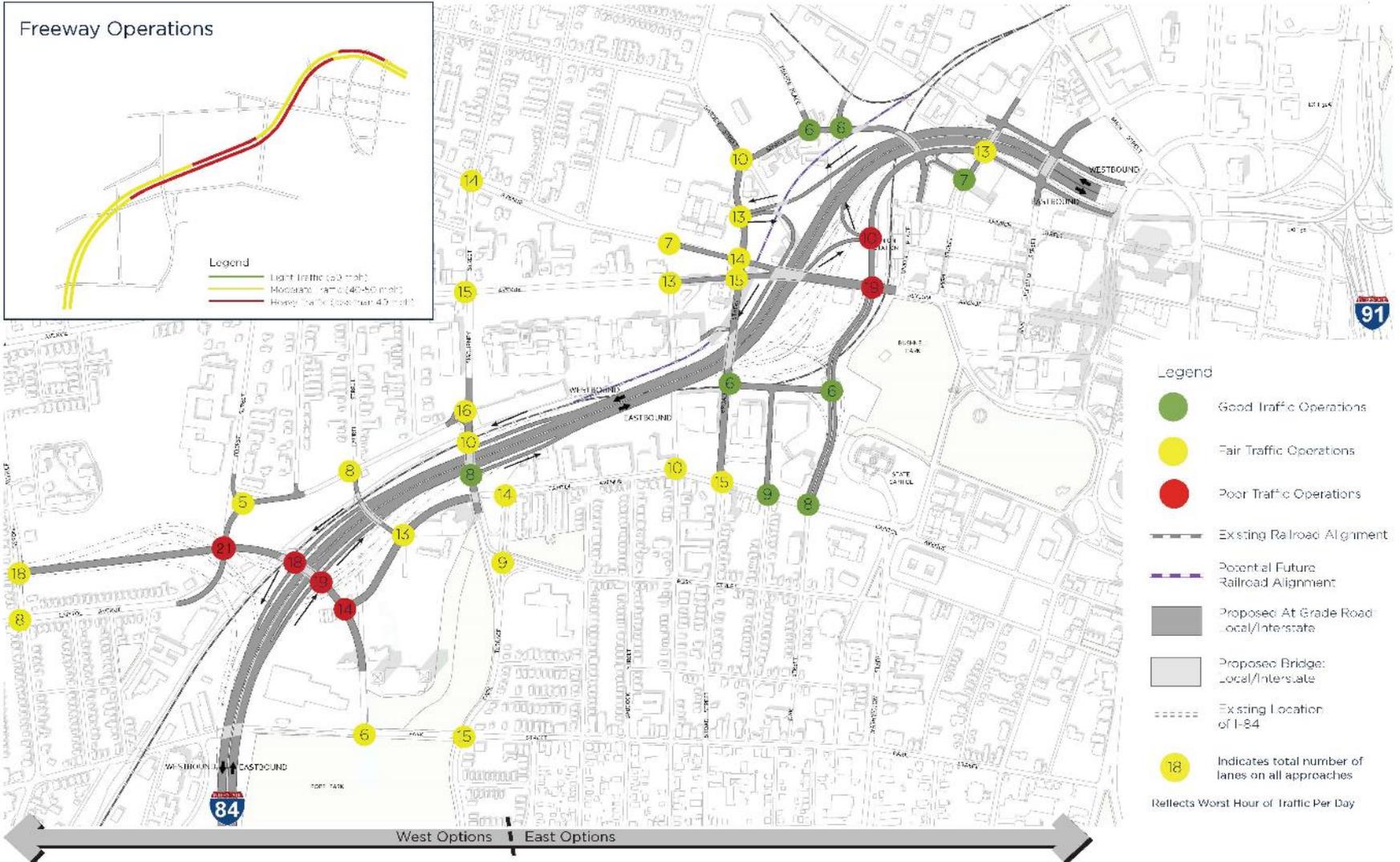




PRELIMINARY TRAFFIC ANALYSIS

ALTERNATIVE 3B: W1/E4 (S) Lowered

Intersection Operation



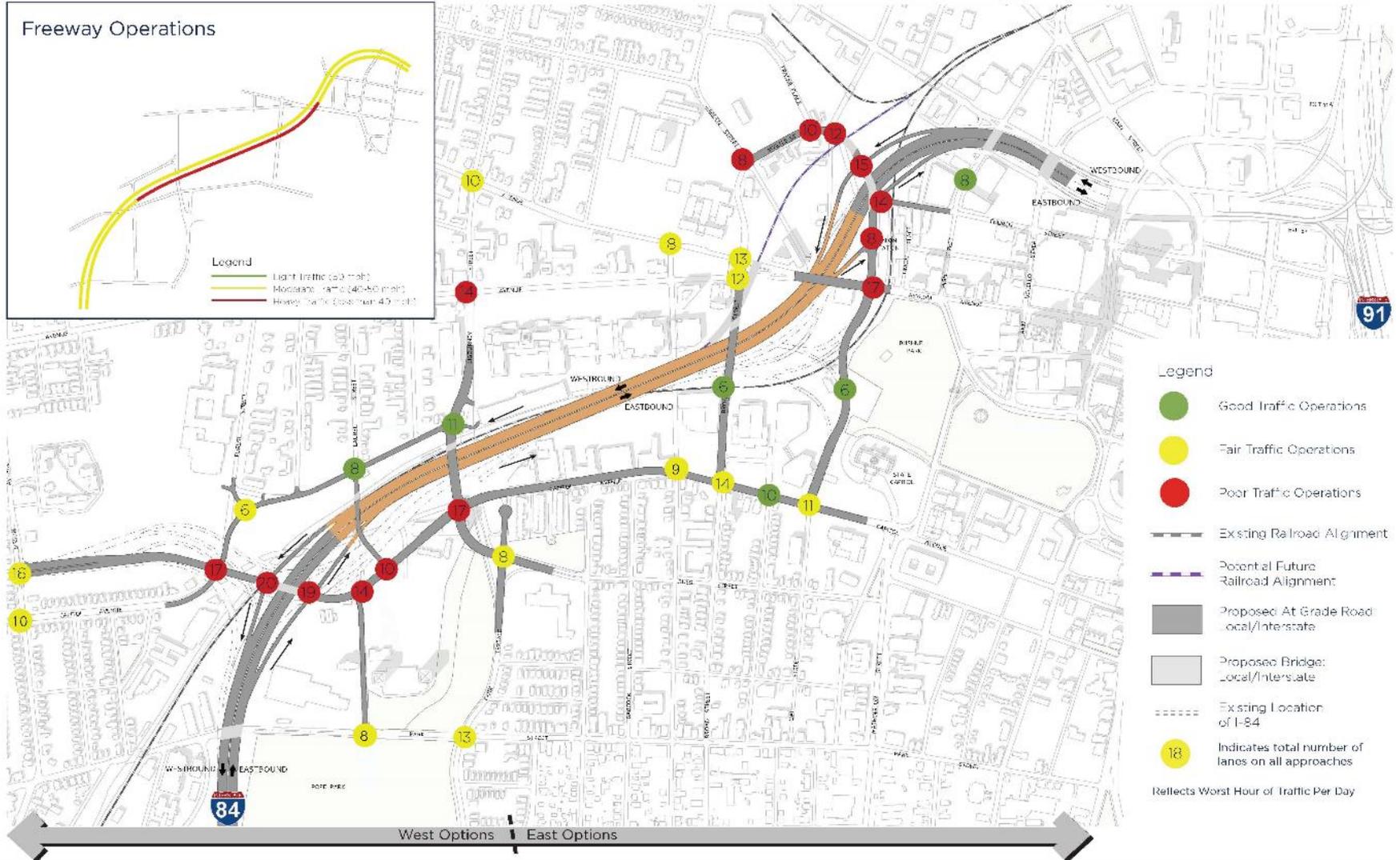
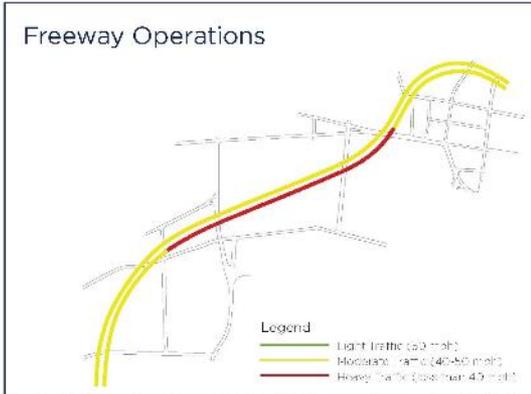


PRELIMINARY TRAFFIC ANALYSIS

ALTERNATIVE 4C Tunnel

Intersection Operation

Freeway Operations

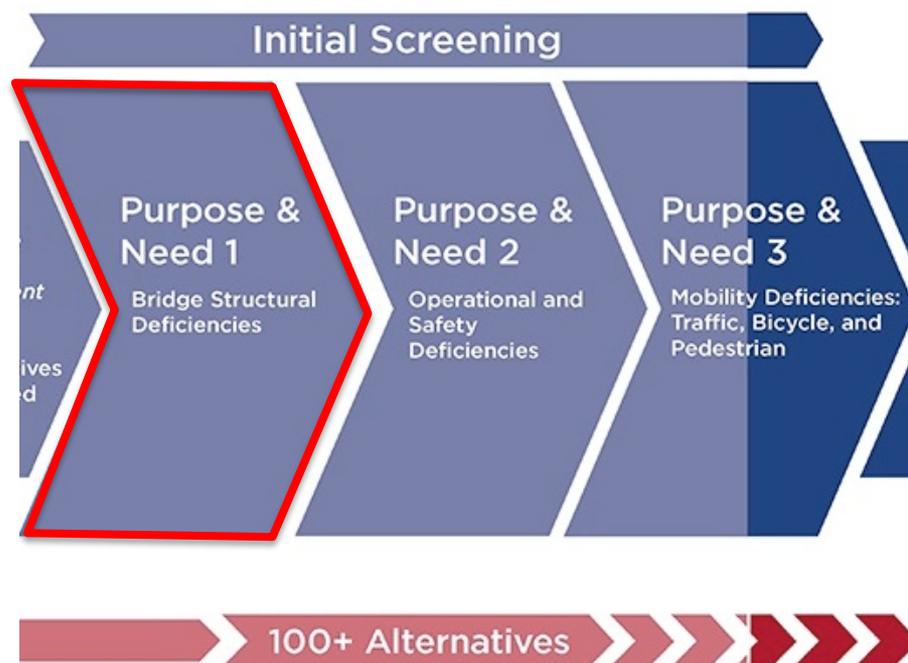




Alternatives Screening

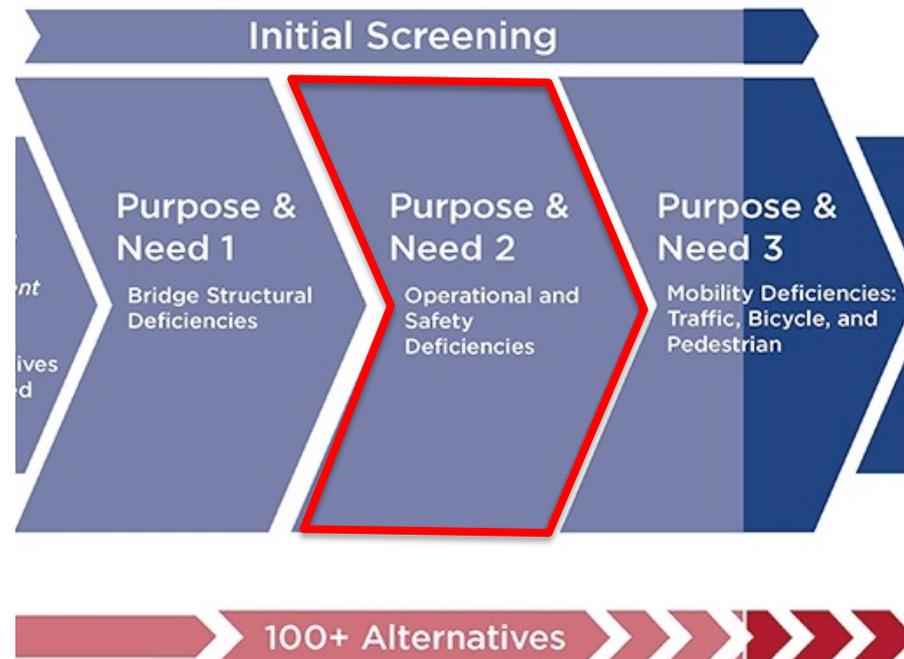
Initial Screening – Purpose and Need

Do the options address ***bridge structure deficiencies***?



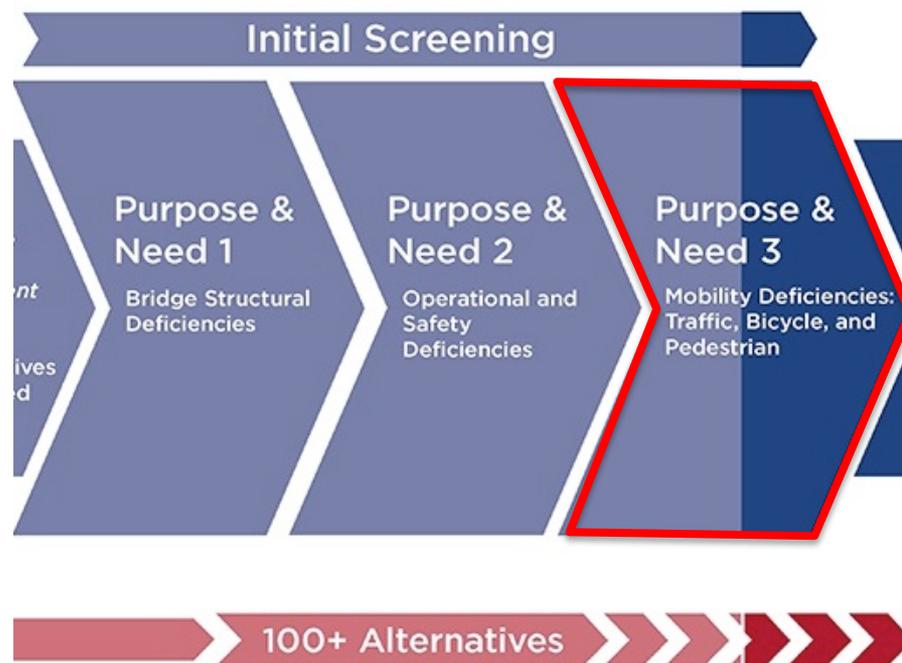
Initial Screening – Purpose and Need

Do the options address ***operational and safety deficiencies?***



Initial Screening – Purpose and Need

Do the options address *mobility deficiencies*, including *traffic performance and bicycle and pedestrian accommodations*?





Initial Screening Results

Three categories for all options:

1. **Eliminated**, because of critical flaws
2. **Set aside**, because of moderate/poor performance or more analysis needed
3. **Continue to be assessed**, because best performing

Initial Screening Results

Ability to Meet Purpose and Need	
Meets P&N	
Moderately Meets P&N	
Does Not meet P&N	
Critical Flaw	
More Analysis Needed	

Criteria	No Build	Eastern Options					Western Options										Tunnel									
		2A - Elevated		3A - At grade		3B - At grade			3C			Alternative 2/3							4C							
		E3		E5(S)		E2(S)	E3(S)	E4(S)	E1(S)	E2(S)	W1	W2	W3-1	W3-2	W3-3	W4		W5		W6-1	W6-2	W7				
Purpose & Need																										
Bridge Structure Deficiencies																										
Mainline Traffic Performance																										
Safety Considerations																										
Local Road Traffic Performance																										
Bike/Ped Accommodations																										
Other Considerations																										
Changes to Travel Patterns																										
Permit Feasibility																										
Impacted Buildings																										
Construction Costs																										

Ten options eliminated due to critical flaws:

- Various options in 2A, 3A, and 3B because of traffic performance (8 total)
- Alternatives 4A and 4B because of property impacts (2 total)



Initial Screening Results

Ability to Meet Purpose and Need	
Meets P&N	
Moderately Meets P&N	
Does Not meet P&N	
Critical Flaw	
More Analysis Needed	

Criteria	No Build	Eastern Options				Western Options							Tunnel								
		2A - Elevated	3A - At grade		3B - At grade	3C	Alternative 2/3														
		E3	E5(S)		E2(S)	E3(S)	E4(S)	E1(S)	E2(S)	W1	W2	W3-1	W3-2	W3-3	W4	W5	W6-1	W6-2	W7	4C	
Purpose & Need																					
Bridge Structure Deficiencies																					
Mainline Traffic Performance																					
Safety Considerations																					
Local Road Traffic Performance																					
Bike/Ped Accommodations																					
Other Considerations																					
Changes to Travel Patterns																					
Permit Feasibility																					
Impacted Buildings																					
Construction Costs																					

11 options set aside for now:

- Alternative 2A: E3 because of traffic performance (1 total)
- Alternative 3C because alignment is contingent on closure (2 total)
- Various western options because of moderate/poor traffic performance and one east/west connection (7 total)
- Alternative 4C because of traffic performance / costs (1 total)



Initial Screening Results

Ability to Meet Purpose and Need	
Meets P&N	Green
Moderately Meets P&N	Yellow
Does Not meet P&N	Red
Critical Flaw	Black
More Analysis Needed	White

Criteria	
Purpose & Need	
Bridge Structure Deficiencies	Green
Mainline Traffic Performance	Red
Safety Considerations	Yellow
Local Road Traffic Performance	Yellow
Bike/Ped Accommodations	White

E5(S)
Green
Green
Yellow
Yellow
Green
White

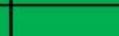
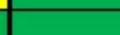
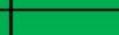
E2(S)	E3(S)	E4(S)
Green	Green	Green
Green	Green	Green
Yellow	Yellow	Yellow
Yellow	Yellow	Yellow
Green	Green	Green
White	White	White

W3-1	W3-2	W3-3
Green	Green	Green
Green	Green	Green
Green	Green	Yellow
Yellow	Green	Green
White	White	White

Started with 100+ alternative combinations

Initial Screening Results

Ability to Meet Purpose and Need	
Meets P&N	
Moderately Meets P&N	
Does Not meet P&N	
Critical Flaw	
More Analysis Needed	

Criteria	No-Build	Eastern Options				Western Options		
		Alt. 3A	Alternative 3B – At grade			Alternative 2/3		
		E5(S)	E2(S)	E3(S)	E4(S)	W3-1	W3-2	W3-3
Purpose & Need								
Bridge Structure Deficiencies								
Mainline Traffic Performance								
Safety Considerations								
Local Road Traffic Performance								
Bike/Ped Accommodations								

- Twelve build alternatives will be further assessed
 - Four eastern options
 - Three western options
- No-build alternative will continue to be assessed



Alternative 3A: Option E5(S)



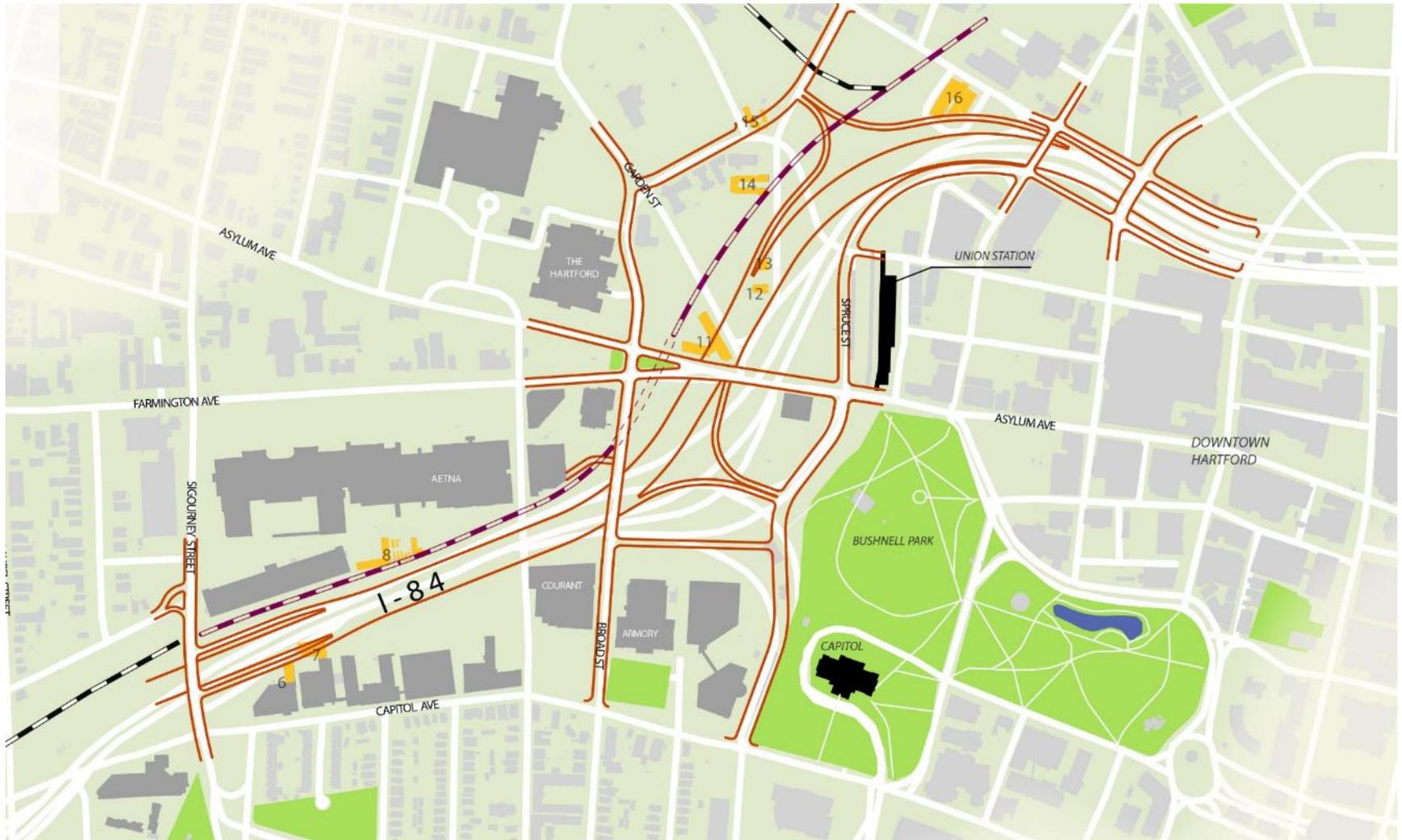


Alternative 3B: Option E2(S)





Alternative 3B: Option E3(S)





Alternative 3B: Option E4(S)





Alternative 3A/3B: Option W3-1





Alternative 3A/3B: Option W3-2





Alternative 3A/3B: Option W3-3



Potential Developable Area

- West of Sigourney Street: 10 – 24 acres +/-
- East of Sigourney Street: 5 - 20 acres +/-





Construction Considerations

Conventional Construction

- Typically has longer duration
- Bridge elements are constructed on site
- Requires temporary construction, increasing cost



Accelerated Construction Technologies

- Typically has shorter duration
- Many elements are constructed offsite, called prefabrication
- Less / no temporary construction, and associated costs



Example of ACT: I-84 Southington, CT



Maintaining Traffic During Construction

- Influences alignment (on vs. off alignment)
- Affects construction approach

Alignment 3B



Alignment 3C

Section or Lane Closures on I-84

- Expedite construction
- Minimize / avoid property impacts
- Reduce community / economic impacts
- Reduce costs
- Save time



Transit Options

- Gather ridership data
 - Transit infrastructure capacity (bus and rail)
 - Percentage who will take transit
- Promote transit/reduce SOV
- Free/reduced fares?



Case Study: SmartFix40

- 2.5 miles of I-40 in Knoxville, TN
- Carries 103,000 vehicles/day
- Left-hand on-ramps/short weaves



Case Study: SmartFix40

- Conducted extensive public outreach
- Improved local road network
- Closed I-40 for 14 months for accelerated construction (versus 3+ years estimated for conventional construction)



Case Study: SmartFix40

What did they build?

- One cut-and-cover tunnel
- 25 bridges
- 48 retaining walls
- 7,500 linear feet of noise walls





Case Study: SmartFix40

*“The number one reason for closing the interstate...is time, but by rerouting traffic around the construction site, **we’re also proving safer conditions for motorists and workers.** This project will be the benchmark for future urban projects.”*

- TDOT Commissioner

*“It was one of the first projects where TDOT took a step back and really considered the total impact and user costs, not just the construction costs. **‘What is this project going to cost the total economy if construction dragged out for another couple of years?’**”*

-Project Manager

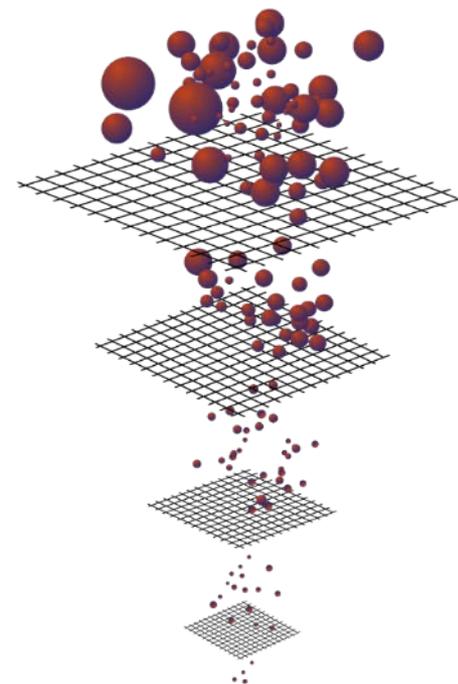


Next Steps

Alternatives Screening

- Add additional options to 3-D model
- Refine interactive alternatives analysis webpage
- Further assess options

150+ Alternatives



Preferred Alternative

Bicycle and Pedestrian Considerations

- Walking and bicycling are methods of transportation
- Regional routes (e.g. East Coast Greenway) are important
- Improve north-south connections on Broad and Sigourney Streets
- Create reconnections at Flower Street, Myrtle Street, and others for cross-town routes



Bicycle and Pedestrian Considerations

- Narrow existing roadways where appropriate
- Design facilities for all users, ages, abilities
- Create walkable intersections
- Add treatments and amenities





Upcoming Outreach



Upcoming Open Planning Studios

- 11/15 at HPL, Mark Twain Branch (1:30-7 PM)
- 12/10 at Conference of Churches (12-8 PM)



Upcoming Public Meetings

- Three meetings in various locations
- East / west locations target commuters / travelers
 - 10/20 at Whiton Memorial Branch Library, Manchester
 - 10/25 at Elmwood Community Center, West Hartford
 - 10/29 at Hartford Public Library, Hartford
- Discussion to include the refining of alternatives





Thank you for your time!

Your I-84 Hartford Project Team