

# The New Mix: Planning for the Long-term Future of the I-84 - Route 8 “Mixmaster” Interchange



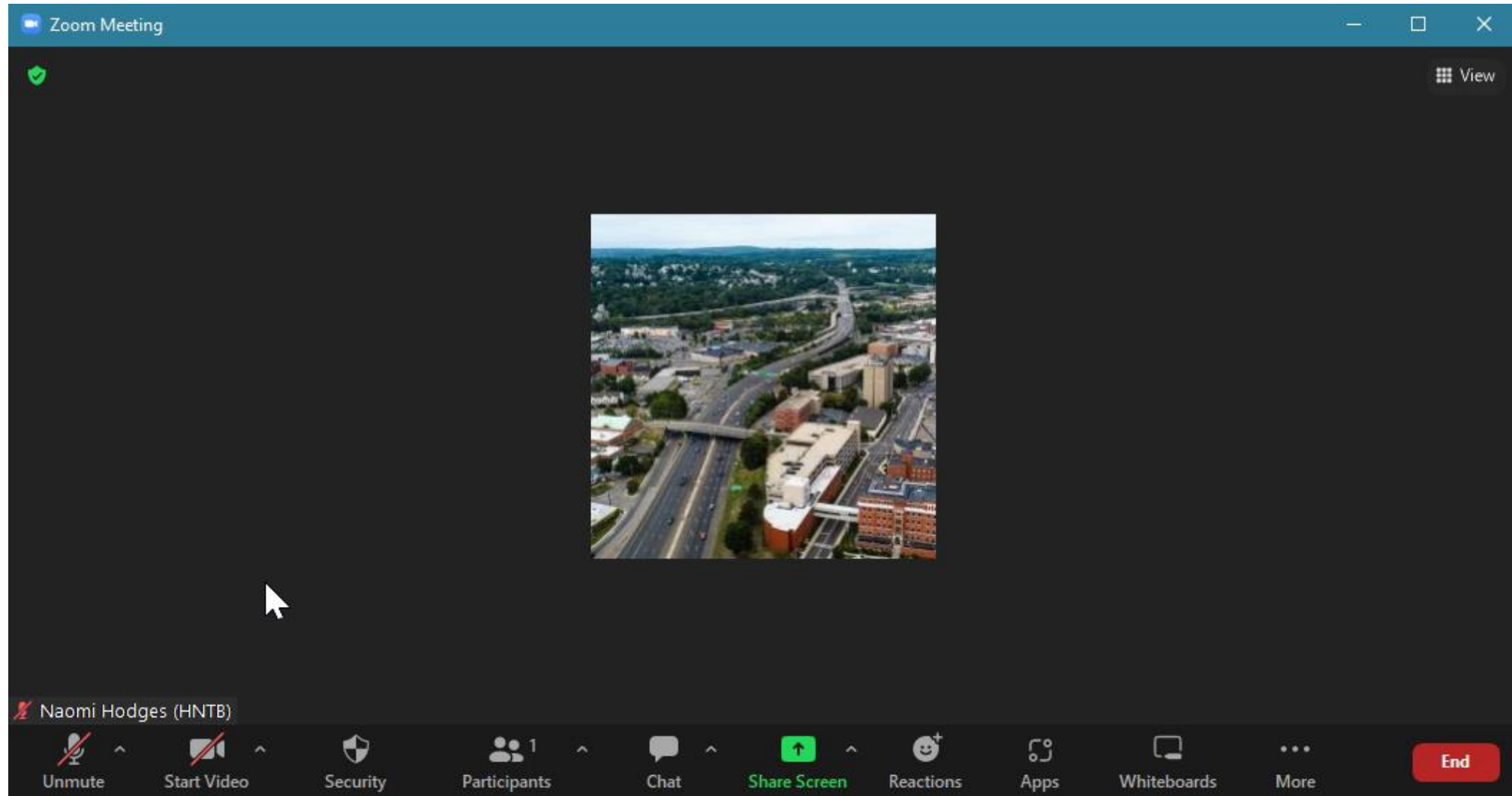
**HNTB**

**84**new  
mix

# Welcome!



# How To Zoom: Camera, Mute, Chat, & Raise Hand



# How To Zoom: Select Real-Time Translation

Real Time Translation:

# Zoom Meeting Protocols

To ensure meetings are productive, friendly, and efficient, we request that attendees adhere to the following:

- Use respectful language & standard, professional meeting decorum.
- Remain muted when not speaking.
- Hold questions until after the presentation.
- Please note that if a backlog of pending questions and/or comments occurs we will ask that attendees limit initial comments to 2 minutes so that everyone has a chance to speak. Once everyone has had the opportunity to speak, we will then allow attendees who have additional comments more time.



# Title VI - Civil Rights

No Person shall, on the basis of race, color or national origin, be excluded from participation or subject to discrimination in the development of this project.

- Civil Rights flyer available:  
<https://bit.ly/CTDOTCivilRights>
- Demographic Survey appreciated:  
<https://bit.ly/CTDOT-Feedback>



*CTDOT may adopt or incorporate Planning Products from this PEL Study into a federal or state environmental review process, pursuant to Title 23 U.S.C. § 168(d)(4). The project is formally identified as State Project No. 0151-0331.*





# The **New Mix** Leadership Team



## Connecticut Department of Transportation

- Michael N. Calabrese, PE, Division Chief
- Nilesh Patel, PE, Principal Engineer
- Jonathan Dean, PE, Project Manager
- Joe Belrose, EIT, Project Engineer

## HNTB Corporation

- Jacob Argiro, PE, Project Manager
- David Schweitzer, PE, Deputy Project Manager
- Chris Fagan, PE, Project Engineer
- Naomi Hodges, Environmental Lead
- Anna Mariotti, Public Information & Involvement



# Agenda



- Introduction
- Recap of Public Meeting No. 1
- Universe of Alternatives
- Level 1 Screening Criteria
- Next Steps
- Questions & Comments

**84**new  
mix





# Recap of Public Meeting No. 1

# Context for the New Mix Project

*Separate from the Mixmaster Rehabilitation project, the New Mix Project is planning for the long-term future of the I84-Rt. 8 interchange, the “Mixmaster,” when it reaches the end of its serviceable lifespan in about 20 years.*

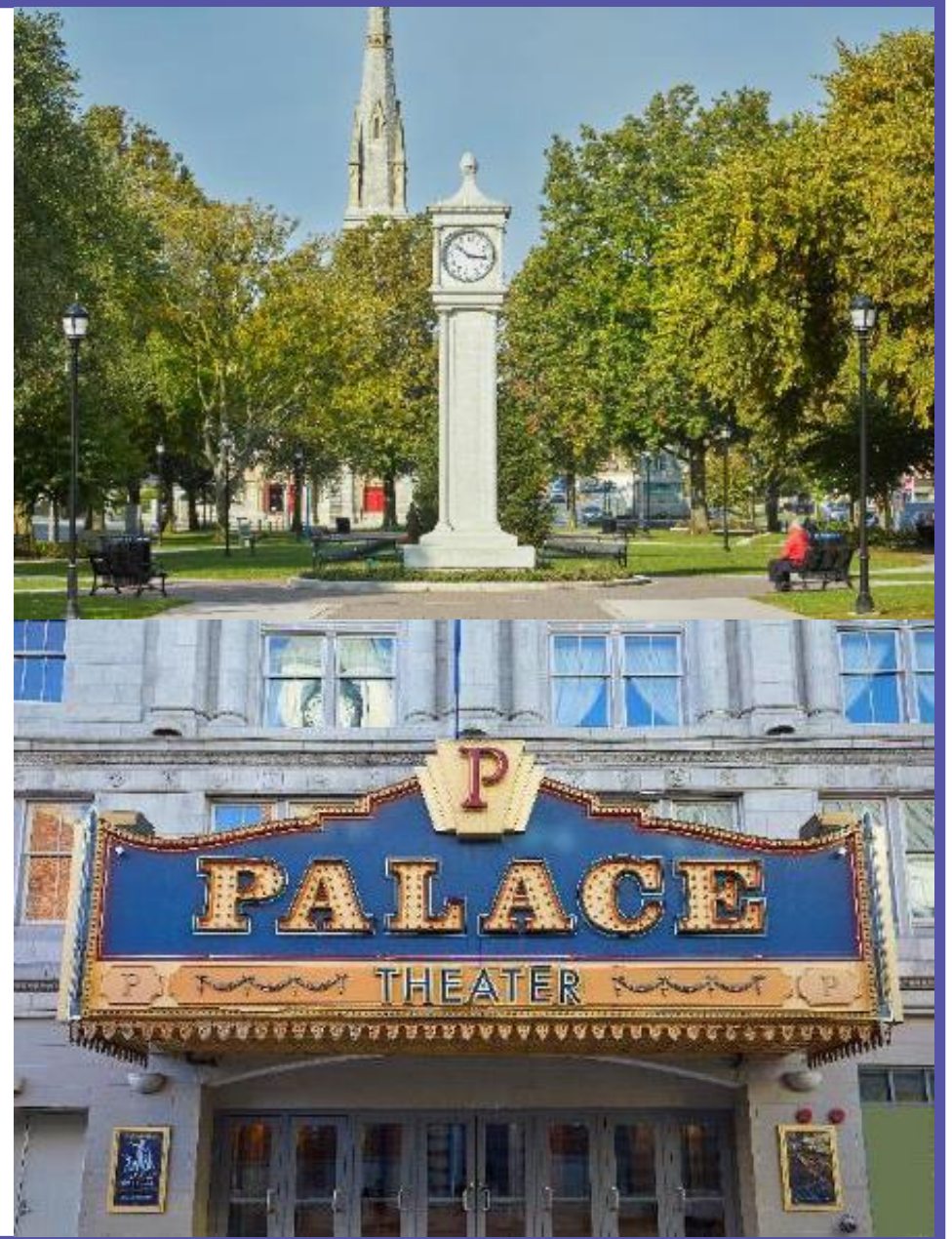
The existing interchange is:

- Aging, components reaching end of serviceable lifespan
- Not designed to current safety standards (sight lines, curves, lack of breakdown lanes, left exits, etc.)
- Stacked structures cause repairs and maintenance to be costly, lengthy, and extremely disruptive to traffic flow



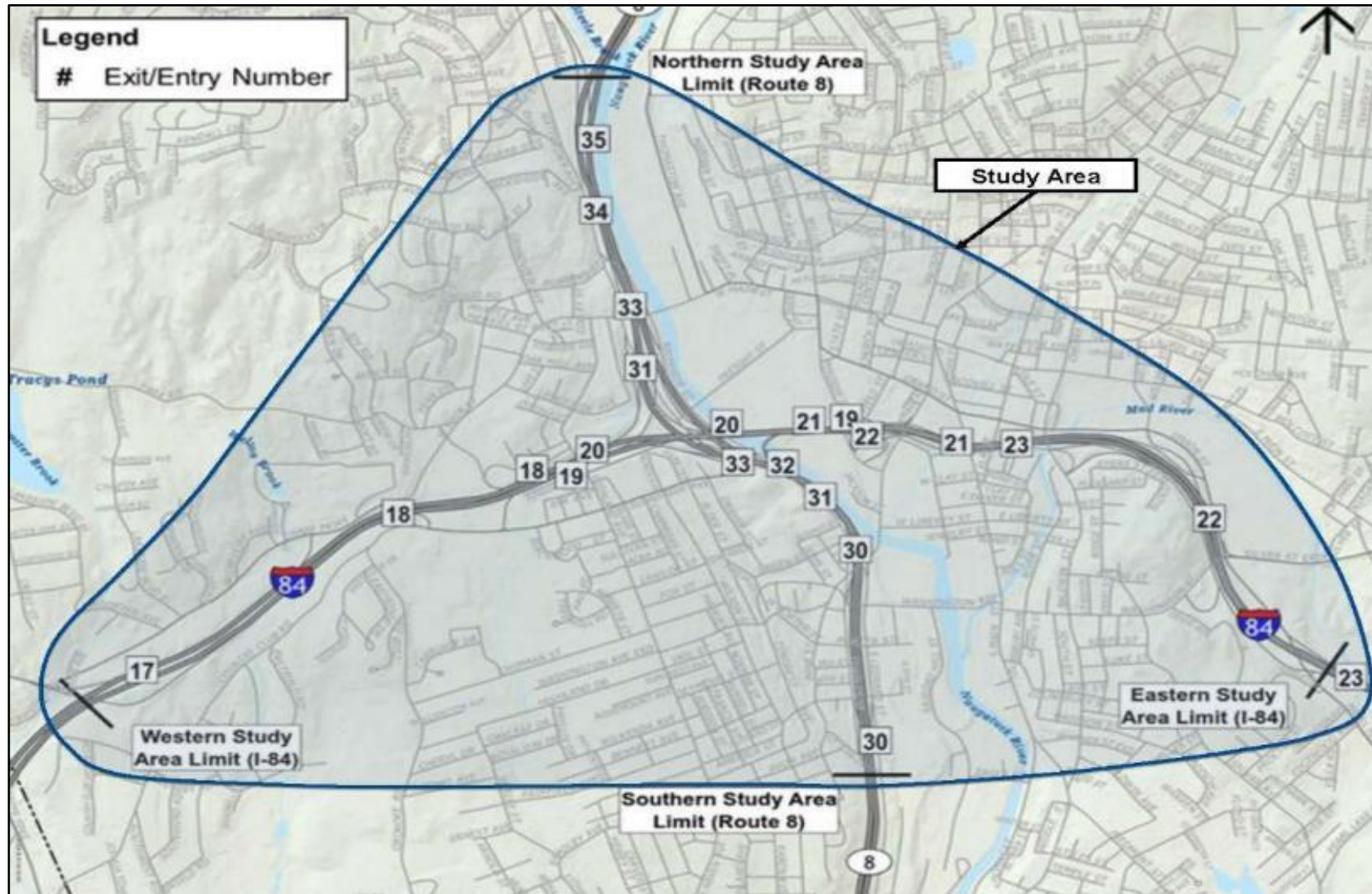
# The New Mix Project

- Long-term plan for the future of the Mixmaster
- Projects will occur over time
- Analyze rehabilitation and replacement options that:
  - Modernize
  - Improve safety & functionality
  - Improve function of local road network & the interchange
  - Reduce congestion
  - Align with economic development & community plans
- CTDOT is using the federally recognized Planning and Environmental Linkages (PEL) approach for the study which will be used to inform the subsequent NEPA process





# The New Mix Study Area





# High Level Overview of This Process

## PEL Study

- Links transportation planning and environmental / community concerns
- Will identify a Range of Reasonable Alternatives

Today through 2023

## National Environmental Policy Act (NEPA) Process

- The Environmental Review Process for compliance with environmental laws
- Will identify a Preferred Alternative

2-4 years

## Design and Permitting

- Advanced design of the *Preferred Alternative* and associated break out projects
- State and Federal Permit Procurement

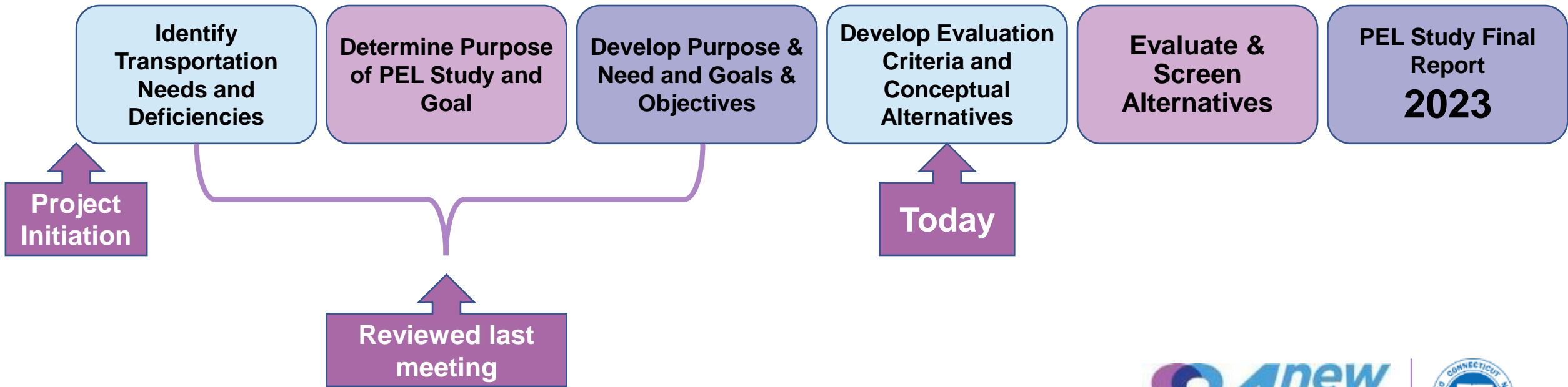
4-6 years

## Construction

- Includes the Early-Action, Near-term, and Long-term breakout projects
- Anticipated completion in 2045

Initiating early 2030s

# The **New Mix** PEL Study Progress



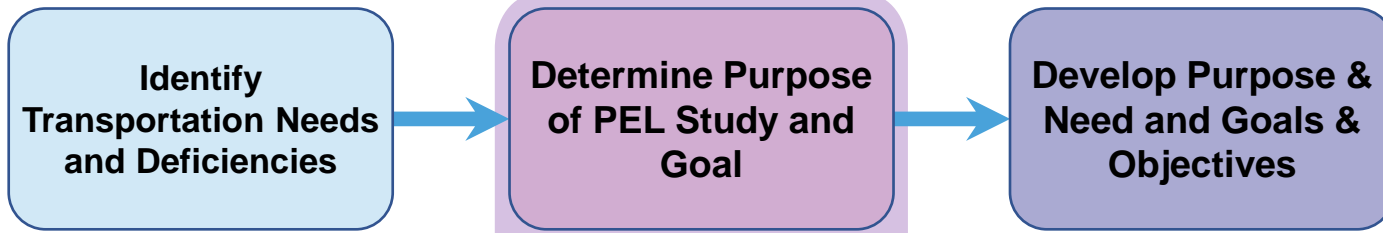
Identify  
Transportation  
Needs and  
Deficiencies

Determine Purpose  
of PEL Study and  
Goal

Develop Purpose &  
Need and Goals &  
Objectives

- Transportation issues, a.k.a. needs and deficiencies
  - Structural
  - Geometric
  - Operational
- Multimodal, community, cultural, social, and environmental context features
  - The built environment
  - The natural environment





***CTDOT desires to establish a vision, or master plan, for the interchange that addresses and balances the regional importance of the Mixmaster for commuter traffic and motor freight users, while also improving multi-modal services, local connections and livability within the city of Waterbury to enhance and support social equity and economic vitality.***



Identify  
Transportation  
Needs and  
Deficiencies

Determine Purpose  
of PEL Study and  
Goal

Develop Purpose &  
Need and Goals &  
Objectives

### Community Q&A

As part of the New Mix project, the Connecticut Department of Transportation asked people about their experiences with the Mixmaster, the I-84/Route 8 interchange, thoughts on its community impact, and ideas for its future. Here is what we heard from the Waterbury community. What do you think?  
Share your thoughts with us at [newmixwaterbury.com](http://newmixwaterbury.com)



Do you feel there is a need for I-84/Route 8 transportation improvements? If so, what are the problems?

Yes. Needs more lanes, breakdown lanes, and to eliminate left-hand exits.

Yes, provide three lanes to Straits Tpke. and beyond, utilizing the existing double decker highway design.

Yes. Traffic flow, bad road surfaces, reckless drivers.

Yes, there are various changes that need to be made to accommodate the amount of traffic that is being seen in the Mixmaster.

Yes. The Mixmaster should be unstacked and the number of continuous through lanes should be increased to three in each direction.

The constant upkeep.

I-84 should be a three lane minimum from Danbury to Waterbury.

Yes, improvements are needed. Both as a Waterbury resident and the Director of Public Works, traffic does not flow smoothly through the entire area.

Hopefully the biggest problem is that the traffic going through the city has no way to go through it without merging and dealing with cross traffic from left and right exits and entrances. A through lane might be warranted.

Yes--overcrowding.

No, but it's been over a year since the Route 8 northbound exit to 84 has been open, it should have been opened already.

No left exits!

Traffic jams, difficulty with some exits, but traffic volume is most important.

Traffic jams.

“Traffic jams, difficulty with some exits, traffic volume is most important”

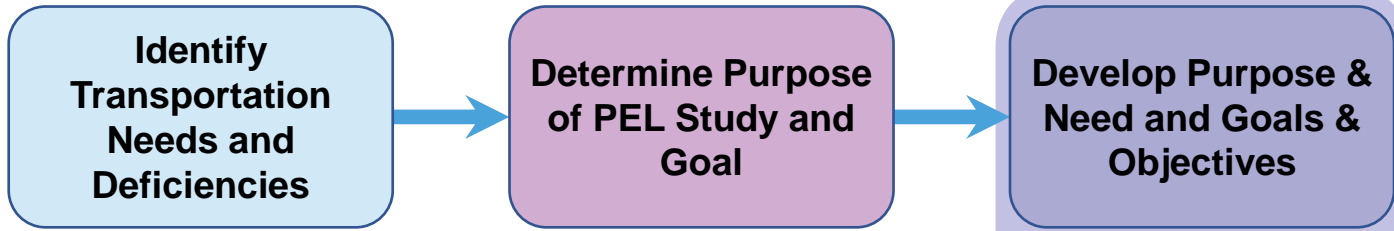
“Yes Very narrow lanes. Entrances and exit very dangerous”

“To many close cars and [too] many **close exits and entrances** in a very close span”

“Needs more lanes and **breakdown lanes** and eliminate cross traffic to exit”

“Yes. Ramp density is too high, **left entrances/exits are dangerous, sharp curvature** on some ramps. Also, the highway is a **barrier in the community.**”

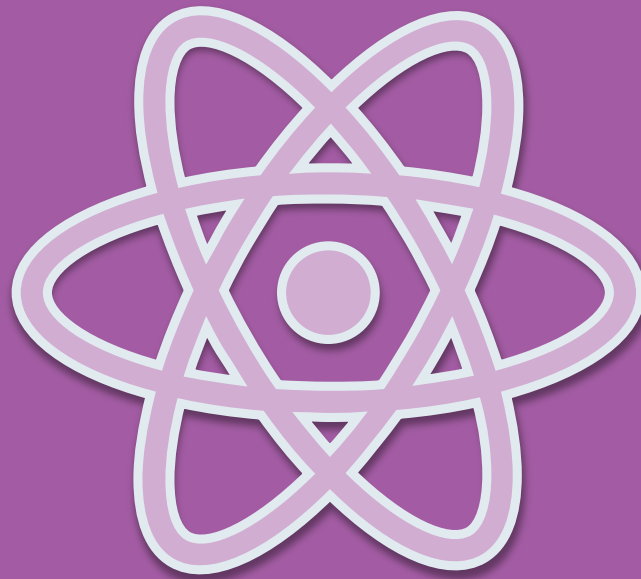
## Survey Feedback



NEEDS (problems)	PURPOSE (solutions)
Structural Deficiencies	To improve I-84/Route 8 bridge conditions.
Geometric Deficiencies	To improve I-84/Route 8 roadway conditions.
Operational (Traffic) Deficiencies (including congestion)	To improve the level of service of I-84/Route 8 and associated local road network.
GOALS & OBJECTIVES (Intended Outcomes)	
<ul style="list-style-type: none"> <li>• Improve system performance;</li> <li>• Reduce congestion;</li> <li>• Reduce crash rates;</li> <li>• Maintain critical system linkages in Connecticut and the Northeast;</li> <li>• Facilitate connectivity with Waterbury through the local road network including multimodal travel;</li> <li>• Provide connections to the Naugatuck River and Greenway;</li> <li>• Improve the local roadway network;</li> <li>• Reduce interchange complexity;</li> </ul>	<ul style="list-style-type: none"> <li>• Enhance mobility equity and safety for bicyclists and pedestrians;</li> <li>• Integrate the Project with ongoing City projects;</li> <li>• Improve access to Downtown and key destinations;</li> <li>• Strengthen surrounding neighborhoods as gateways to the City's Central Business District (CBD);</li> <li>• Support City revitalizing goals of the CBD;</li> <li>• Support opportunities to improve equitable access to multimodal facilities;</li> <li>• Avoid, minimize or mitigate potential Project consequences to the environment;</li> </ul>

***May be further refined to incorporate issues and data identified during stakeholder and public involvement processes including coordination with project partners, agencies, and the public.***

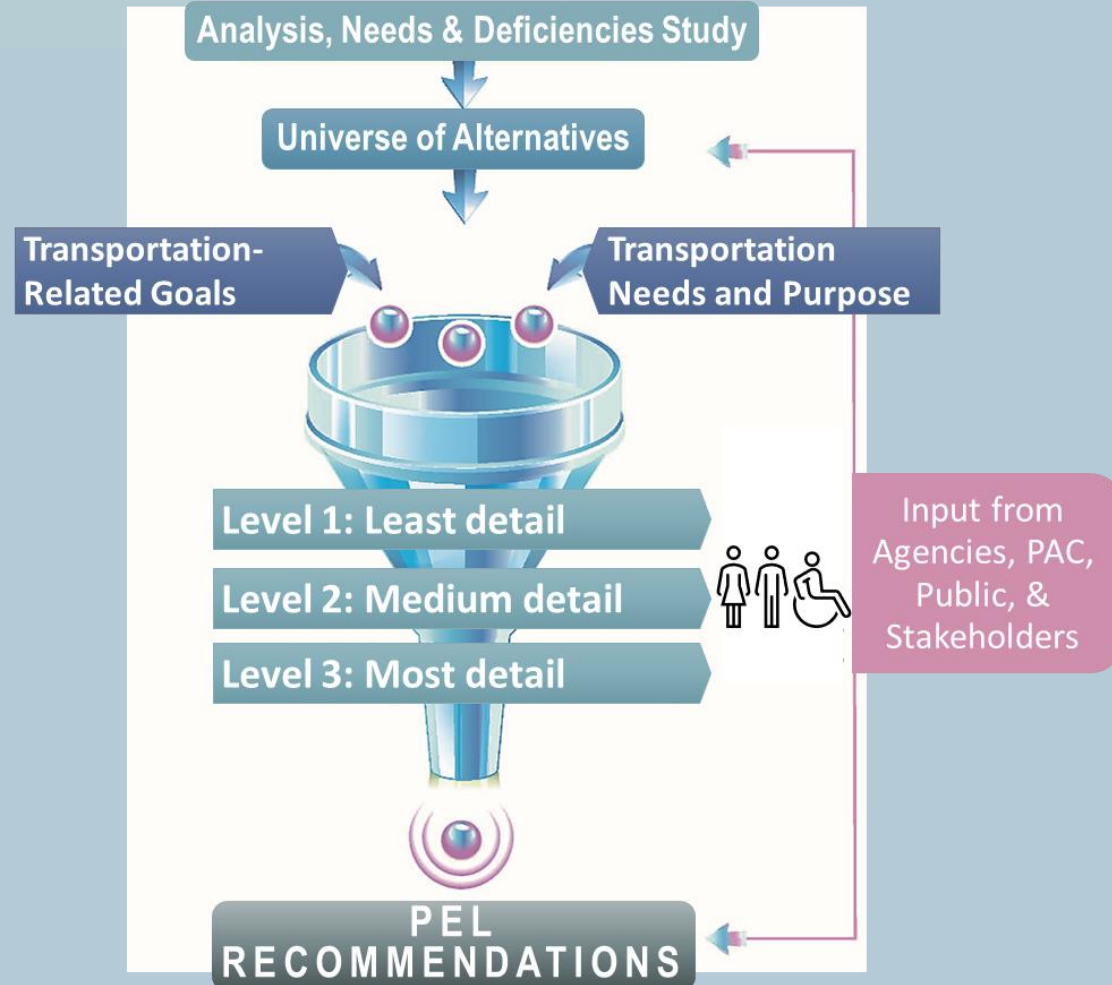
# *New Mix* PEL Study Universe of Alternatives



Develop Evaluation  
Criteria and  
Conceptual  
Alternatives

Evaluate &  
Screen  
Alternatives

PEL Study Final  
Report  
**2023**



## *New Mix* PEL Process: Developing the Universe of Alternatives

- Identification of constraints and challenges
- Compliance of State and Federal design standards,
- Understanding of program / community needs
- Input from a diverse team of experts, and
- Determining evaluation criteria.



Develop Evaluation  
Criteria and  
Conceptual  
Alternatives

Evaluate &  
Screen  
Alternatives

PEL Study Final  
Report  
**2023**

Analysis, Needs & Deficiencies Study

Universe of Alternatives

Transportation-  
Related Goals

Transportation  
Needs and Purpose



## *New Mix* PEL Process: Developing the Universe of Alternatives

- Identification of constraints and challenges
- Compliance of State and Federal design standards,
- Understanding of program / community needs
- Input from a diverse team of experts, and
- Determining evaluation criteria.

# Constraints, Considerations, and Challenges

- **Natural Conditions**
  - Geography/Topography
  - Naugatuck River, Mad River, and other watercourses
- **Built/Human Conditions**
  - Downtown Waterbury
  - Industry
  - Railroad
  - Local Roadway
  - Neighborhoods
  - Environmental Justice Populations
  - Historic/Significant Landmarks (parks, public facilities)
  - Hazardous material sites
- **Previous, ongoing and planned projects/studies**
  - State
  - Regional
  - Local
- **Funding**
  - State / Federal grants





**WATERBURY, CT  
I-84/ROUTE 8 "MIXMASTER" INTERCHANGE  
EXISTING CONDITIONS**



**WATERBURY  
HOSPITAL**

**UNION  
STATION**

**RIVERSIDE  
CEMETERY**

**Four (4)  
Levels**

**NAUGATUCK  
RIVER**

**WATERBURY BRANCH  
LINE RAILROAD**

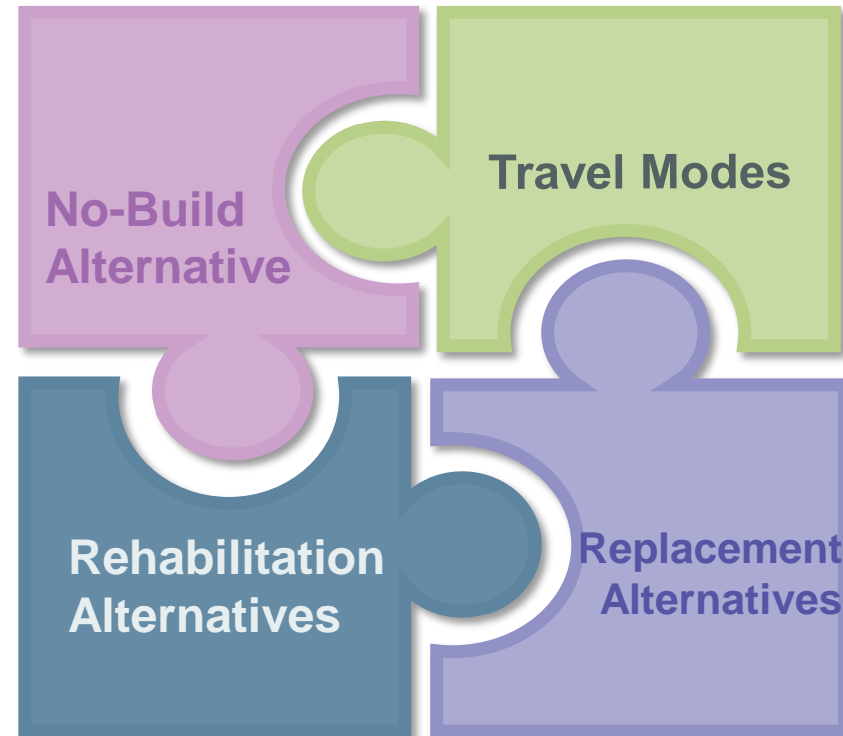


# Universe of Alternatives



The Study Team summarized and consolidated similar conceptual alternatives

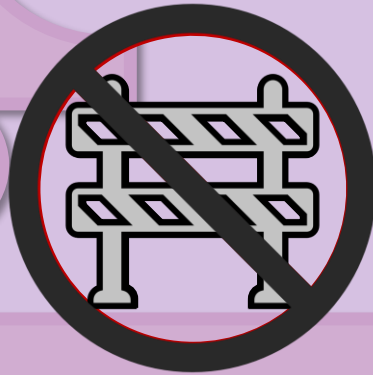
**The final Universe defined the following groups of alternatives:**





# The Universe of Alternatives: The No-Build Alternative and other Travel Modes

No-Build  
Alternative



**Baseline condition:** no improvements implemented other than those identified in Transportation Improvement Plans (e.g., safety and maintenance activities)

Travel Modes



No improvements implemented other than transit, rail, bicycle, pedestrian, and other modes of travel as potential solutions to the identified deficiencies.

# The Universe of Alternatives: Rehabilitation and Replacement Alternatives

## Rehabilitation Alternatives

Focus on the major rehabilitation (repair) of the existing stacked I-84 Structures over the Naugatuck River.

## Replacement Alternatives

Explores the full reconstruction of the Mixmaster on different alignments and connections between the mainlines.

# The Universe of Alternatives: Rehabilitation Alternatives



- ▶ Require 80+ year-old structures to remain.
- ▶ Complex/lengthy construction sequencing is needed.
- ▶ Concerns with return on investment (benefits vs. cost)

## NEEDS

Structural Deficiencies

Geometric Deficiencies

Operational Deficiencies

## PURPOSE

Improve bridge conditions.

Improve roadway conditions.

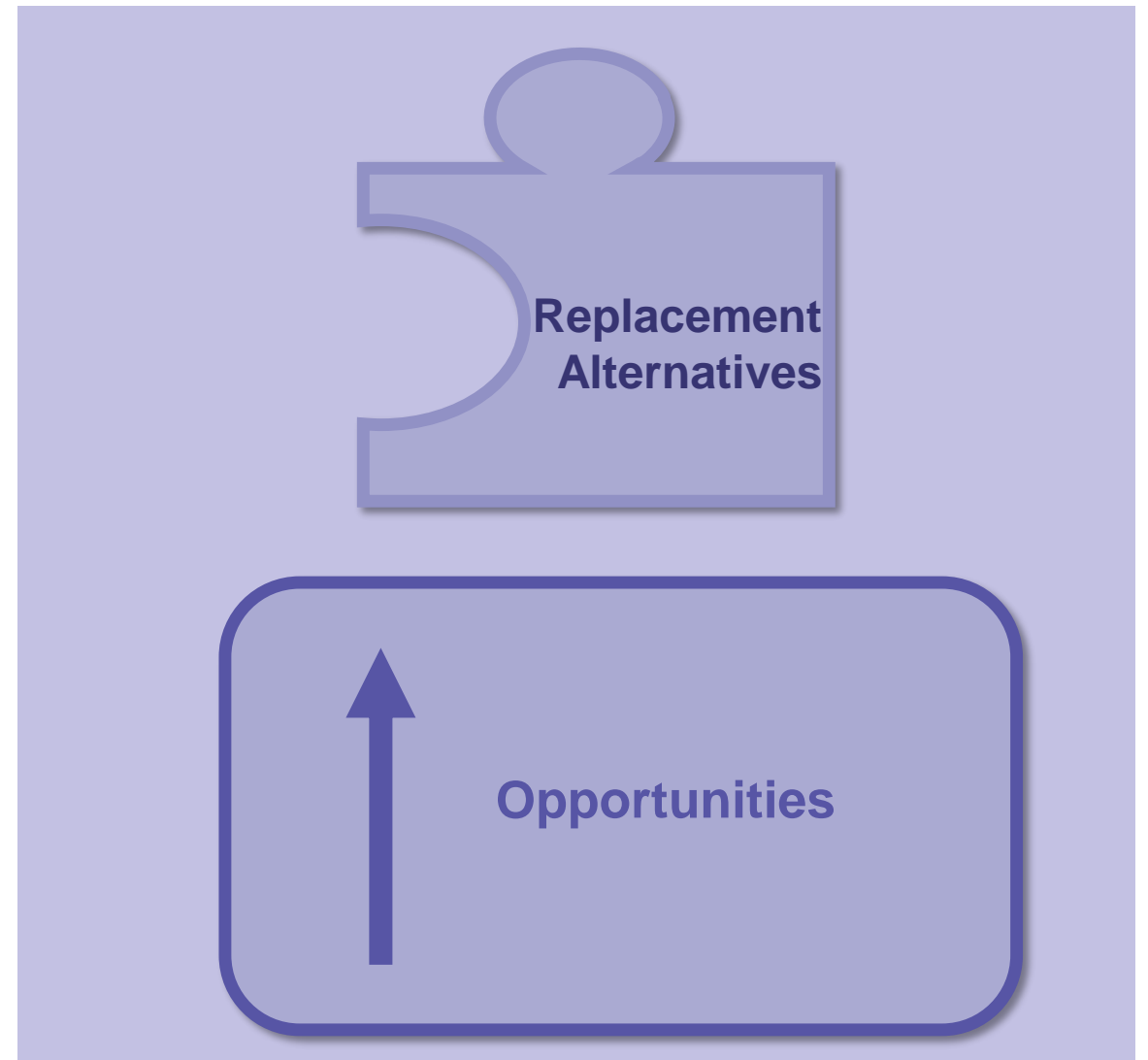
Improve operational conditions

## GOALS AND OBJECTIVES

# The Universe of Alternatives: Replacement Alternatives

- ▶ Includes options for the complete replacement of the I-84 and Route 8 structures.
- ▶ New structures = new connections
- ▶ Constraints affect feasibility of improvements

NEEDS	PURPOSE
Structural Deficiencies	Improve bridge conditions.
Geometric Deficiencies	Improve roadway conditions.
Operational Deficiencies	Improve operational conditions
GOALS AND OBJECTIVES	





# New Mix Program: Highway Design 101

## Mainline Alignments

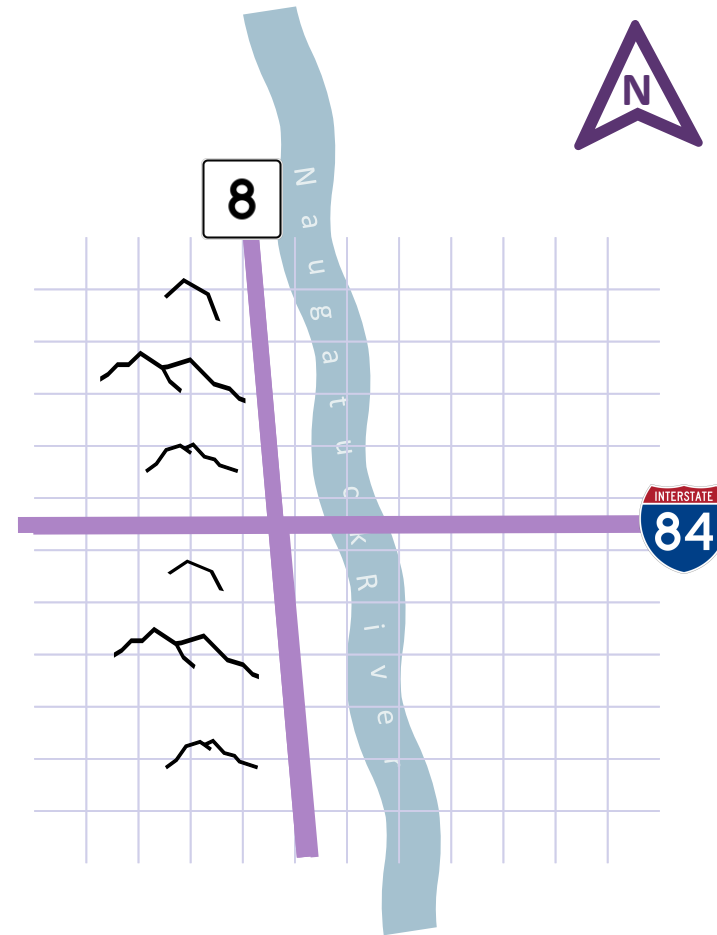
### I-84 and Route 8 Alignments

I-84: north or south

Route 8: east or west

Unstacked configurations

- Side by Side
- Split
- Different elevations



**84**new  
mix



# New Mix Program: Highway Design 101

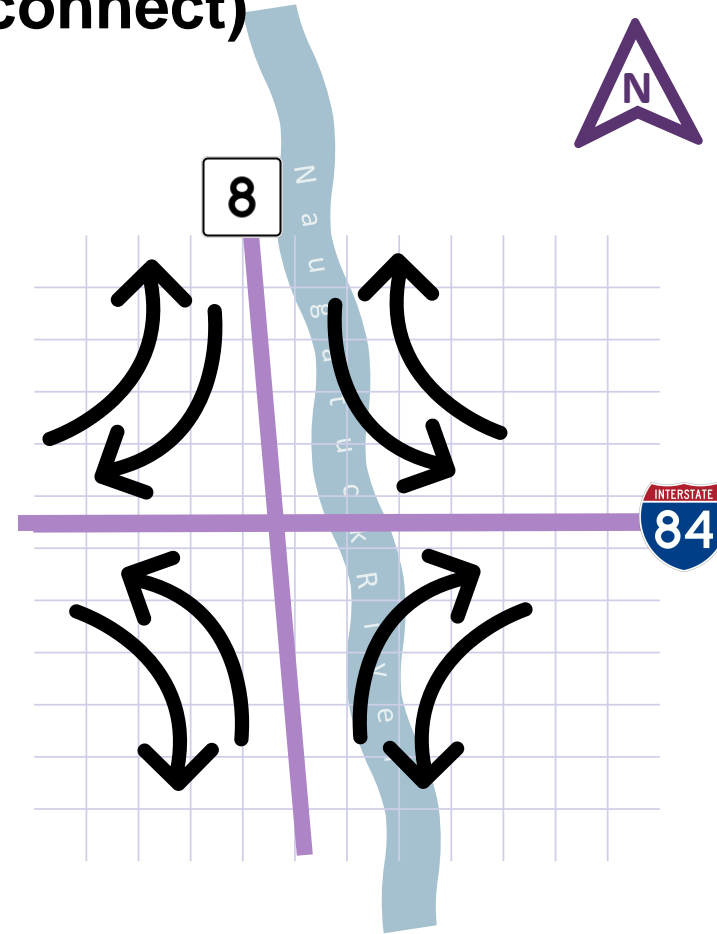
## System Connections (How mainlines may connect)

### System Connections

(getting to/from I-84 and Route 8)

Full System Interchange

Direct connections: stay on the mainline, typical from I-84/Rt 8



**84**new  
mix

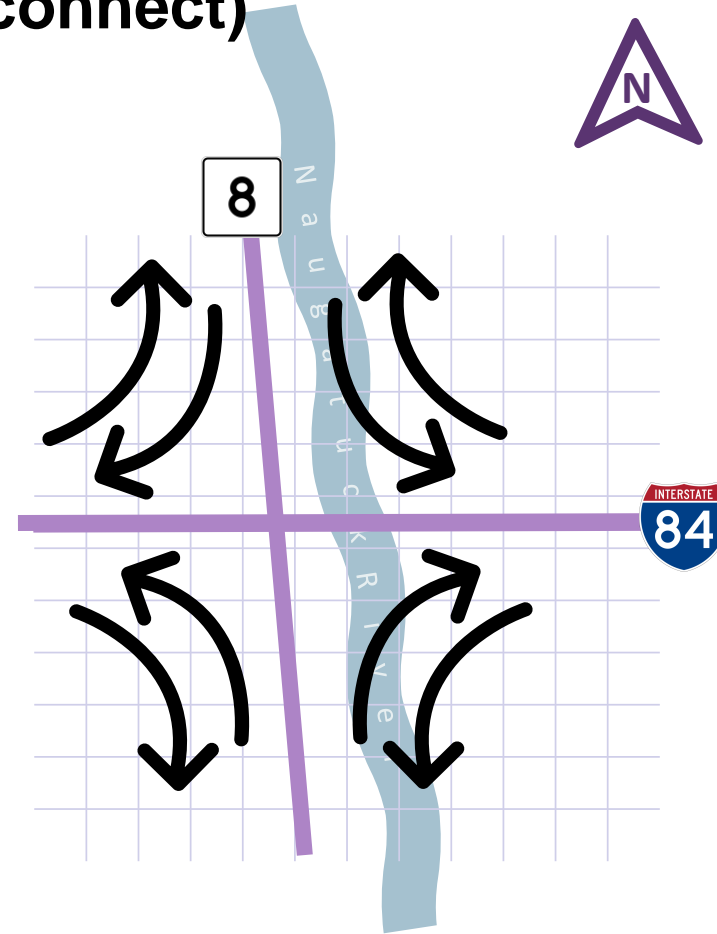


# New Mix Program: Highway Design 101

## System Connections (How mainlines may connect)

**System Connections**  
(getting to/from I-84 and Route 8)

Partial System Interchange  
Indirect Connections: must leave the mainline, on the local road network



**84new mix**

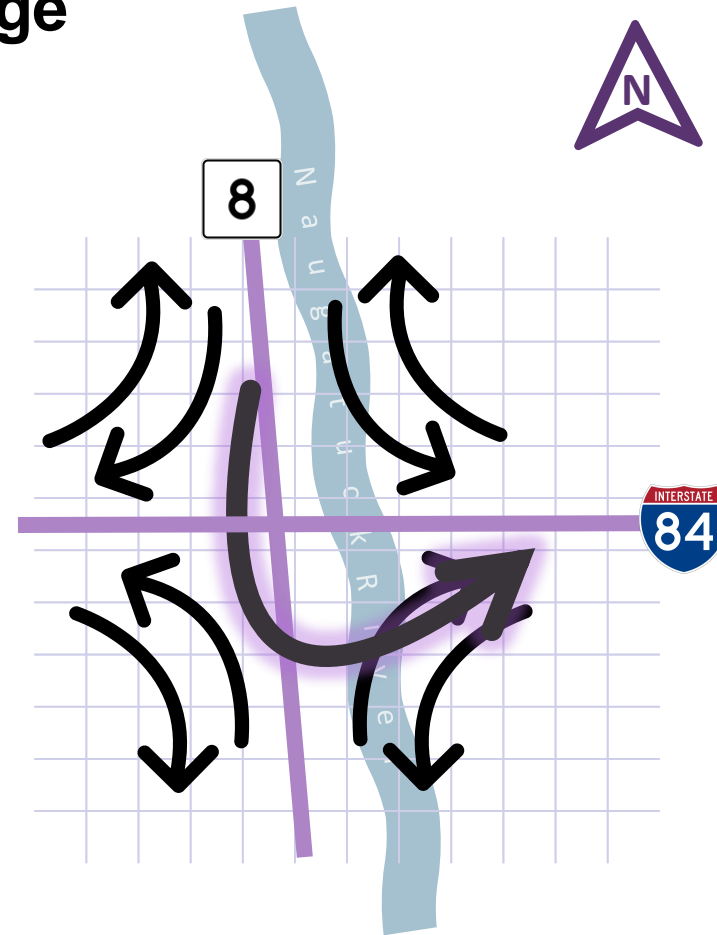


# New Mix Program: Highway Design 101

## System Connections: Crossover Interchange

### Crossover Interchanges:

Instead of left-hand entrances and exits, the system connection would cross over or under the mainlines for a typical/safer right-hand entrance and exit.



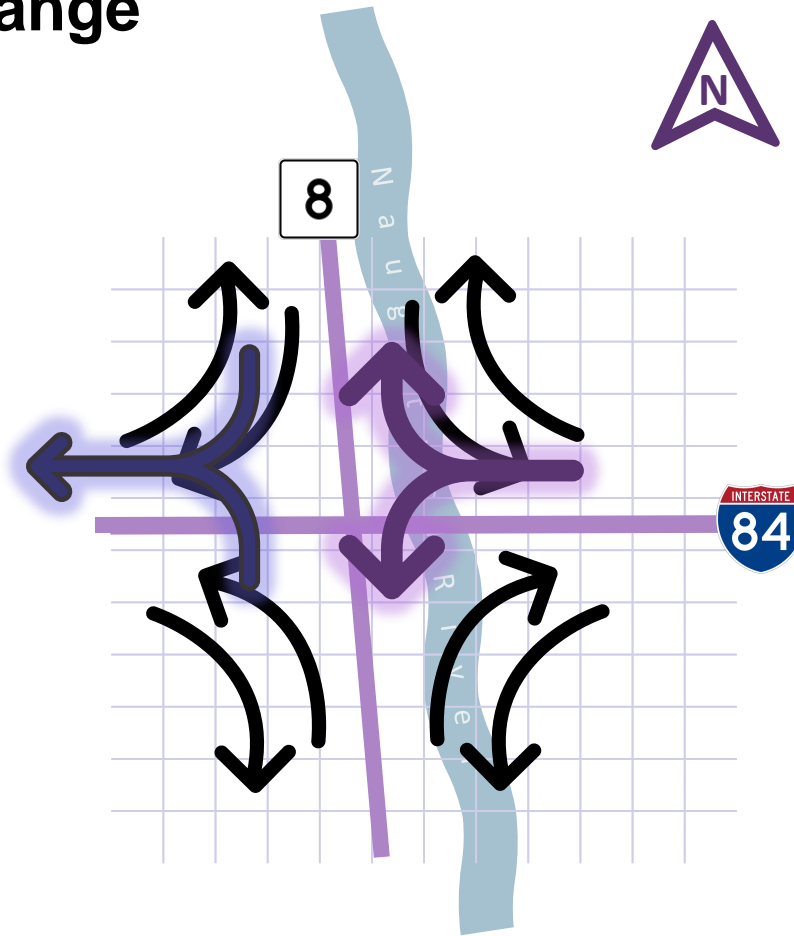


# New Mix Program: Highway Design 101

## System Connections: Combined Interchange

### Combined Connections (interchange):

Vehicles traveling on a mainline together, leave or join a mainline together. This movement has increased traffic flow and requires more vehicular maneuvers.



**84**new  
mix

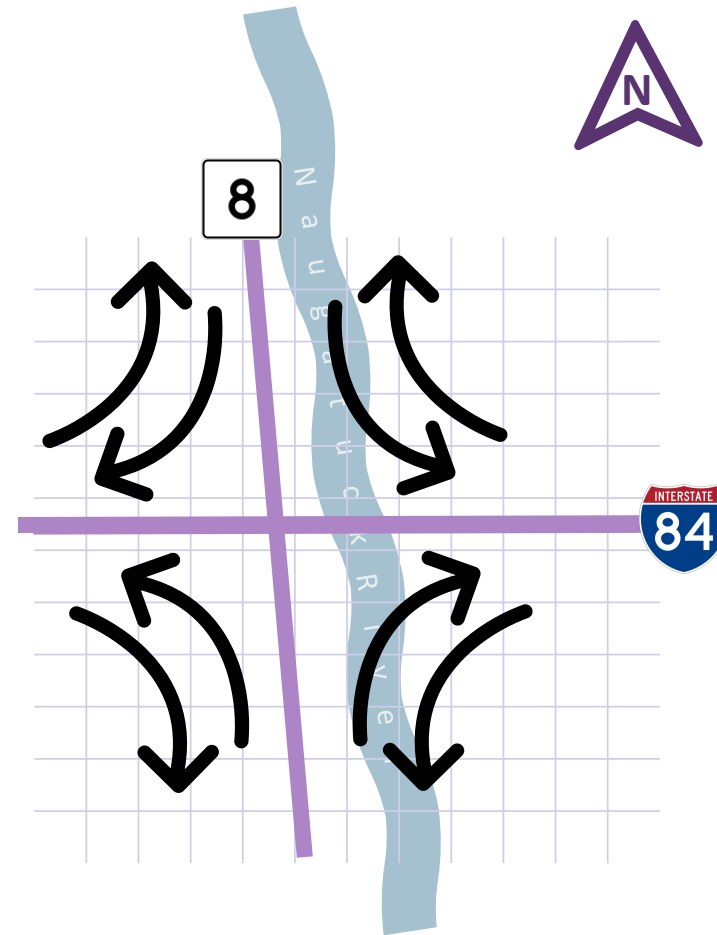


# New Mix Program: Highway Design 101

## Local Connectivity Features

**Local Connectivity:** service interchanges, frontage road systems, and more:

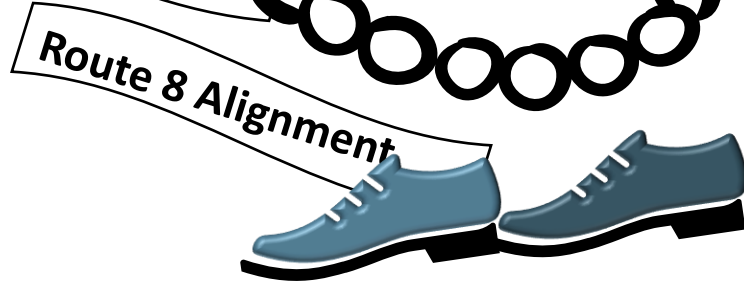
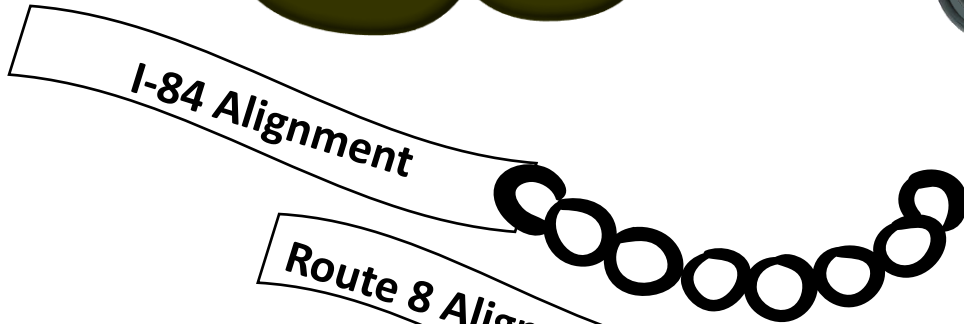
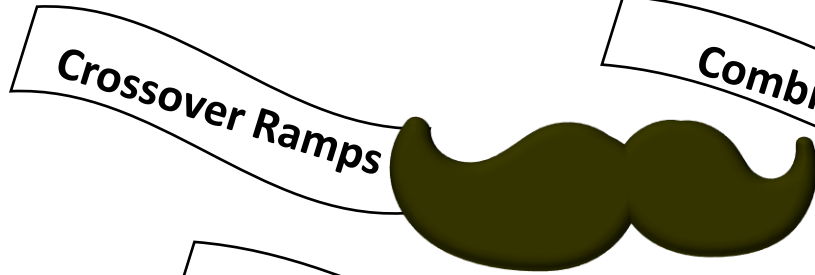
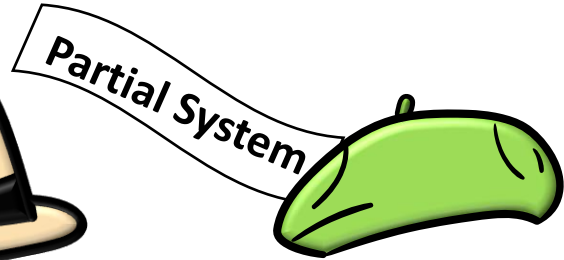
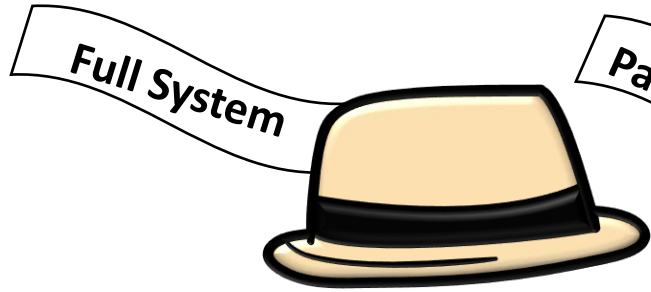
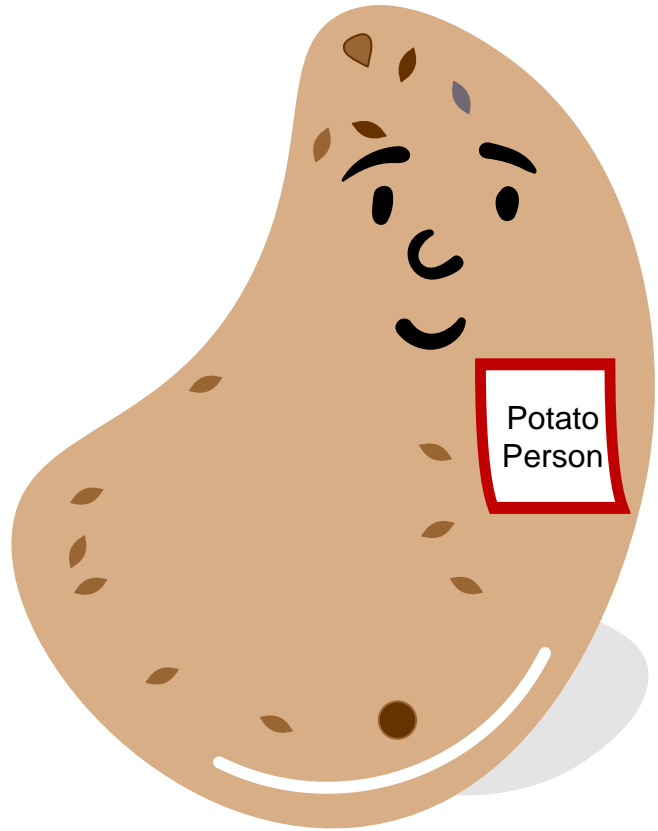
- road Service Interchanges connect the local network and the mainlines
- Connecting the city to the mainlines and enhancing local roadway network
- Multimodal (transit, bike, pedestrian, and rail) considerations



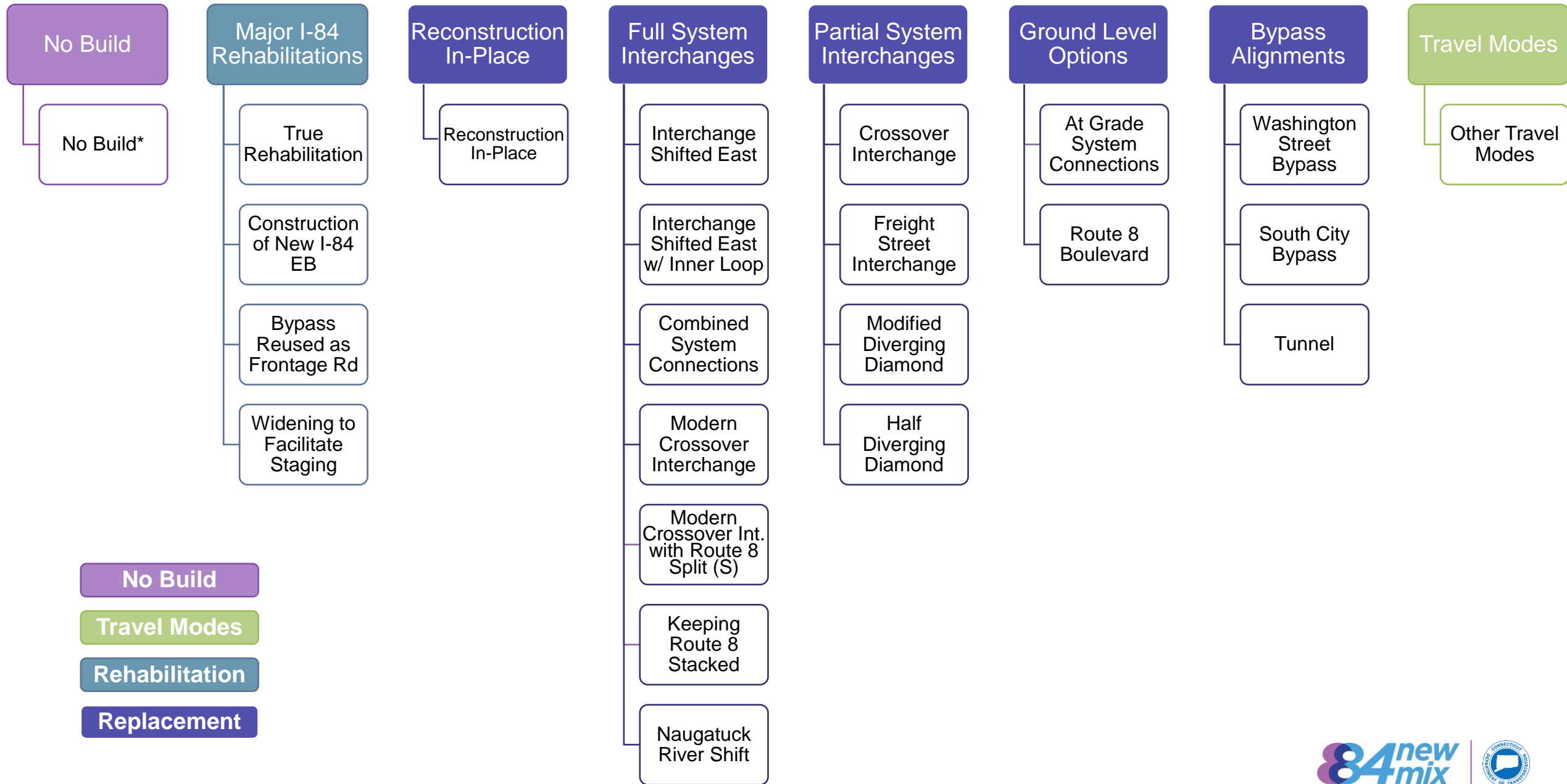
**84new mix**



# Highway Design 101 Activity

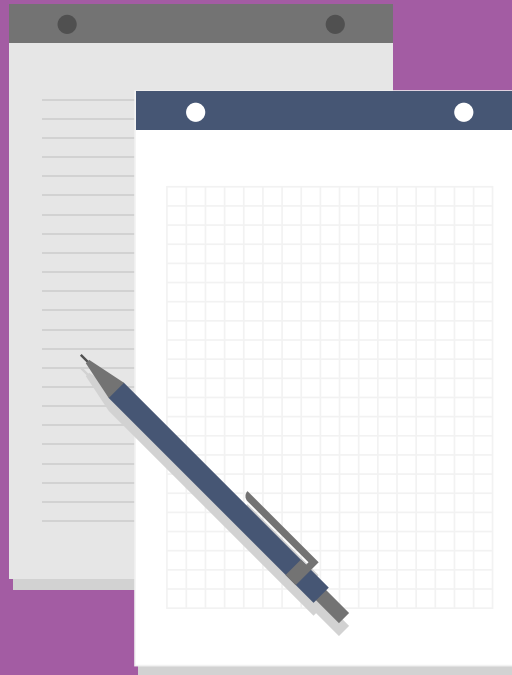


# Universe of Alternatives:

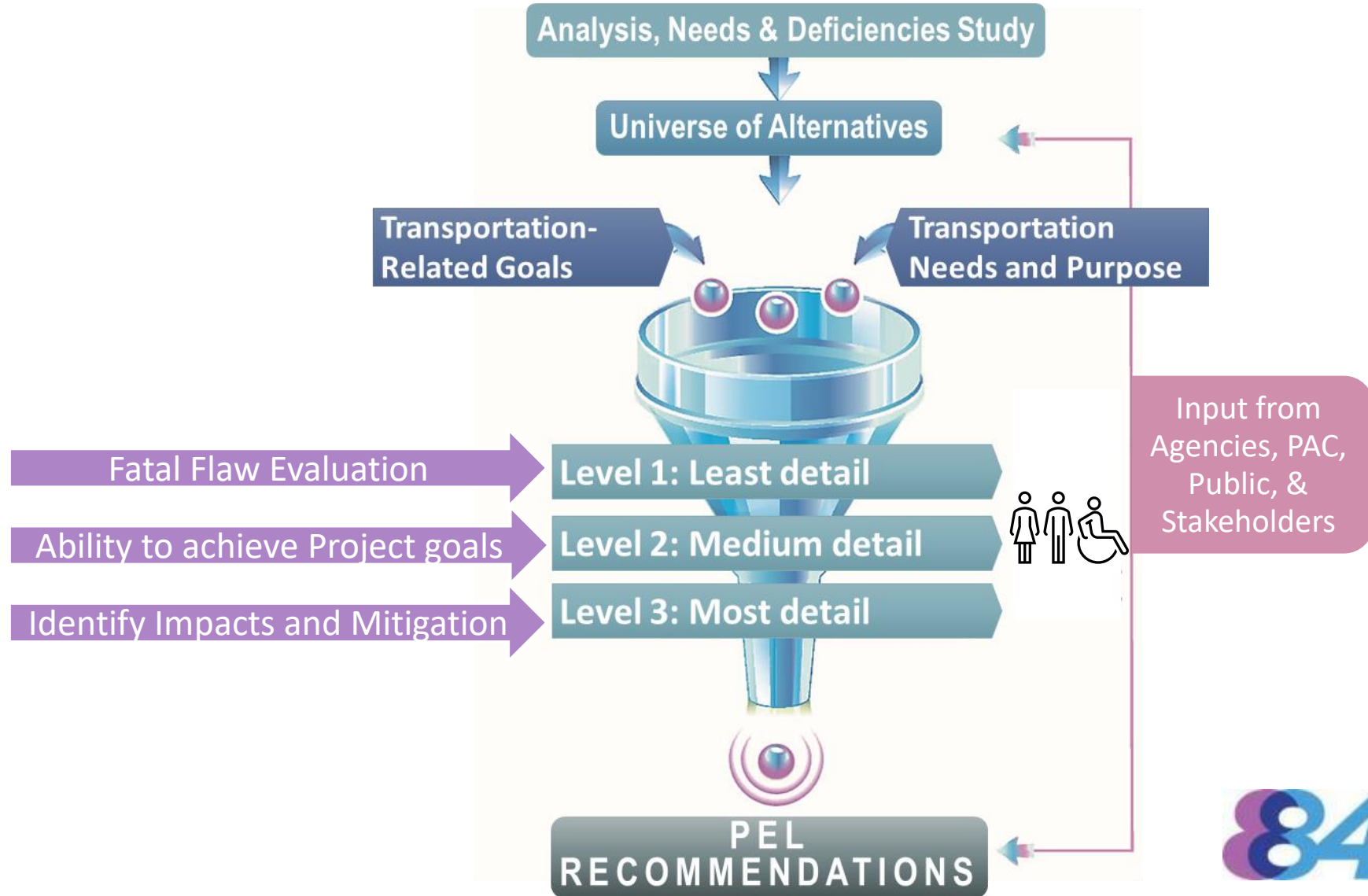


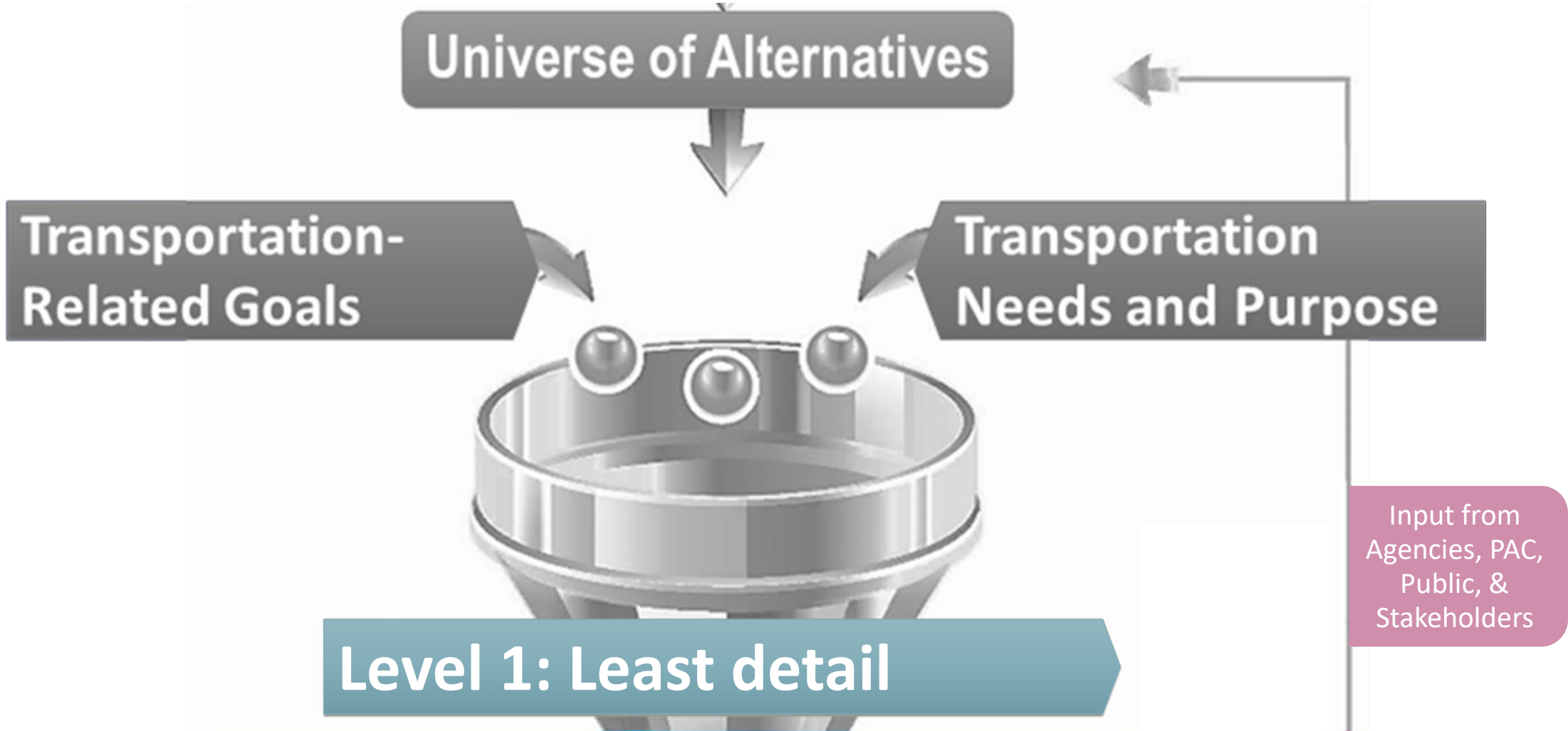


# *New Mix Program* PEL Study Level 1 Screening Criteria



# New Mix PEL Process: Screening of Alternatives





# *New Mix* Screening Process: Level 1 (Engineering-Based)

NEEDS	PURPOSE
Structural Deficiencies	Improve bridge conditions.
Geometric Deficiencies	Improve roadway conditions.
Operational Deficiencies	Improve operational conditions.

## Fatal Flaws:

Cost  
Feasibility



Pass

Fail



# Level 1 Criteria: Engineering-Based for Improving the Identified Deficiencies (Needs) and Feasible Solutions (Purpose)

Criteria Category	Evaluation Criteria
Structural	Improves or replaces deteriorating bridge structures
Geometric	Addresses and improves conditions not meeting current design standards.
Operational	High-volume movements as direct connections; Lower-volume movements as indirect connections. Adequate capacity for current traffic and future traffic forecasts is provided.
<b>Fatal Flaws</b>	
Cost	Financial resources can be made available (order of magnitude cost).
Feasibility	Can be constructed using proven technology, engineering, construction techniques, and general constructability – allowing traffic to operate during construction.



Pass

Fail





# Engineering Based – Can the Alternative Satisfy the Purpose of the Project? Does it have any fatal flaws?



Structural



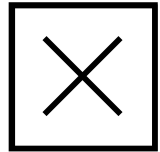
Geometric



Operational



Cost



Feasibility



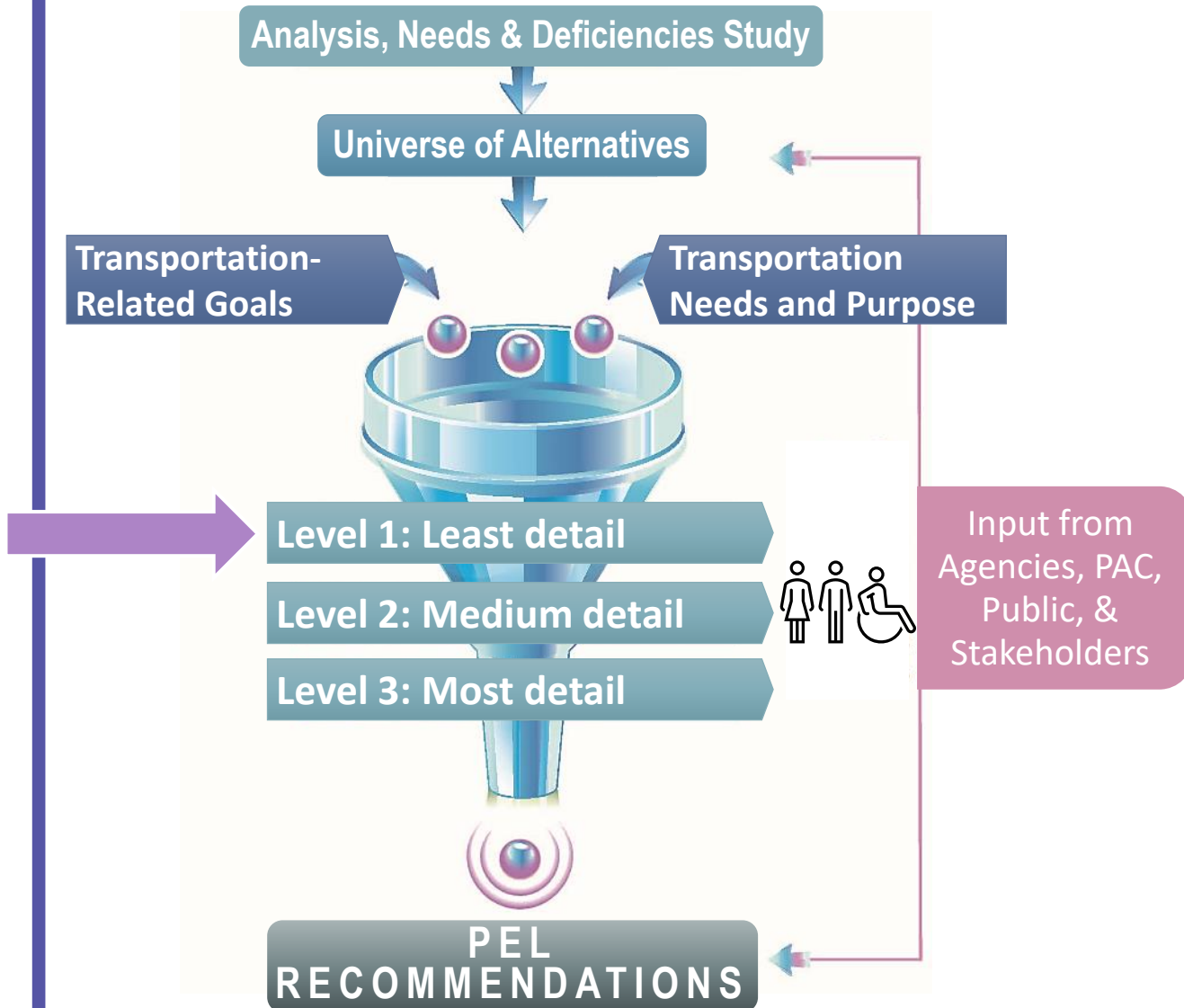
**✗ Fail**

Pass ✓



**=FAILURE TO SATISFY THE PRELIMINARY PURPOSE & NEED STATEMENT HAS FATAL FLAW**

# New Mix PEL Study Screening Process



**✗ Not Advancing**



**Advancing**



# Next Steps

# Public Feedback Due

Comments / Input Due: Friday, September 30, 2022  
Send in your comments through the website

September						
S	M	T	W	TH	F	S
				1	2	3
4	5	5	7	8	9	10
11	12	13	14	15 <i>TODAY</i>	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30 <i>COMMENTS DUE</i>	
2	3	4	5	6	7	8

CTDOT wants to hear from you! Share your thoughts on issues related to the Mixmaster. [Take our survey >](#)

Select Language ▾

**84new mix** I-84/ROUTE 8 INTERCHANGE REPLACEMENT

Project Information Public Involvement Document Library Contact Us Search

### Contact Us

Whether you're looking for more information, have comments and questions, or just want to stay informed on the New Mix as the program progresses, use the links below to get in touch.

### Stay Connected

Join our mailing list to receive project news and updates, including notice of public meetings where you can learn more about the project.

[Join our mailing list ↗](#)

Have a comment or question? Ask us here!

[Contact Us ↗](#)

Tweets by @NewMixWaterbury

**The New Mix**  
@NewMixWaterbury  
#CTDOT is in the process of assessing the current state of the I-84/Rt 8 interchange and planning for its long-term future. Join us on June 16th at noon or 6 pm to learn more about the project and make your voice heard! Register at [NewMixWaterbury.com](#). #NewMixWaterbury

# Upcoming Public Meetings

## Public Mtg #3 November/December 2022

**Where:**

Anticipated Virtual via Zoom

**Topics:**

Present Level 1 Screening Results, Level 2 Evaluation Criteria which includes community considerations and urban design, and obtain input from public

## Public Mtg #4 February/March 2023

**Where:**

Anticipated Virtual via Zoom

**Topics:**

Present Level 2 Screening Results, Level 3 Evaluation Criteria, and obtain input from public

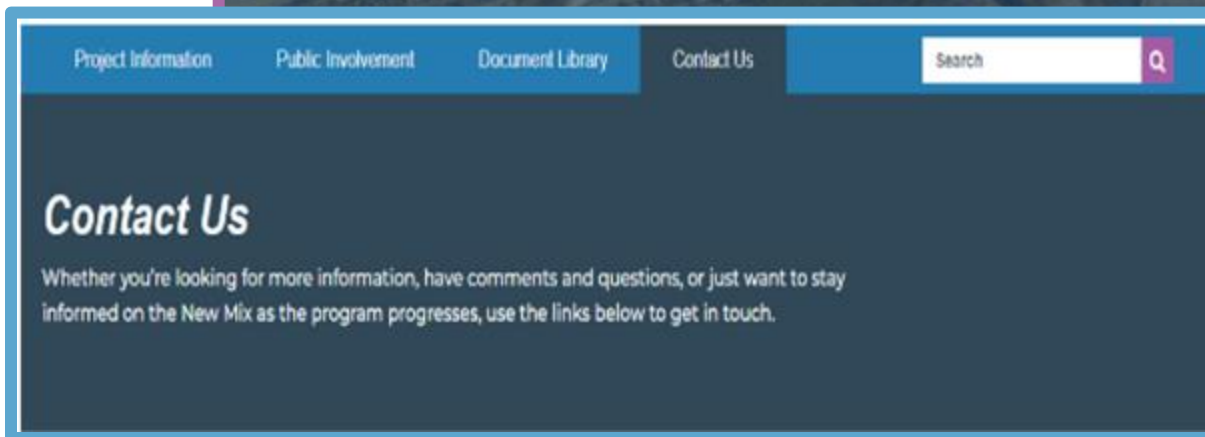
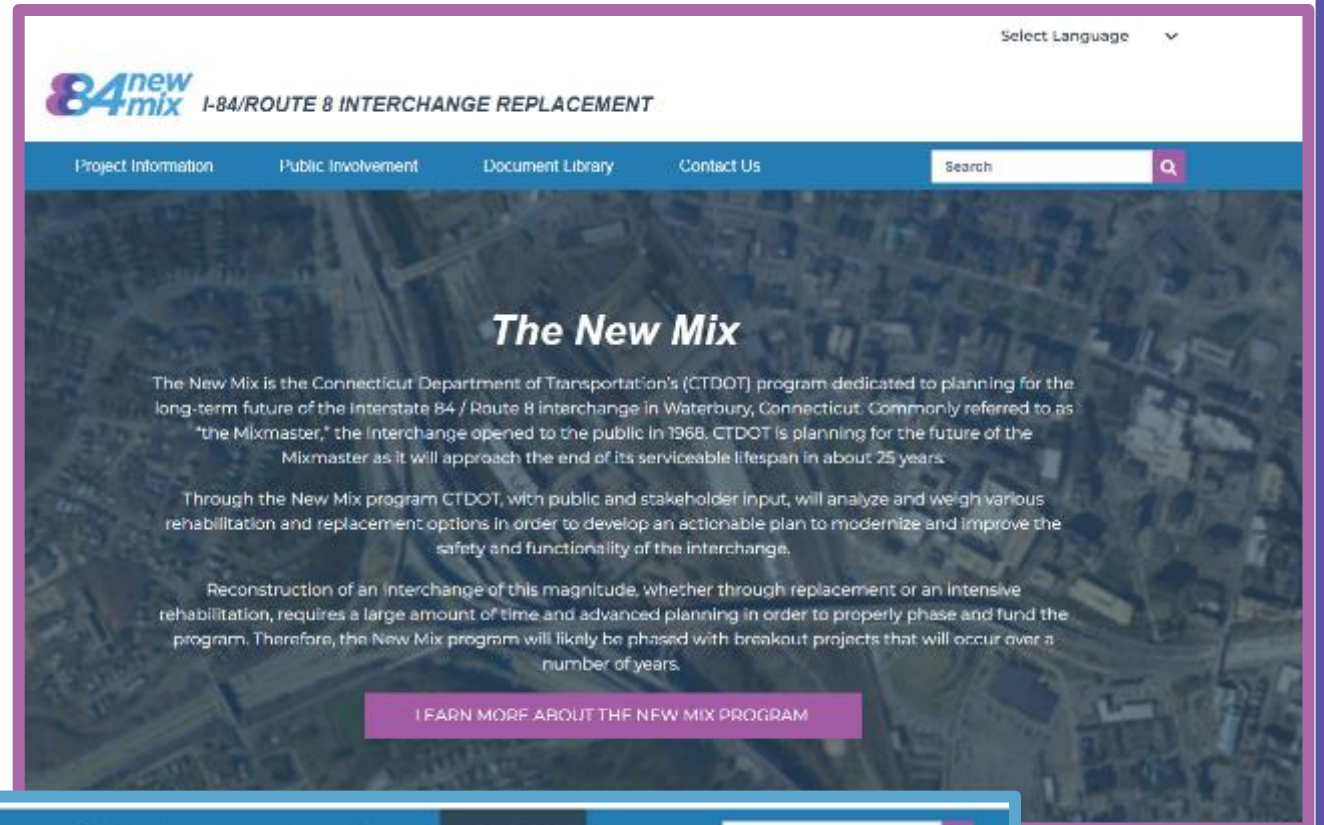


# The *New Mix* Website

Please check out The New Mix website!

**NEWMIXWATERBURY.COM**

- Access Project History, FAQ, and more
- Subscribe to New Mix news and updates
- Ask us any questions or provide comments you may still have!



# Questions & Comments



# The *New Mix* Project: Question & Answer Session

Provide feedback through the following...



Chat: using the Zoom chat function during the meeting/ live event.



Project Email: [thenewmixwaterbury@gmail.com](mailto:thenewmixwaterbury@gmail.com)



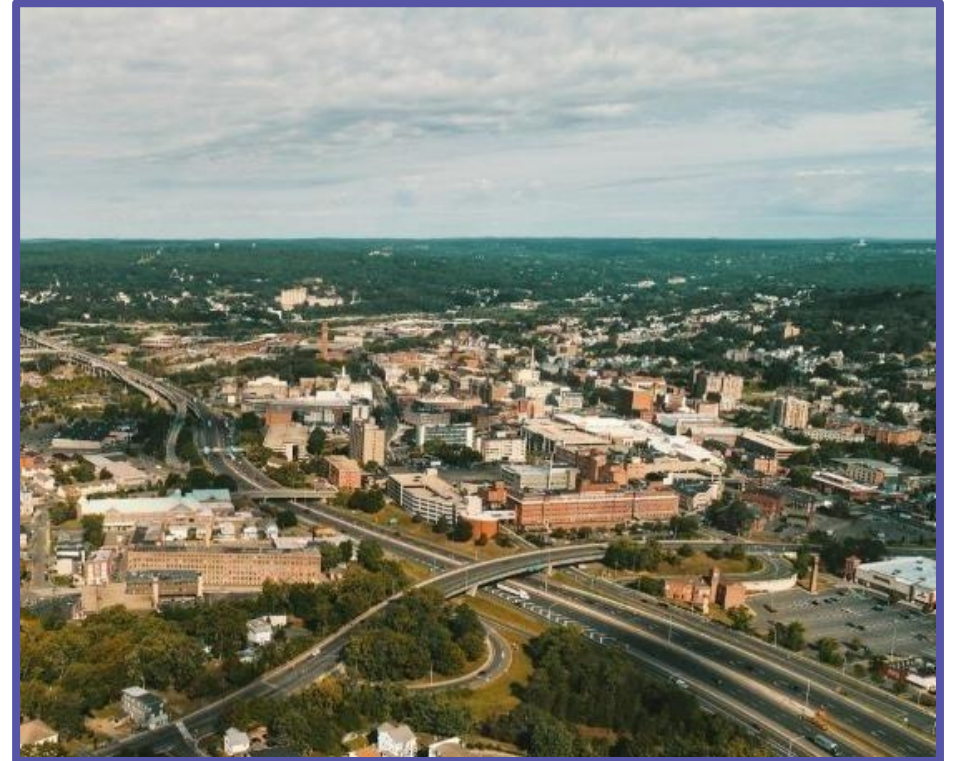
Website: [NewMixWaterbury.com](http://NewMixWaterbury.com)



Survey: [bit.ly/NewMixSurvey2](https://bit.ly/NewMixSurvey2)



Call us at 203-805-8018



**HNTB**

**84** new mix



A recording of this presentation will be made available on the project website.

# Thank You!

