APPENDIX F AGENCY COORDINATION AND PUBLIC INVOLVEMENT

I-25 Planning and Environmental Linkage
Interview Approach and Template
November 26, 2011

Purpose: The purpose of conducting key person interviews is to gather ideas and to understand the interests, goals and desired outcomes of key stakeholders regarding the I-25 PEL. Information from all the interviews will inform the visioning workshop agenda, to be held in early 2012.

Approach: The informal interviews will explore the views of the individual and his/her constituents both on how to enhance the effectiveness of the effort and on the substantive issues of the study, such as purpose and need, corridor vision, range of alternatives to be studied, public involvement effort and other potential challenges and issues to be addressed during the study.

Protocols: CDOT has approved a set of potential interviewees that is primarily comprised of key staff from the jurisdictions; Elected officials or other staff that can speak to the issue of I-25 PEL are also able to participate in the interviews. The interviews will last for approximately 1 hour and will be conducted in early December 2011.

Documentation: A summary will be developed indicating the names, titles, and organizations of persons interviewed, other individuals and their occupational or interest categories, and the dates of the interview. Summaries of what the project team learned from the interviews will be prepared as part of the project record.

Interview Template
The following represents the topic areas that will be covered during the stakeholder interviews for the N. I-25 PEL. The conversations between the project team and stakeholders will focus on the topics that are of most importance, as articulated during the meeting. Questions provided here are examples of the types that will be asked, but other questions that are relevant in the moment may be posed as well.

Topics & Example Questions

The Decision Making Process
- What is your understanding of the decisions to be made in this PEL; are you clear on decision-making process?
- What other policy initiatives are occurring which may impact this project?

Purpose and Need
- An 'umbrella' purpose and need will be developed for the project with a focus on short term safety and operational improvements – do you have concerns with this approach? If so, say why.
- The goal is to identify immediate needs without precluding the longer-term vision or 2035 metro vision. Is this your understanding?

Alternatives
- What criteria would you use to compare alternatives?
- What specific alternatives need to be considered? What other alternatives or variations should be studied, and why?

Public Involvement and Coordination

- What advice do you have on the best to reach out to your agency/organization, how to disseminate information in a user-friendly way, and how to elicit comments and ideas?
- How do we ensure that we meet the public and stakeholder engagement requirements in order to 'carry forward' decisions in the PEL?

Traffic

- What are your top concerns regarding traffic operations in the study area?
- How do you measure the performance of I-25 through the PEL study area?

Modeling /Information

- A DRCOG regional model update will occur toward the end of the project (2035 -2040) – what ideas do you have to ensure that the effort is coordinated as effectively as possible, e.g. sensitivity comparisons?
- What north – south parallel arterials are most affected by traffic conditions along I-25?

<u>Example Agency/Jurisdiction Specific Questions</u>

CDOT R6 Engineering

- What are some of the engineering alternatives you foresee as feasible and effective solutions for implementation within the next 5-10 years?
- What questions would you like to see answered by the traffic analysis portion of the project?

RTD

- What is your perspective about the relationship between North Metro ridership and I-25 improvements.

Adams County

- What are your thoughts regarding the multi-modal concept that you raised at the kick-off meeting?
- What surface street improvements are planned for the next 5-10 years in your jurisdiction that affect this project area?

North Glenn

- What surface street improvements are planned for the next 5-10 years in your jurisdiction that would affect this project area?

Thornton

- Say more about the median station concept? What constraints or opportunities do you see with this option?

Broomfield/Westminster

- What surface street improvements are planned for the next 5-10 years in your jurisdiction that would affect this project area?

Technical Advisory Committee Meeting
April 4, 2012

NORTH I-25 PEL

COLORADO DOT DEPARTMENT OF TRANSPORTATION

Technical Advisory Committee Meeting #2

April 4, 2012

Agenda

Meeting Goals

- Ensure common corridor understanding
- Purpose and Need discussion
- Public meeting overview

- Introductions
- Tiger IV update
- Visioning Workshop summary
- Draft Purpose and Need Statement and goals
- Additional data collection
- Next steps
- Public meeting
- Next meeting

Tiger IV

- Submitted March 19, 2012
- Requested $15 million
- Total project cost $44 million
- Updates from Tiger III
  - Prioritization
  - Safety - ATDM
  - Local match
- Award notification anticipated – End of May 2012
- Included as base case for this project

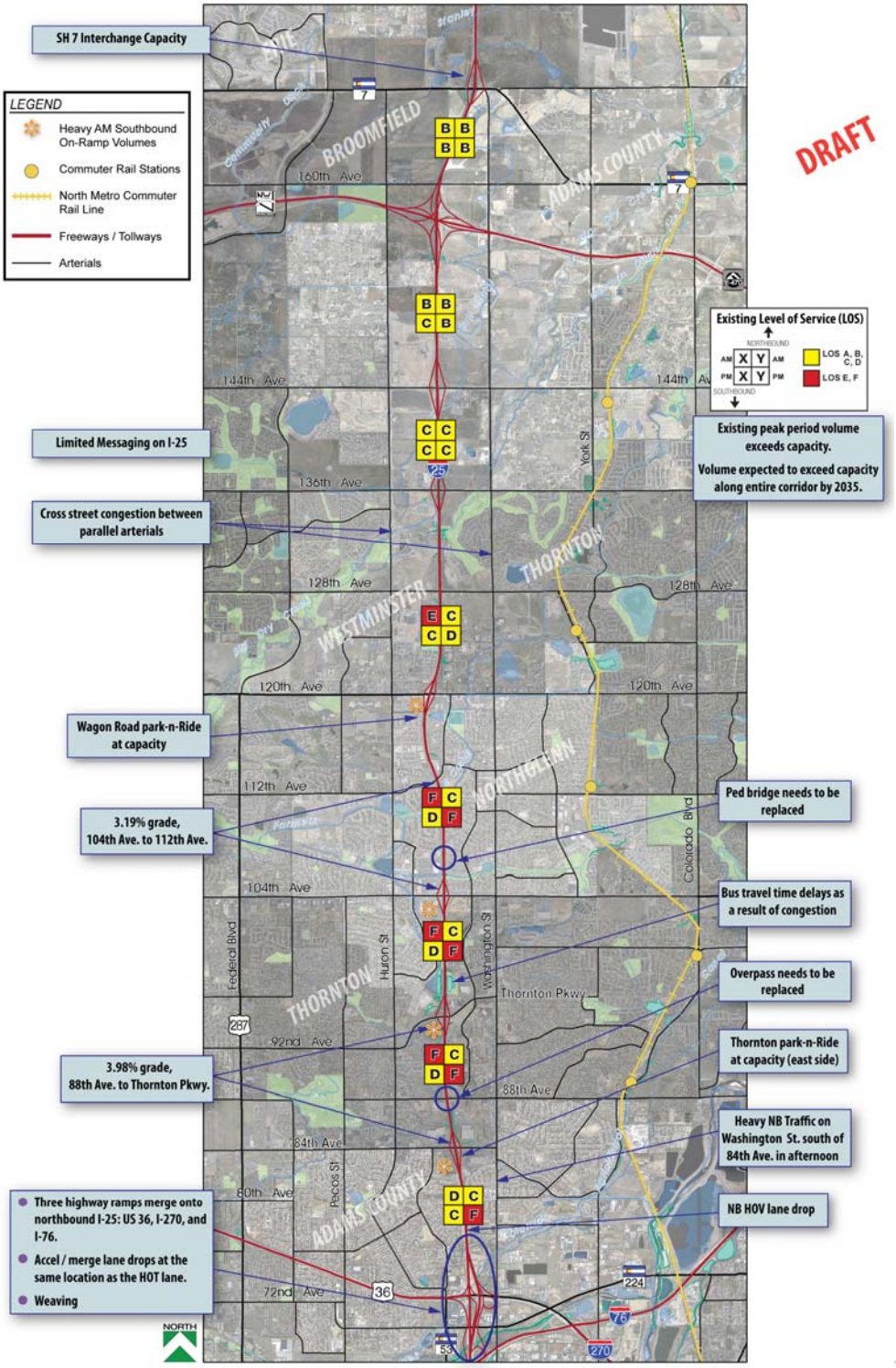
Visioning Workshop Summary

- Reached agreement with the Operating Protocols
- Summarized stakeholder interviews
- Confirmed support for the PEL approach
- Identified issues and potential solutions

NORTH I-25 PEL

COLORADO DOT DEPARTMENT OF TRANSPORTATION

Visioning Workshop Summary



What is a Purpose and Need Statement?

- Describes the intention of the project (project purpose)
- States the problems (project needs)
- Determines and limits the range of alternatives
- Not mode specific or biased toward a particular solution

DRAFT Purpose and Need Statements

Project Purpose

- The purpose of the project is to reduce congestion and improve safety on I-25 between US 36 and SH 7 by implementing near-term, multi-modal, and cost-effective transportation improvements that would neither preclude long-term options nor require reconstruction of recently built structures.

Need for Project

- Mobility Problem: Recurring and nonrecurring congestion along the corridor.

- Safety Problem: Higher than expected crashes due to traffic congestion.

- Multimodal Problem: Over capacity multimodal facilities.

Project Goals

NORTH I-25 PEL

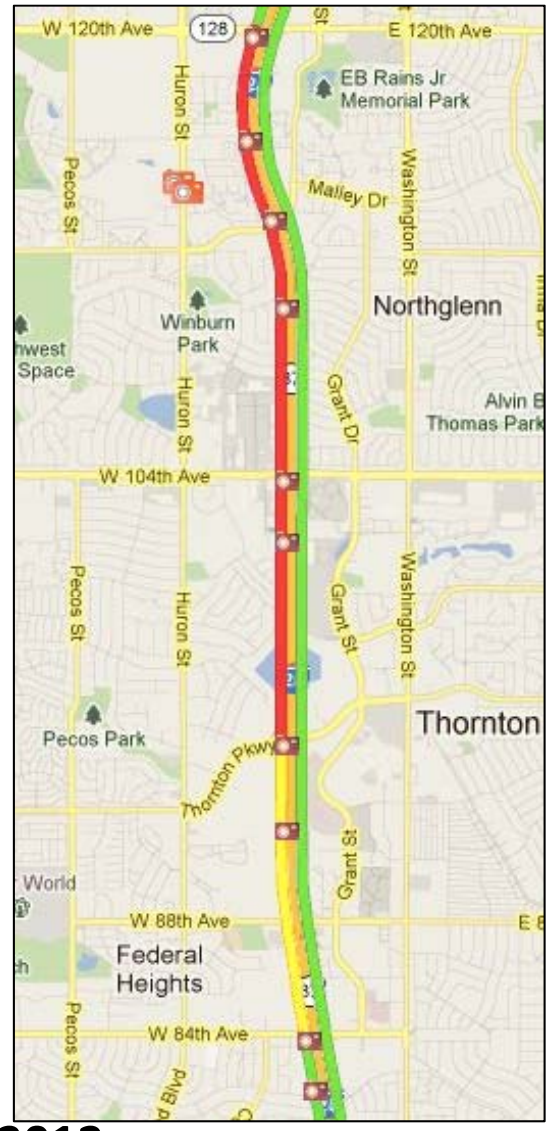
COLORADO DOT DEPARTMENT OF TRANSPORTATION

Mobility Problem

Recurring Congestion Southbound AM

Google Maps

Cotrip



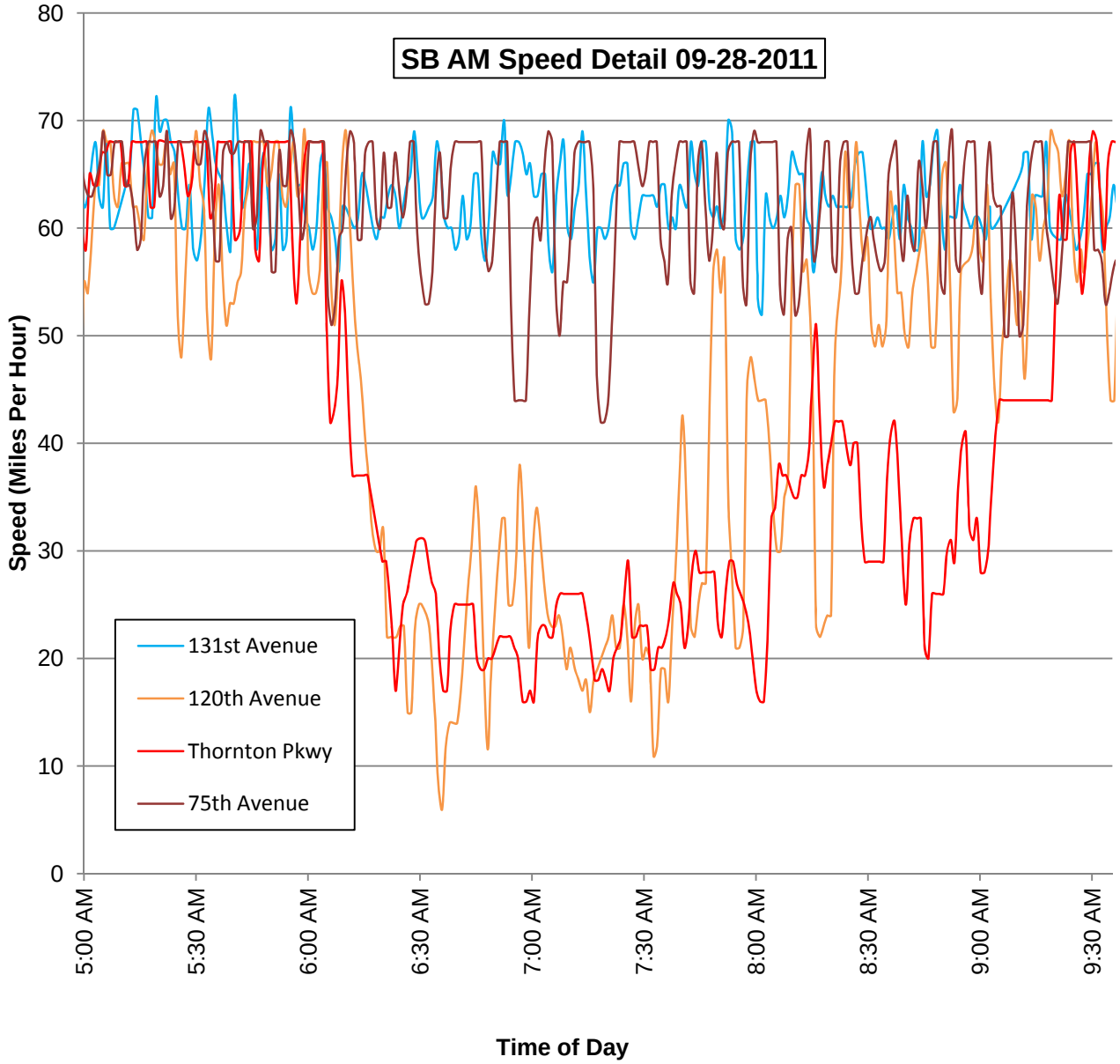
March 22, 2012
6:35 AM

NORTH I-25 PEL

COLORADO DOT DEPARTMENT OF TRANSPORTATION

Mobility Problem

Recurring Congestion Southbound AM



NORTH I-25 PEL

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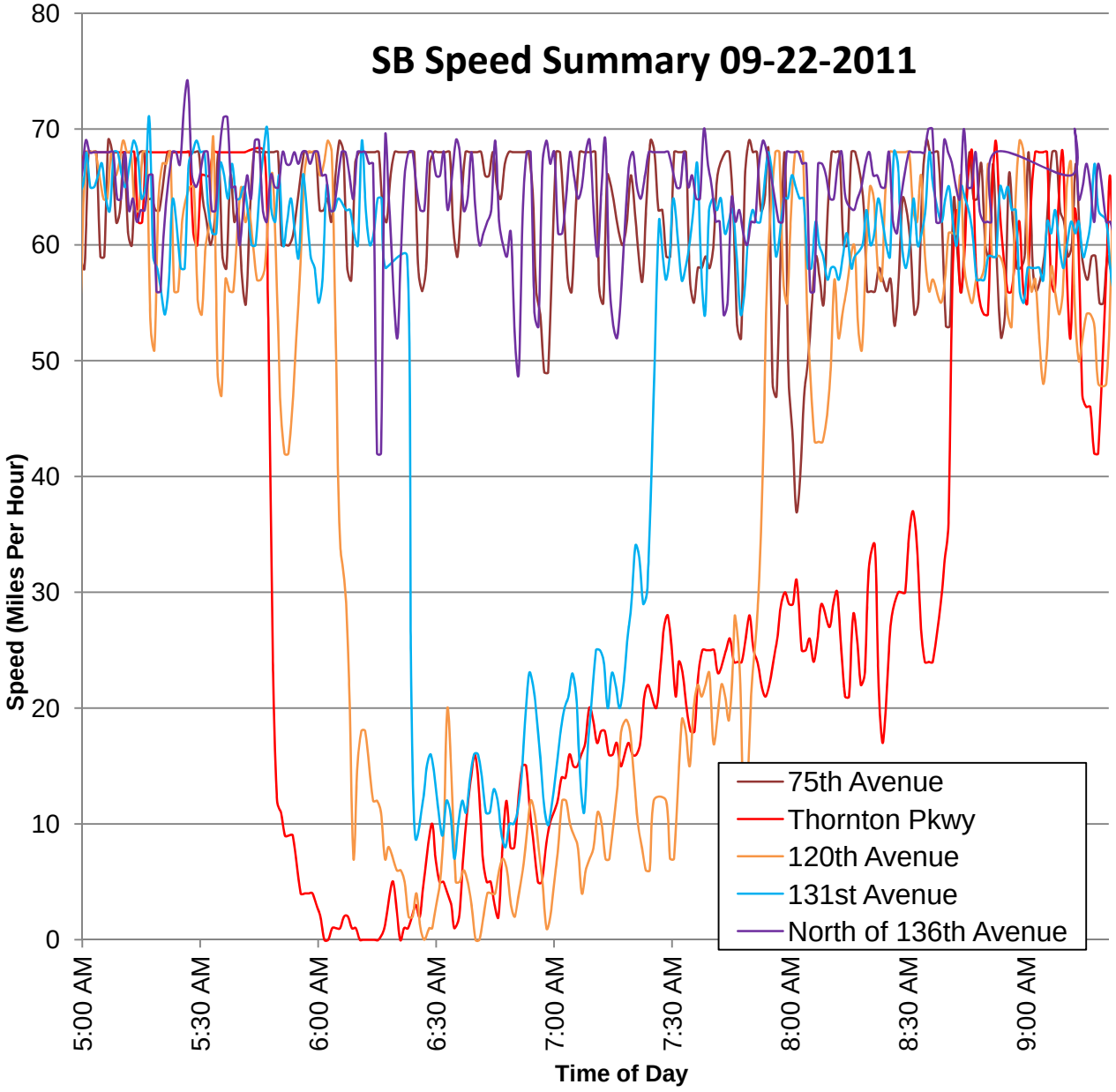
Mobility Problem

Non-recurring Congestion Southbound AM



NORTH I-25 PEL

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Mobility Problem

Recurring Congestion Northbound PM

Google Maps

Cotrip

March 13, 2012

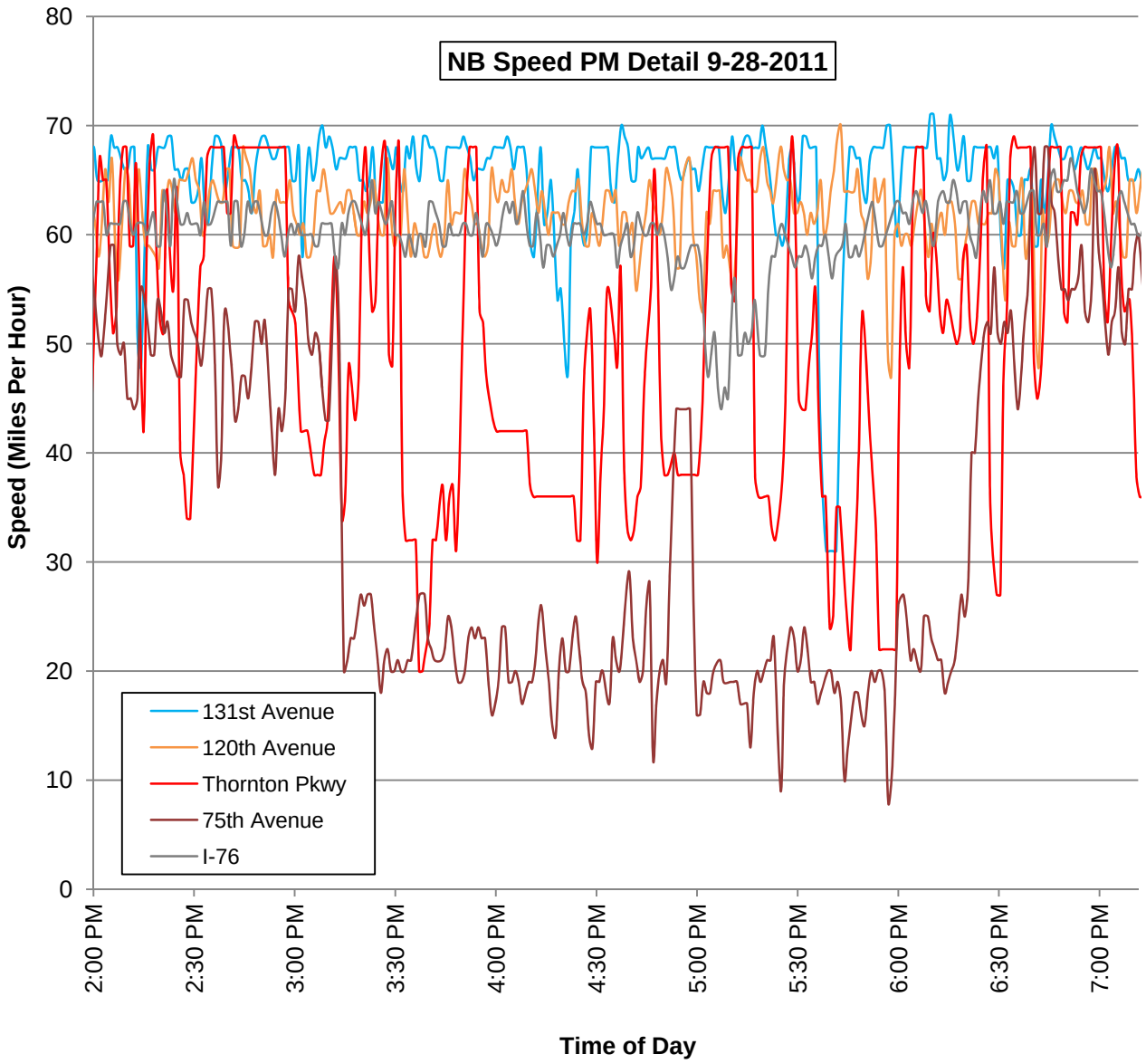
4:35 PM

NORTH I-25 PEL

COLORADO DOT DEPARTMENT OF TRANSPORTATION

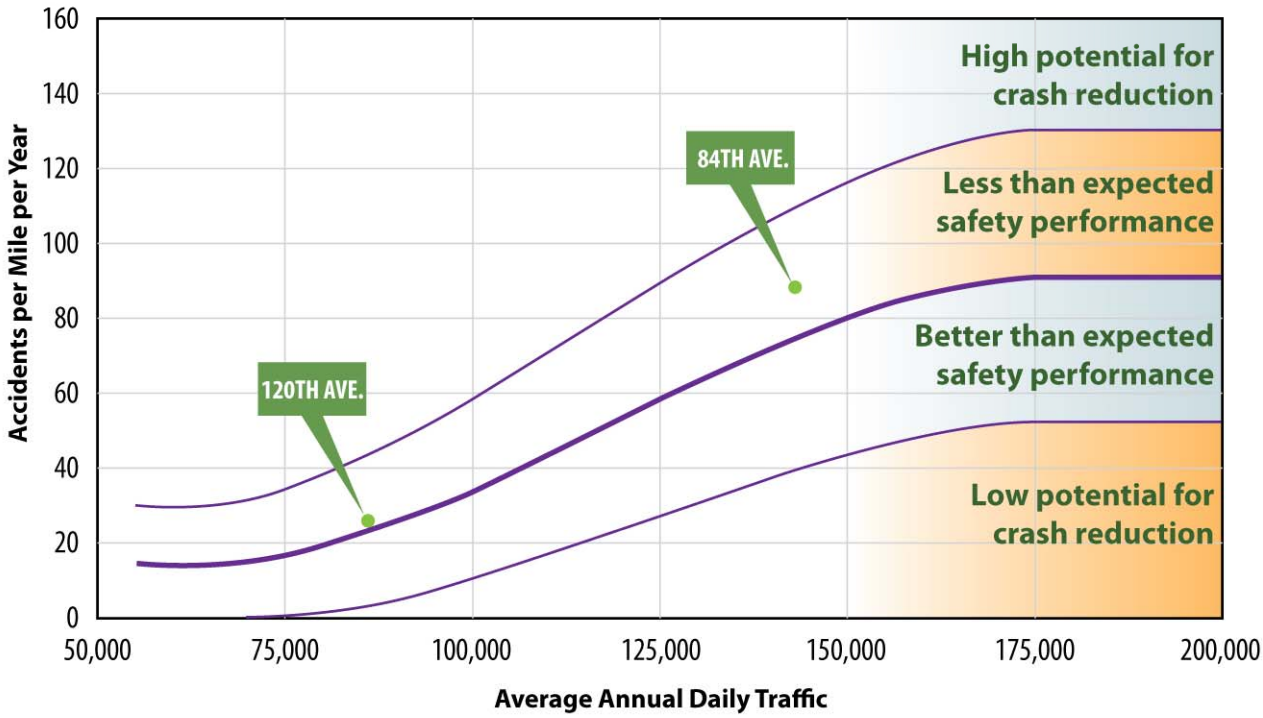
Mobility Problem

Recurring Congestion Northbound PM

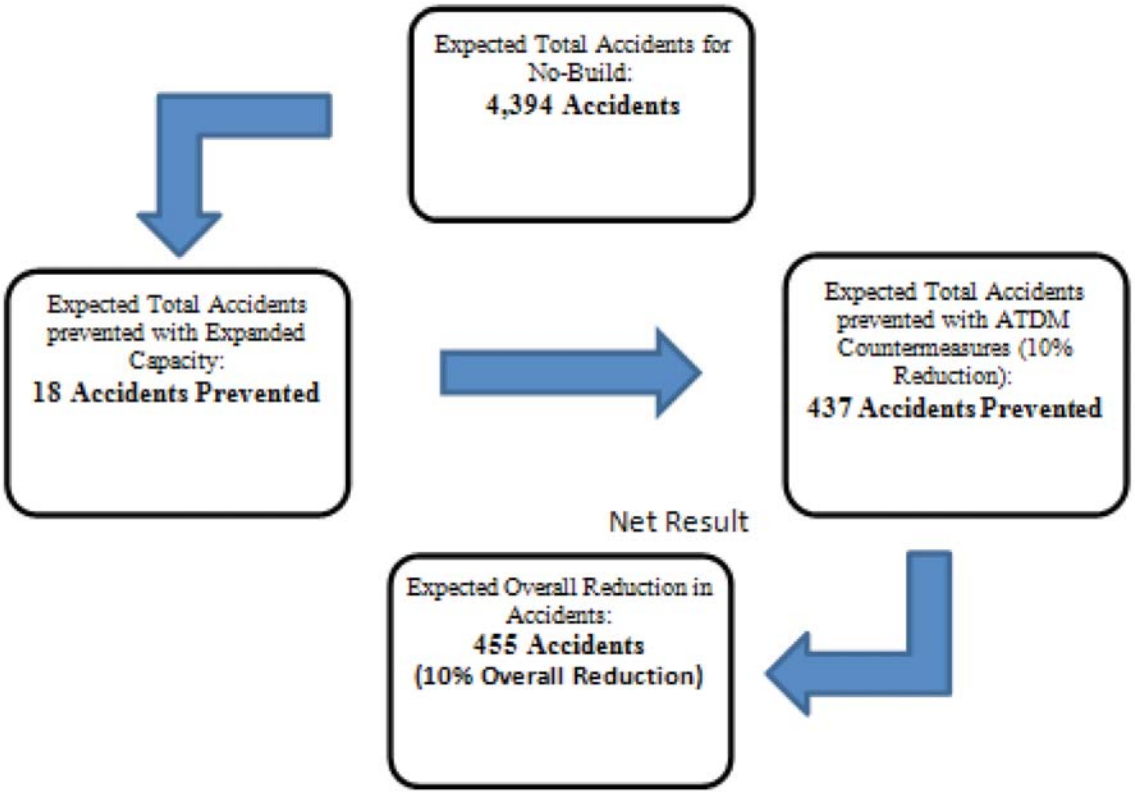


Safety Problem

Higher than Expected Crashes



Safety with Tiger IV Enhancement



Multimodal Problem
Over Capacity Multimodal Facilities

- Some Express Bus trips in each peak period are at or near capacity
- Wagon Road (120th Ave) pnr is at capacity
- Thornton (88th Ave) pnr (east side) is nearing capacity

Project Purpose

The purpose of the project is to reduce congestion and improve safety on I-25 between US 36 and SH 7 by implementing near-term, multi-modal, and cost-effective transportation improvements that would neither preclude long-term options nor require reconstruction of recently built structures.

Concurrence

- Do the need statements accurately identify transportation problems along the corridor?
- Do you support moving forward with the Purpose and Need statements presented here?

Project Goals

Alternatives should:

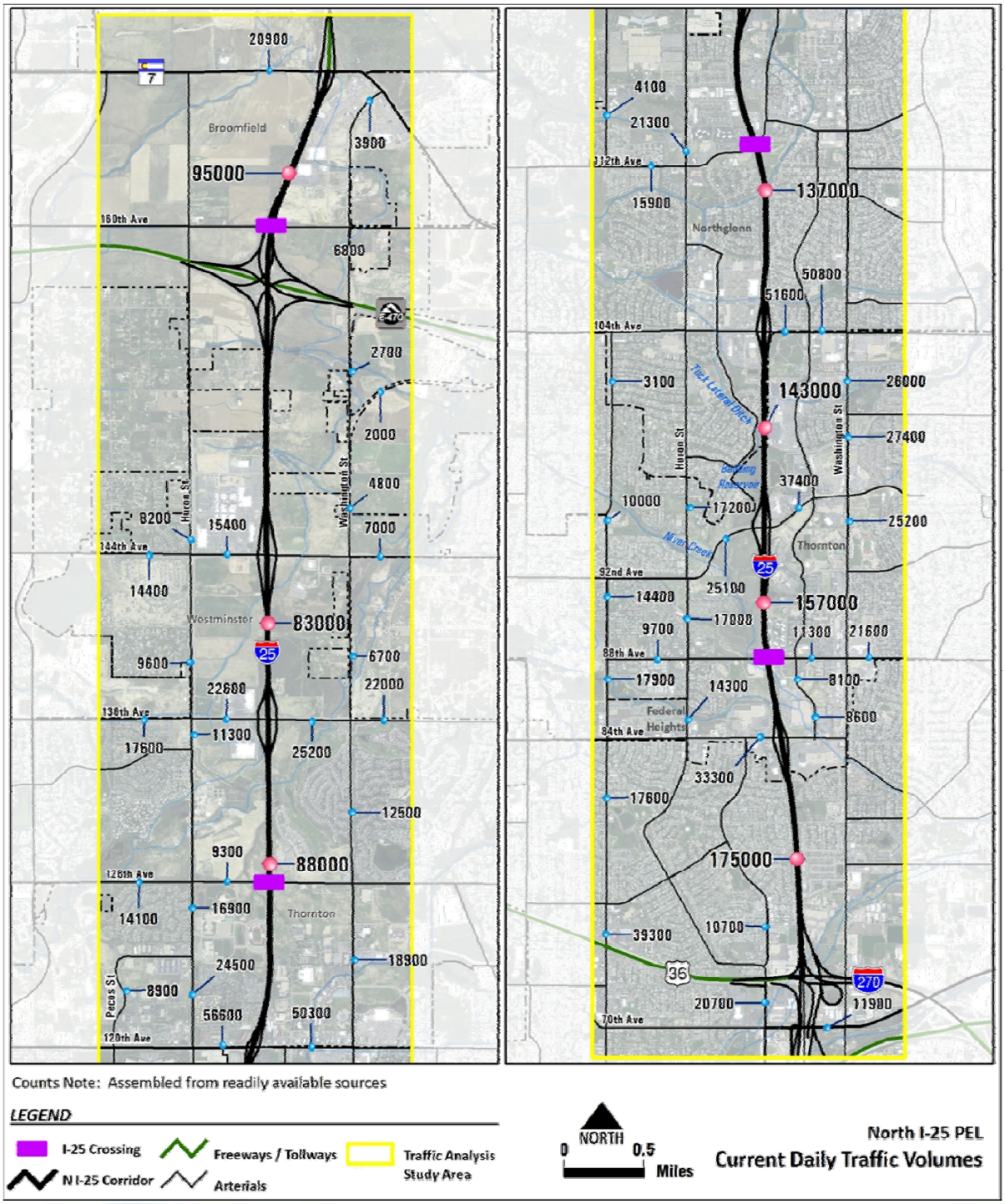
1. Maximize the use of existing infrastructure
2. Expand/enhance transportation options
3. Complement and utilize services of the newly formed TMO
4. Avoid and minimize impacts to environmental resources
5. Identify and prioritize improvements that can proceed independently
6. Coordinate with local plans and projects
7. Maximize duration of benefits

Additional Data Collection Transportation

NORTH I-25 PEL

COLORADO DOT DEPARTMENT OF TRANSPORTATION

More trips on Washington than Huron



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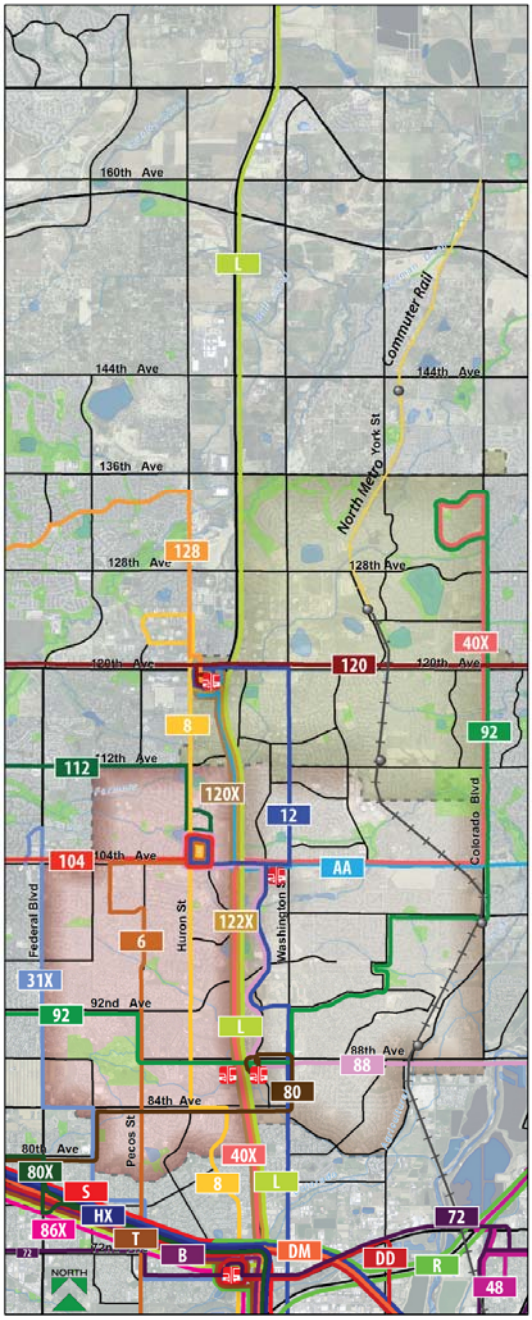
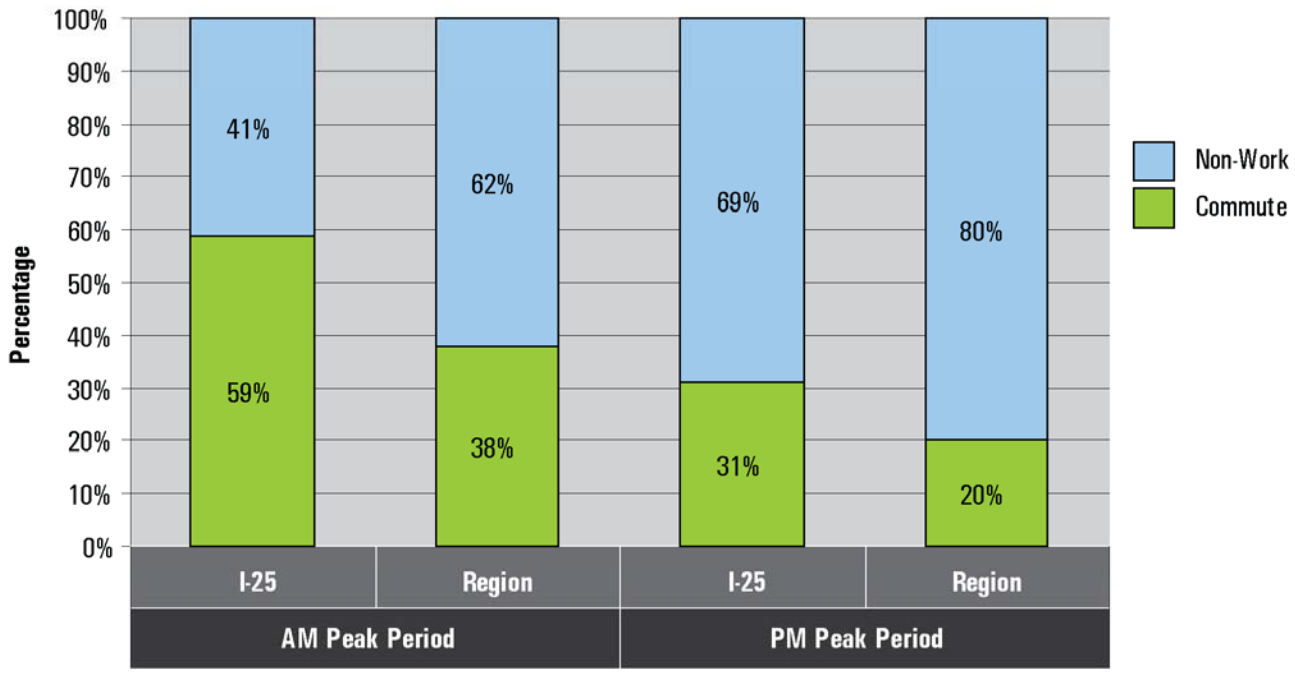
Express routes have higher than average boardings per hour



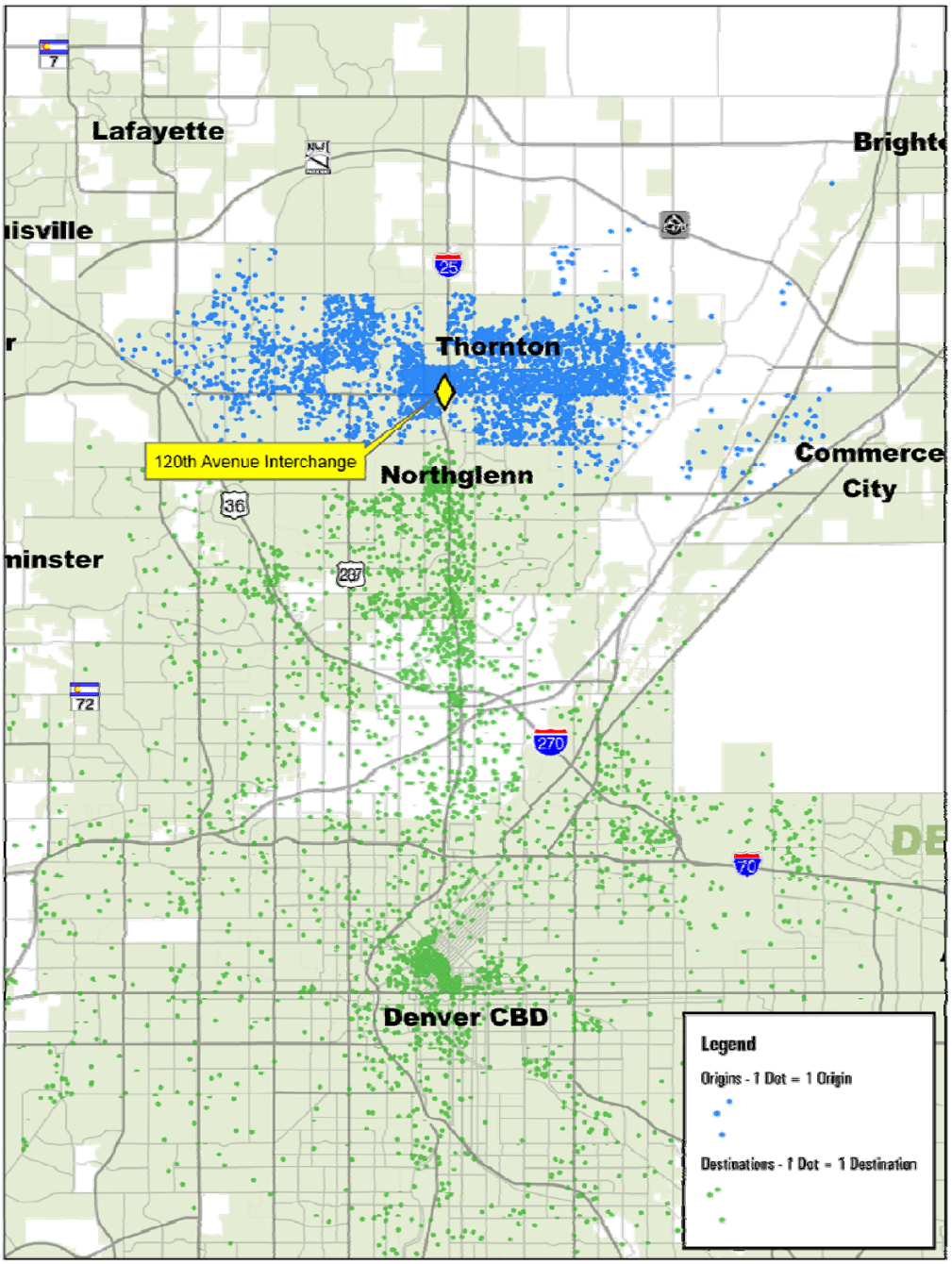
LEGEND

- = park-n-Ride
- 80X = West 80th Express
- 104 = 104th Ave.
- 120 = 120th Ave. / Brighton
- HX = 28th St. / Civic Center
- 72 = 72nd Ave.
- 80 = 80th Ave. - 80
- 92 = 92nd Ave. - 92
- DM = Boulder / Anschutz-Fitzsimons
- DD = Boulder / Colorado Blvd.
- AB = Boulder / DIA
- B = Boulder / Denver
- T = Boulder / Greenwood Plaza
- R = Brighton / Denver
- 128 = Broomfield / Wagon Rd.
- S = Denver / East Boulder
- 12 = Downing St.
- 48 = East 48th Ave. / Commerce City
- 6 = E. 6th Ave. / North Pecos
- L = Longmont Denver
- 8 = North Broadway / Huron
- 40X = North Colorado Express
- 31X = North Federal Express
- 88 = Northglenn / Commerce City / Stapleton
- 122X = Wagon Rd. / Civic Center Express
- AA = Wagon Rd. / DIA
- 120X = Wagon Rd. / Thornton Express
- 112 = West 112th Ave.
- 86X = Westminster Center Express
- = Federal Heights call-n-Ride
- = South Thornton / Northglenn call-n-Ride
- = Thornton / Northglenn call-n-Ride

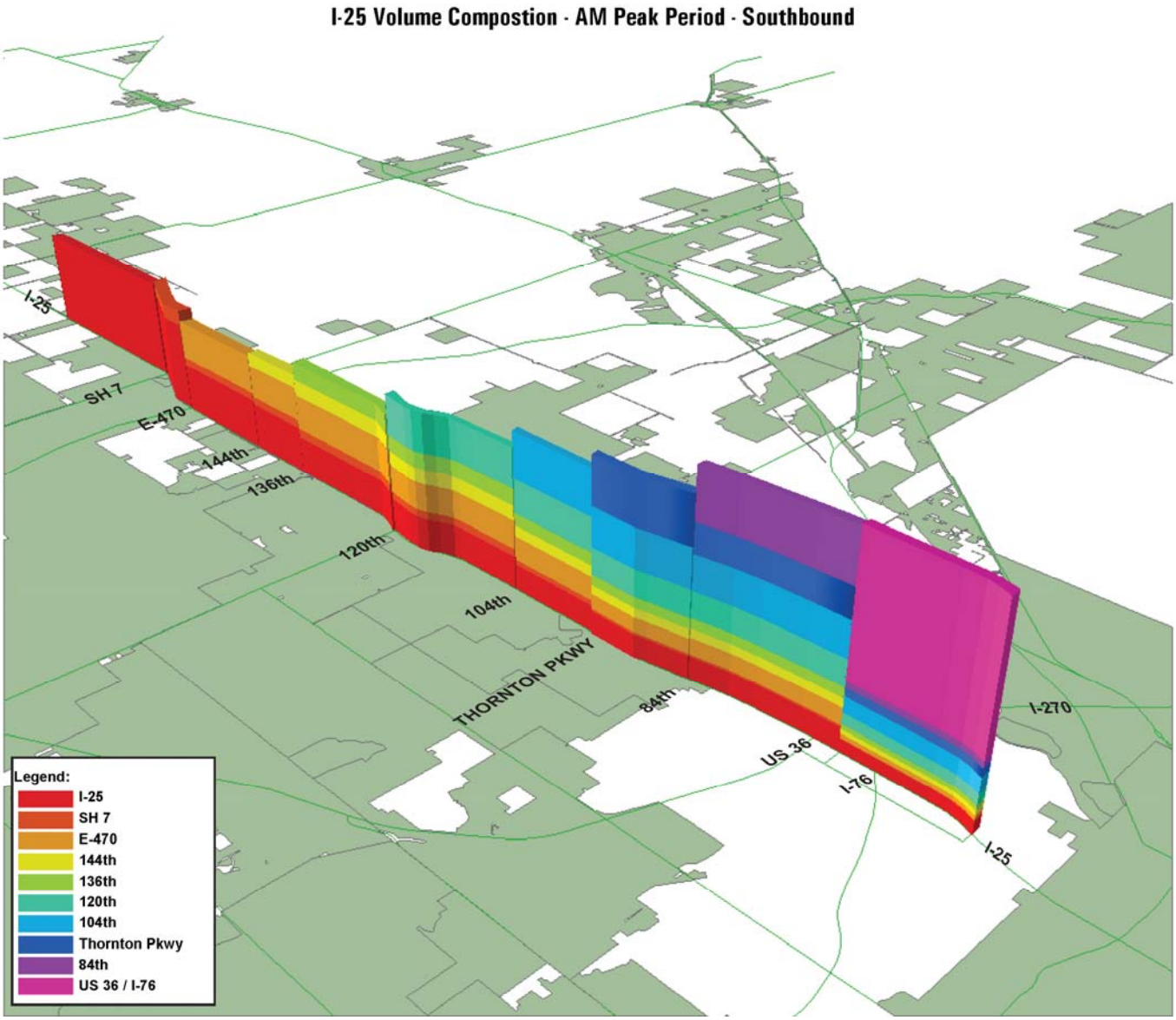
High portion of commuter trips on I-25 – southbound AM peak



10 – 15% destined to downtown Denver - southbound AM peak



High percentage of trips both enter and exit within the study area



Observations

ADT

- Volumes on I-25 increase as you go south – from 85,000 vpd in the north to 175,000 vpd near US-36
- Washington and Huron each carry as many as 25,000 vpd, with Washington carrying more traffic than Huron
- 104th and 120th each carry more than 50,000 vpd

Buses

- RTD operates 28 bus routes in the study area
- Two of RTD's most popular express routes serve the corridor – the 120X and 122X
- These bus routes carry 50% more passengers than the average RTD Express route

Commuter Share

- High percentage of commuters on I-25, compared to Region
- AM Southbound commuter share is highest
- Travelers are familiar with the corridor

Observations (*cont.*)

120th Origins/Destinations

- Origins of trips using the 120th Avenue interchange are concentrated near 120th
- Destinations concentrated in Downtown Denver and near I-25 within the Study Area
- 20% of all trips on I-25 in the Study Area are less than 10 miles long

I-25 Volume Composition

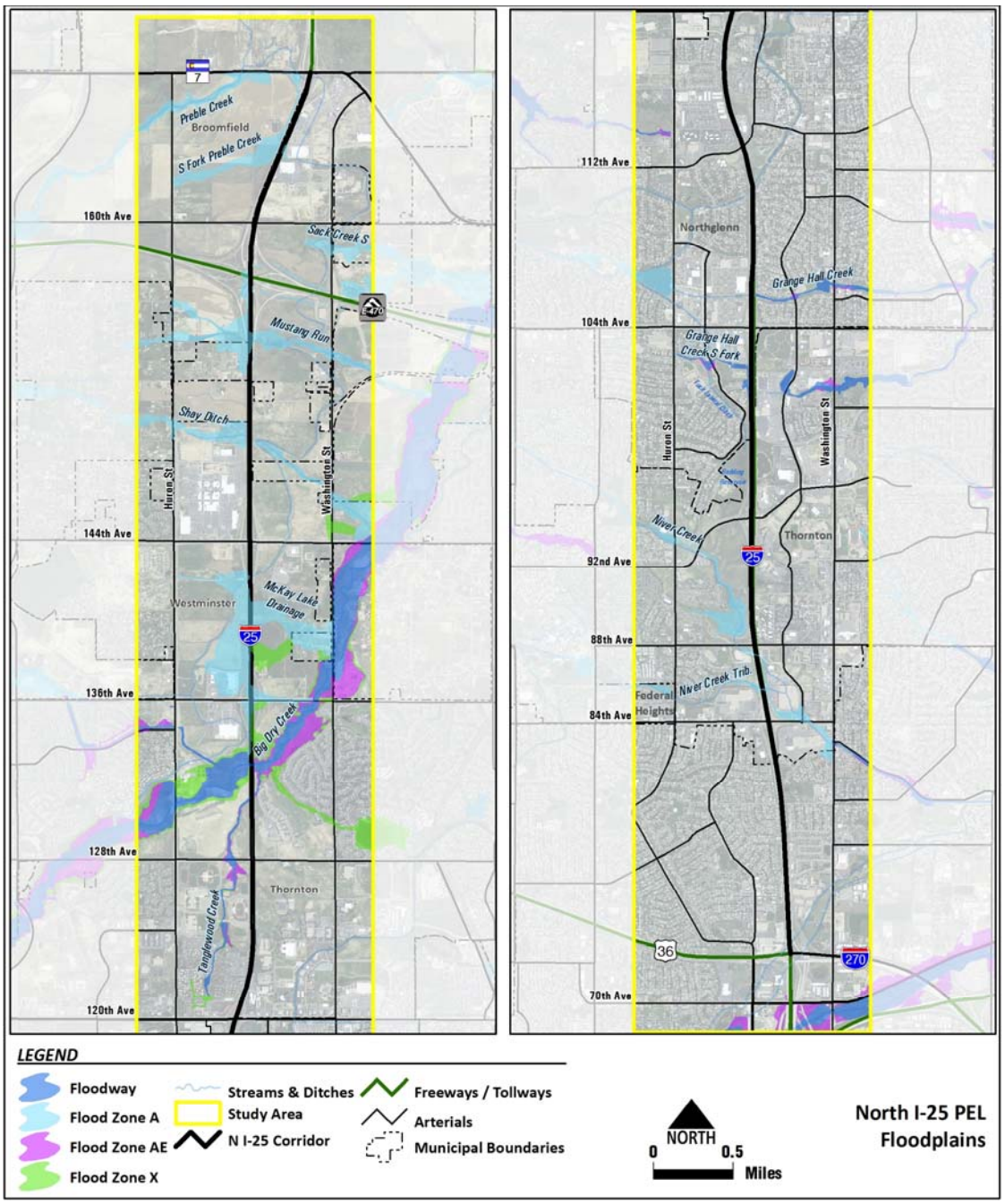
- Composition of traffic on each segment of I-25 in the Study Area
- Colors represent location I-25 traffic entered the interstate
- Very few through trips
- The US-36, I-270 & I-76 interchanges both attract and generate a large portion of the traffic on I-25

Environmental Resources

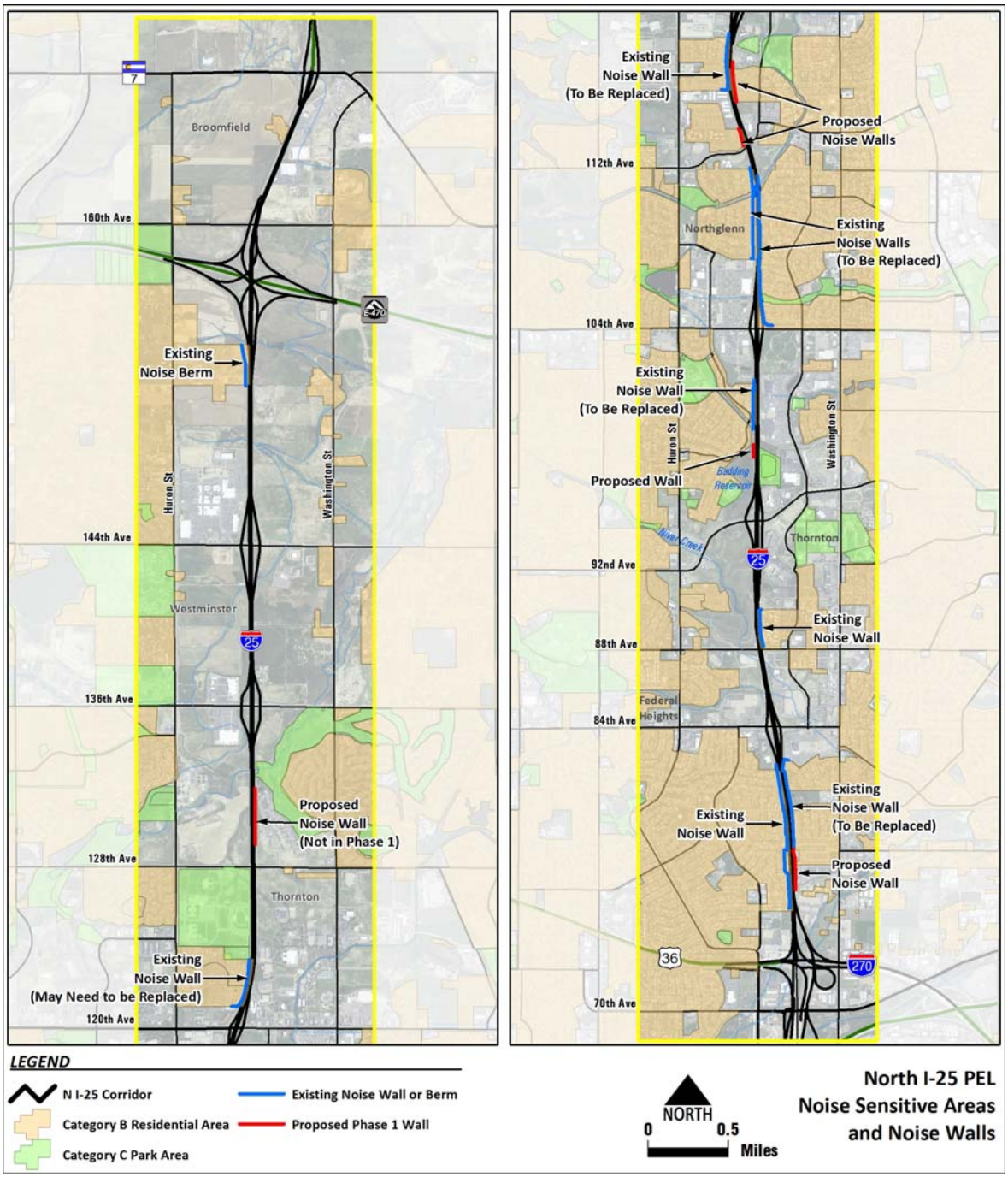
NORTH I-25 PEL

COLORADO DOT DEPARTMENT OF TRANSPORTATION

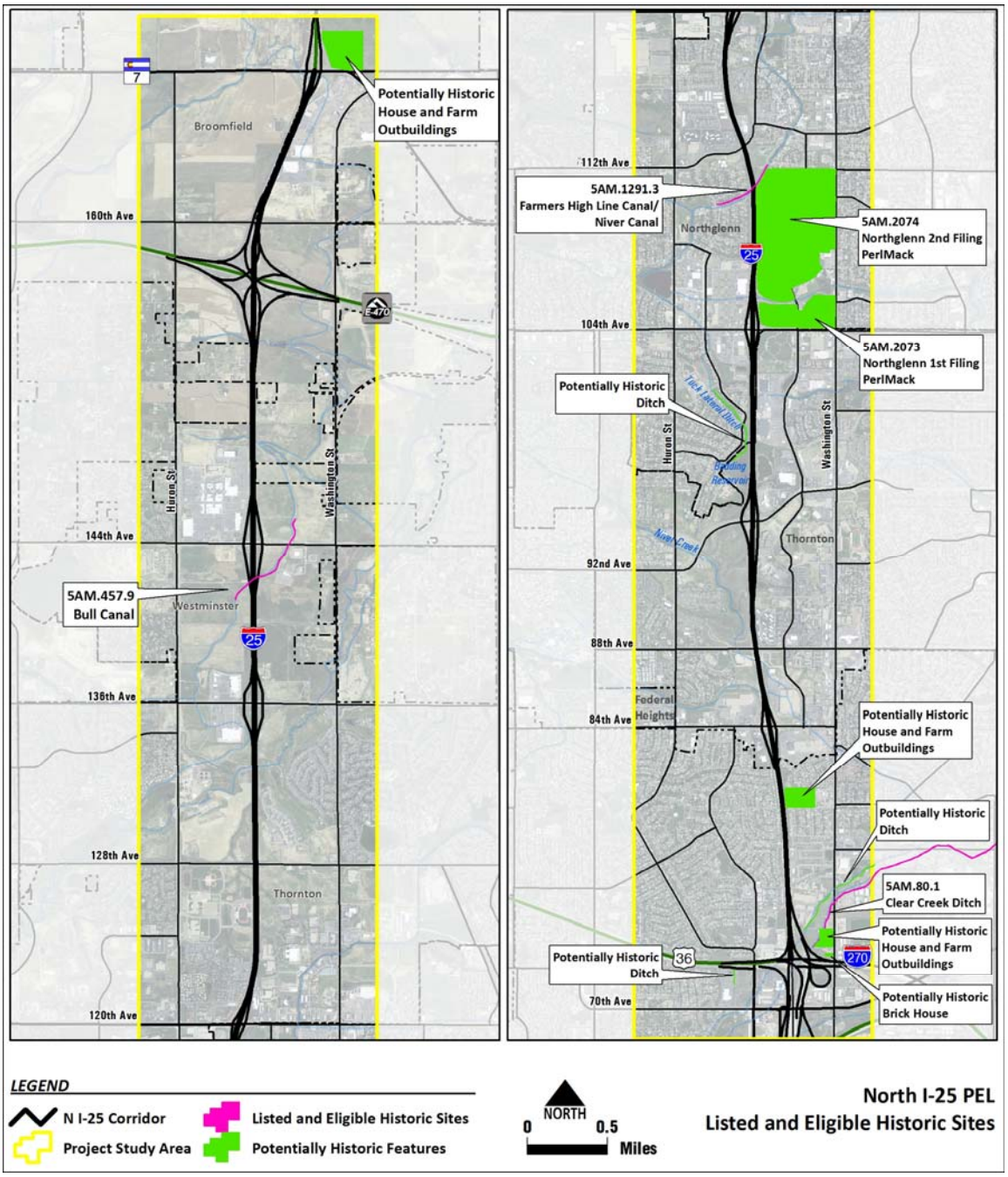
Numerous areas of flood waters on surface of I-25



Noise barriers existing and proposed



Three historically eligible ditches and multiple potential historic sites



NORTH I-25 PEL

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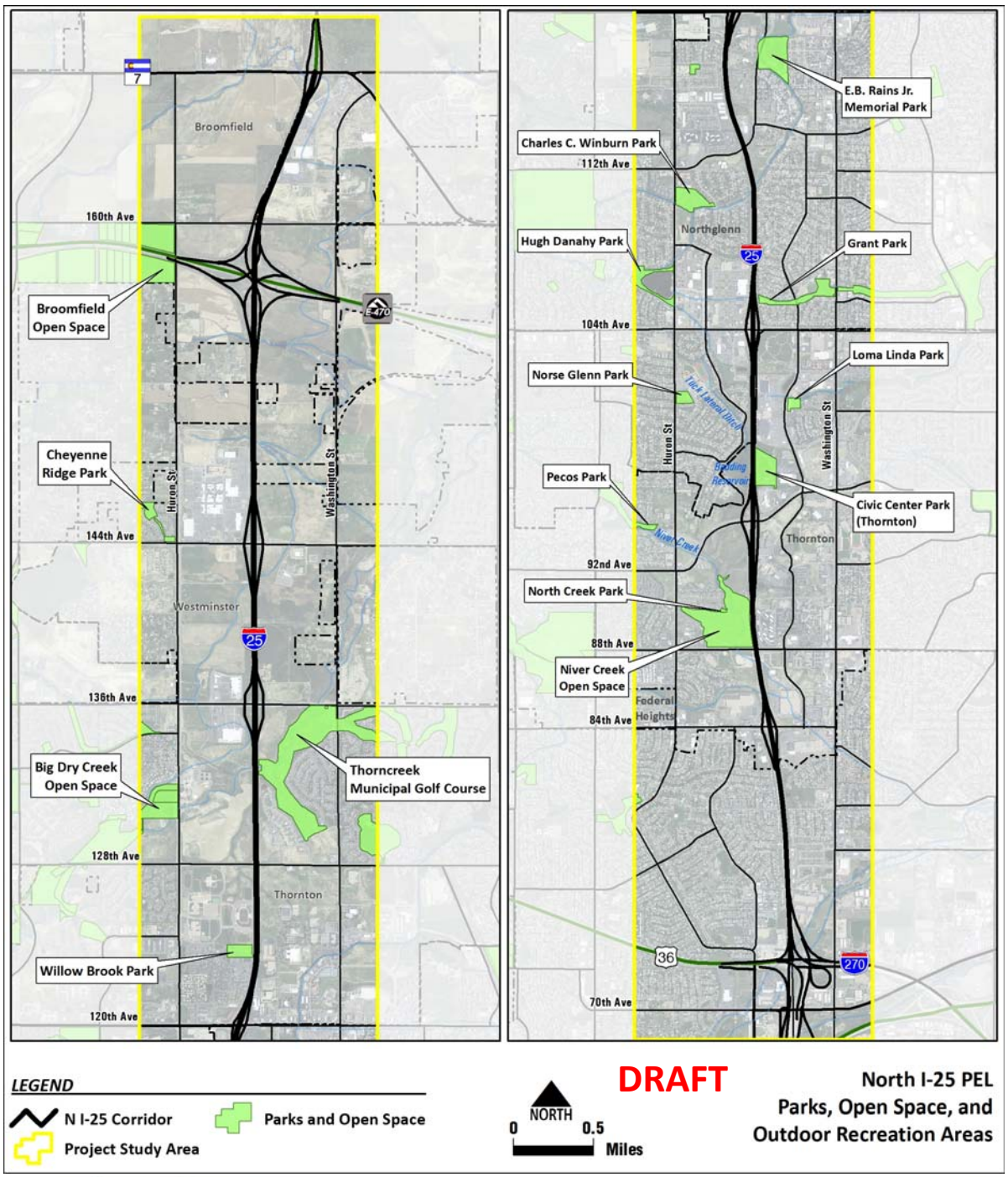
Five parks and open space facilities adjacent to I-25



NORTH I-25 PEL

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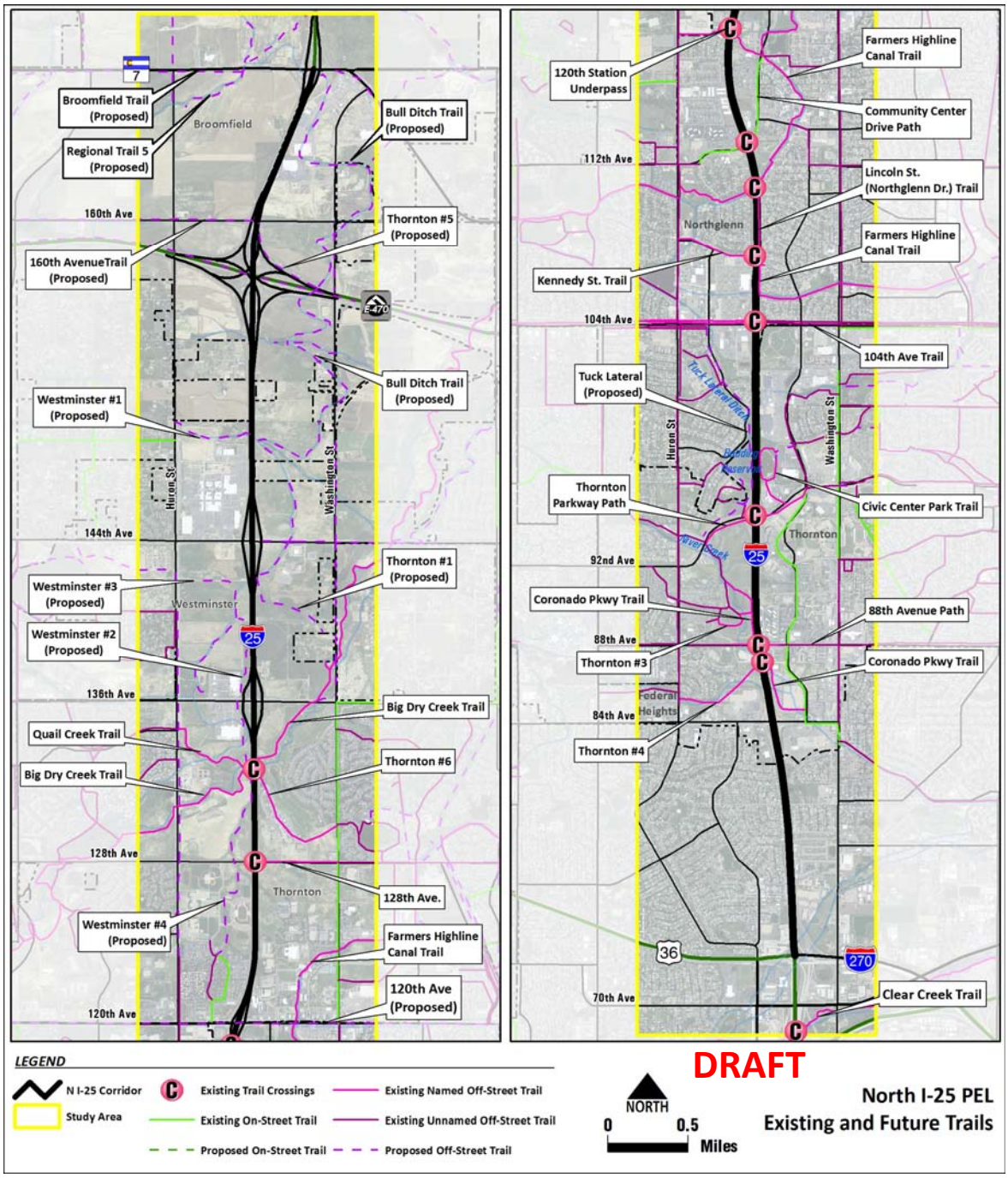
Extensive trail crossings I-25



Next Steps

- Complete Corridor Conditions Report
- Complete data analysis for Purpose and Need
- Initiated alternatives development and screening
- Begin preparation for the public meeting

Public Meeting

- Tentatively scheduled
  - Wednesday, May 9th , 5-7 PM
  - Thornton Police Department
  - Open house format
- Advertising
  - TAC functions
  - Team functions
- Topics
  - Project background and PEL process
  - Purpose and need, project goals
  - Preliminary existing conditions findings
  - Issues map
  - Solicit input

Next TAC Meeting

- May 30th (tentative)
- Public meeting summary
- DynusT update
- Introduce long-term options
- Introduce near-term alternatives

TAC MEETING MINUTES
North I-25 PEL

Technical Advisory Committee
Wednesday, April 4, 2012
1:30 PM to 3:30 PM

LOCATION: CDOT R6, North Holly

PREPARED BY: Alex Pulley, FHU

ATTENDEES: See Attached Sign-in Sheet

I. Introductions

Andy Stratton, CDOT Project Manager, provided an introduction to the meeting and stated the goal of the meeting was to have a productive dialogue between the project team and the municipalities present.

Andrea Meneghel, CDR Associates, stated that the team wanted to discuss and gain initial concurrence on the purpose and need and existing traffic and environmental corridor condition information. He stated that there would be other opportunities to provide input throughout the project and that the purpose and need will be provided to the public and then presented to the Executive Committee for their input prior to finalization.

II. TIGER IV Update

Jon Chesser, CDOT Environmental, provided an update on the TIGER IV grant application and said that a decision is expected by the end of May. He expressed appreciation to the municipalities for their local contribution to the project.

III. Visioning Workshop Summary

Andrea provided a brief summary of the Visioning Workshop and directed the group to review the Issues Graphic developed from input from the Visioning Workshop. No comments on the graphic were provided during the meeting, but asked the group to further review the document and provide any input, as appropriate.

IV. Purpose and Need

Jon provided a summary of what a Purpose and Need Statement is and how it is utilized in National Environmental Policy Act (NEPA) documentation. He then discussed how it is planned to be used in the PEL. He then presented the purpose and need statements for the PEL for discussion and initial concurrence.

Lyle DeVries, Felsburg Holt & Ullevig (FHU) Transportation Engineer, presented existing traffic information throughout the corridor that supports the corridor need statements (or problems).

<u>Congestion Problem</u>

Lyle provided congestion information for the southbound traffic in the AM peak period from Google Maps and CoTrip. A comment was received that if the information was going to be presented to the public that a legend describing the colors would be necessary.

Recurring Congestion— Lyle then presented Doppler speed information that is used to identify bottlenecks in the system. The initial graphic showed southbound recurring congestion (i.e., days when no incidents are present) from 5:00 AM to 9:30 AM. At 6:15 AM, congestion occurs at 120th Avenue and then a large bottleneck occurs south of Thornton Parkway and lasts longer than 120th Avenue. Speeds then recover by 75th Avenue. Lyle stated that the bottleneck is, indeed in the project area and not outside the project area, as was brought up in the Visioning Workshop as a possibility.

Gene Putman, Thornton, stated that this conclusion is intuitive and validates what has been stated over time. However, he advised that other days be considered to ensure that the presented day is not an anomaly. Lyle stated that multiple days were considered and the presented day was representative of recurring conditions. Brook Svboda, Northglenn, stated that when this is communicated to the public, be sure to state that this is a sample of all the data considered and explain why this information is important to analytically demonstrate the intuitive problem. Annette Marquez, Brighton, requested that supporting discussion be provided for the graphical representation of the provided information.

Non-recurring Congestion—Lyle presented another Doppler speed graphic of non-recurring congestion (i.e., when an accident occurred at 84th avenue at 5:45 AM and then a secondary crash at 88th Avenue at 6:10 AM). The queue extends up to 131st Avenue, which did not experience decreased speeds during the recurring congestion. It was stated that 81 percent of the time an accident occurs on I-25 mainline in the project area.

Gene suggested that all the same five points in the recurring congestion be presented on this graphic, as well. Brook suggested that the real base case is the one with an accident because it occurs 81 percent of the time and inquired if the project should non recurring congestion as the more typical-day scenario.

Northbound in the afternoon at US 36 has a convergence of many inputs and thus, 75th has the longest sustained decreased speeds until 6:30. Further north Thornton Parkway has extremely volatile speeds and this speed differential is a safety concern. Gene thought the differential could be a result of large trucks slowing down because of the increased grade moving towards Thornton Parkway. At 120th and further north, free-flow conditions exist.

The following comments were received on the presentation and interpretation of the traffic information:

- Instead of “Recurring” and “Non-recurring” Congestion, it should be called “Incident” and “Incident-Free”
- Add a percentage to show days with and days without incidents
- The corridor seems to differ from convention in that slower speeds should reduce incidents, but the data doesn’t seem to reflect this
- The incidents could be affected by driver expectations

<u>Safety</u>
Generally the corridor is operating in the expected range of safety for the volumes. Only two areas experience at or less than expected safety numbers. It was suggested that all areas be shown, even if they are in the expected range to show completeness. Brook conveyed that the Northglenn Police Department suggests stepping down speeds in the north to lessen the drastic slowing from congestions, potentially using variable speed limit signs.

<u>Multi-modal Facilities</u>
The information presented was based on information from the Visioning Workshop. An aerial photo of the Wagon Road park-n-Ride shows that the facility is at capacity. Kevin Standbridge suggested that RTD 5, 10, and 15 year park-n-Ride projections are used to show future problems. Gene stated that the commercial area near the park-n-Ride has put up special signage discouraging RTD patrons from parking there, which indicates additional parking demand. Brook suggested putting in parking limitations in nearby residential areas.

Purpose and Need Statement Initial Concurrence

After the presentation of the data, the purpose and need was revisited. The following comments were received:

- Make the ending of the purpose statement more positive. For example, use the word "enhance" instead of "not preclude."
- Any projects identified need to be defined enough to identify them and fold into the DRCOG 2040 fiscally constrained plan.
- Identify that the need statements are based on data available at the time of the study.
- Consider adding clarifications like "interim improvement" and "that progress toward long term options."
- Add 2035 condition information, such as that SH 7 is projected to have similar volumes in 2035 as 84th Avenue has today.

The following clarifications were provided by the project team:

- The long-term options will be identified using the 202 foot width of the recently constructed interchange/bridge structures. It will identify what could be possibly be constructed and won't state specifically what the vision is, but provide options.
- The near-term projects will be compared to this in an effort not to preclude these options.

Based on the discussion, the purpose will be updated with a more positive spin and the language in the mobility need will be modified to eliminate the recurring and non recurring congestion terminology. With these revisions, the TAC indicated initial concurrence with this purpose and need statement as a basis to move forward with public involvement and identification of alternatives. The purpose and need statement may be further refined as the study progresses, if appropriate, based on addition information that comes to light.

V. Goals

The following suggestions were made on the goal statements:

- It was suggested that the second goal (Expand/enhance transportation options) be listed first.
- Have the third goal read: "Complement and utilizes services *and goals* of the newly formed TMO."
- Change the fourth goal to read: "Avoid and minimize impacts to environmental *and cultural* resources."
- Change the fifth goal to read: "Identify and prioritize improvements that can proceed independently."
- Add a new goal that states: "*Minimize throwaway projects*."

The project team committed to look at the goals and make sure that it is clear that the goals are in addition to the purpose and need statement and that they are intended to help direct alternative development and screening.

VI. Additional Data Collection

Keith Borsheim with Jacobs Engineering presented additional information on parallel arterials trips and it was decided that the title of the slide was a bit confusing because the distribution of trips changes north of 104th. Keith presented modeled traffic data showing that the I-25 corridor carries more commuter traffic than the region.

A single origin and destination graphic for the 120th Avenue interchange was presented and showed that many of the trips end within the project area (specifically along I-25) and downtown. It was asked if the Tech Center was included in the analysis, which it was, but not displayed. It was suggested that data for the other interchanges also be presented. The project team has this information developed and it is included in the Corridor Conditions Report. It was also suggested that the figure should be footnoted that the information is from the DRCOG model.

Keith presented a volume composition graphic showing the volumes coming from each interchange. The highest single interchange adding volume is at 84th southbound. The majority of travelers in the project area exit I-25 at US 36/I-270.

Alex Pulley from Felsburg Holt & Ullevig briefly presented information on the existing environmental resources in the project area, focusing on noise walls, floodplains, and parks/open space/trails. He asked the communities for input on the trails and parks to ensure that the latest planning information has been included. A discussion regarding the noise walls along the corridor ensued that focused on what was going to be included with the TIGER IV application. It was clarified that the existing timber noise walls will be rehabilitated and any new noise walls identified in Phase 1 ROD for the North I-25 EIS would be evaluated and constructed.

VII. Next Steps

The next steps in the process will be to complete the Corridor Conditions Report and draft the Purpose and Need statement. The team will be preparing for the upcoming open house and subsequently will initiate the alternatives development and screening process.

VIII. Public Meeting

The public meeting date is to be conducted May 9th at the Northglenn Recreational Center between 5 and 7 PM.TAC members were reminded to send available contact lists to the project team. They were also asked to disseminate information on the open house to their citizens and stakeholders.

IX. Next TAC Meeting

The group tentatively discussed conducting the next TAC meeting toward the end of May. This date may be moved out in order to not conflict with the next Executive meeting.

North I-25 PEL
Sign-in Sheet
April 4, 2012

TECHNICAL ADVISORY COMMITTEE

Community/Agency	Representative	Signature
Brighton	~~Joe Smith~~ ANNETTE MARQUEZ	
Broomfield	~~Debra Baskett~~ Kevin Standbridge	
Commerce City	Daren Sterling	
Dacono	A.J. Euckert	
Erie	~~Gary Behlen~~ RUSSELL PENNINGTON	
Firestone	Dave Lindsay	
Frederick	Richard Leffler	
Longmont	Phil Greenwald	
Northglenn	Brook Svoboda	
Thornton	Gene Putman	
Westminster	Dave Downing	
Adams County	Jeanne Shreve	
Federal Transit Administration	Larry Squires	
CDOT Region 6	Andy Stratton	
CDOT Region 6	Jon Chesser	

North I-25 PEL
Sign-in Sheet
April 4, 2012

Community/Agency	Representative	Signature
CDOT Region 6	Lizzie Kemp	
CDOT Region 6	Jay Hendrickson	
CDOT Region 6	Steve Hersey	
CDOT Region 6	Leela Rajasekar	
CDOT Region 4	Carol Parr	
CDOT Region 4	Karen Schneiders	
CDOT Region 4	Long Nguyen	
FHWA	Monica Pavlik	
RTD	Lee Cryer	
DRCOG	Fred Sandal	
City and County of Denver	Emily Silverman	
Metro North Chamber	Interim Rep: Deb Obermeyer	
Broomfield EDC	Interim Rep: Stephanie Salazar	
Broomfield Chamber	Interim Rep: Jennifer Kerr	

North I-25 PEL
Sign-in Sheet
April 4, 2012

OTHER ATTENDEES

Name	Organization	Signature	Phone	Email
Doug Monroe	RTD		303 299 2213	douglas.monroe@rtd-denver.com
Nate Diaz	RTD		303 299 2135	nathan.diaz@rtd-denver.com
Holly Buck	FHU	Holly Buck	303 721 1440	Holly.Buck@fhueng.com
Andrea Meneghel	CDR		7.4074721	no change -
Leela Rajasekar	CDOT		303 757-9862	
Russell Pennington	Town of Erie		303-926-2700	rpennington@erieco.gov
Chris Primus	Jacobs		3 820 4875	chris.primus@jacobs.com
Carol Parr	CDOT		970 350 2170	carol.parr@dot.state.co.us
Jennifer Gorek	CDOT		970 350 2264	jennifer.gorek@dot.state.co.us
Thor Gjelsteen	FHU		3/721-1440	thor.gjelsteen@fhueng.com
Keith Borsheim	Jacobs		7/359-3033	KEITH.BORSHEIM@JACOBS.COM
Alex Polley	FHU		303-721-1440	alex.polley@fhueng.com
Lyle DeMerites	FHU		3-721-1440	lyle.demeritesa@fhueng.com
Larry Squires	FTA		720-963-3305	larry.squires@dot.gov

Executive Committee Meeting
May 31, 2012

NORTH I-25 PEL

COLORADO DOT DEPARTMENT OF TRANSPORTATION

Executive Committee

May 31, 2012

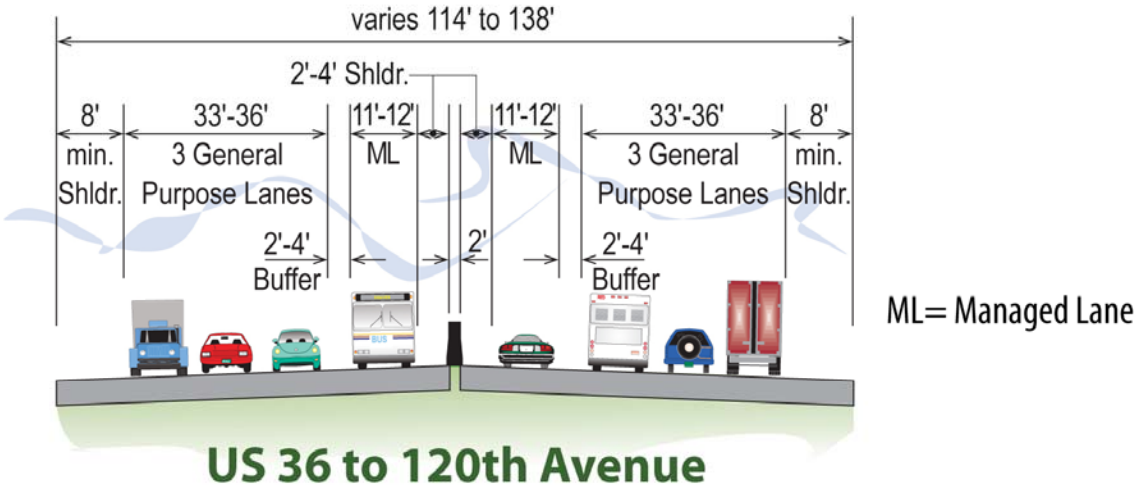
Welcome!

Agenda

- I-25 Managed Lane Extension Update
- Project Status
- Public Involvement
- Purpose and Need Statement
- Project Goals
- Next Steps: Alternative Development and Evaluation

I-25 Managed Lanes Extension – TIGER Grant

- Award notifications – June 2012
- Design in progress



Project Status

- Held Visioning Workshop
- Collected Corridor Data
- Drafted Purpose and Need Statement
- Drafted Project Goals
- Held TAC Meeting
- Held Public Open House
- Project on schedule

NORTH I-25 PEL

COLORADO DOT DEPARTMENT OF TRANSPORTATION

Visioning and Issues Report

- Based on Stakeholder Interviews and Visioning Workshop
- Corridor Issues
- Improvement Suggestions
  - I-25 Mainline
  - Parallel Arterials
  - Transit, Bicycle and Pedestrian
  - Intelligent Transportation Systems
  - Travel Demand Management

Draft Corridor Assessment Report

- Travel Patterns
  - Majority of trips are to/from the corridor area
- Traffic Volumes and Speeds
  - Existing demand exceeds capacity
  - Corridor regularly experiences extreme and prolonged congestion
- Accident History
  - Two locations experience higher than expected rear-end and sideswipe crashes

Draft Corridor Assessment Report

- Transit Services and Ridership
  - Parking demand exceeds parking supply at the Wagon Road park-n-Ride and the eastern Thornton park-n-Ride
- Environmental Data
  - Parks/trails, historic sites, hazardous materials, wildlife, and wetlands all are most critical environmental resources in this corridor

Public Involvement

- Public Meeting May 9, 2012
  - Presented project description, corridor data, draft purpose and need statement
  - Received input on corridor issues and potential solutions

Public Comments – Summary

- Concern about noise
- Support for additional capacity
- Support for operational improvements
- Support for transit improvements
- Questions regarding coordination of planned corridor improvements
- Questions on I-25 Express Lanes use policy
- Concern about RTD FasTracks schedule
- Presented draft purpose and need statement – no issues identified

Definition of a Purpose & Need Statement

- Describes the intention of the project (project purpose)
- States the problems (project needs)
- Determines and limits the range of alternatives
- Not mode specific or biased toward a particular solution

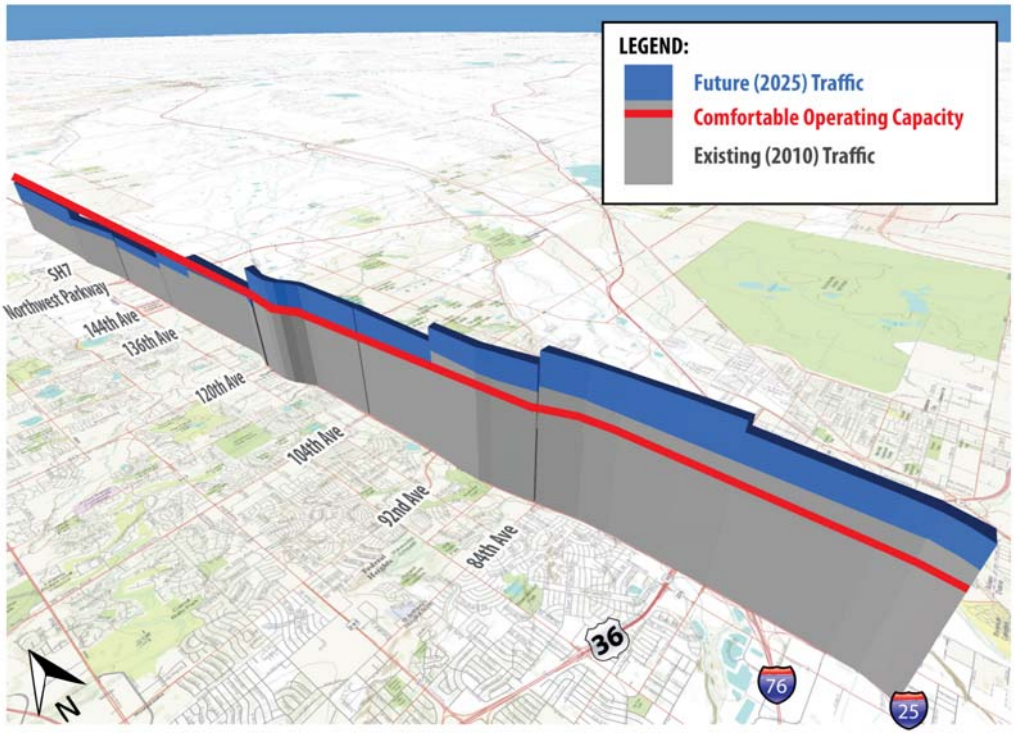
DRAFT Purpose & Need Statement

- **Project Purpose**

  The purpose of the project is to reduce congestion and improve safety on I-25 between US 36 and SH 7 by implementing near-term, multi-modal, and cost-effective transportation improvements that are compatible with long-term options and the recently constructed interchange structures.

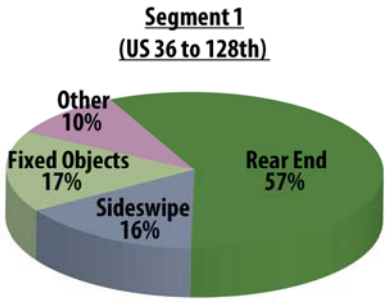
DRAFT Mobility Problem

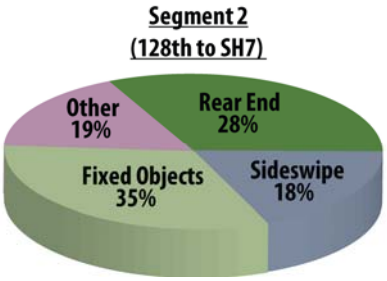
- Traffic congestion resulting from high traffic volumes and incidents.



DRAFT Safety Problem

- Higher than expected crashes due to traffic congestion.





DRAFT Multimodal Problem

- Over-capacity multimodal facilities.

DRAFT Purpose & Need Statement

- **Project Purpose**

  The purpose of the project is to reduce congestion and improve safety on I-25 between US 36 and SH 7 by implementing near-term, multi-modal, and cost-effective transportation improvements that are compatible with long-term options and the recently constructed interchange structures.

Decision Point

- Do you have any concerns with the Purpose and Need of this study as presented?
- Do you support the study moving forward with the Purpose and Need as outlined?

Definition of Project Goals

- Goals are not project needs or the project purpose
- Goals provide guidance for alternatives development and evaluation

- Alternatives should consider the following:

DRAFT Project Goals

- Expand/enhance transportation options.
- Maximize the use of existing infrastructure.
- Complement and utilize services and goals of the newly formed TMO.
- Avoid and minimize impacts to environmental and cultural resources.
- Identify and prioritize improvements that can proceed independently.
- Coordinate with local plans and projects.
- Maximize sustained benefits.
- Minimize throwaway projects.

Next Steps

North I-25 PEL Project Tasks

- [x] Establish Purpose and Need
- [x] Identify Corridor Issues
- [ ] Identify Long-Term Options
- [ ] Identify and Evaluate Near-Term Alternatives
- [ ] Estimate Costs of Near-Term Alternatives
- [ ] Confirm Compatibility of Near-Term Alternatives with Long-Term Options
- [ ] Recommend and Prioritize Near-Term Alternatives

Legend

- [x] Tasks to Date
- [ ] Next Steps

Alternative Development - Suggested Improvements

- Modifications to managed lanes
- Additional Acceleration/deceleration lanes
- Additional general purpose lane
- Transit improvements
- Policy changes
- ITS enhancements
- Travel demand management strategies

Comments

- In coordination with TAC representative

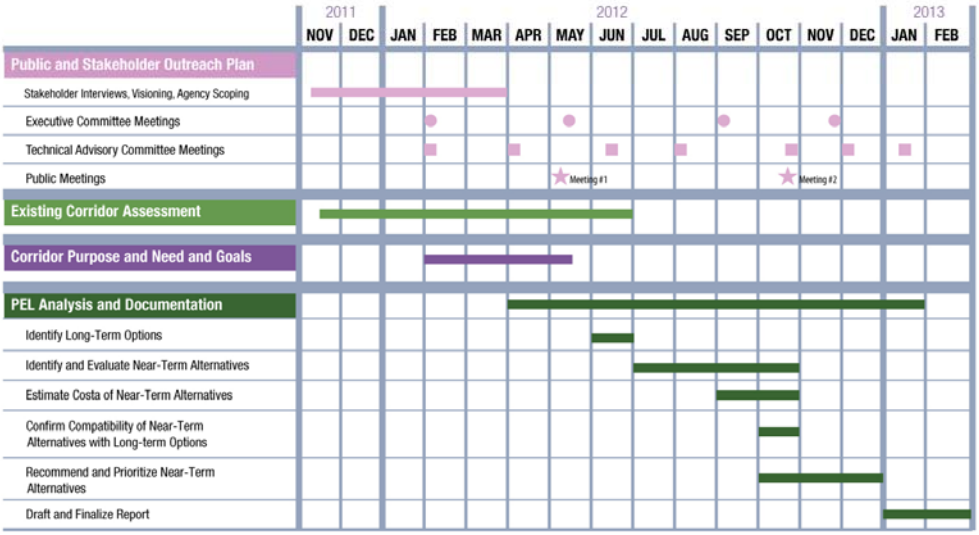
- Email Andy
  - Andrew.Stratton@dot.state.co.us
- Project website
  - http://www.coloradodot.info/projects/northI25PEL

NORTH I-25 PEL

COLORADO DOT DEPARTMENT OF TRANSPORTATION

Thank you

- Next TAC Meeting: June 28 2012
- Next Executive Committee Meeting: September 2012
- Next Public Meeting: October 2012



Executive Committee Meeting Minutes
North I-25 PEL

Thursday May 31, 2012
1:30 PM to 3:00 PM

LOCATION: Thornton Police Department Training Center
9551 Civic Center Drive
Thornton, CO 80229

PREPARED BY: Holly Buck, FHU

ATTENDEES: See Attached Sign-in Sheet

I. Introductions

Andy Stratton, CDOT Project Manager, provided an introduction to the meeting and stated that the goal of the meeting was to update the committee on the status of the project, provide a summary of comments received to date, and get concurrence from the committee on the Purpose and Need. He reminded the group that the Executive Committee's role is to provide policy-level feedback at key milestones.

II. TIGER IV Update

Andy provided an update on the TIGER IV grant application and said that a decision is expected by the end of May or early June.

III. Project Status

Andy provided the group a summary of the project activities to date. This includes conducting the stakeholder interviews, holding the visioning workshop, and the public open house. The project remains on schedule. Over the next few months the team will develop and evaluate near-term and long-term alternatives to address the Purpose and Need.

Lyle Devries provided the group a summary of the materials compiled to date. The first is a Visioning and Issues report describing what was heard from at the stakeholder interviews and during the Visioning workshop. The second report is the Corridor Conditions report which documents analysis and data on the corridor conditions. Both reports are available for review by the committees.

IV. Comment Summary

Chris Primus provided a summary of the comments received to date on the project. Most of these comments were received at the public meeting held May 9th or via the web site during the week of the public meeting. Comments included questions about the TIGER project and other planned improvements for the corridor, support for transit improvements, disappointment on the timing of the North metro rail line, implicit support for the Purpose and Needs Statement. Holly Buck asked the committee if they would like a list of the comments verbatim or if a summary would be sufficient. The group felt that a summary was sufficient at this point.

Gene Putman stated that Thornton had recently requested that RTD consider a park-n-Ride at SH 7 and I-25. RTD has responded with a letter stating that more information about parking demand, demand for service and land use will need to be considered.

Gene also reminded the group that both the SH 7 and I-25 PELs had information at Thorntonfest on May 19th. The most commonly asked question was about the status of RTD's work on the North Metro corridor. The team will add comments received at Thorntonfest to the overall comment summary.

V. Purpose and Need

Jon Chesser, CDOT Environmental, provided information about purpose and need statements. PN statements

identify the problem to be addressed and the purpose of a project. They are not mode specific and can't be defined as a lack of a mode. Holly reviewed the three "need" statements. The three needs address the mobility problem, safety problem and multimodal capacity problem along the corridor. Holly then asked the group for questions and comments on the purpose statement as well as the three needs.

Jeanne Shreve stated that multimodal should be defined in the last need statement. General purpose lanes may be the ultimate solution along the corridor and it is important that the term multimodal is defined as all modes not just bus. It should include general purpose lanes too.

Steve Rudy expressed concern about this PEL versus the outcome of the EIS Phase 1. The team responded that the North I-EIS identified transportation improvements for long-distance travelers. More localized issues in the metro area were not examined by the EIS. Therefore this PEL was initiated to study these specific needs.

Myron Hora asked about how a PEL would address the long-term vision because this is typically established before prioritizing near-term improvements. The team answered that a PEL is a flexible study process that can examine the feasibility of options in the corridor within a framework of reasonable long-term solutions. This study will look at a number of long-term options without identifying a preferred long-term solution. Near-term alternatives will be evaluated on their compatibility with long-term options. It was noted that the long-term vision is established by the metro vision template of 202 feet which all recent bridge structures meet. The ultimate long-term vision is formalizing that template but no more will be done during this PEL.

At the conclusion of the discussion, the group was asked if they support the purpose and need. All those present raised their hand in support of the statement.

Jon reviewed the draft goals stating that these are not technically needs but will be used to evaluate and differentiate between the alternatives.

Stephanie Salazar asked if there was any sign of environmental issues that could impact cost. Jon responded that noise and needed noise walls could have a substantial impact on the cost.

Gene commented that light rail on I-25 was thoroughly examined as part of the North Metro EIS. This study should reference that effort to eliminate that as an option for this study.

Nancy McNally expressed the need for the region to look at the tolling facilities in a comprehensive fashion. US 36, I-25, I-76 and I-270 could all potentially have tolling. It seems that the convergence of these facilities needs to be bidirectional. It was suggested that CDOT study buildout of the managed lane system.

VI. Schedule and Next Steps

Holly provided the group information on project activities that would be occurring over the next few months. These include identification of long-term options, development and evaluation of near-term alternatives, and confirmation of compatibility of the two. EC members were asked to keep in touch with their Technical Advisory representative as the team will be working closely with them over the summer. The next Executive meeting is anticipated to be in September. The final public meeting is tentatively planned for October.

North I-25 PEL—Executive Committee Meeting
Sign-in Sheet
May 31, 2012

EXECUTIVE COMMITTEE

Community/Agency	Representative	Signature	Alternate	Signature
Brighton	Dick McLean Mayor		Wayne Scott Councilmember	
Broomfield	Pat Quinn Mayor		Kevin Standbridge Deputy CM	
Commerce City	Sean Ford Mayor		Jason McEldowney Councilmember	
Dacono	Charles Sigman Mayor		A.J. Euckert Interim City Manager	
Erie	Cheryl Hauger Mayor Pro Tem		Gary Behlen Public Works Director	
Firestone	Chad Auer Mayor		Wes LaVanchy Town Manager	
Frederick	Eric Doering Mayor		Gary Barbour Interim Town Administrator	
Longmont	Dennis Coombs Mayor		Phil Greenwald Transportation Planner	

North I-25 PEL—Executive Committee Meeting
Sign-in Sheet
May 31, 2012

Community/Agency	Representative	Signature	Alternate	Signature
Northglenn	Joyce Downing Mayor		Brook Svoboda Director of Planning	
Thornton	Heidi Williams Mayor		Joyce Hunt	
Westminster	Nancy McNally Mayor		Aric Otzelberger Senior Mngmt. Analyst	
Adams County	Jim Robinson Administrator		Erik Hansen	
Metro North Chamber	Jonathan Perlmutter (J Perlmutter & Co) Howard Gelt (Polsinelli Shughart PC)		Deb Obermeyer Executive Director	
CDOT Region 6	Reza Akhavan, RTD		STEVE OLSON ~~Kevin Radel~~, North Program Engineer	
CDOT Region 4	Myron Hora, Planning and Environmental Manager		Johnny Olson RTD	
FHWA	Shaun Cutting, Program Delivery		Monica Pavlik, Senior	

North I-25 PEL—Executive Committee Meeting
Sign-in Sheet
May 31, 2012

Community/Agency	Representative	Signature	Alternate	Signature
	Engineer		Operations Engineer	
RTD	Lee Kemp			
City and County of Denver	Brian Mitchell		Michael Finochio	
Federal Transit Administration	David Beckhouse, Sr. Transportation Program Specialist		Larry Squires, Community Planner	
DRCOG	Steve Rudy Director, Transportation Planning and Operations		Steve Cook Planning Manager	
Broomfield EDC	Interim Rep: Stephanie Salazar, President and CEO			
Broomfield Chamber	Interim Rep: Jennifer Kerr President and CEO			
ADAMS COUNTY ECONOMIC DVPT	BARRY GORE PRESIDENT/CEO			

North I-25 PEL—Executive Committee Meeting
Sign-in Sheet
May 31, 2012

TECHNICAL ADVISORY COMMITTEE

Community/Agency	Representative	Signature
Brighton	Joe Smith	
Broomfield	~~Debra Baskett~~ Kevin Standbridge	
Commerce City	Daren Sterling	
Dacono	A.J. Euckert	
Erie	Gary Behlen	
Firestone	Dave Lindsay	
Frederick	Richard Leffler	
Longmont	Phil Greenwald	
Northglenn	Brook Svoboda	
Thornton	Gene Putman	
Westminster	Dave Downing	
Adams County	Jeanne Shreve	
Federal Transit Administration	Larry Squires	
CDOT Region 6	Andy Stratton	

North I-25 PEL—Executive Committee Meeting
Sign-in Sheet
May 31, 2012

Community/Agency	Representative	Signature
CDOT Region 6	Jon Chesser	
CDOT Region 6	Lizzie Kemp	
CDOT Region 6	Jay Hendrickson	
CDOT Region 6	Steve Hersey	
CDOT Region 6	Leela Rajasekar	
CDOT Region 6	Steve Olson	
CDOT Region 4	Carol Parr	
CDOT Region 4	Karen Schneiders	
CDOT Region 4	Long Nguyen	
FHWA	Monica Pavlik	
RTD	Lee Cryer	
DRCOG	Fred Sandal	
City and County of Denver	Emily Silverman	
Metro North Chamber	Interim Rep: Deb Obermeyer	
Broomfield EDC	Interim Rep: Stephanie	

North I-25 PEL—Executive Committee Meeting
Sign-in Sheet
May 31, 2012

Community/Agency	Representative	Signature
	Salazar	
Broomfield Chamber	Interim Rep: Jennifer Kerr	
Smart Commute Metro North (NMTA TMO)	Karen Stuart	Karen Stuart

Technical Advisory Committee Meeting
June 28, 2012

NORTH I-25 PEL

COLORADO DOT DEPARTMENT OF TRANSPORTATION

Technical Advisory Committee

June 28, 2012

Welcome!

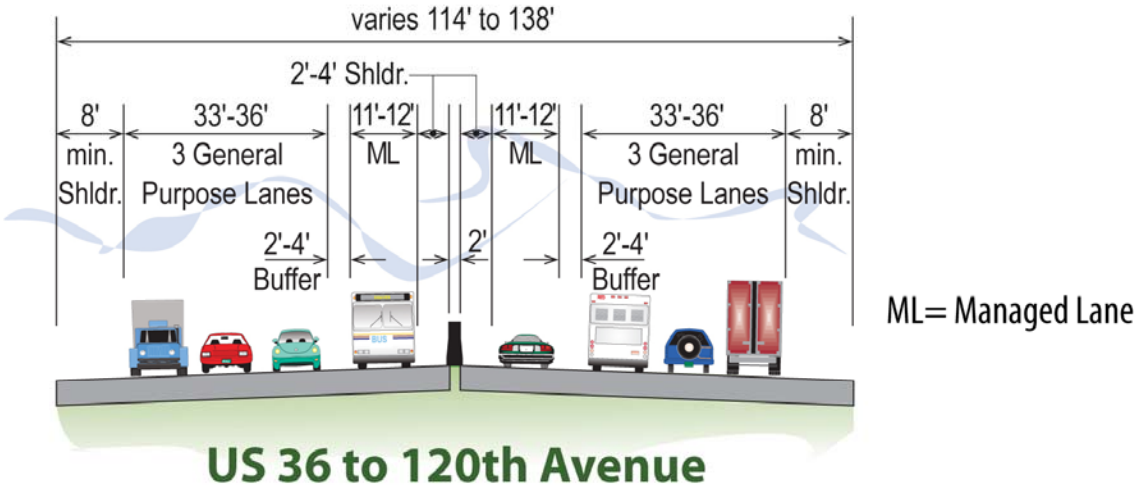
Agenda

Meeting goal: Review and discuss initial set of near-term components

- Welcome and introductions
- TIGER update!
- Public open house & Executive Committee follow-up
- Draft Corridor Assessment Report
- Near-term components
- Long-term options
- Next Meeting

I-25 Managed Lanes Extension – TIGER Grant

- Award notification!
- Design in progress



Public Meeting

- Open House May 9, 2012
  - Presented project description, corridor data, draft purpose and need statement
  - Received input on corridor issues and potential solutions

Public Comments – Summary

- Concern about noise
- Support for additional capacity
- Support for operational improvements
- Support for transit improvements
- Questions regarding coordination of planned corridor improvements
- Questions on I-25 Express Lanes use policy
- Concern about RTD FasTracks schedule
- Presented draft purpose and need statement – no issues identified

Executive Committee

- May 31, 2012
  - Presented project status, summary of public input, draft purpose and need statement
  - Received affirmation of purpose and need statement

NORTH I-25 PEL

COLORADO DOT DEPARTMENT OF TRANSPORTATION

Draft Corridor Assessment Report

- Travel Patterns
- Traffic Volumes and Speeds
- Accident History
- Transit Services and Ridership
- Environmental Data

- Available for TAC Review
- Draft: sections still to be added

Evaluation Process

- Level 1 screening
  - Qualitative assessment of components
  - Potential to meet purpose
  - Potential to address identified problems
- Level 2 screening
  - Quantitative analysis resulting in a comparative assessment among components
- Package components to create alternatives and identify Preferred Alternative
- Prioritize components of Preferred Alternative

Level 1 Screening Criteria

- Meet purpose and need
  - Potential to reduce congestion in near-term
  - Potential to reduce crashes in near-term
  - Potential to increase multimodal capacity in near-term
- Potential to impact key environmental resources
- Potential to be funded in the near-term
- Compatible with recently constructed structures

Next Steps and Next Meeting

- Conduct Level 1 screening
- Initiate compatibility check of near-term components and long-term options
- Develop Level 2 components list for screening

- Next TAC Meeting: August 16th (tentative)

(DRAFT)

Long Term Options Identification

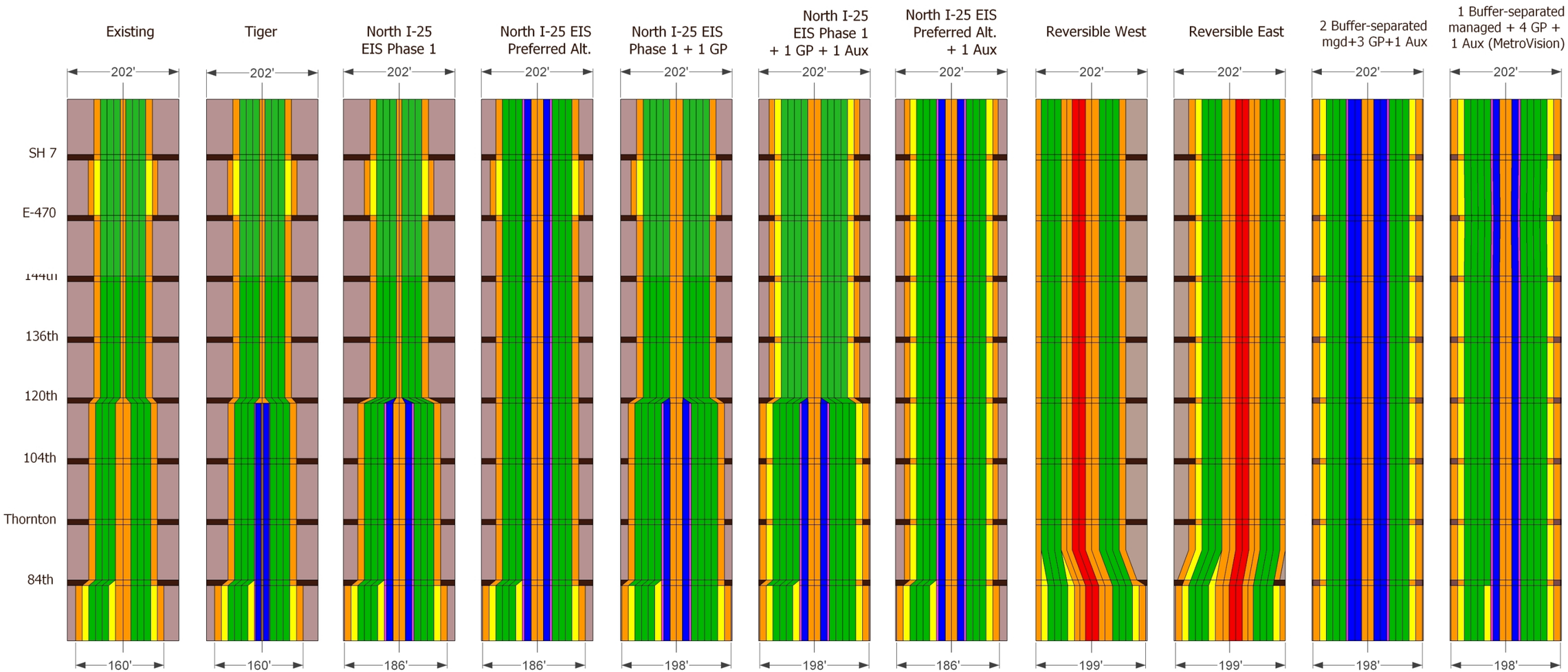
Parameters and Development Requirements

The parameters listed in this section provide guidelines for the development of the long term options. Each of the options should, at a minimum:

- Work within the 202-foot envelope for the majority of the corridor
  - This 202-foot width is compatible with the corridor plan in 2035 MetroVision, and all of the recent bridge structures accommodate this width. However, it would still require right-of-way acquisition
- Work within 82-feet per direction at E-470 for mainline lanes
  - Additional width may be available for auxiliary or collector-distributor lanes
- Take into account projects in the 2035 Fiscally Constrained RTP
  - North I-25 EIS Phase 1
    - SH 7 Interchange – coordination with the SH-7 PEL
- Take into account the 2035 MetroVision policies and plans at either end of the corridor
  - South end of the Study Area:
    - General Purpose Lanes: 4 through per direction
    - Managed Lanes: 1 per direction north of US 36, reversible south
    - Managed Lanes: I-25, US-36, I-270, and I-76
  - North end of the Study Area:
    - General Purpose Lanes: 3 through per direction
    - Managed Lanes: 1 per direction, per the North I-25 EIS / MetroVision
  - Reflect regional goals and policies
- Minimize impacts to structures
- Minimize interchange modifications

Additional Parameters

- Ability of the option to accommodate **2035 travel demand**
  - Directional travel
  - SOV vs. HOV
  - Downstream (AM), Upstream (PM) Capacity Limitations
- Ability of the option to improve **Safety**
  - Emergency Response
  - Cross-Section
- Ability of the option to provide **Multimodal Options**
- Ability of the option to meet **CDOT design criteria**



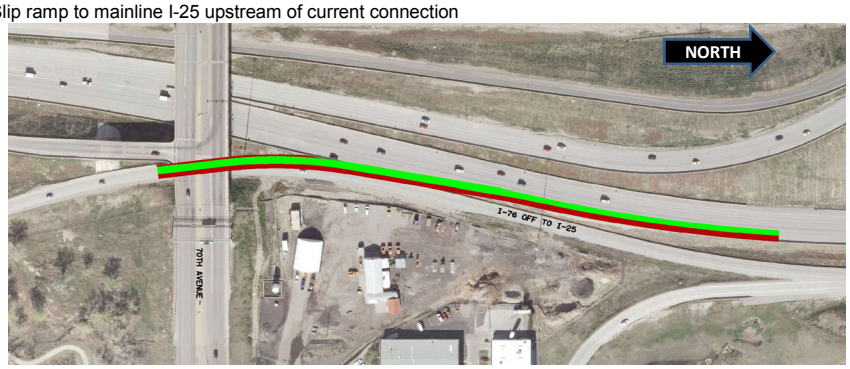
Shoulder
Auxiliary Lane
GP Lane
Managed Lane
Reversible Lane
Buffer

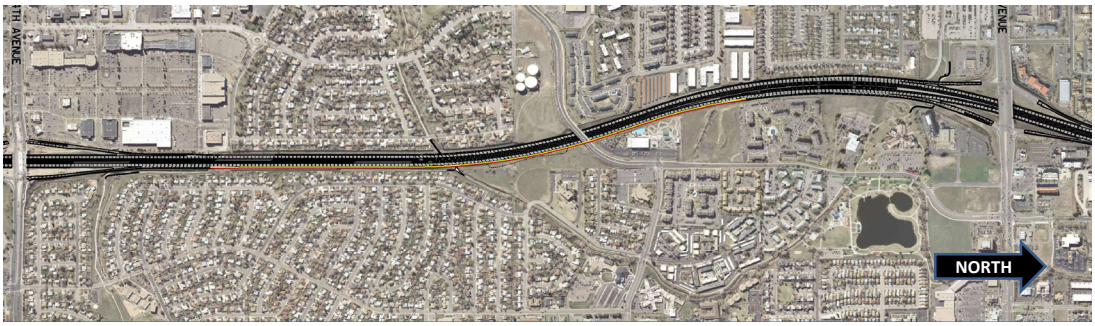
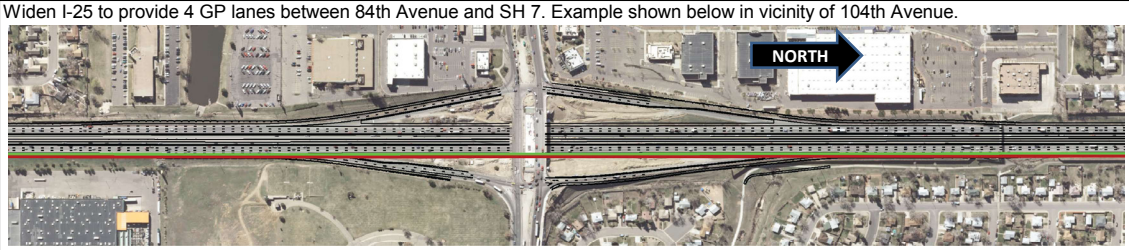
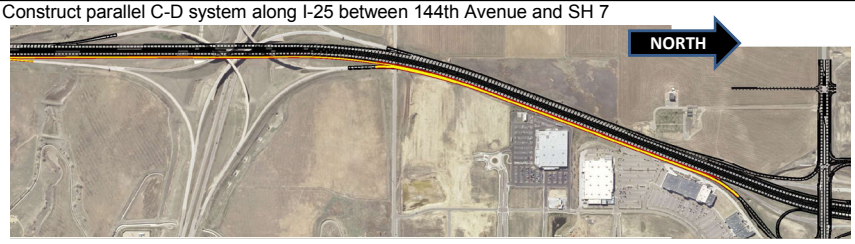
Long Term Options

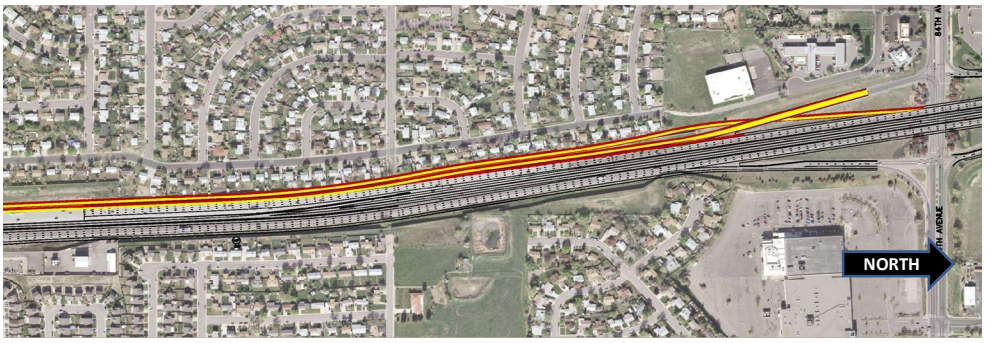
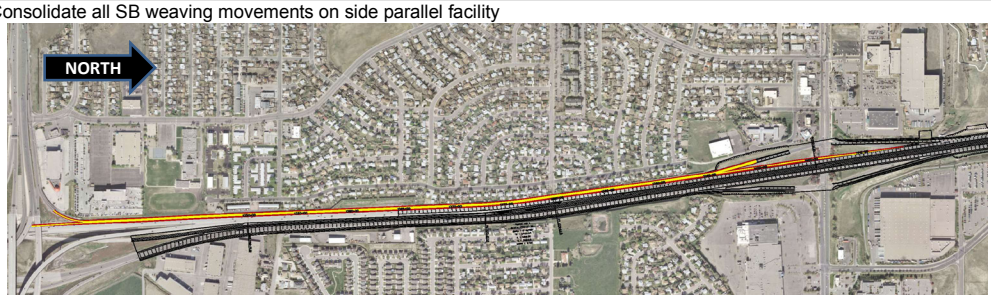
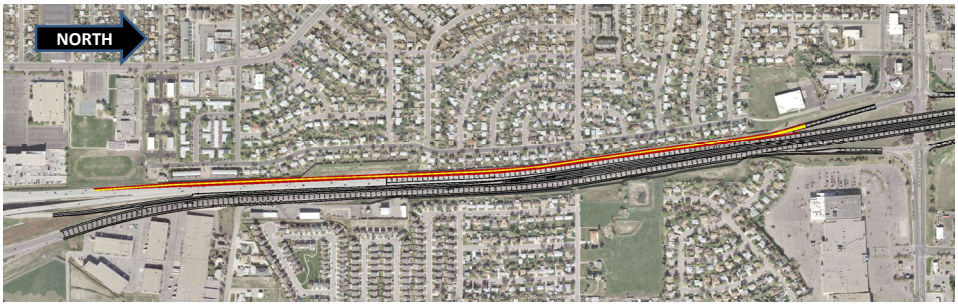
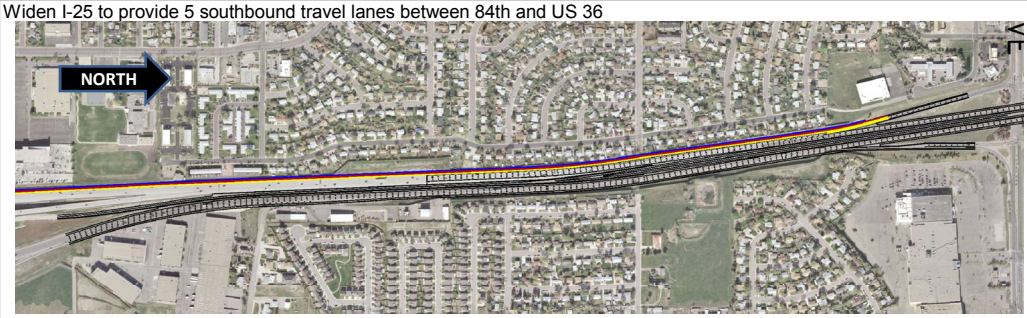
PRELIMINARY

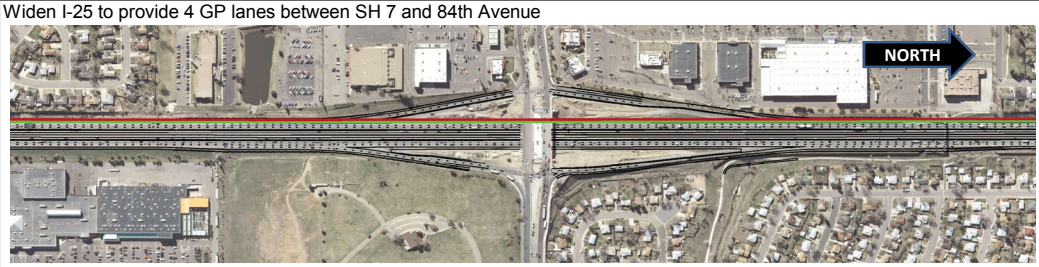
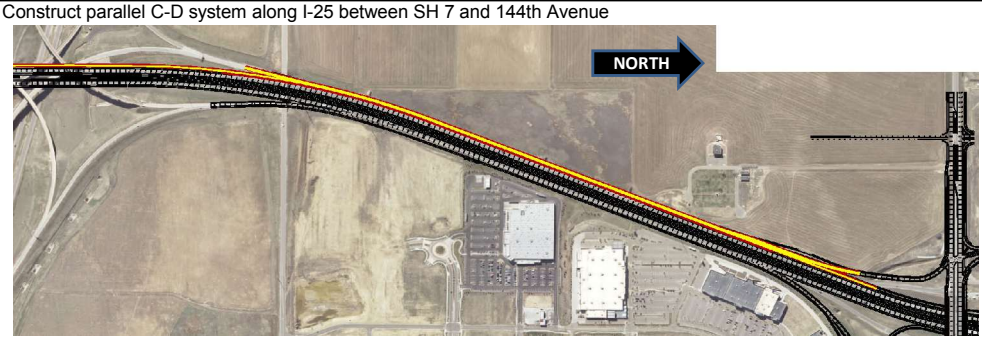
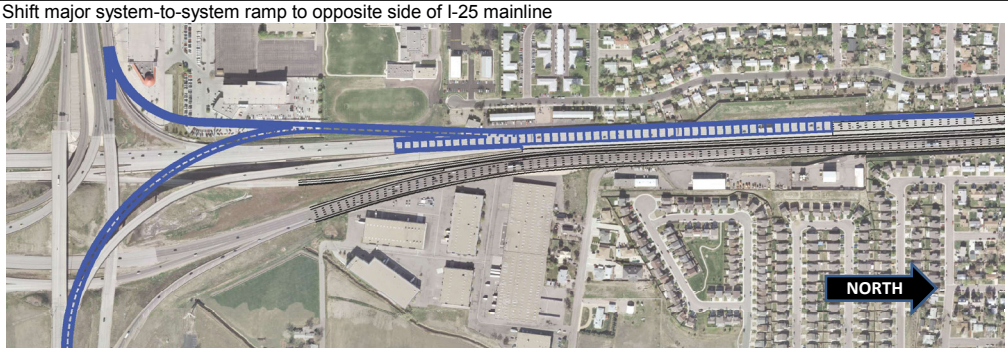
NORTH I-25 PEL

COLORADO DOT DEPARTMENT OF TRANSPORTATION

Near Term Operational Improvements - North I-25 PEL Preliminary List of Initial Roadway Infrastructure Components		
Component Reference	**Title**	**Description**
Northbound I-25 The northbound merge of multiple ramps and connections currently cause congestion on I-25 and ramps, particularly in the weekday afternoon peak period. Ideas for addressing this are listed below.		
N.1	Braided ramps - US 36 to 84th	Physical grade separation to eliminate some weaving movements
N.2	C-D system - US 36 to 84th	Consolidate all NB weaving movements on side parallel facility
N.3	Additional lane - I-270 to 84th	Provide lane add via northbound I-270/US 36/I-76 ramp
N.4	I-76 direct connection to I-25	Slip ramp to mainline I-25 upstream of current connection 

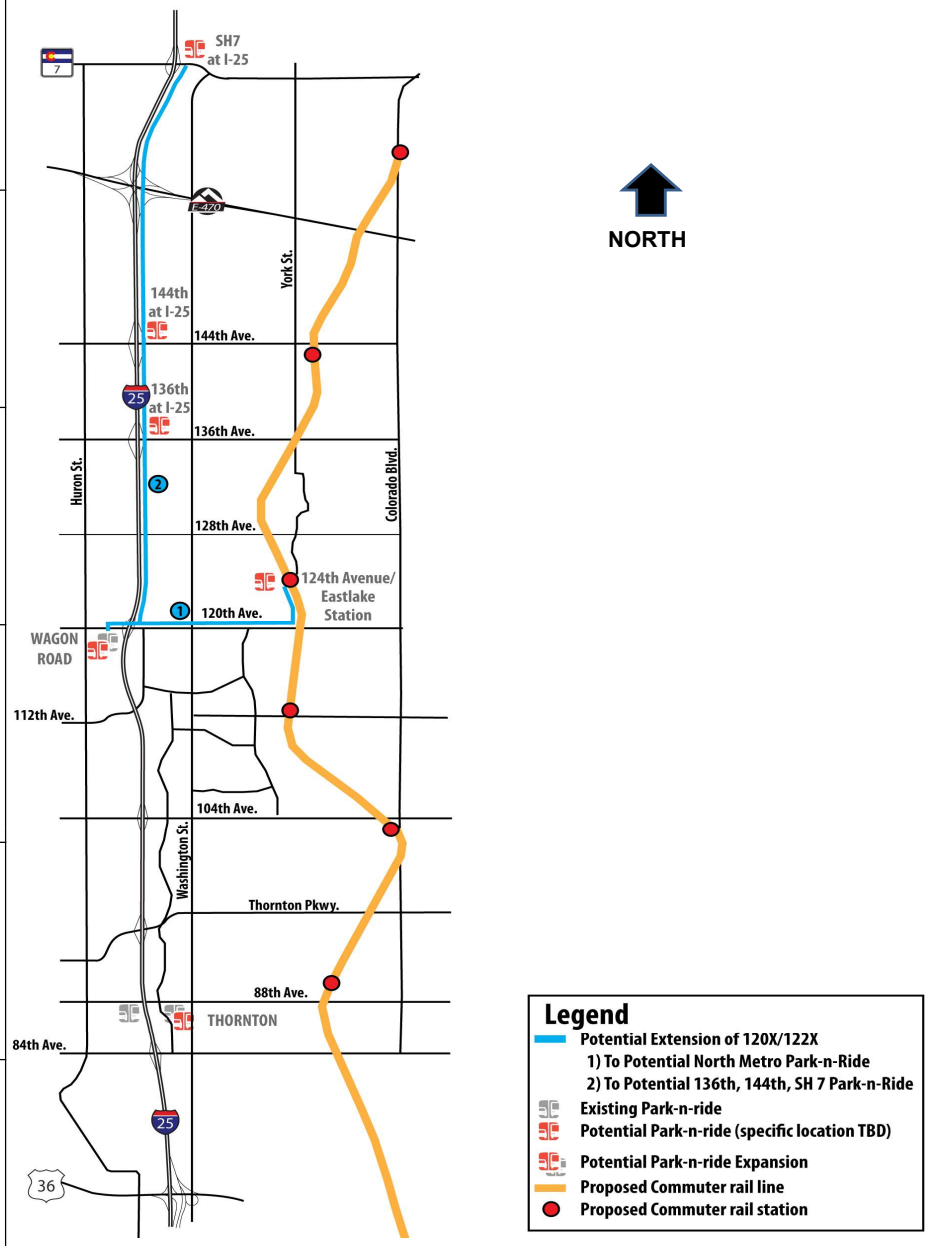
Component Reference	Title	Description
N.5	Pre-mainline merge	Merge all northbound ramps prior to I-25 entry
N.6	84th to Thornton Parkway - NB	Construct a continuous acceleration/deceleration lane between interchanges. Example shown below 104th Avenue to 120th Avenue. 
N.7	Thornton Pkwy. to 104th - NB	
N.8	104th to 120th - NB	
N.9	120th to 136th - NB	
N.10	136th to 144th - NB	
N.11	144th to E-470 - NB	
N.12	Physical improvements to ramp merge and diverge	Components currently under consideration based on a survey of existing geometrically deficient ramp merge and diverge sections.
N.13	Additional General Purpose Lane	Widen I-25 to provide 4 GP lanes between 84th Avenue and SH 7. Example shown below in vicinity of 104th Avenue. 
N.14	144th to SH 7 C-D system	Construct parallel C-D system along I-25 between 144th Avenue and SH 7 

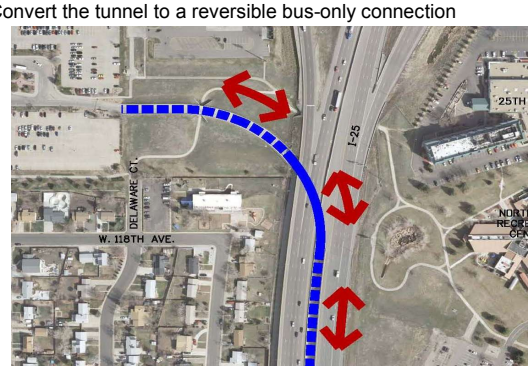
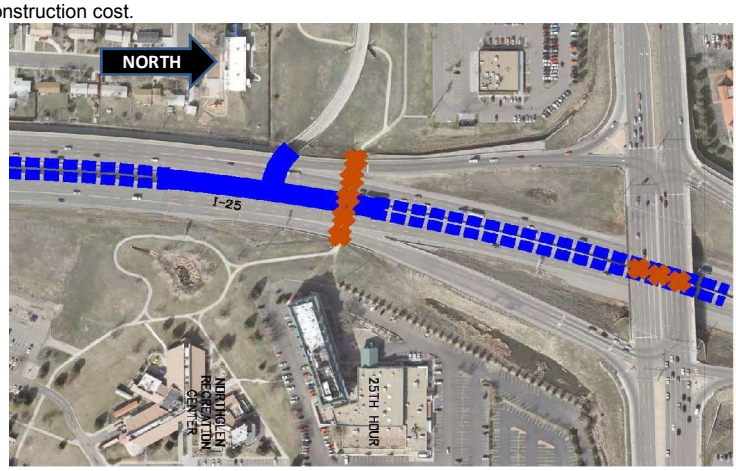
Component Reference	Title	Description
		Southbound I-25 Southbound I-25 typically experiences congestion between 84th and US 36 during the weekday morning peak period. Ideas include:
S.1	Braided ramps - 84th Avenue to US 36	Physical grade separation to eliminate some weaving movements 
S.2	C-D system - 84th Avenue to US 36	Consolidate all SB weaving movements on side parallel facility 
S.3	84th Avenue on-ramp gore point extension - restrict SB traffic entering I-25 from reaching I-270 flyover	Eliminate tight right-to-left weaving movement 
S.4	Additional lane - 84th to US 36	Widen I-25 to provide 5 southbound travel lanes between 84th and US 36 
S.5	E-470 to 144th - SB	Construct a continuous acceleration/deceleration lane between interchanges. Example shown previously in northbound direction - 104th Avenue to 120th Avenue
S.6	144th to 136th - SB	
S.7	136th to 120th - SB	
S.8	120th to 104th - SB	
S.9	104th to Thornton Pkwy.- SB	
S.10	Thornton Parkway to 84th - SB	
S.11	Physical improvements to ramp merge and diverge sections - SB	Components currently under consideration based on a survey of existing geometrically deficient ramp merge and diverge sections.

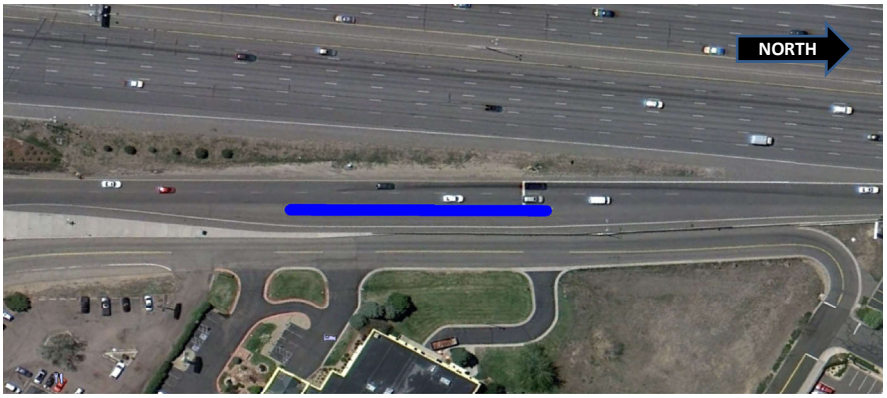
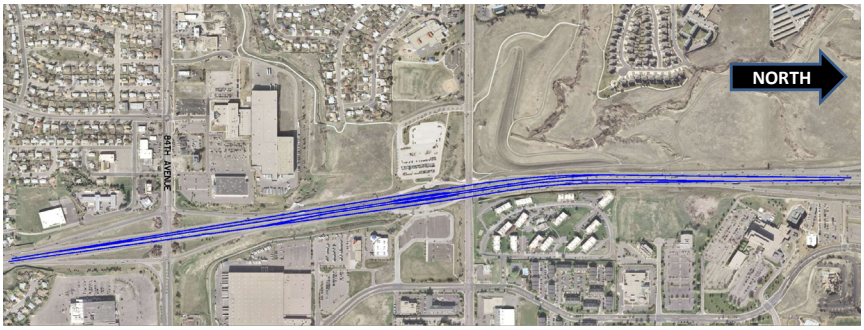
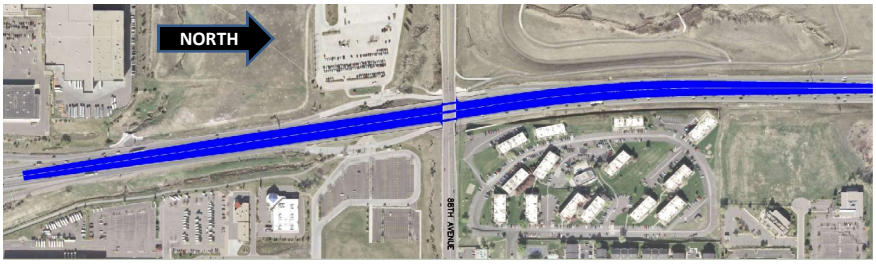
Component Reference	Title	Description
S.12	Additional General Purpose Lane	Widen I-25 to provide 4 GP lanes between SH 7 and 84th Avenue 
S.13	SH 7 to 144th C-D system	Construct parallel C-D system along I-25 between SH 7 and 144th Avenue 
S.14	Convert left-side I-270 flyover to right-side ramp	Shift major system-to-system ramp to opposite side of I-25 mainline 
Other Components These Components address conditions not specific to direction of I-25		
I.1	Extend Express Toll Lanes north to SH 7	Build current express lanes north to SH 7
I.2	Add second Managed Lane	Provide two managed lanes in each direction between US 36 and SH 7.
I.3	Construct parallel bypass route for trucks	New north south alternative for truck traffic only
I.4	Construct two-lane interchange ramps	Widen single-lane ramps to provide two lane exit and entry at I-25
I.5	70th/Washington Intersection	Extend eastbound dual left-turn lane to better accommodate evening peak flows.
I.6	Add I-25 Crossings	Construct additional roadway crossings of I-25 between interchanges
I.7	Extend toll lane ingress/egress north	Restrict managed lane ingress and egress south of 84th and make first point of access north of 84th
I.8	Extend reversible lane up I-25	Extend current reversible lane farther north along I-25 to SH 7

Near Term Operational Improvements - North I-25 PEL
Preliminary List of Initial Transit Alternatives

Component Reference	Title	Description
Park-n-Rides along I-25 are currently over-capacity or reaching capacity		
PNR.1	Expand Wagon Road Park-n-Ride	Expansion of current or construction of new Park-n-Ride locations
PNR.2	Expand Thornton Park-n-Ride	
PNR.3	New Park-n-Ride at 136th and I-25	
PNR.4	New Park-n-Ride at 144th and I-25	
PNR.5	New Park-n-Ride at SH-7 and I-25	
PNR.6	New Park-n-Ride at 124th and Claude Court at Eastlake	
Bus service over-capacity		
B.1	Increase bus frequency during peak period	Increase the passenger capacity of individual routes by adding buses and reducing headways.
B.2	Increase use of articulated buses	Increase the passenger capacity of individual routes by using buses of larger carrying capacity.
B.3	Provide service farther north	Route L is the only current north connection, and does not stop at interchanges within the study area. More extensive northern service will be considered.



Component Reference	Title	Description
Transit infrastructure		
TI.1	Bi-directional tunnel for bus access to the Wagon Road p-n-R from the managed lanes.	Convert the tunnel to a reversible bus-only connection 
TI.2	Structure south of the 120th Ave interchange to facilitate bus access to the managed lanes.	Alternative would extend tunnel structure farther north to provide bus conectivity north to future p-n-R locations. Significant impacts to the existing pedestrian crossing and 120th Avenue bridge increase construction cost. 
TI.3	Build a shoulder busway from 120th Avenue to 144th Avenue	Allows buses only to travel on existing outside shoulder. Buses could be limited to 35 mph or less, and could not enter the shoulder when general purpose traffic is traveling at 35 mph or more. Below photo depicts bus-only shoulder in Minneapolis.

Component Reference	Title	Description
TI.4	Bus queue jump lanes and bus ramps at interchanges	Provide HOV and bus bypass around ramp meter. Existing queue jump at I-25/Arapahoe interchange pictured. 
TI.5	84th Avenue interchange T-ramp	Add T-ramp to current diamond interchange - serving the managed lane.
TI.6	88th Avenue Median Station	Inline station to prevent buses from weaving. 
TI.7	88th Avenue interchange T-ramp	Add T-ramp to current overpass to serve the managed lane. 

Component Reference	Title	Description
TI.8	120th Avenue Median Station	Eliminate bus weaving at key locations and enhance passenger access to transit. Minneapolis example shown.
TI.9	128th Avenue Median Station	
TI.10	Move 120th bus tunnel exit	Shift from left side to right side of northbound I-25 near 120th Avenue off ramp
TI.11	Light rail on I-25	Construct light rail line along I-25 mainline alignment

Near Term Operational Improvements - North I-25 PEL
Preliminary List of Initial ITS Components

ITS Components fall into a number of categories:

1. Ramp Metering
2. Traveler Information
3. Active Traffic Management
4. Real-time Monitoring and Data Collection

Category	Component Reference	Title	Description
Ramp Metering	ITS.1	New Ramp Meter at 104th Ave NB	Ramp Meter to control the vehicles from the on-ramp to the highway
	ITS.2	New Ramp Meter at 120th Ave NB	Ramp Meter to control the vehicles from the on-ramp to the highway
	ITS.3	New Ramp Meter at 136th Ave SB	Ramp Meter to control the vehicles from the on-ramp to the highway
	ITS.4	New Ramp Meter at 144th Ave SB	Ramp Meter to control the vehicles from the on-ramp to the highway
	ITS.5	Upgrade Ramp Meter at 84th Ave NB	Ramp Meter to control the vehicles from the on-ramp to the highway
	ITS.6	Upgrade Ramp Meter at 84th Ave SB	Ramp Meter to control the vehicles from the on-ramp to the highway
	ITS.7	Upgrade Ramp Meter at 104th Ave SB	Ramp Meter to control the vehicles from the on-ramp to the highway
Traveler Information	ITS.8	Upgrade Travel Time Indicator (TTI) SB between US36 and 84th Ave	To provide vehicle travel times across segments from one TTI location to the next
	ITS.9	Upgrade Travel Time Indicator (TTI) SB between 88th Ave and 92nd Ave	To provide vehicle travel times across segments from one TTI location to the next
	ITS.10	Updgrade Travel Time Indicator (TTI) SB at 112th Ave	To provide vehicle travel times across segments from one TTI location to the next
	ITS.11	Upgrade Travel Time Indicator (TTI) NB between 112th and 120th Ave	To provide vehicle travel times across segments from one TTI location to the next
	ITS.12	Add additional TTI units with spacing of no more than one mile, located before and after each interchange, and installed in between the off-ramp and on-ramp at each interchange	To provide vehicle travel times across segments from one TTI location to the next
	ITS.13	New TTI units for Managed Lanes located between each ingress/egress point	To provide vehicle travel times across segments from one TTI location to the next
	ITS.14	Upgrade existing VMS's	To be used for traveler information
	ITS.15	Add VMS between each interchange	To be used for traveler information
Real-time Monitoring and Data Collection	ITS.16	Add CCTV cameras north of 120th spaced at 1.5 miles	To increase the coverage for monitoring the conditions in corridor
	ITS.17	Upgrade 12 existing cameras with new Ethernet-based cameras	To monitor the conditions in the corridor
	ITS.18	Microwave Vehicle Radar Detection (MVRD) every 1/2 mile	Side Fire Radar - To collect volume, occupancy, and speed data at a given point
Active Traffic Management	ITS.19	Active Traffic Management (ATM)	Could consist of Land Use Signals, Speed Harmonization, Supplemental VMS for putting advisory speeds and queue warning

Near Term Operational Improvements - North I-25 PEL
Preliminary List of Initial TDM and TSM Components

TDM and TSM Components fall into a number of categories:

1. Improved Transportation Options
2. Incentives to use Alternative modes and reduce driving
3. Parking and Land Use Management
4. Policy and Institutional Reforms

(source: Victoria Transport Policy Institute)

Category	Component Reference	Title	Description
Transportation Demand Management			
Improved Transportation Options	TDM.1	Guaranteed Ride Home	For commuters who use alternative modes, this program provides taxi rides home in cases of emergency. The Guaranteed Ride Home program is currently operated by DRCOG.
	TDM.2	Telework employer resources	This strategy promotes commuters working from home. This reduces the overall number of commute trips. DRCOG provides information on Telework to employers. IT support for local businesses is included in the telework program for employers.
	TDM.3	Telework recognition awards	
	TDM.4	Commuter cash program	This is a program that provides a subsidy for travelers to introduce them to alternative modes of transportation for a set period of time, to potentially alter long-term travel mode choices.
	TDM.5	Flexible work schedule resources	Promotion of off-peak work schedules, or flex-time, could result in reduced congestion during peak hours.
	TDM.6	Carpool Matching	DRCOG operates a RideArrangers program to help match potential carpoolers with each other and to aid the formation of vanpools and schoolpools.
	TDM.7	Vanpool	
	TDM.8	Schoolpool	
	TDM.9	Pool program subsidies	The provision of additional funds to increase the potential of carpools forming could reduce congestion and aid the shift from SOV to HOV travel.
	TDM.10	Carpool lots	A strategy to encourage carpooling, the provision of parking lots designated for carpooling. The location of the carpool lots is important to provide convenience. Lighting is also important to provide security.
	TDM.11	Peak hour bus-only lanes	Peak hour bus-only lanes and/or queue jumps help to maintain transit level of service and may promote transit usage in a congested corridor.
	TDM.12	Final mile programs – pool bikes, employer fleet vehicles, shuttles	Final mile programs address a typical gap in a journey by transit – the leg between a transit stop and the commuter's destination. This strategy provides a shuttle service to connect transit stops or stations with a traveler's final destination, typically large employers.
Incentives to use alternative modes and reduce driving	TDM.13	Bike Map	This is an online map that provides up-to-date bicycle information for travelers in the corridor, including the location and condition of bike routes and paths.
	TDM.14	Bike share program	A bike share program provides bicycles to the public for daily check-out for a small fee. The bicycles are docked at a variety of activity centers. In Denver, the B-Cycle operates in downtown, Cherry Creek, and other areas.
	TDM.15	Education, Marketing, including website, hotline, advertising, social networking, etc.	There are a variety of potential marketing mechanisms to promote TDM strategies: website, phone hotline, newspaper and radio advertising, social networks including Twitter, Facebook, mail-out campaigns, etc.
	TDM.16	Employer Outreach	These are programs directed at large employers to promote and provide education regarding TDM strategies.
	TDM.17	Corridor Transit Guide	Published guide to circulate to users

Category	Component Reference	Title	Description
Parking and Land Use Management	TDM.18	Secure bike facilities	Secure bike lockers are typically located at park-and-rides.
Policy and Institutional Reforms	TDM.19	Master EcoPass contract	
	TDM.20	Transit subsidies	Programs to incentivize transit ridership, that temporarily provide free or reduced fares to introduce transit to commuters who are accustomed to travel by driving alone.
Transportation Systems Management			
	TSM. 1	Designate inside lane of I-25 for trucks only	
	TSM.2	$2 toll all day	
	TSM.3	Implement education campaign to instruct drivers on appropriate use of buffer-separated managed lane	
	TSM.4	Limit large trucks and buses to the rightmost three lanes of I-25	
	TSM.5	Incident Management Plan	

Color Code Legend
TDM program already established
Potential TDM Program

I-25 Planning and Environmental Linkage (PEL) Visioning Workshop Summary

The following summarizes the breakout discussion during the I-25 Planning and Environmental Linkage (PEL) Visioning Workshop.

Parallel Arterials—

The discussion at the Parallel Arterials table focused on Issues associated with the arterials and then on possible Solutions to those issues. The hope was that the Solutions might be evaluated as alternatives in the PEL study. The Parallel Arterials discussed were Washington Street to the east and Huron Street to the west.

Issues

The following issues were identified and discussed:

- Capacity issues at the State Highway (SH) 7 interchange are becoming or will be more apparent in the near future
- There are congestion issues on the cross connection feeders to the parallel arterials. For example, 84th Avenue between I-25 and Washington Street.
- There is limited variable message signs (VMS) along this stretch of I-25
- There is heavy northbound traffic on in the afternoon on Washington Street south of 84th Avenue.

Solutions

The following solutions were identified and discussed:

- There should be increased education/messaging (VMS, Intelligent Transportation System (ITS), CoTrip) to guide travelers during incidents to utilize I-25 mainline for regional trips and the arterials for local trips
- Consider adaptive traffic signal timing on arterials during non-recurring congestions (i.e., accidents, large sporting events, etc.)
- Increase education on the use of the local transportation network, rather than I-25 for local trips
- Complete the implementation of capacity improvements on Washington Street to the southern end of the project area

NORTH
I-25 PEL

Existing and Planned Bike/Ped Facilities and Services

COLORADO DOT
DEPARTMENT OF TRANSPORTATION

Current use in this area is limited. However future Bike/Ped access is in the planning stages by the surrounding communities. Bike/Ped access would be desirable across I-25 and E-470 should be examined to determine if they are realistic and feasible.

Good Bike/Ped access to the west of I-25 and access to the east is anticipated to be good once build out occurs. A crossing between the two interchanges would help to facilitate Bike/Ped activity in this area.

Good Bike/Ped access is available to the west of I-25 and there is fair access to the east. The under pass between 136th Ave. and 128th Ave. provides a good crossing free of vehicular traffic.

Fair Bike/Ped access is available to the east and west of I-25. However a direct connection does not exist, crossings of I-25 are limited to 128th Ave. and 120th Ave.

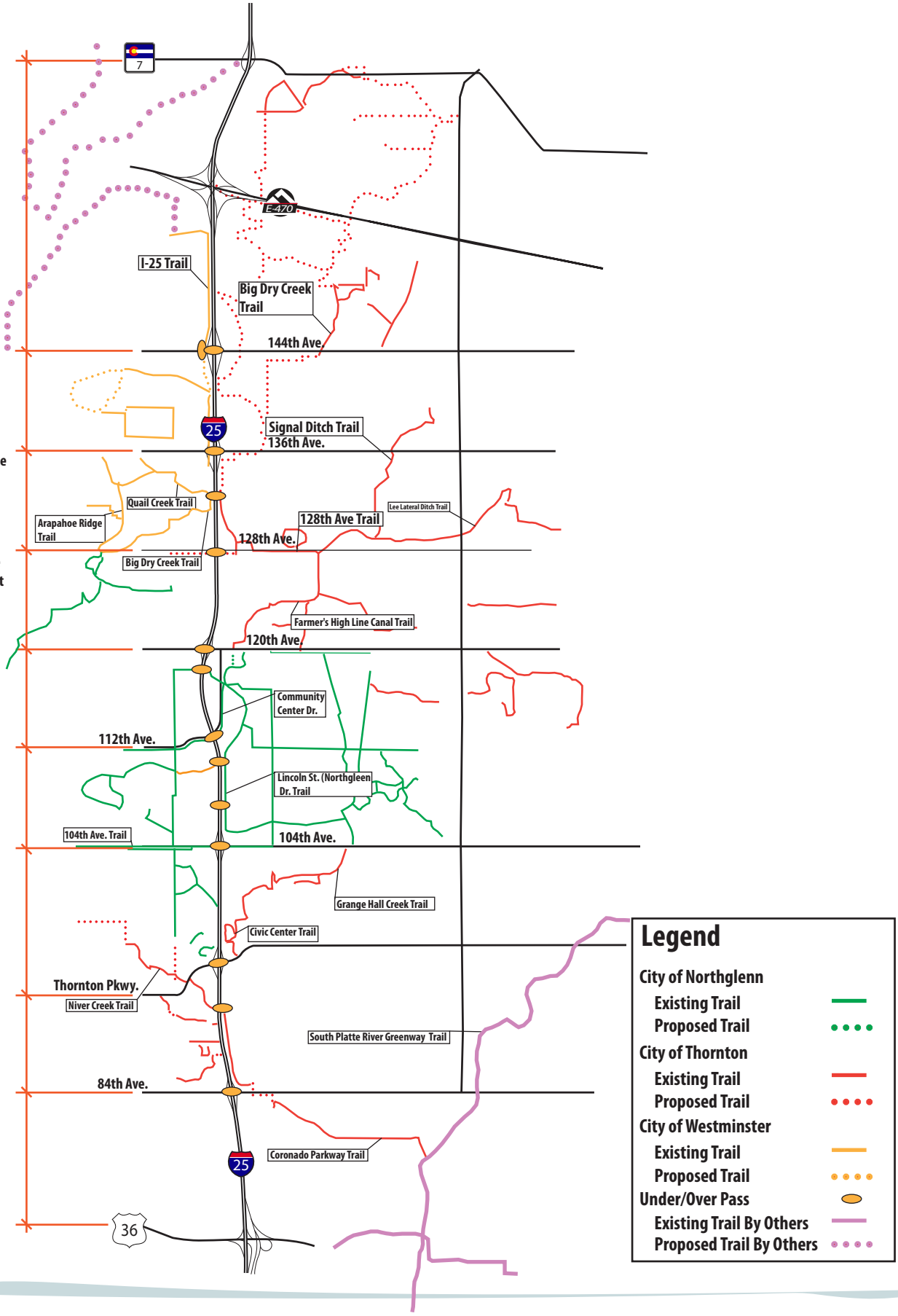
Fair Bike/Ped access to the west of I-25 and good access to the east. There are also a fair amount of crossings of I-25 along this segment.

Fair Bike/Ped access to the west of I-25 and good access to trails to the east. Many opportunities for crossing I-25 occur along the segment.

Good Bike/Ped access to the east and west of I-25. Nearest crossings of I-25 are at Thornton Pkwy. or 104th Ave.

Fair Bike/Ped access to the west and east of I-25 between 84th Ave. and Thornton Pkwy. The under pass at the Thornton Park-n-ride provides a crossing that is free of vehicular traffic .

Limited Bike/Ped access between 84th Ave. and US 36.



NORTH

DRAFT TAC MEETING MINUTES
North I-25 PEL

Technical Advisory Committee
Thursday, June 28, 2012
10:00 AM to Noon

LOCATION: Adams County Economic Development

PREPARED BY: Alex Pulley, FHU

ATTENDEES: See Attached Sign-in Sheet

I. Welcome and Introductions

Andy Stratton, CDOT Project Manager, welcomed the group and asked the group to conduct self introductions. He also thanked the group for their participation in the recent success of the TIGER grant.

II. TIGER IV Update

Gene Putman provided the group with a handout on the TIGER award. He was very happy with the outcome. However, he expressed concern with the *Denver Post* poll on tolling because it was misleading by implying that all lanes would be tolled.

Jeanne Shreve suggested that we make an extra effort to describe how the managed lane TIGER project and our PEL work together. This is important from a messaging standpoint. In addition, we should provide a link between the two web sites.

Steve Cook stated that the DRCOG Plan Amendment for the managed lanes is in place but a TIP amendment will still need to be completed.

III. Public Meeting and Executive Meeting

Chris Primus provided an overview of the May 9th public meeting, identifying the number of attendees and a summary of the corridor issues raised by the public at the meeting. The public questioned what managed lanes are and how they are used. A couple of key issues/comments included: concern about noise, support for improvements that increase capacity, support for transit, and concern about RTD's Fastracks schedule. The public did not identify any issues with the purpose and need statement as presented.

Holly Buck provided a summary of the May 31st Executive Committee meeting. Concurrence was received on the Purpose and Need, and there was some clarification on a few items. The EC is not expected to meet again until after the summer. Holly asked TAC members to be sure to coordinate with their EC representatives during this time to keep them up to speed on the project. If TAC members are going to give council or board presentations please contact the team and we will provide you the latest information available for you use.

Gene Putman requested all the materials handed out today in digital format because they have gone paperless. He suggested that all materials should also be posted to the website.

Gene Putman stated that at the latest NATA meeting , elected officials voiced strong dissatisfaction of RTD transit improvements in the northern metro area to Phil Washington, RTD General Manager. Brook Svoboda expressed that there is an undercurrent of skepticism about this PEL because the RTD relationship has degraded.

IV. Corridor Assessment Report

Holly Buck asked how the website worked for retrieving the Corridor Assessment Report and there was a positive response. Holly provided an overview of what the Corridor Assessment and why it was completed. This report documents where problems existing and tries to understand why they exist. The information is then used to develop a purpose and need statement and ultimately develop alternatives to address the problems.

The 2025 DynusT model is not yet operational and therefore the Corridor Assessment section on the 2025 conditions is not yet included. Comments on the document will not be requested until the missing sections are provided.

Gene Putman reminded the group that this project should be identifying projects that need to be incorporated into the 2040 DRCOG Plan. Steve Cook stated that large operational projects would be in the 2040 plan but operational improvements less than a mile on an existing facility can be in TIP but don't have to be in the Plan.

V. Near-term Components

Holly provided an overview of the two-level screening/evaluation process. Level 1 will be a qualitative assessment of the components. Level 2 will be a quantitative and qualitative screening resulting in a comparison between components. After Level 2 the team will package components to create alternatives then prioritize the components within the package. Holly then reviewed the more detailed Level 2 screening criteria.

Jon stated that Level 1 has been set up to mirror the NEPA process so can take credit later. He also confirmed Level 1 criteria with the group.

Highway Infrastructure Components

Lyle DeVries oriented the group to the near-term components and walked the group through these components. He provided clarification between the CD option and and the pre-main line merge option.

Gene wants to request that the parclo at SH 7 also be shown as DDI.

Component S-14 has a lot of impacts, along with its positive components; it would also benefit the reversible lane movements.

Jeanne stated that in regard to S-14 we do not want to lose the local access at Broadway.

Brook reminded the group to look at how these improvements fit into the other planned/existing improvements.

Lyle stated that I.8 should be deleted because it is the same as I.1.

Questions were raised as to the number of vehicles that enter southbound I-25 at 84th Avenue that seek to enter the I-270 flyover ramp.

Brook suggested perhaps providing a barrier separation to limit existing NB reversible to past 84th to not add additional or perpetuate weaving movements.

Larry Squires suggested seeing how these planned components fit because they could have an effect on

privatization and packaging.

Transit Components
Chris and Lyle began the discussion on transit components.

Larry suggested that the group look at new PNRs and service changes. He also suggested that the group be sure to look at and complete an EJ analysis. Roaring Fork uses bus on shoulder as their BRT to Aspen full time.

Karen asked for clarification on median stations and if a median station would require bus to cross over to opposite direction. The details have not been identified but this component would likely require a large amount of right of way, cross over travel or left side bus doors.

US 36 will use managed lane on inside shoulder and bus running on outside shoulder.

ITS Components
Larry suggested looking at transit priority for STS, bus route information, and TTI.

Karen noted that Region 4 has an ITS plan and asked if Region 6 has one that can be consulted. Lizzie confirmed that one is available for our considerations. The team will review these plans to determine if anything should be added to the ITS component discussion.

Brook asked if anything, such as ramp metering, can be done at Thornton Parkway.

TDM/TSM Components
Karen – Telework and guaranteed ride home should list the NFRMPO programs as they are very active in the Denver metro area.

Bike/Pedestrian Components
Lyle told the group that we are looking for direction from them on how to handle bike and pedestrian improvements. Steve Cook suggested looking at bike/pedestrian connections to PNRs. The group was asked how bike/pedestrian fits into project in regard to Purpose and Need. The team should provide guidance to incorporate into design. Mostly will be at small scale. Add statement/philosophy/commitment that sets forth bike/pedestrian connectivity. This language will also benefit grant applications.

Parallel Arterials
Lizzie brought up corridors of significance. FHWA needs to identify TTI for interstates and other important corridors, which may have to be consulted and may include arterials. The team will check into this further.

The group also felt that during incidents a more active traffic management role should be taken. This would be part of the Incident Management Plan component.

VI. Next Steps and Next Meeting
The team will develop a preliminary level 1 screening for review with the TAC by the next meeting. The next meeting is tentatively scheduled for August 16th.

North I-25 PEL
Sign-in Sheet
June 28, 2012

TECHNICAL ADVISORY COMMITTEE

Representative	Community/Agency	Signature
Annette Marquez	Brighton	
A.J. Euckert	Dacono	
Andy Stratton	CDOT Region 6	
Brook Svoboda	Northglenn	
Carol Parr	CDOT Region 4	
Daren Sterling	Commerce City	
Dave Downing	Westminster	
Dave Lindsay	Firestone	
Deb Obermeyer	Metro North Chamber	
Doug Monroe	RTD	
Emily Silverman	City and County of Denver	
Fred Sandal	DRCOG	
Gene Putman	Thornton	
Jay Hendrickson	CDOT Region 6	
Jeanne Shreve	Adams County	
Jennifer Gorek	CDOT Region 4	
Jennifer Kerr	Broomfield Chamber	
Jon Chesser	CDOT Region 6	

North I-25 PEL
Sign-in Sheet
June 28, 2012

Karen Schneiders	CDOT Region 4	Karen Schneiders
Kevin Standbridge	Broomfield	
Larry Squires	Federal Transit Administration	
Lee Cryer	RTD	
Leela Rajasekar	CDOT Region 6	
Lizzie Kemp	CDOT Region 6	
Long Nguyen	CDOT Region 4	
Monica Pavlik	FHWA	
Phil Greenwald	Longmont	
Richard Leffler	Frederick	
Russell Pennington	Erie	Russell Pennington
Stephanie Salazar	Broomfield EDC	
Steve Hersey	CDOT Region 6	
Steve Olson	CDOT Region 6	

Other Attendees

Holly Buck	FHU	Holly Buck
Jim Smith	Larkiridge Shopping Center Jordan Perlmutter & Co.	Jim Smith
STEVE COOK	DRCOG	Steve Cook
Chris Primus	Jacobs	Chris Primus

North I-25 PEL
Sign-in Sheet
June 28, 2012

Karen Stuart	Smart Commute Metro North TMO	
Lyle DeVries	FHU	
Alex Pulley	FHU	x

Technical Advisory Committee Meeting
August 16, 2012

NORTH I-25 PEL

COLORADO DOT DEPARTMENT OF TRANSPORTATION

Technical Advisory Committee

August 16, 2012

Welcome!

Agenda

Meeting goal: Reach agreement on components to be evaluated in Level 2.

- Introductions
- Input on material presented in June
- Evaluation process update
- Draft Level 1 evaluation results
- Traffic analysis/modeling update
- Next meeting

June Meeting Recap

- Questions on June materials
- Other improvement ideas/questions?

Near-Term Evaluation Process

- Level 1 screening
  - Qualitative assessment of components' potential to address Purpose and Need
- Level 2 screening
  - Quantitative and qualitative analysis based on readily available data
- Level 3 screening
  - Package components into alternatives
  - Quantitative analysis
    - DynusT traffic modeling and transit modeling
    - Focused environmental analysis
- Identify Preferred Alternative
- Prioritize components of Preferred Alternative

Level 1 Screening Questions

1. Purpose - Component could be accommodated within recently constructed structures?
2. Purpose - Potential to be implemented in the near-term?
3. Need - Potential to address identified near-term congestion issues?
4. Need - Potential address identified near-term safety issues?
5. Need - Potential to address identified near-term multimodal capacity issues?

Level 1 Categories

- Category 1 - Retained for Additional Analysis in Level 2
- Category 2- Retained for Packaging in Level 3
- Category 3 – Eliminated for Near-term Implementation
- Category 4 - Eliminated

Retained for Additional Analysis in Level 2

Potential Infrastructure Improvements	
C-D system - US 36 to 84th, northbound N.2	Retained in Level 2 to assess potential to improve operations, reduce congestion and improve safety between 84th Avenue and US 36.
C-D system - 84th Avenue to US 36, southbound S.2	
Auxiliary lane - I-270 to 84th, northbound N.3	
Auxiliary lane - 84th to US 36, southbound S.4	
Braided ramps - 84th Avenue to US 36, southbound S.1	
I-76 direct connection to I-25 upstream of current connection N.4	
84th Avenue on-ramp gore point extension - restrict SB entering traffic from reaching I-270 flyover S.3	
Extend toll lane ingress/egress north of 84th (no access at 84th) I.7	
70th/Washington Intersection, extend eastbound dual left turn I.5	
88th Avenue T-ramp TI.7	
Continuous accel/decel lane 84th to 136th Avenue(between each interchange), northbound N.9	Retained in Level 2 to assess potential to reduce congestion and improve safety between 84th Avenue and 136th Avenue.
Continuous accel/decel lane 84th to 136th Avenue(between each interchange), southbound S.7-S.10	
Add I-25 Crossings	

C-D system - US 36 to 84th Avenue, northbound N.2

Braided ramps- 84th Avenue to US 36, southbound S.1

I-76 direct connection to I-25 upstream of current connection N.4

Note: **This category includes components that:**
1. Address the Purpose
2. Have potential to address all three identified Needs

X.X **Component Reference Number, June 28, 2012 TAC packet.**

Retained for Additional Analysis in Level 2

Potential Transit Improvements	
Expand Wagon Road park-n-Ride PNR.1	Retained in Level 2 to assess potential to address multimodal capacity need and efficacy of various locations.
Expand Thornton park-n-Ride PNR.2	
New Park-n-Ride at 136th Avenue and I-25 PNR.3	
New Park-n-Ride at 144th Avenue and I-25 PNR.4	
New Park-n-Ride at SH 7 and I-25 PNR.5	
New Park-n-Ride at 124th Avenue and Claude Court at Eastlake PNR.6	
Increase bus frequency during peak period B.1	Retained in Level 2 to assess potential to address multimodal capacity need.
Increase use of articulated buses B.2	
Provide bus service farther north B.3	
88th Avenue Median Station TL.6	Retained in Level 2 to assess operational benefit of eliminating bus weave from managed lane to Thornton park-n-Ride at 88th Avenue.

Note: This category includes components that:

1. Address the Purpose
2. Have potential to address all three identified Needs

X.X **Component Reference Number, June 28, 2012 TAC packet.**

Retained for Packaging

Potential Infrastructure Improvements	
Upgrade ramp merge and diverge sections to meet current design standards N.12, S.11	These components would not fully address the Purpose and Need. However, they will be included, as appropriate, to improve operations, safety and capacity.
Construct continuous acceleration/deceleration lanes between interchanges north of 136th Avenue N.9, N.10, S.5, S.6	
Construct parallel C-D system along I-25 between 144th Avenue and SH 7 N.14, S.13	
Construct two-lane interchange ramps I.4	

Potential Transit Improvements	
Convert 120th Avenue bus tunnel to be a bi-directional facility (to and from south) TI.1	This component would not fully address Purpose and Need. However, it will be considered as appropriate to enhance multimodal capacity.
Build a shoulder busway from 120th Avenue to 144th Avenue TI.3	This component would not fully address Purpose and Need. However, it will be considered if alternatives recommend additional bus service north of 120th Avenue.
Bus queue jump lanes and bus ramps at interchanges TI.4	This component would not fully address Purpose and Need. However, it will be considered if bus service recommendations include use of interchange ramps.
128th Avenue Median Station TI.9	This component would not fully address Purpose and Need. However, it will be considered if alternatives include new transit station/Park-n-Ride at 128th Avenue.

Potential TDM, ITS, TSM Improvements	
Travel Demand Management Measures (e.g., guaranteed ride home, carpooling, bike maps, bike share programs, marketing, etc.) TDM.1-TDM.20	These components would not fully address the Purpose and Need. However, they will be included, as appropriate, to improve operations, safety and capacity.
Intelligent Transportation Systems (e.g. ramp metering, travel time indicators, variable message signing, radar vehicle detection, active traffic management, etc.) ITS.1-ITS.19	
Incident management TSM.5	
Driver education campaigns (e.g., use of buffer separated lanes) TSM.3	

X.X **Component Reference Number, June 28, 2012 TAC packet.**

Note: This category includes components that:
1. Address the Purpose
2. Have potential to address one or more Needs
3. Are more universal in application

Components Eliminated for Near-Term Implementation

Components Eliminated for Near-Term Implementation	
Extend Managed Lanes north to SH 7 I.1	Could not be implemented in near-term due to cost, property impacts, and NEPA process and therefore do not meet the Purpose and Need, but are retained as long-term options.
Additional General Purpose Lanes 84th Avenue to SH 7 N.13, S.12	
Extend reversible lanes up I-25 I.8	
Provide two managed lanes in each direction between US 36 and SH 7 I.2	

Note: This category includes components that:

1. Do not address the Purpose (typically because they can't be implemented in the near term)
2. Are retained for long-term consideration

X.X **Component Reference Number, June 28, 2012 TAC packet.**

Components Eliminated

Infrastructure Components Eliminated	
Pre-mainline merge [merge all ramps (I-270, US 36 and I-76) prior to I-25 northbound entry] N.5	Would reduce capacity of merge point and result in longer queues on the merging facilities.
Convert left-side I-270 flyover to right-side ramp S.14	Would require reconstruction or modification of recently constructed structures and therefore would not meet the project Purpose and Need.
84th Avenue interchange T-ramp TI.5	
Construct new north/south route for trucks parallel to I-25 I.3	Construction of a new facility could not be accomplished in the near-term due to cost , property impacts or NEPA process and therefore would not meet the project Purpose and Need.
Braided ramps US 36 to 84th Avenue, northbound N.1	Could not be implemented in near-term due to anticipated property impacts, and/or NEPA process and therefore would not meet the project Purpose and Need.

Transit Components Eliminated	
Light rail on I-25 TI.11	Considered during an extensive study of the North Metro corridor. Not considered as favorable as the commuter rail solution ultimately identified in the Environmental Impact Statement.
120th Avenue Median Station TI.8	Would require reconstruction or modification of recently constructed structures and therefore would not meet the project Purpose and Need.
Add structure to 120th Avenue bus tunnel to facilitate bus access to the managed lanes (to and from the north) TI.2	Could not be implemented in near-term due to cost, property impacts, and/or NEPA process and therefore would not meet the project Purpose and Need.
Shift 120th Avenue bus tunnel from left side to right side of northbound I-25 TI.10	Extension of managed lanes north to 120th (opening 2014) would allow the buses to enter the bus tunnel without changing lanes therefore this component would create an unnecessary weave on I-25. This would not address the Purpose and Need.

TDM, ITS, TSM Components Eliminated	
Limit large trucks and buses to the rightmost three lanes of I-25 TSM.4	Not compatible with new managed lane.
Designate inside lane of I-25 for trucks only TSM.1	Not compatible with new managed lane.
Implement $2 toll all day TSM.2	The existing dynamic toll structure serves to maximize revenue and person through-put, therefore this does not meet the project Purpose and Need.

X.X **Component Reference Number, June 28, 2012 TAC packet.**

Note: This category includes components that:
1. Do not address the Purpose or
2. Do not address one or more Need

Discussion and agreement on Level 1 results

Traffic Analysis/ Modeling Update

- Dynamic Traffic Assignment Modeling effort
  - 2010 calibrated model
  - 2035 and 2010 No Action
- Upcoming component evaluation and screening
  - Traffic analysis tools
  - 2035 comparison, 2010 testing

Reminder: Please coordinate with your Executive Committee reps!

Next meeting:
September 27th (tentative)

DRAFT TAC MEETING MINUTES
North I-25 PEL

Technical Advisory Committee
Thursday, August 16, 2012
9:30 AM to 11:30

LOCATION: Thornton Police Department Training Center

PREPARED BY: Alex Pulley, FHU

ATTENDEES: See Attached Sign-in Sheet

I. Welcome and Introductions

Andy Stratton, CDOT Project Manager, welcomed the group and asked the group to conduct self introductions.

II. Follow up from Previous Meeting

Andy asked for any additional alternative ideas other than those presented at the last TAC Meeting. No additional alternative were noted. The project team therefore, considered the current list as comprehensive for evaluation in the PEL.

III. Screening Process

Holly Buck provided an overview of the three screening levels and generally what will be evaluated at each screening level. The remaindered of the meeting would focus on Level 1 Screening that focuses on the initial screening of components that do or do not meet the Purpose and Need statement.

Holly Buck provided the following list of questions that were asked during Level 1 Screening:

- Purpose—Component could be accommodated within recently constructed structures?
- Purpose—Potential to be implemented in the near-term?
- Need—Potential to address identified near-term congestion issues?
- Need—Potential to address identified near-term safety issues>
- Need—Potential to address identified near-term multimodal capacity issues?

The results of Level 1 were categorized into the following four groupings:

- Category 1—Retained for Analysis in Level 2 Screening
- Category 2—Retained for Packaging in Level 3 Screening
- Category 3—Eliminated for Near-term Consideration, but may be considered for long-term
- Category 4—Eliminated from Further Evaluation

<u>Category 1—Retained for Analysis in Level 2 Screening</u>

Lyle DeVries walked through the components that have been retained (see Handout) and asked for any questions. Lee Kemp stated that the 120 and 120x bus routes are already using all articulated buses and that component should be removed from the retained category.

Brook Svoboda asked if extending the toll egress/ingress to 84th Avenue would be barrier separated to eliminate the I-270/US 36 access to the toll before 84th. This was confirmed as correct.

Larry Squires asked if the alternatives retained for Level 2 fully address the purpose and need. Holly stated that the retained component do meet one of the three needs and the purposes. The degree to which these components meet purpose and need will be further evaluated in subsequent screening levels.

The grouped questioned whether the restriction of southbound 84th travel to the I-270 fly over is even feasible to

the public. Lyle DeVries stated that additional modeling numbers were needed to see how many people are actually performing that movement. Andy Stratton suggested that an alternative route could be to use US 36. This is an example of the type of consideration and information needed for subsequent screening steps.

Category 2—Retained for Packaging in Level 3 Screening
Lyle briefly discussed the components in this category (see handout). There were no comments from the TAC regarding this grouping

Category 3—Eliminated for Near-term Consideration, but may be considered for long-term
Lyle briefly discussed the components in this category (see handout).

Jeanne Shreve requested that additional and specific rationale why components/alternatives were eliminated in the near-term be provided to the TAC. This is needed so the TAC members can sufficiently answer questions by their elected officials regarding this category.

The project team will send out the detailed matrix for clarification and add additional documentation and justification for removal of components/alternatives.

The TAC members asked for two weeks for review and conversation with their Executive Committee members from the time of receiving the additional information to provide comments.

The TAC members also asked to receive meeting materials via email prior to the actual TAC meetings so they would have an opportunity to review the materials prior to the meeting and come to the meeting with comments ready.

Brook Svoboda suggested that circle matrix (circles empty/half/quarter/full filled) be used to make the matrix easily understood. This would work well in the 'graphical' handout provided.

Jon Chesser and Jay Hendrickson both stated that this process is complicated and they appreciate the conversation and it really helps the project team with the project.

Category 4—Eliminated from Further Evaluation
Lyle briefly discussed the components in this category (see handout).

Jeanne Shreve asked that adding a structure to 120th Avenue bus tunnel to facilitate bus access to the manage lanes (to and from the north) be deferred for long-term consideration (Category 3) rather than fully eliminated.

The TAC requested that a map showing the locations of the components would be helpful to understand the location and interaction of the components.

No further clarification or concerns regarding Level 1 Screening were voiced by the TAC.

IV. Dynus-T Model Update

Lyle DeVries provided an update on the Dynus-T model and the timing for obtaining the model information and evaluation for the project would take additional time to complete.

The TAC asked if the Dynus-T model fully captured the arterials and Lyle confirmed that it does.

A question was asked about the southern terminus for project improvement influences in the model. The southernmost influence area is downtown, but no improvements are expected in this area, it is simply the influence area.

The Project Team intensively worked with FHWA on the modeling extents and initially looked at Huron and Washington and one interchange north and south of the project area, but is now much larger.

Some information from Dynus-T will be used in Level 2 Screening, but Dynus-T is critical to Level 3 Screening.

A question was asked if the model can differentiate between single occupancy and high occupancy vehicle traffic. DRCOG assigns a 15% HOW assumption to the traffic. The Project Team will be using a static number to assign for modeling. The Project Team will identify a percentage of HOV for this corridor.

V. Next Steps and Next Meeting

The Project Team will provide additional information for removal of components for the TAC and provide a deadline to get comments back from the TAC. The next meeting is tentatively scheduled for September 27th.

North I-25 PEL
Sign-in Sheet
August 16, 2012

TECHNICAL ADVISORY COMMITTEE

Representative	Community/Agency	Signature
Annette Marquez	Brighton	
A.J. Euckert	Dacono	
Andy Stratton	CDOT Region 6	
Brook Svoboda	Northglenn	
Carol Parr	CDOT Region 4	
Daren Sterling	Commerce City	
Dave Downing	Westminster	Dave Downing
Dave Lindsay	Firestone	
Deb Obermeyer	Metro North Chamber	
Doug Monroe	RTD	
Emily Silverman	City and County of Denver	
Fred Sandal	DRCOG	
Gene Putman	Thornton	
Jay Hendrickson	CDOT Region 6	
Jeanne Shreve	Adams County	
Jennifer Gorek	CDOT Region 4	
Jennifer Kerr	Broomfield Chamber	
Jon Chesser	CDOT Region 6	

North I-25 PEL
Sign-in Sheet
August 16, 2012

Karen Schneiders	CDOT Region 4	
Karen Stuart	Smart Commute TMO	
Kevin Standbridge	Broomfield	
Larry Squires	Federal Transit Administration	
Lee Cryer	RTD	
Leela Rajasekar	CDOT Region 6	
Lizzie Kemp	CDOT Region 6	
Long Nguyen	CDOT Region 4	
Monica Pavlik	FHWA	
Phil Greenwald	Longmont	
Richard Leffler	Frederick	
Russell Pennington	Erie	
Stephanie Salazar	Broomfield EDC	
Steve Cook	DRCOG	
Steve Hersey	CDOT Region 6	
Steve Olson	CDOT Region 6	
Steve Durian	Federal Heights	

North I-25 PEL
Sign-in Sheet
August 16, 2012

DOT
DEPARTMENT OF TRANSPORTATION

Other Attendees

Holly Buck	FHU	303 721 1440
Lyle DeVries	FHU	" "
Keith Borsheim	JACOBS	720-359-3033
Nataly Ewing	RTD	303 299 2059
LEE KEMP	RTD	303-299-2730
Steve Durian	Federal Heights	(3) 412-3539
Thanh Ly	CDOT	(3) 398-6725
Alex Pettey	FHU	303-721-1440

Technical Advisory Committee Meeting
April 4, 2013

NORTH I-25 PEL

COLORADO DOT DEPARTMENT OF TRANSPORTATION

Technical Advisory Committee

April 4, 2013

Welcome!

Meeting Goals

- Provide progress report
- Solicit input on updated screening process
- Discuss preliminary transit findings

Agenda

- Introductions
- Project Reminder
  - Purpose and Need
  - Corridor Conditions Report
- Project Activity
  - Sorting and screening process
  - DynusT modeling
  - Preliminary transit results
- Schedule and next steps
- Next meeting

Introductions

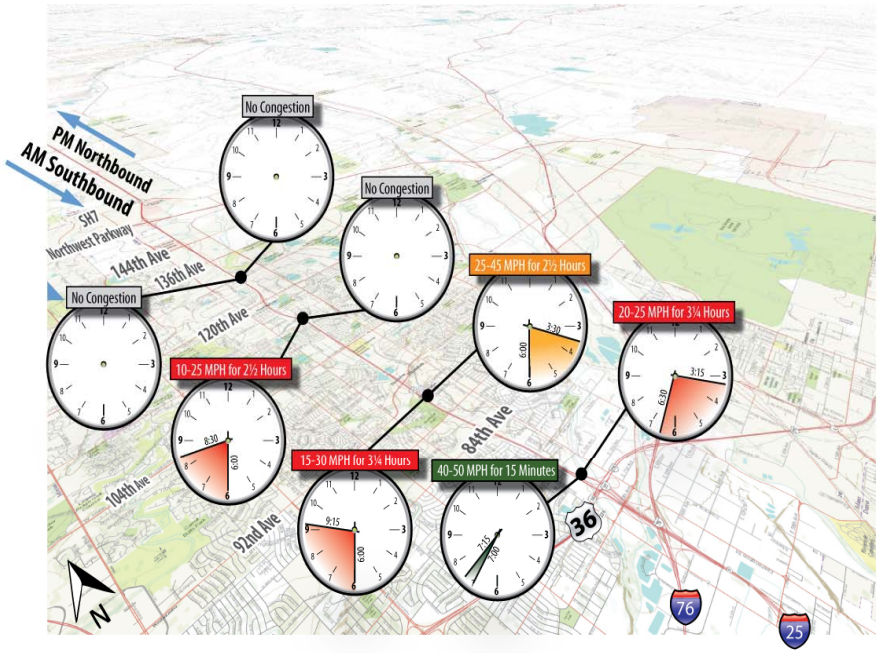
Project Reminder

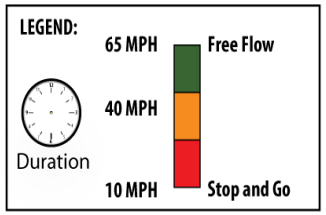
- **Project Purpose**
  - To reduce congestion and improve safety on I-25 between US 36 and SH 7
  - Implement near-term, multi-modal, and cost-effective transportation improvements that are compatible with recently constructed interchange structures

Project Reminder

- **Project Needs**
  - Mobility Problem: Traffic congestion resulting from high traffic volumes and incidents
  - Safety Problem: Higher than expected crashes due to traffic congestion
  - Multimodal Problem: Over capacity multimodal facilities

Mobility Problem



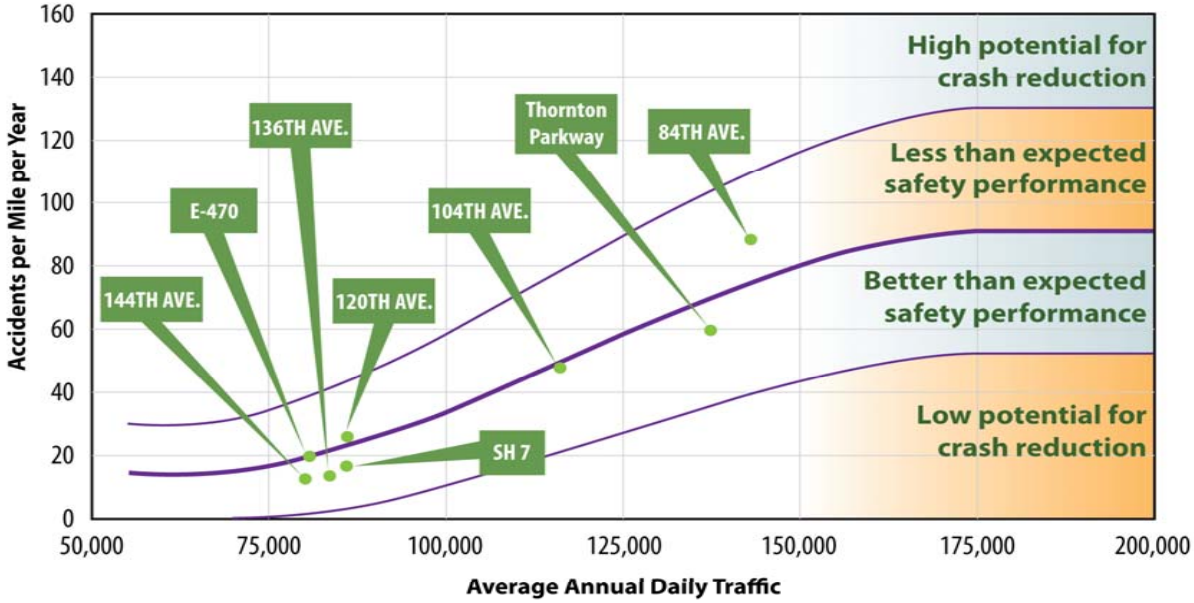


Source: CDOT Doppler Radar Speed Sensor Data

- There is a need to reduce the duration and extent of peak period congestion along the corridor.

Safety Problem

- Higher than expected crashes due to traffic congestion



Multimodal Problem

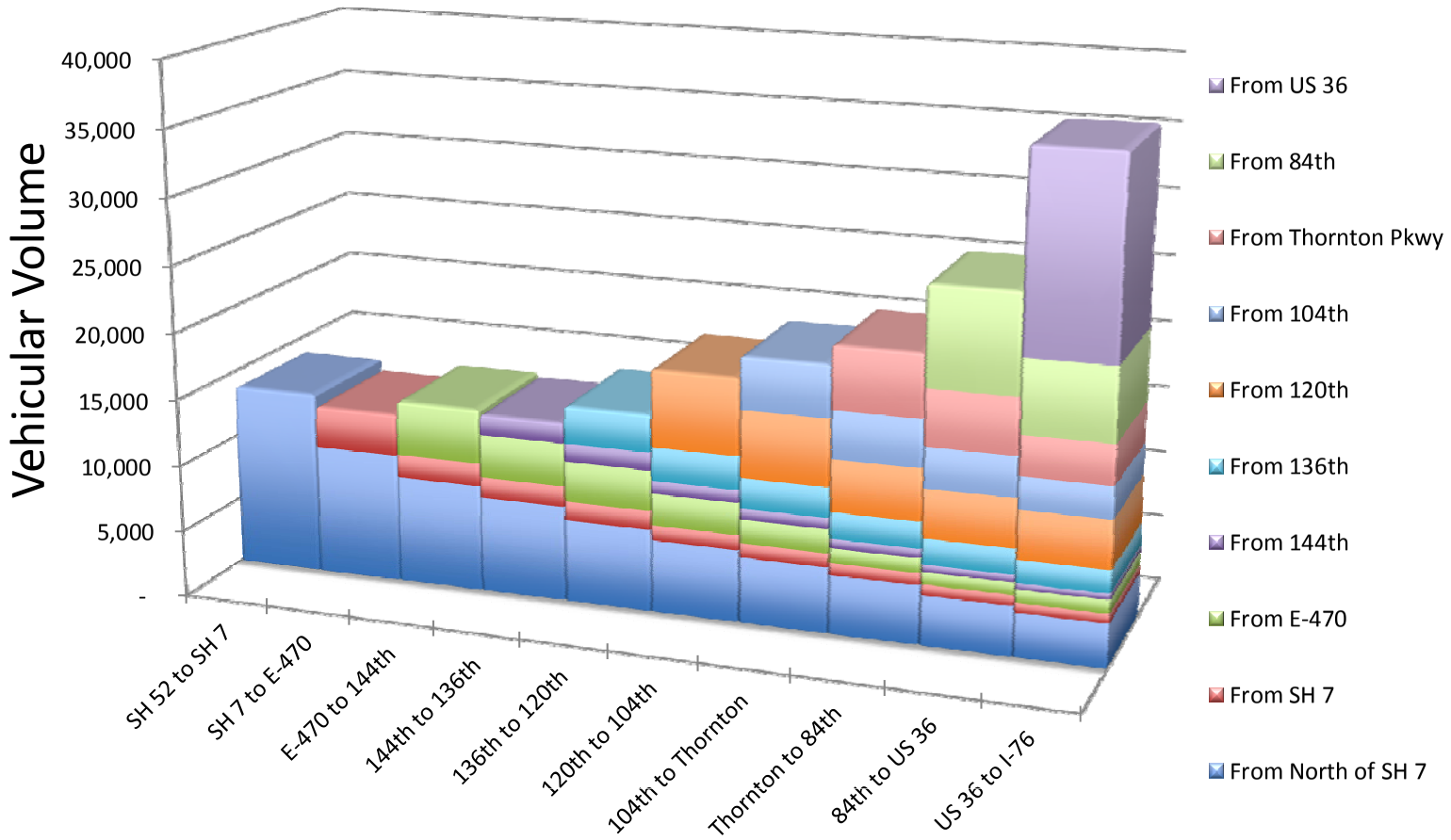
- Over capacity multimodal facilities
  - Wagon Road park-n-Ride
    - over capacity today
    - 140% increase in demand by 2035
  - Thornton park-n-Ride (eastern side)
    - over capacity today
    - 40% increase in demand by 2035

Corridor Conditions Report

- 2035 No-Action Conditions
  - Regional growth incorporated
  - New managed lane in place between US 36 and 120th Avenue
- Tools
  - Regional Travel Demand Model
  - DynusT analysis

Travel Demand Model

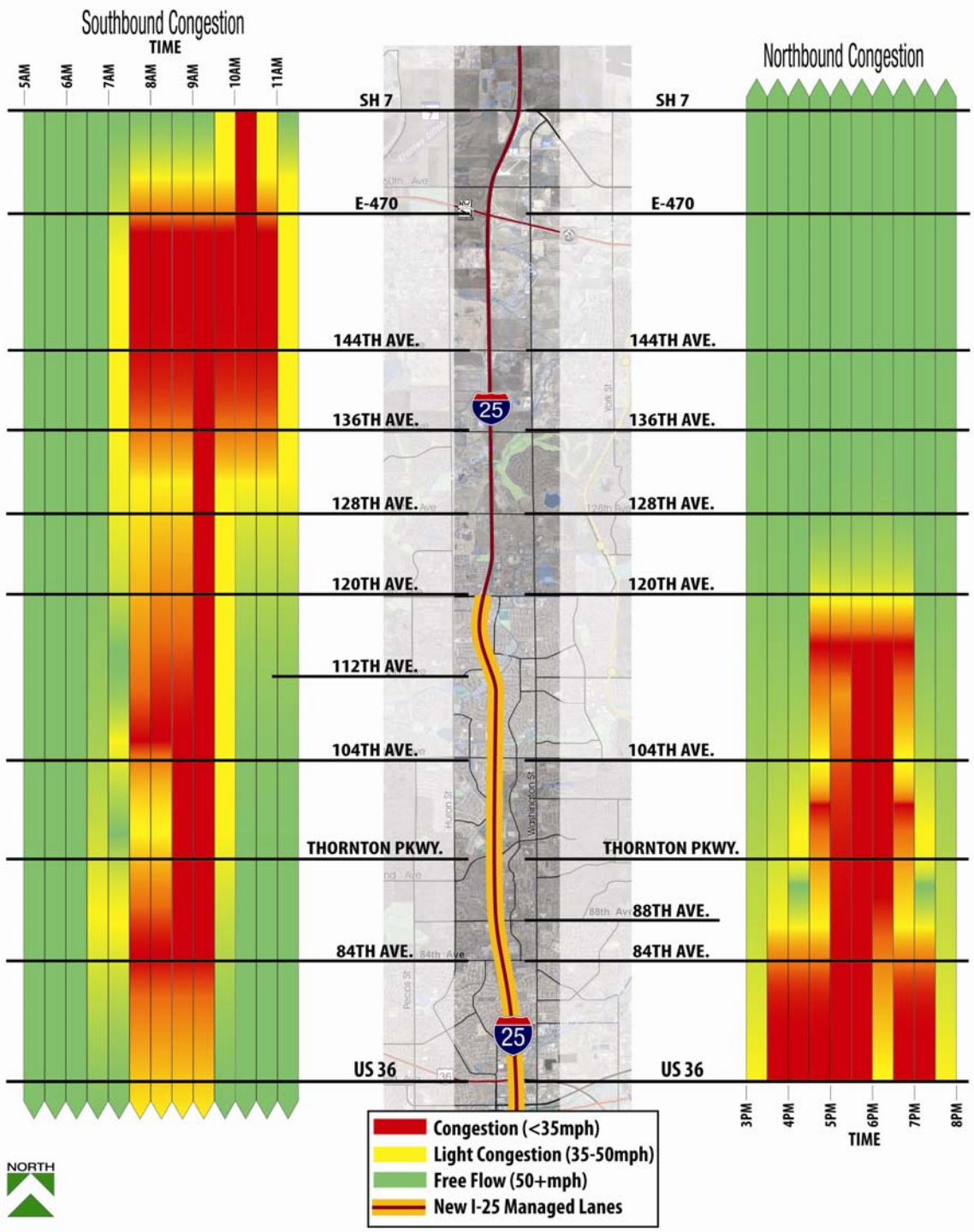
2035 No Action AM Southbound



NORTH I-25 PEL

DynusT Findings

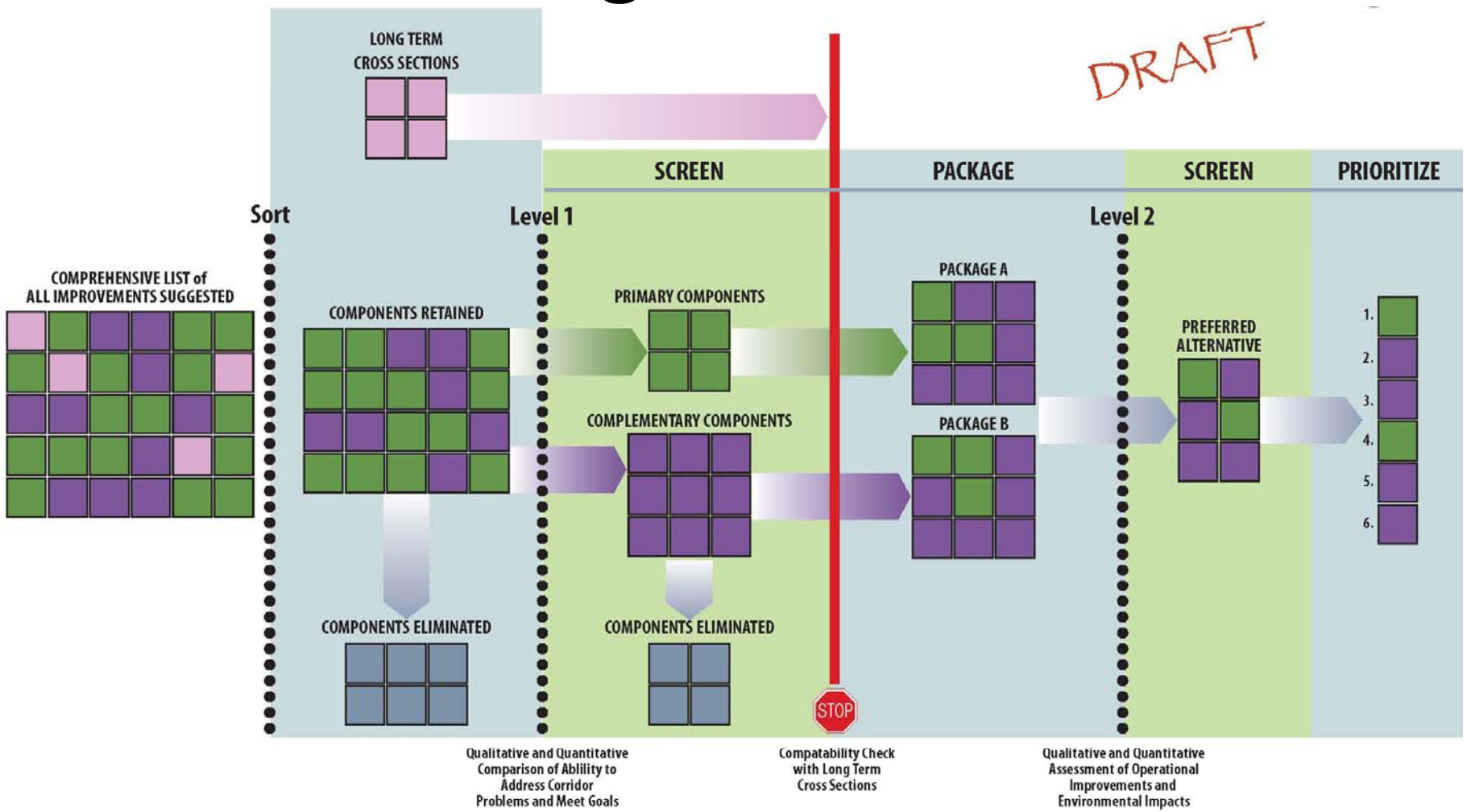
2035 No Action



Summary of Comments Received on Initial Screening

- Don't eliminate long-term options that could meet purpose and need
- Provide better explanation of components eliminated
- Evaluate general purpose lanes
- Feedback on individual components

Screening Process Chart



Updates to Previous Screening

1. Sorting includes 3 categories vs 4
   - Components retained
   - Components eliminated
   - Potential long-term cross sections for future consideration
2. Transition Level 1 screening to sorting
3. Updated description for components eliminated
4. Added two components
   - N.15 general purpose lanes I-270 to Thornton Pkwy
   - S.15 general purpose lanes Thornton Pkwy to I-76

Sorting Handout

Level 1 Evaluation

Example Evaluation Matrix

Purpose and Need			Goals	Resource Impacts	Cost
MOBILITY	SAFETY	MULTIMODAL			

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- Mobility
  - Duration of congestion
  - Travel time
- Safety
  - Potential to reduce crashes
- Multimodal
  - Ridership
  - Park-n-Ride use
- Cost

- Goals
  - Expand transportation options
  - Maximize use of existing infrastructure
  - Complement TMO
  - Coordinate with local plans
  - Maximize sustained benefits
  - Minimize throw-away
- Resource Impacts
  - Semi quantitative assessment

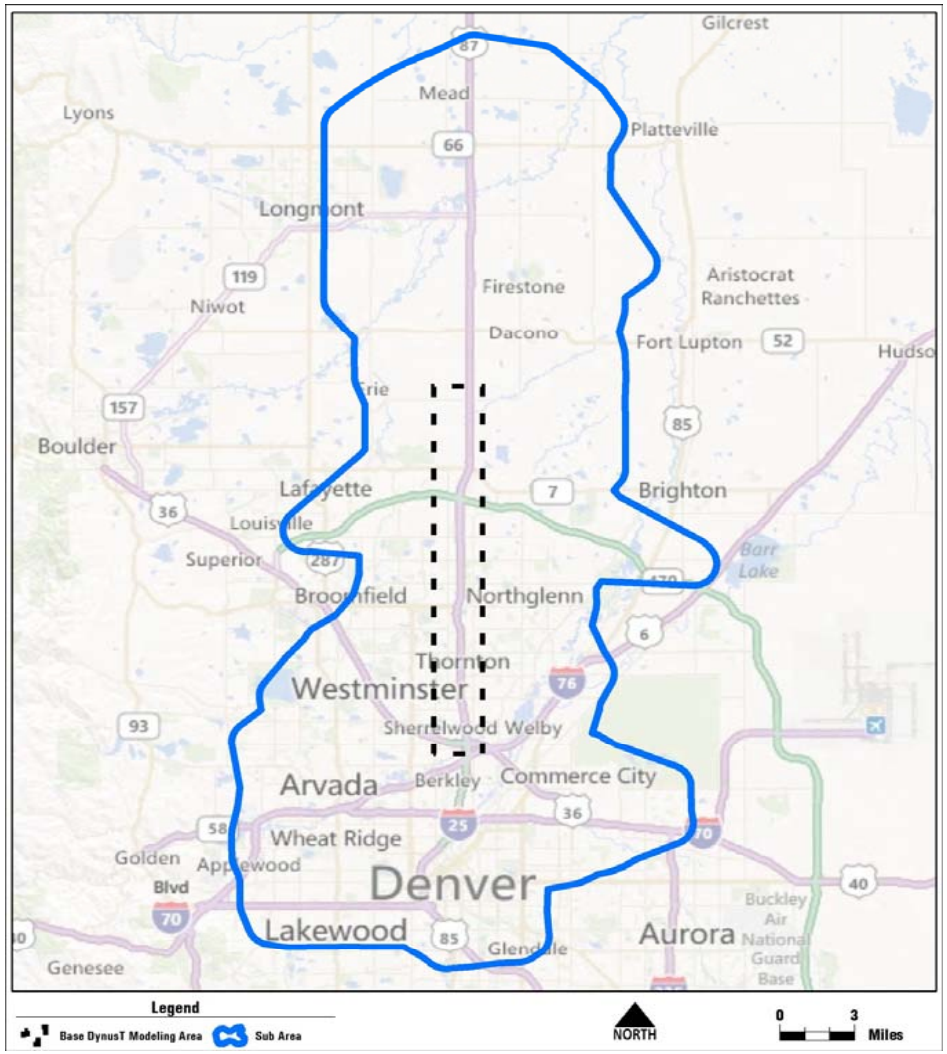
Traffic Analysis/Modeling Update

- Traffic Modeling effort
  - Methods and assumptions
  - 2010 calibrated model
  - 2035 No Action
- Upcoming component evaluation and screening
  - Traffic analysis tools
  - 2035 comparison

Methods and Assumptions

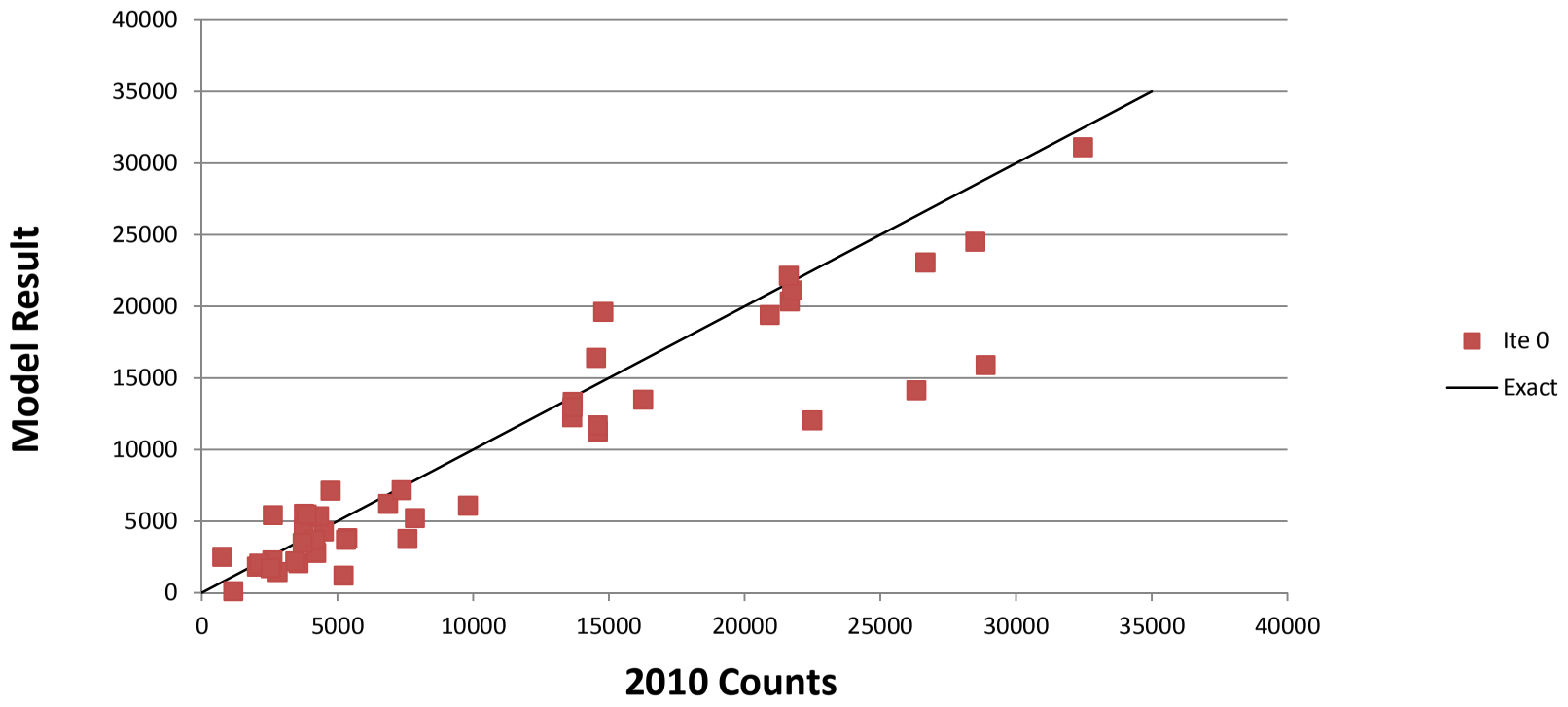
- FHWA-approved document that addresses:
  - Dynamic Traffic Assignment tool - DynusT
  - Modeling time periods
    - AM: 5 AM – 11 AM
    - PM: 2 PM – 9 PM
  - Sub-area development
  - Calibration process
    - Volumes
    - Speeds

PEL Subarea


Gilcrest
Mead
Lyons
Platteville
Longmont
Firestone
Aristocrat Ranchettes
Niwot
Dacono
Fort Lupton
Boulder
Brighton
Lafayette
Louisville
Superior
Broomfield
Northglenn
Barr Lake
Thornton
Westminster
Sheridan
Welby
Arvada
Berkley
Commerce City
Wheat Ridge
Golden
Applewood
Denver
Lakewood
Glendale
Aurora
Buckley Air National Guard Base
Genesee
Legend
Base DynusT Modeling Area
Sub Area
NORTH
0
3
Miles

Demand Calibration

- Iterative adjustments to origin destination tables
- Calibrated to Weekday September 2010
- Achieved: 6.5% tolerance at key locations



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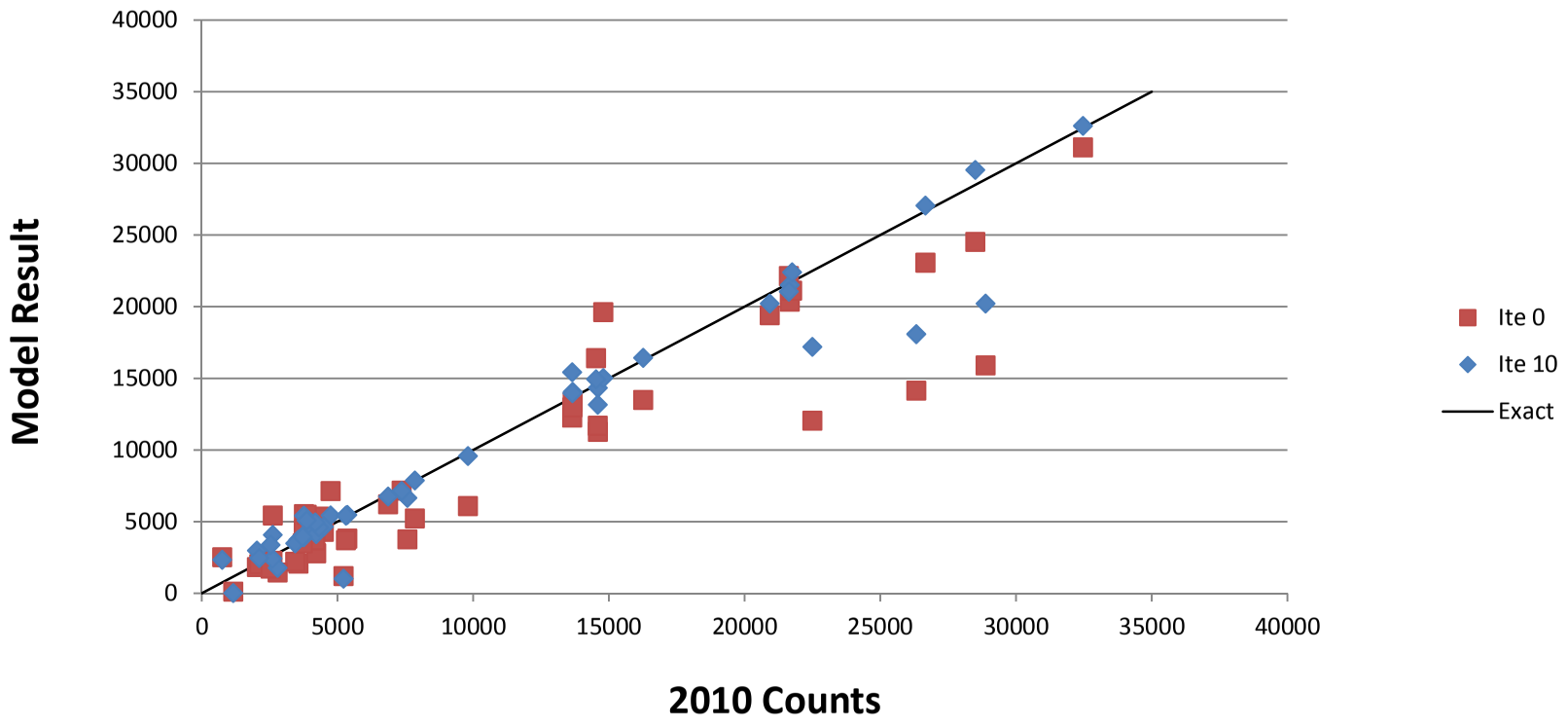

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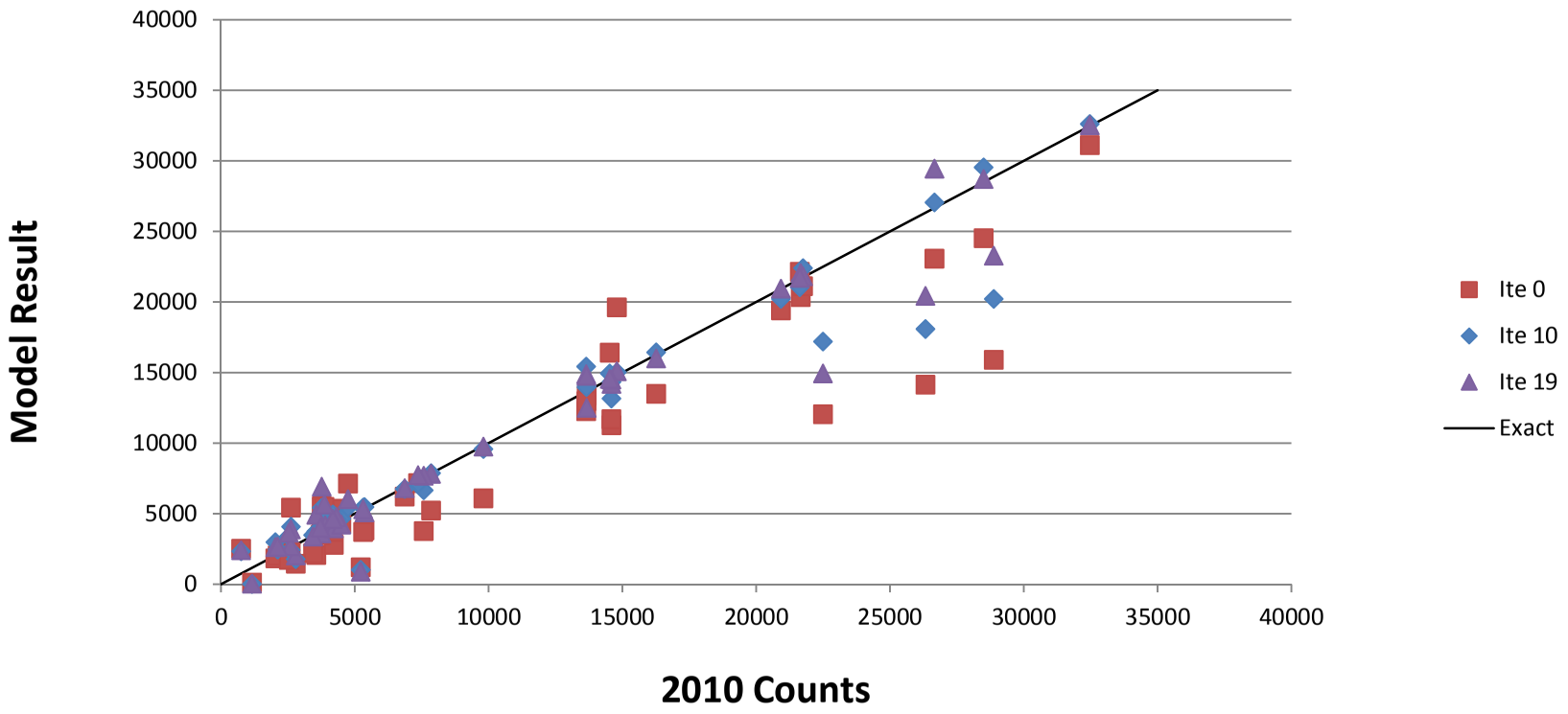

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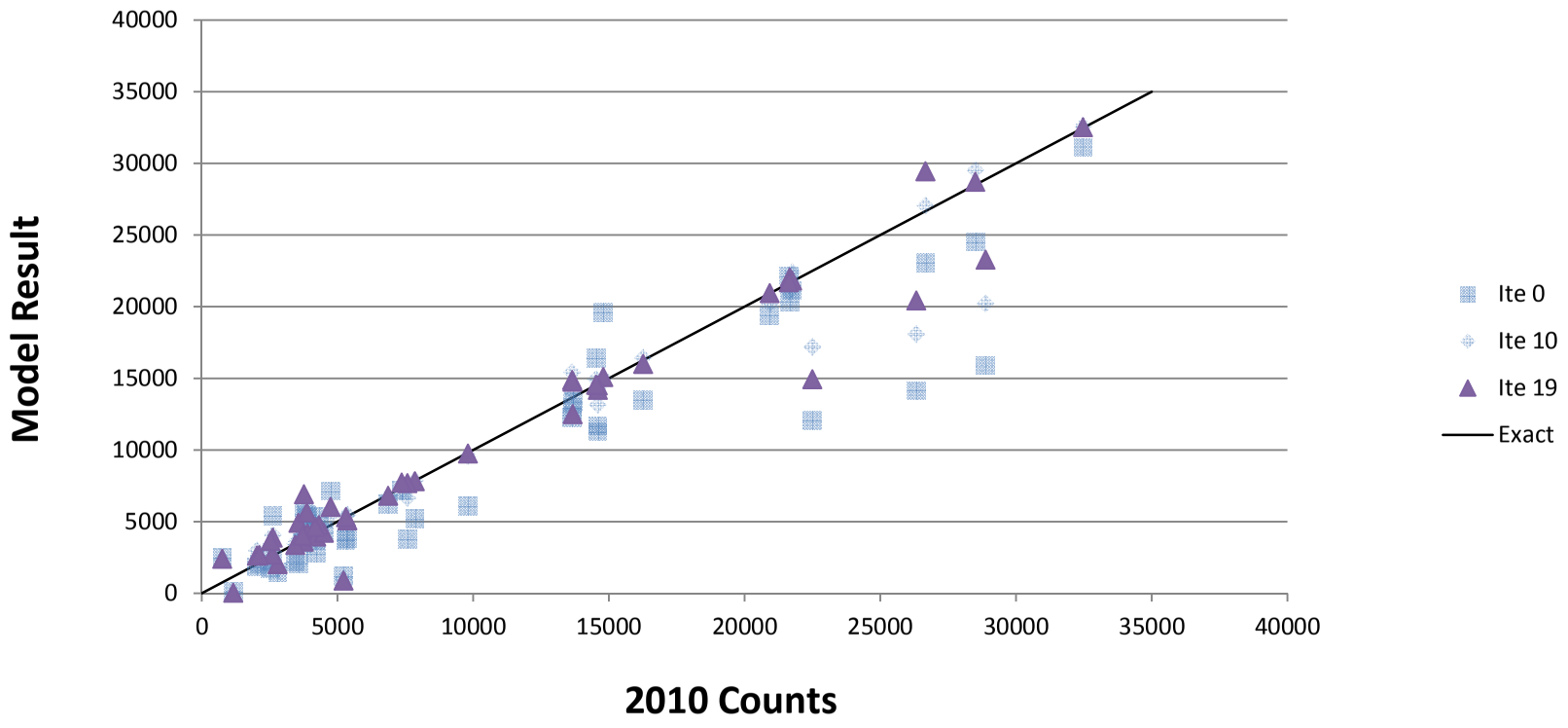


Preliminary Results

Initial Evaluation of New park-n-Rides

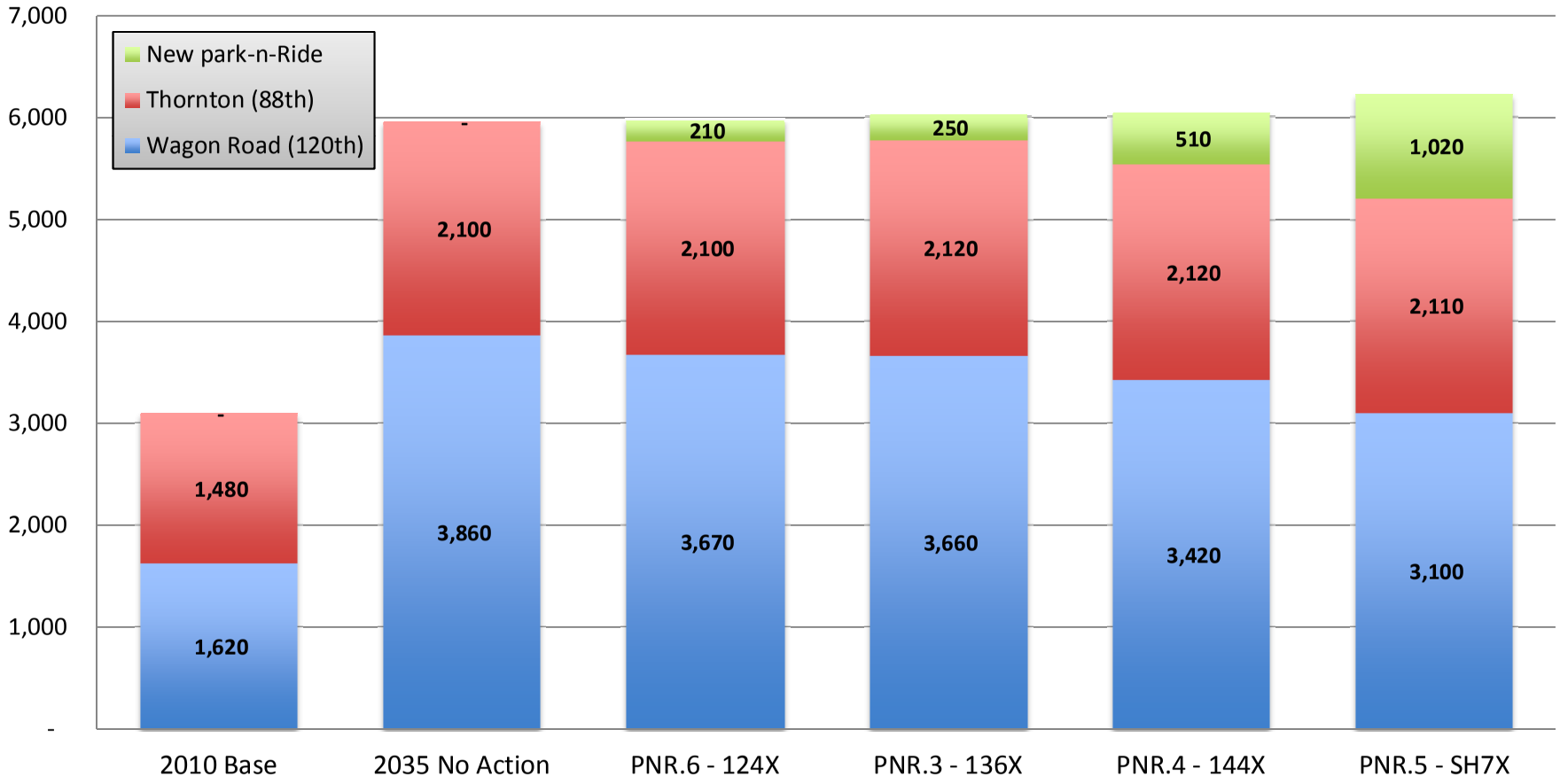
- Evaluating potential transit alternatives using the 2035 DRCOG Regional Travel Demand Model
  - Includes the North Metro Commuter Rail Line to 72nd Avenue

Alternatives considered:

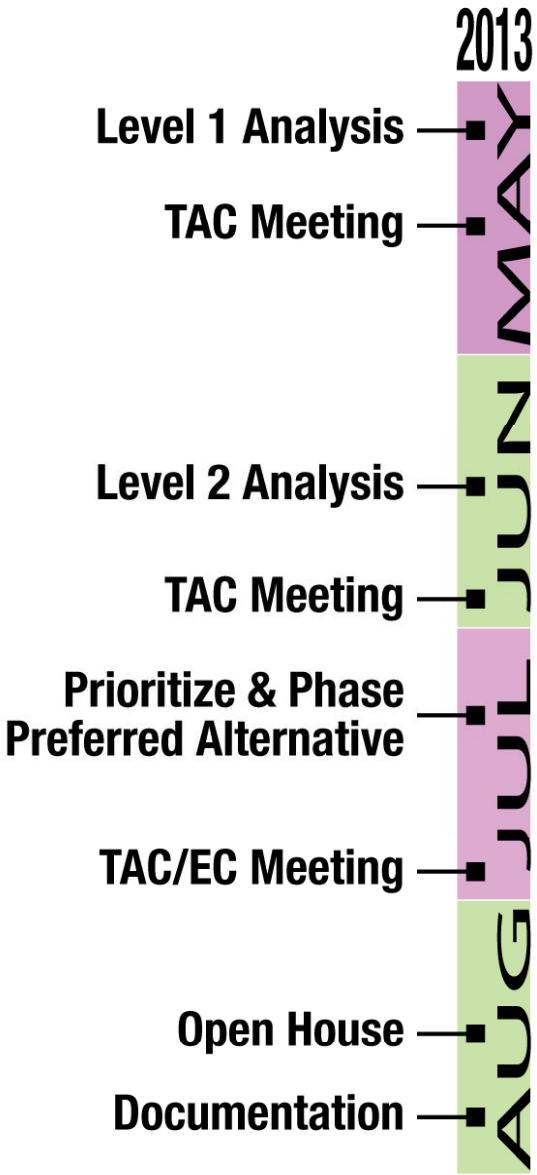
- New park-n-Rides and express bus service at:
  - 124th & Claude Court (PNR.6) (potential North Metro station location)
  - I-25 & 136th Avenue (PNR.3)
  - I-25 & 144th Avenue (PNR.4)
  - I-25 & SH 7 (PNR.5)

Initial Evaluation of New park-n-Rides Results of Travel Demand Modeling

2035 DRCOG Model Daily park-n-Ride Demand



Schedule


2013
Level 1 Analysis
TAC Meeting
MAY
Level 2 Analysis
TAC Meeting
JUN
Prioritize & Phase
Preferred Alternative
TAC/EC Meeting
JUL
Open House
Documentation
AUG

Next meeting:

May 15th (tentative)

April 4, 2013 **DRAFT**

Purpose and Need

The Purpose and Need statement describes the intention of the project, and states the problems. Ultimately it is used to develop and evaluate alternatives but is not mode specific or biased toward a particular solution. The following chapter defines the purpose and need for the I-25 PEL improvements.

Project Purpose

The purpose of the project is to reduce congestion and improve safety on I-25 between US 36 and SH 7 by implementing near-term, multi-modal, and cost-effective transportation improvements that are compatible with long-term options and the recently constructed interchange structures.

It is acknowledged that there may be unmet mobility needs beyond the near-term horizon. As a result, this study will develop a set of potential long-term cross sections that fit within the envelope of the recently constructed interchange structures on the corridor. All near-term improvements considered will be evaluated to determine their compatibility with the potential long-term cross sections to minimize throw away and increase cost effectiveness.

Need for Project

Mobility Problem: Traffic congestion resulting from high traffic volumes and incidents.

There is a need to reduce the duration and extent of peak period congestion along the corridor. The corridor regularly experiences extreme and prolonged congestion resulting from high traffic volumes and/or incidents. Recurring congestion is observed repeatedly during peak travel periods at predictable locations and is a result of high traffic volumes and/or a physical condition that causes the travel speed on the corridor to be reduced. Incidents such as crashes, work zones, weather, or special events also cause congestion along the corridor. The occurrence of both of these types of congestion is described below.

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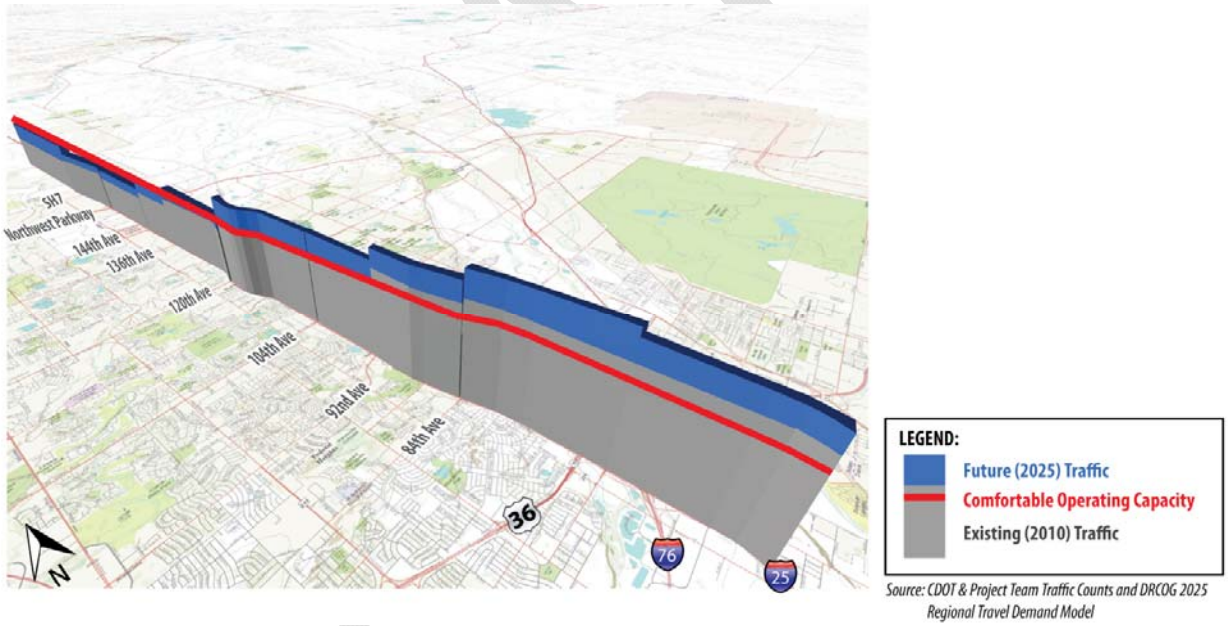
High Volume Congestion

Figure 1 illustrates existing and future daily traffic volumes along the corridor. As shown, south of 120th Avenue I-25 currently operates at or above capacity. By 2025 most of the corridor is expected to operate at or above capacity. When traffic volumes reach or exceed the comfortable carrying capacity of the road, congestion occurs and the travel speed along the corridor is reduced.

Figure 1. Existing and Future Peak Hour Volumes



Source: CDOT & Project Team Traffic Counts and DRCOG 2025 Regional Travel Demand Model

The reduction of travel speed is documented by CDOT's Doppler radar speed data. To identify a representative day for evaluation of high volume congestion, speed data were gathered and summarized from 20 Doppler radar speed sensors between 58th Avenue and SH 7 for two consecutive weeks and crash data for this period were also reviewed to eliminate days when an incident was reported during peak travel periods. The pattern of reduction in speeds is consistent among days of

similar traffic levels and lack of incidents. For presentation purposes, Wednesday, September 28, 2011 was identified as a representative day.

Figure 2 illustrates the Doppler speed data recorded on September 28th, 2011 southbound on I-25. On this typical day, no peak period incidents were reported on I-25 but speeds still dropped to below 30 MPH at Thornton Parkway between 6:30 and 8:30 AM. The speed drop initiates near Thornton Parkway (likely south of Thornton Parkway), then propagates upstream through 120th Avenue. Congestion occurs upstream at 120th Avenue starting around 6:30 AM but typically recovers by about 8:30 AM.

The poor southbound morning operation of I-25 between US 36 and 88th Avenue can be attributed to several factors including:

- A significant amount of southbound volume enters the I-25 corridor between Thornton Parkway and 84th Avenue (approx. nearly 2000 vehicles per hour during peak morning flows) The high volume of merging on-ramp traffic coupled with the lack of acceptable gaps along I-25 cause mainline I-25 traffic to slow at merge / diverge points, resulting in vehicular queues that extend north through 120th Avenue.
- A significant amount of traffic (nearly 4,000 vehicles per hour) leaves I-25 south of 84th Avenue at one of four exit points. The weaving and lane changing activity that occurs as vehicles position themselves to exit I-25 contributes to poor operation of I-25 during the morning peak period.

The 2035 No Action DynusT model predicts that travel time in 2035 will increase to 83 minutes on southbound I-25 during the AM peak period and the congestion will extend from SH 7 to US 36.

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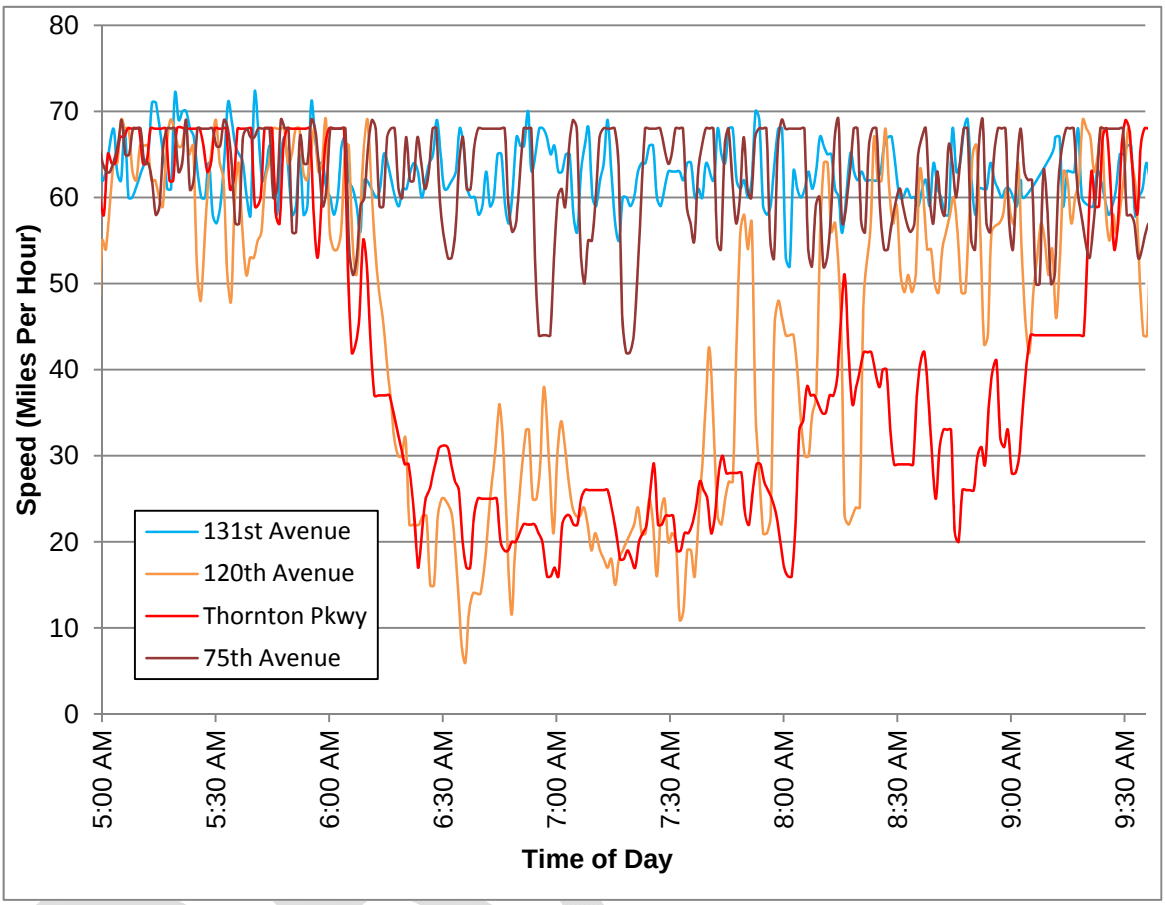
Figure 2. Southbound I-25 Speeds on a Typical Day

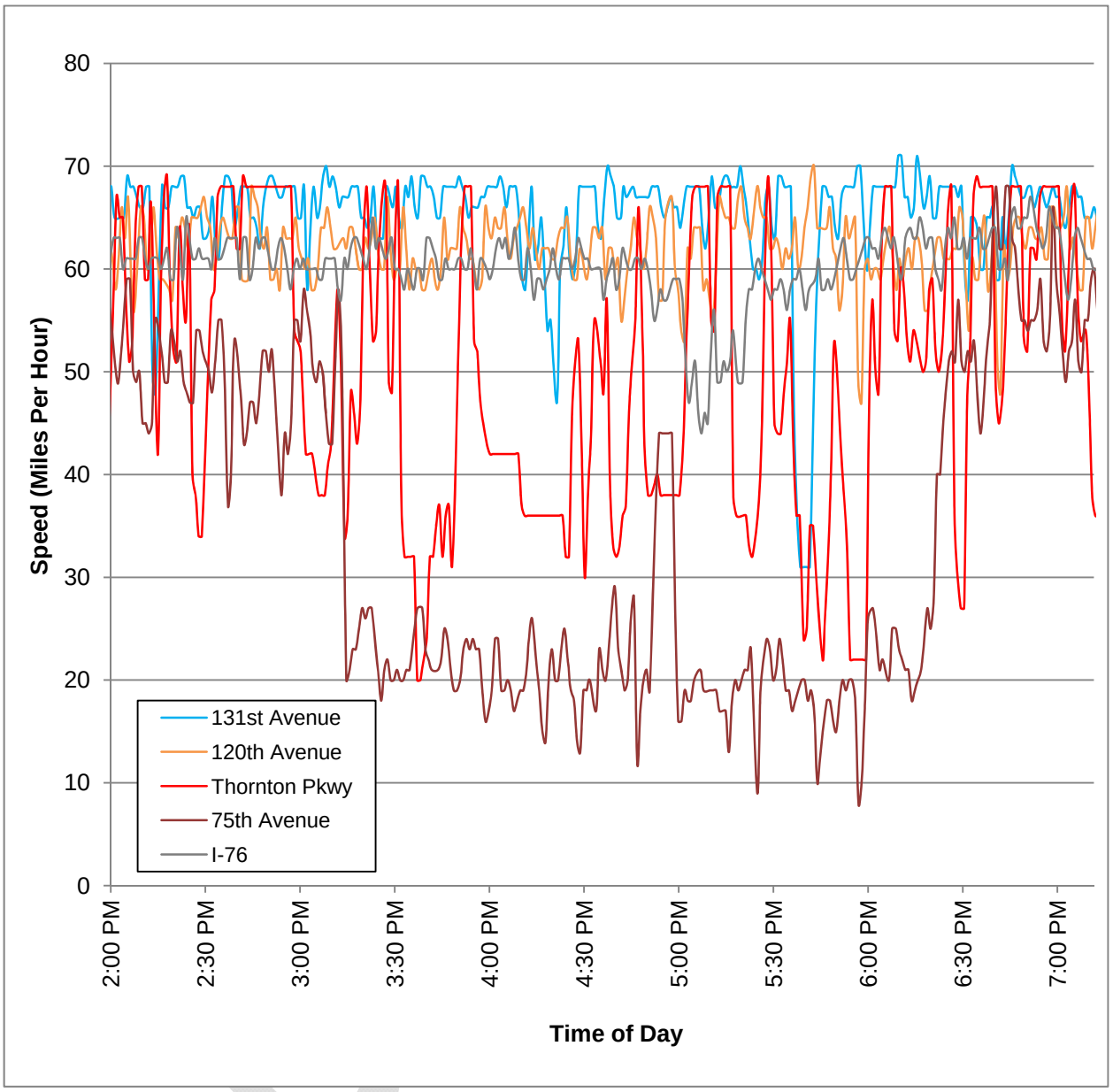


Source: CDOT Doppler Radar September 28, 2011.

Northbound I-25 experiences similar congestion issues. **Figure 3** illustrates the speeds recorded on I-25 northbound during the PM peak period. On this day, no incidents were reported. Speeds at 75th Avenue are consistently around 20 MPH between 3:30 PM and 6:30 PM. Farther north near Thornton Parkway, speeds are very volatile varying between 20 MPH and over 60 MPH. This variability may be causing some of higher than expected rear-end collisions described later in this chapter.

Once vehicles travel north through 75th Avenue, speeds fluctuate between 30 mph and 45 mph past Thornton Parkway and I-25 northbound at Thornton Parkway experiences some lingering effects of congestion until about 6:30 PM. Congestion typically does not extend north past 120th Avenue. Traffic conditions along the entire corridor return to free flow by about 7:00 PM.

Figure 3. Northbound I-25 Speeds on a Typical Day



Source: CDOT Doppler Radar September 28, 2011.

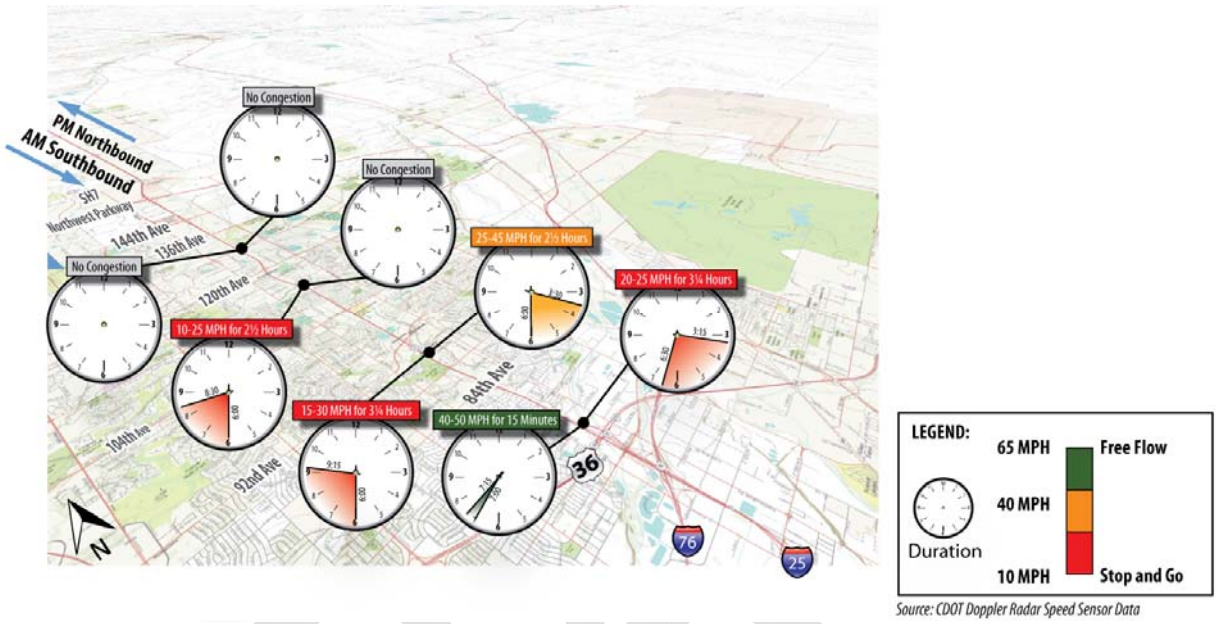
The poor northbound operation of I-25 at 75th Avenue can be attributed to approximately 3,000 vehicles per hour entering I-25 northbound within less than 2,000 feet (I-76/US 36, HOT lane, and I-270).

The 2035 No Action DynusT model predicts that travel time in 2035 will increase to 30 minutes on northbound I-25 at during the PM peak period and the congestion will extend from US 36 to 120th Avenue.

Figure 4 summarizes the span of congestion experienced along the corridor recorded on September 28th. As shown, southbound traffic was stop and go for about three hours in the morning between 120th

Avenue and US 36. In the afternoon northbound traffic experienced similar, low speed, conditions for about three hours. Insert text and figures illustrating congestion duration estimates in 2035.

Figure 4. Duration of Peak Period Congestion



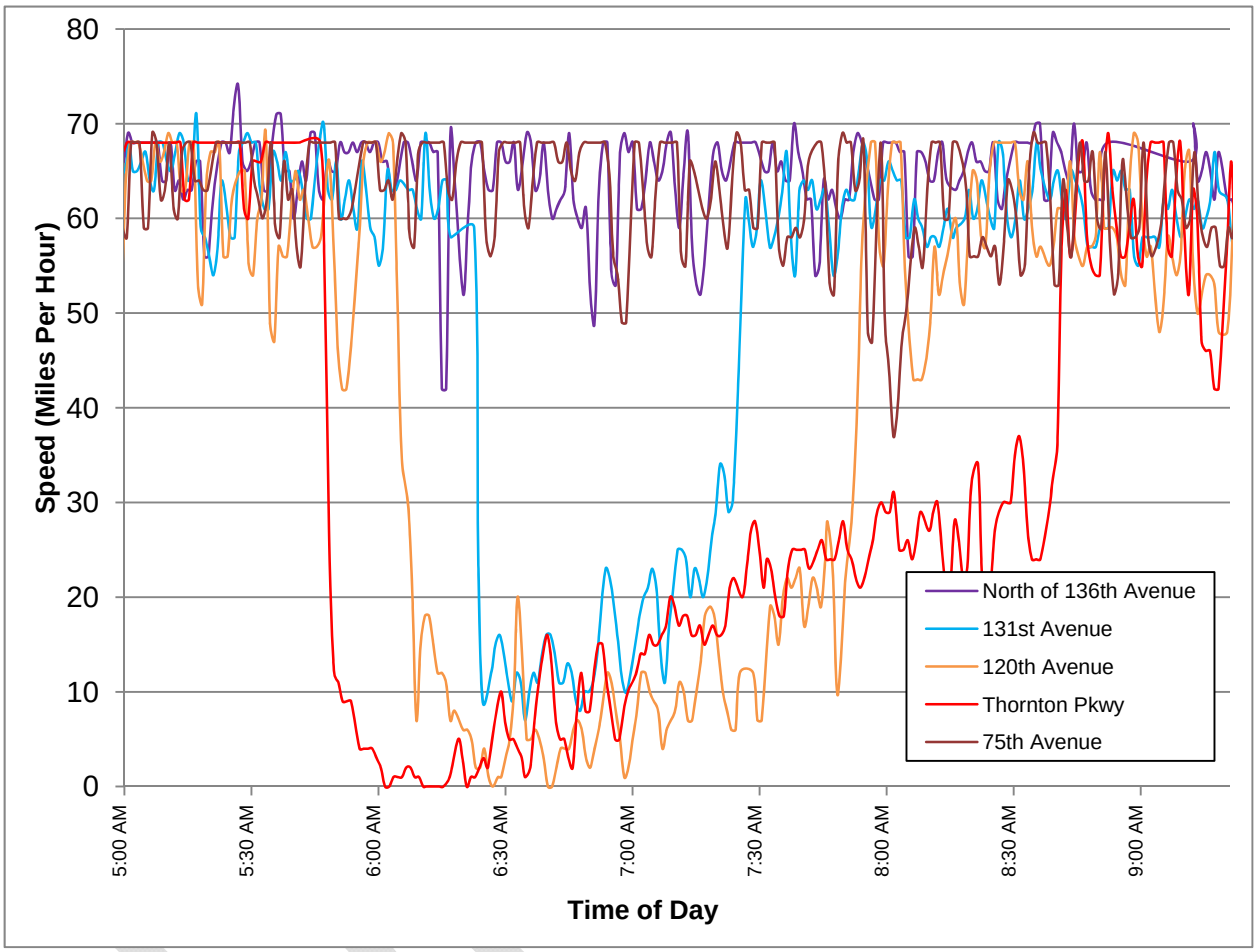
Incident Related Congestion

Incident related congestion also comprises a significant portion of the overall congestion along a corridor. A review of Year 2011 crashes along I-25 through the Study Area revealed that a crash happened along mainline I-25 on 296 of the 365 days. Based on this sampling, the probability of a crash happening in the Study Area on a given day is 81 percent. In addition, approximately 18 percent of all crashes happen during the AM and PM peak hours. The crash listing does not contain information on whether the crash may have been a secondary crash caused by a nearby incident.

As a case study on the impacts of non-recurring congestion upon the I-25 PEL corridor, the project team reviewed crash histories for September 2011 days with speed data available. September 22 was identified as an appropriate day for representing incident-related congestion as multiple crashes occurred during the peak travel periods.

The presence of two incidents along southbound I-25 during the morning peak period (5:44 AM at 84th and 6:10 AM near 88th) caused speeds to be reduced even more and the queue to extend farther than on a typical day. In comparison with a typical day, speed drops extended farther north (more than one mile) and speeds decreased by an additional 15 to 20 MPH. The corresponding southbound speed plot is shown on **Figure 5**.

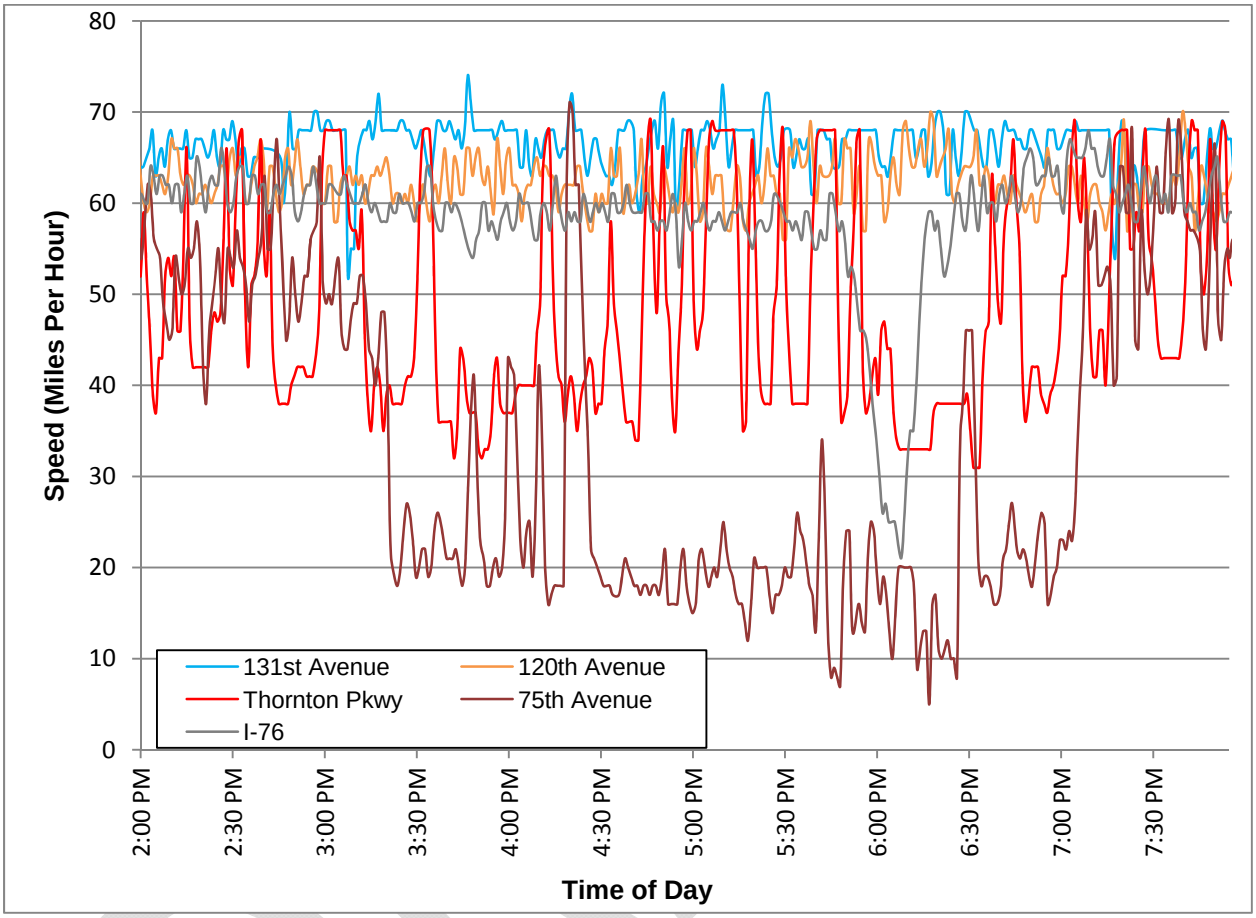
Figure 5 Southbound I-25 Congestion – AM Peak Period (Incident Related Congestion Analysis)



Source: CDOT Doppler Radar September 22, 2011.

The Doppler speed data for northbound I-25 was plotted to determine the location where vehicular traffic slowed during the afternoon peak period on September 22, see **Figure 6**. The data show that vehicles traveling at free flow speeds slowed down to 20 mph at 75th Avenue (maroon line) beginning at 3:15 pm. The occurrence of an incident in the northbound direction at approximately 5:11 PM at 88th Avenue served to increase congestion in comparison with recurring levels.

Figure 6 Northbound I-25 Congestion – PM Peak Period (Incident Related Congestion Analysis)



Source: CDOT Doppler Radar September 22, 2011.

Safety Problem: Higher than expected crashes due to traffic congestion.

The assessment of the magnitude of safety problems on select highway sections has been refined through the use of Safety Performance Function (SPF) methodology. The SPF reflects the complex relationship between exposure (measured in Annual Daily Traffic) and the crash count for a section of roadway measured in accidents per mile per year (APMPY). The SPF models provide an estimate for the expected crash frequency for each interchange influence area, for a range of ADT, among similar facilities. SPF functions are limited to mainline crashes only and as such do not include crashes that occur on ramps. SPF analyses have been completed for I-25 and are discussed in more detail in the following sections.

Figure 7 illustrates the resulting SPF analysis of I-25 segments. A shown, the SPF analysis indicates that I-25 between and 84th Avenue and I-25 at the 120th Avenue experience less than expected safety performance.

Figure 7. I-25 Locations with Less than Expected Safety Performance

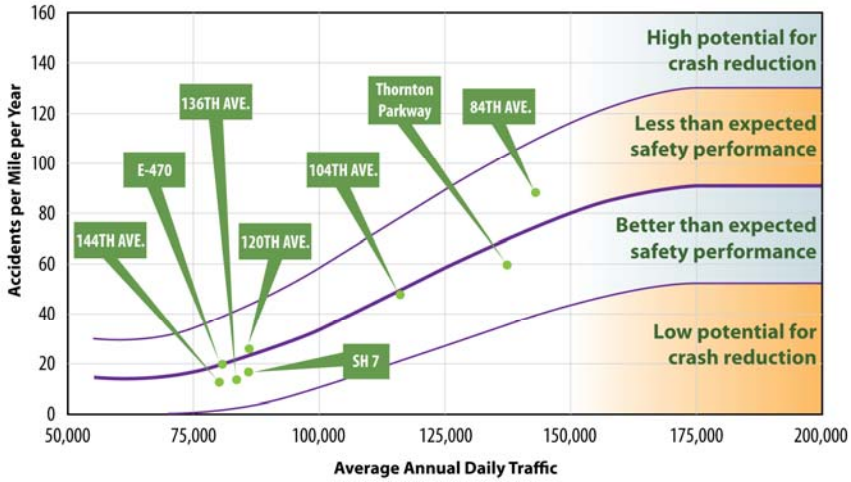


Figure 8 summarizes crashes by type along the corridor for a three-year period (2008 to 2010). The safety review found the following:

- Rear end and sideswipe type crashes coincided with the AM and PM peak hours.
- Sideswipe crashes were primarily related to weaving / lane changes between US 36 and 84th Avenue.
- Incidents involving concrete barrier crashes, primarily occurred at night or during inclement weather but that the barrier prevented a more serious crash from occurring.

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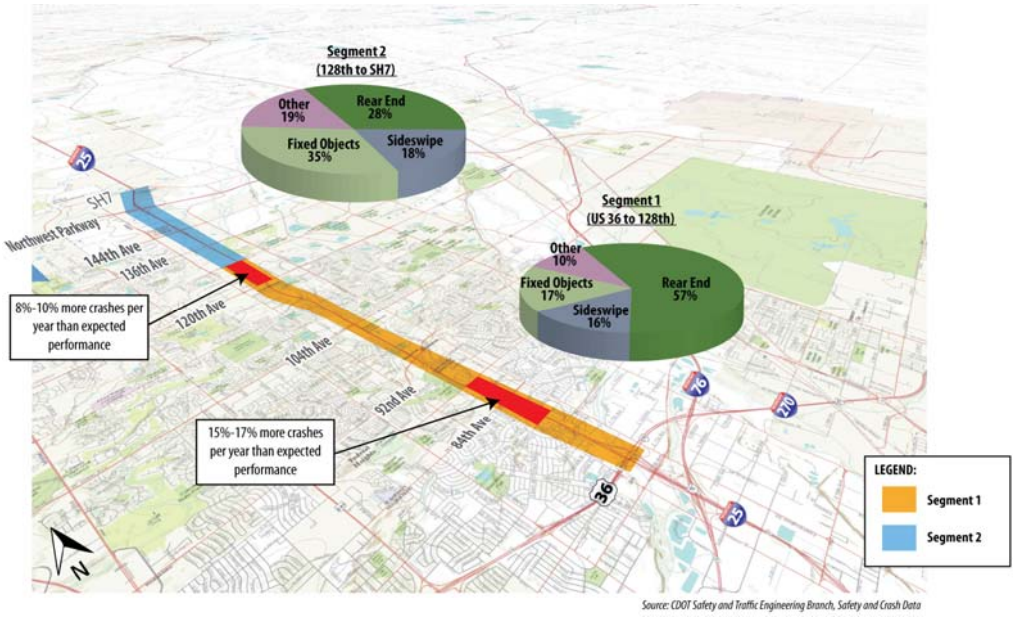
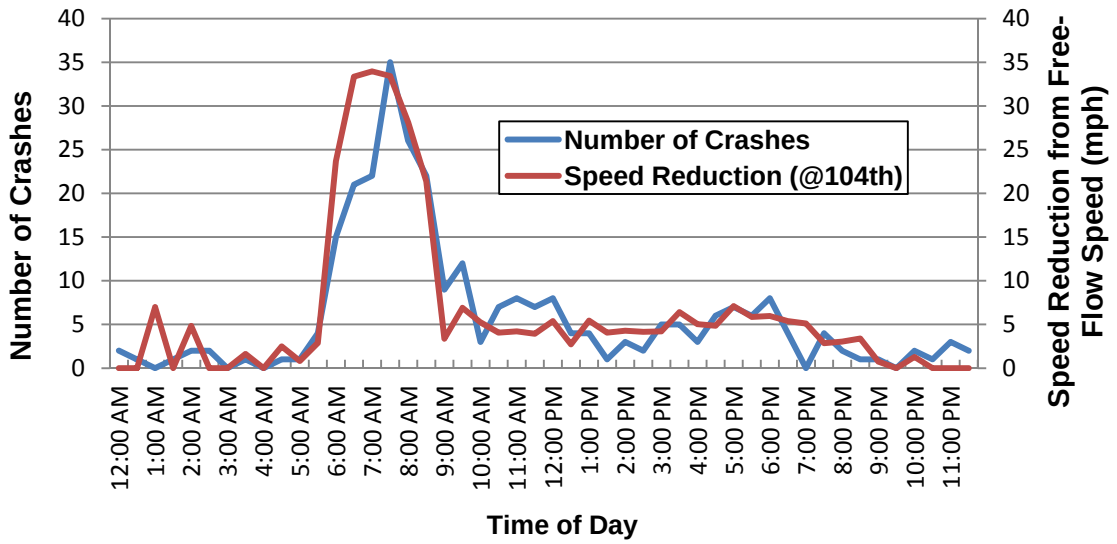
Figure 8. Crashes by Segment and Type



Data show a strong correlation between crash frequency and traffic congestion along I-25. **Figures 9** and **10** demonstrate this link. The figures depict the number of crashes and congestion observed by time of day for the southbound and northbound directions. Congestion is measured as the drop in miles per hour below free flow conditions (60 miles per hour). For example, a recorded speed of 40 mph registers as a 20 mph speed reduction. Crashes are measured as the ½ hour interval average number of crashes that occurred along southbound I-25 between 120th Avenue and US 36 during the 3 years between 2009 and 2011.

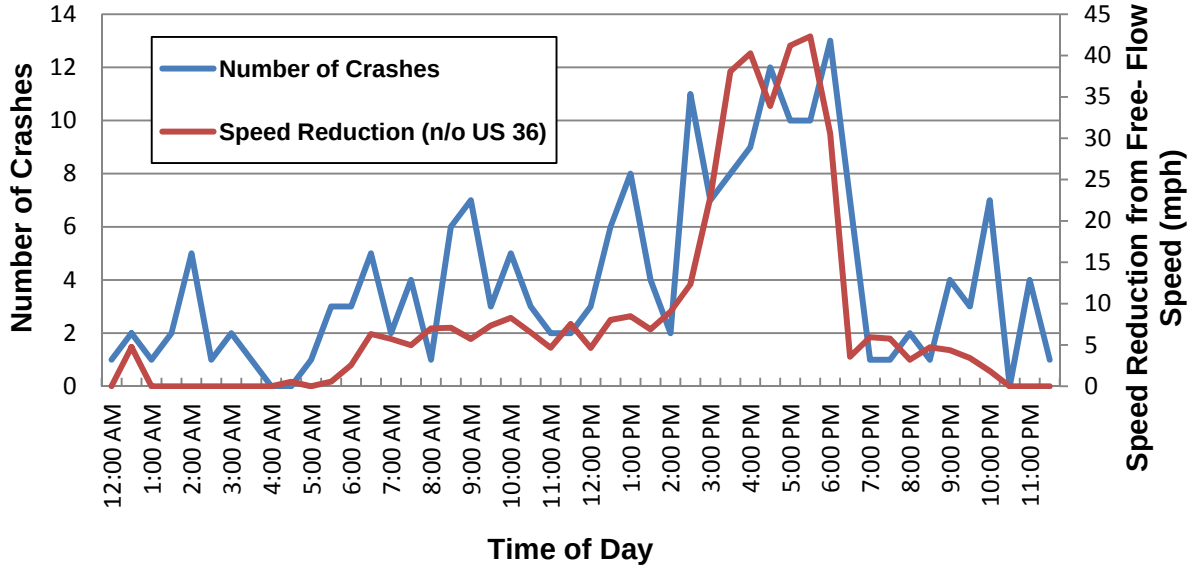
As shown on **Figure 9**, the temporal pattern of crashes recorded along southbound I-25 (in blue) closely tracks with the temporal pattern of speed reductions observed along southbound I-25 at 104th Avenue (in red). It can be inferred from this consistency that congestion is a significant factor in causing crashes along North I-25. **Figure 10** depicts a similar correlation between crash frequency and congestion throughout a typical day.

Figure 9 Southbound I-25 Crashes and Congestion - 120th Avenue to US 36



Sources: CDOT Doppler Radar September 28, 2011, CDOT I-25 crash listing 2009 – 2011.

Figure 10 Northbound I-25 Crashes and Congestion – US 36 to 120th Avenue



Sources: CDOT Doppler Radar September 28, 2011, CDOT I-25 crash listing 2009 – 2011.

Multimodal Problem: Over capacity multimodal facilities.

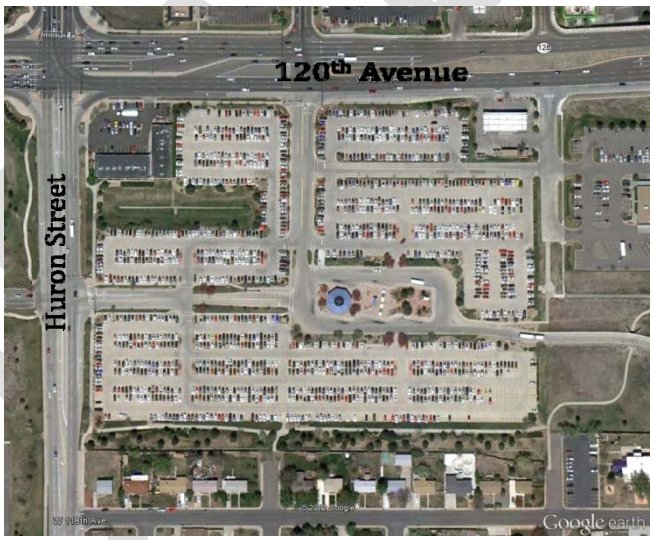
Transit parking demand exceeds supply at the Wagon Road park-n-Ride and the eastern Thornton park-n-Ride. In addition, some Express Bus trips along the corridor operate at or over capacity.

RTD's express bus routes 120X and 122X both travel along I-25 south of 120th Avenue serving the Wagon Road p-n-R and downtown Denver. In 2010 they carried 53.1 and 71.0 boardings per service hour, respectively compared to the RTD 2010 average for express routes of 41.4.

Since 2006 the Wagon Road park-n-Ride has had an occupancy of approximately 90% which is considered fully occupied. **Figure 11** illustrates the typical day occupancy at the Wagon Road park-n-Ride. In 2035 demand for park-n-Rides in the study area will increase[i]. Demand at the Wagon Road (120th Avenue) and Thornton (88th Avenue) park-n-Rides is projected to increase by 140 percent and 40 percent over current levels, respectively.

I-25 general purpose lanes are also over capacity as described under the mobility section of this document. Buses, private autos, and trucks traveling on I-25 are all exposed to the over capacity condition present today in the general purpose lanes.

Figure 11. Aerial of Wagon Road park-n-Ride



[i] Assumes the RTD North Metro Commuter Rail line is not yet in place by 2035. Data from RTD indicates that demand at Wagon Road will be comparable to existing levels upon implementation of the North Metro rail line to Thornton.

DRAFT Alternatives Evaluation and Screening Process Summary

April 4, 2013

Step A. Sorting - Sort all improvements identified into the following three categories:

Long Term Cross Sections for Future Consideration – Options that have potential to meet the long term needs and work within the Metro Vision Plan of a 202' corridor cross section that span the length of corridor (US 36 to SH 7);

Components Retained - Improvement components that could potentially contribute to addressing the problems in this corridor, and may or may not completely address all of the needs.

Components Eliminated – Improvements that are considered to have a fatal flaw would be eliminated during this sorting process. These would include improvements that would require reconstruction of recently constructed structures, have been considered and eliminated in a previous NEPA study, would cause operational problems and/or do not contribute to meeting the purpose and need identified for this study.

Step B. Level 1 Screening –During this step, components will be divided into two categories – primary and complementary. Once components are divided, a quantitative and qualitative assessment of primary components will be conducted to determine which best address the purpose and need and project goals. Operational benefits of primary components will be evaluated using the DynusT model (or other evaluation tool as appropriate), and the potential to impact environmental resources will be identified. Environmental analysis will identify if a component is expected to impact a resource but the impact will not be quantified. Components will also be checked for compatibility with long-term options.

Primary Components Retained – Components that address the needs and best achieve project goals.

Complementary Components – ITS, TSM, and TDM components that could be combined with virtually any primary component would be considered complementary. Other complementary components would be those that would only be considered if a particular primary component is retained (for example, shoulder busway north of 120th Avenue would be considered only if enhanced bus service north of 120th Avenue is recommended).

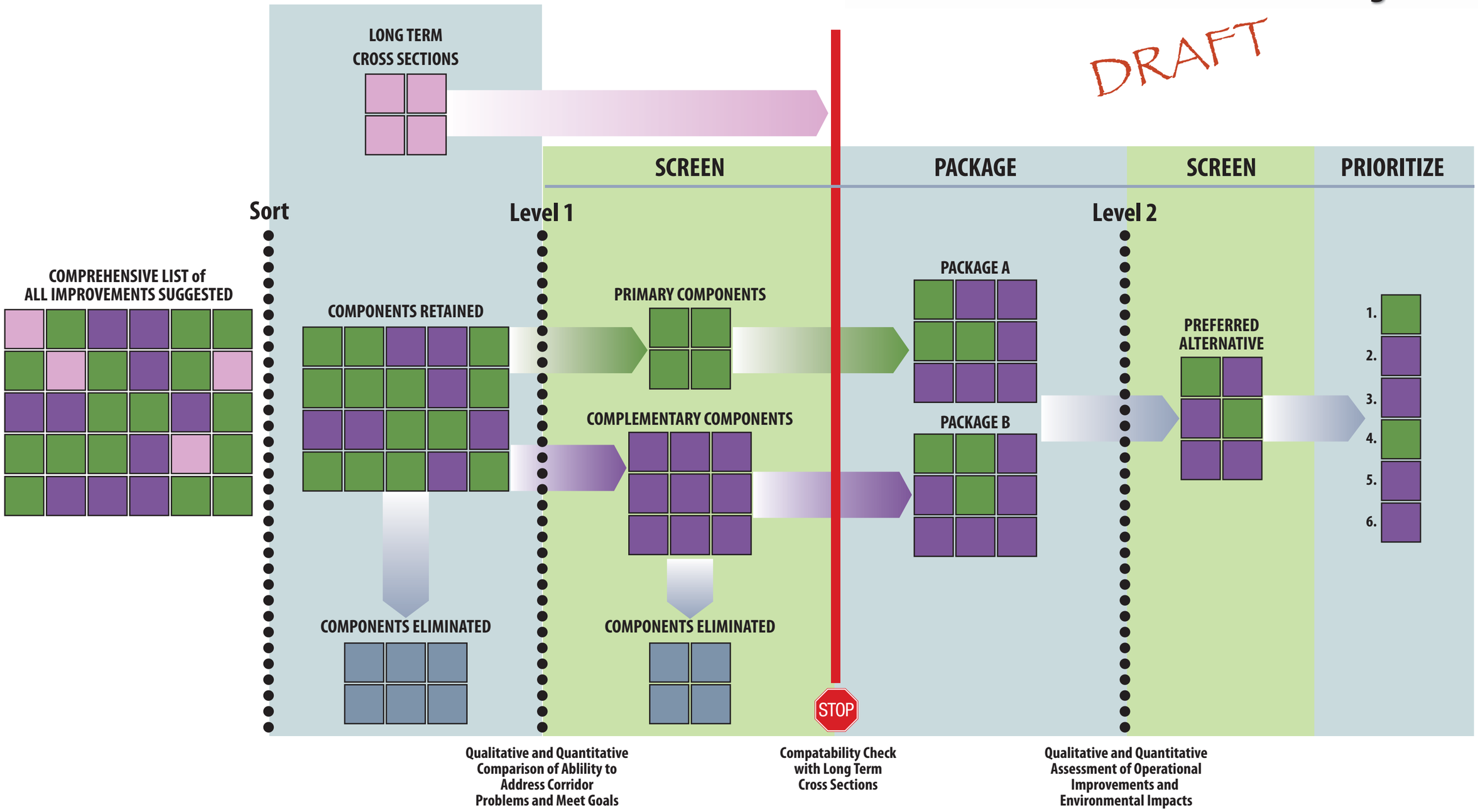
Eliminated – Primary components that do not meet the needs identified for this study, or are not compatible with long-term options will be eliminated from further consideration.

Step C. Packaging – Primary components along with complementary components will be combined into two improvement packages that have the potential to fully address the problems identified along the corridor and meet the project goals.

Step D. Level 2 Screening – Quantitative and qualitative comparative assessment of the two packages and the no action alternative will be performed to develop a final set of improvements that will become the recommended preferred improvement package. Evaluation will include operational analysis using DynusT (when feasible) and a quantitative assessment of environmental impacts. A breakpoint analysis of the preferred improvement package will be conducted to understand in which five-year period levels of traffic congestion occur similar to existing conditions, despite the benefit of the recommended improvements.

Step E. Prioritization – Prioritization of each component included in the preferred improvement package. Priority will be based on a conceptual cost benefit analysis, and a qualitative assessment of improvements.

Alternatives Evaluation and Screening Process



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Components Retained

REF. NO.	Potential Infrastructure Improvements	
1	C-D system - US 36 to 84th, northbound N.2	These components could potentially address the need to reduce congestion and improve safety between 84th Avenue and US 36.
2	C-D system - 84th Avenue to US 36, southbound S.2	
3	Auxiliary lane - I-270 to 84th, northbound N.3	
4	Auxiliary lane - 84th to US 36, southbound S.4	
5	Braided ramps - 84th Avenue to US 36, southbound S.1	
6	I-76 direct connection to I-25 upstream of current connection N.4	
7	84th Avenue on-ramp gore point extension - restrict SB entering traffic from reaching I-270 flyover S.3	
8	Extend toll lane ingress/egress north of 84th (no access at 84th) I.7	
9	70th/Washington Intersection, extend eastbound dual left turn I.5	
10	88th Avenue T-ramp TI.7	
11	General purpose lanes I-270 to Thornton Parkway northbound N.15	These components could potentially address the need to reduce congestion and improve safety between Thronton Parkway and US 36.
12	General purpose lanes Thornton Parkway to I-76 southbound S.15	
13	Continuous accel/decel lane 84th to 136th Avenue(between each interchange), northbound N.9	These components could potentially address the need to reduce congestion and improve safety between 84th Avenue and 136th Avenue.
14	Continuous accel/decel lane 84th to 136th Avenue(between each interchange), southbound S.7-S.10	
15	Add I-25 Crossings I.6	
16	Upgrade ramp merge and diverge sections to meet current design standards N.12, S.11	These components could potentially contribute to addressing operations, safety and capacity needs.
17	Construct continuous acceleration/deceleration lanes between interchanges north of 136th Avenue N.9, N.10, S.5, S.6	
18	Construct parallel C-D system along I-25 between 144th Avenue and SH 7 N.14, S.13	
19	Construct two-lane interchange ramps I.4	

X.X **Component Reference Number, June 28, 2012 TAC packet.**

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Components Retained

REF. NO.	Potential Transit Improvements	
20	Expand Wagon Road park-n-Ride PNR.1	These components could potentially address multimodal capacity needs and efficacy of various locations.
21	Expand Thornton park-n-Ride PNR.2	
22	New Park-n-Ride at 136th Avenue and I-25 PNR.3	
23	New Park-n-Ride at 144th Avenue and I-25 PNR.4	
24	New Park-n-Ride at SH 7 and I-25 PNR.5	
25	New Park-n-Ride at 124th Avenue and Claude Court at Eastlake PNR.6	
26	Increase bus frequency during peak period B.1	These components have potential to address multimodal capacity needs.
27	Increase use of articulated buses B.2	
28	Provide bus service farther north B.3	
29	Convert 120th Avenue bus tunnel to be a bi-directional facility (to and from south) TI.6	
30	88th Avenue Median Station TI.1	This component has potential to address operating condition needs by eliminating bus weave from managed lane to Thornton park-n-Ride at 88th Avenue.
31	Build a shoulder busway from 120th Avenue to 144th Avenue TI.3	This component could potentially contribute to addressing the Purpose and Need. However, it will only be considered if alternatives recommend additional bus service north of 120th Avenue.
32	Bus queue jump lanes and bus ramps at interchanges TI.4	This component could potentially contribute to addressing the Purpose and Need. However, it will only be considered if bus service recommendations include use of interchange ramps.
33	128th Avenue Median Station TI.9	This component could potentially contribute to addressing the Purpose and Need. However, it will only be considered if alternatives include new transit station/Park-n-Ride at 128th Avenue.

X.X **Component Reference Number, June 28, 2012 TAC packet.**

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Components Retained

REF. NO.	Potential TDM, ITS, TSM Improvements	
34	Travel Demand Management Measures (e.g., guaranteed ride home, carpooling, bike maps, bike share programs, marketing, etc.) TDM.1-TDM.20	These components could potentially contribute to addressing the need to improve operations, safety and capacity.
35	Intelligent Transportation Systems (e.g. ramp metering, travel time indicators, variable message signing, radar vehicle detection, active traffic management, etc.) ITS.1-ITS.19	
36	Incident management TSM.5	
37	Driver education campaigns (e.g., use of buffer separated lanes) TSM.3	

X.X **Component Reference Number, June 28, 2012 TAC packet.**

Potential Long-Term Cross Sections for Future Consideration

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REF. NO.	Potential Infrastructure Improvements	
38	Extend Managed Lanes north from 120th Ave. to SH 7 I.1	These cross sections may meet long-term needs and fit within the Metro Vision Plan of a 202 foot corridor and therefore would not require reconstruction of recently constructed structures.
39	Additional General Purpose Lanes 84th Avenue to SH 7 N.13, S.12	
40	Extend reversible managed lanes on I-25 to SH 7 I.8	
41	Provide two managed lanes in each direction between US 36 and SH 7 I.2	

X.X **Component Reference Number, June 28, 2012 TAC packet.**

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Components Eliminated

REF. NO.	Infrastructure Components Eliminated	
42	Pre-mainline merge [merge all ramps (I-270, US 36 and I-76) prior to I-25 northbound entry] N.5	Would reduce capacity of merge point and result in longer queues on the merging facilities and therefore would not contribute to meeting the Purpose and Need.
43	Convert left-side I-270 flyover to right-side ramp S.14	Would require reconstruction or modification of recently constructed structures and therefore would not meet the project Purpose and Need.
44	84th Avenue interchange T-ramp TI.5	
45	Construct new north/south route for trucks parallel to I-25 I.3	Construction of a new facility could not be accomplished in the near-term due to cost, property impacts or NEPA process and therefore would not meet the project Purpose and Need.
46	Northbound braided ramps US 36 to 84th Avenue N.1	Could not be implemented in near-term due to anticipated property impacts and/or NEPA process and therefore would not meet the project Purpose and Need.

REF. NO.	Transit Components Eliminated	
47	Light rail on I-25 TI.11	Considered during an extensive study of the North Metro corridor. Not considered as favorable as the commuter rail solution ultimately identified in the Environmental Impact Statement.
48	120th Avenue Median Station TI.8	Would require reconstruction or modification of recently constructed structures and therefore would not meet the project Purpose and Need.
49	Add structure to 120th Avenue bus tunnel to facilitate bus access to the managed lanes (to and from the north) TI.2	Would require reconstruction or modification of recently constructed structures and therefore would not meet the project Purpose and Need.
14	Shift 120th Avenue bus tunnel from left side to right side of northbound I-25 TI.10	Extension of managed lanes north to 120th (opening 2014) would allow the buses to enter the bus tunnel without changing lanes therefore this component would create an unnecessary weave on I-25. This would not address the Purpose and Need.

REF. NO.	TDM, ITS, TSM Components Eliminated	
50	Limit large trucks and buses to the rightmost three lanes of I-25 TSM.4	Not compatible with new managed lane and therefore would not contribute to meeting the Purpose and Need.
51	Designate inside lane of I-25 for trucks only TSM.1	
52	Implement $2 toll all day TSM.2	The existing dynamic toll structure serves to maximize revenue and person through-put, therefore this does not meet the project Purpose and Need.

X.X **Component Reference Number, June 28, 2012 TAC packet.**

DRAFT TAC MEETING MINUTES
North I-25 PEL

Technical Advisory Committee
Thursday, April 4, 2013
1:00 PM to 4:00 PM

LOCATION: Thornton Police Department Training Center

PREPARED BY: Alex Pulley, FHU

ATTENDEES: See Attached Sign-in Sheet

I. Welcome and Introductions

Andy Stratton, CDOT Project Manager, gave a quick introduction and welcomed the group. Andy stated the goals of the meeting and presented the agenda.

II. Purpose and Need

Holly Buck offered a reminder about the Purpose and Need. Purpose and Need has been updated with supporting technical data. Holly reviewed the project needs defined by the TAC last August and pointed out the data that supports the identified needs. Holly asked for questions, but there were none. Holly asked TAC members to review the draft Purpose and Need by next week and provide comments.

III. Corridor Conditions

Lyle DeVries reminded the team that it has been one year since the TAC last saw the Corridor Conditions Report. Lyle identified changes to the report and discussed the 2035 No Action DynusT model results which have been added to the report. Lyle discussed anticipated 2035 trip making along the corridor, which will include a significant number of local trips along I-25 with growth in volume from the north to the south end of the study area.

a. DynusT Model 2035 No Action

Lyle explained that the report now includes 2035 No Action DynusT findings for the corridor in the morning southbound and afternoon northbound. Importantly, the managed lanes will provide relief but not alleviate all congestion in the south half of the corridor and significant congestion will build in the morning southbound north of I20th Avenue. Lyle described how to interpret the DynusT model results for the 2035 No Action alternative.

TAC members had questions about the southbound results between 120th Avenue and 136th Avenue, questioning why the chart shows light congestion (yellow) instead of heavy congestion (red) as might be expected due to heavy congestion north and south. Lyle will double-check this area. A question was asked if the effect in the southbound direction north of 136th Avenue reflected the change in posted speed from 75 mph to 65 mph. Lyle will review the model to determine if this is the cause.

TAC members had questions about the 2035 No Action alternative between 84th Avenue and Thornton Parkway in the northbound direction. This area is green when there is a big hill. Going uphill for trucks is be very impactful. It was stated that intuitively, it should not be green; it should be worse. Jay Hendrickson pointed out that the model is not so precise to capture every nuance of every situation. Jay is more concerned if the model is showing any irregularities.

TAC members also had questions about the reasonableness of trends. We need to be careful on what is shown to the public. We also need to be credible to the public to demonstrate the importance of finding transportation dollars at the ballot box. Modeling needs to pass DOT and FHWA approval to not impede

projects for this Corridor. The direction of congestion is the most important message. Northbound goes from seven lanes to three at 84th. There was some surprise that congestion is not shown north of 120th, which does not seem to correlate to known land use growth between now and 2035.

IV. Summary of Comments on Initial Screening

Holly Buck reviewed comments received on initial screening. Comments revealed a desire to keep long-term options in the screening matrix; as a result, these projects have now been put in their own category for long-term cross sections for future consideration. These projects have not been included in the components retained for this PEL because the project team does not feel that they can implemented in near-term. Holly also provided an overview of the screening process chart. Many of the changes resulted from in-depth discussions with FHWA.

Holly identified specifics of changes to previous screening and asked for comments now or within the next week on the Sorting handout. She pointed out that projects retained during the Sorting process will move into Level 1 screening. Holly discussed a sample Level 1 screening evaluation, walking through the initial screening measures. The point was made that we need to switch from comparing just from Purpose and Need to comparing alternatives to each other.

V. Traffic Analysis/Modeling

Steven Marfitano described the overall process of traffic analysis/modeling. Steven explained that a lot of time was spent with FHWA and CDOT to define the methods and assumptions. DynusT is a mixture of macroscopic and microscopic modeling tools useful in evaluating the effects of alternatives on driver behavior and routing in the transportation system. DynusT can provide time based information including the development of bottlenecks and the recovery process. Two models were developed, one for AM and PM. Steven also pointed out that we had to wait for DRCOG to develop its 2010 regional DynusT model to extract the subarea for this study.

Steven explained the calibration process and how the model achieved a 6.5 percent tolerance. It was noted typical standards are 10 percent or 15 percent tolerance. Therefore, the model is expected to have a higher level of precision than is typically accepted in other models.

Lee Cryer asked if only the origination and destination tables were adjusted during calibration or if other factors were adjusted. Steven confirmed that only the origination and destination table values were adjusted. Lee also asked if final origination and destination tables' numbers had been cleared with DRCOG. It would be interesting to see any differences between the DynusT model assumptions compared with DRCOG. Lyle stated that FHU will initiate that comparison with DRCOG.

TAC members suggested that the graphic illustrating the calibration iterations should be better labeled for communication with the public.

VI. Preliminary Transit Results

Keith Borsheim pointed out that to retrieve preliminary transit results we have to use the DRCOG regional model because DynusT does not do transit. Four alternative park and ride locations were tested with new bus service using the latest Compass 4.0 geo-rectified network. The model-predicted parking demand is much greater than capacity at existing park and ride locations. The model indicates that a new park and ride at SH 7 would provide the greatest demand reduction at Wagon Road.

Drive access trips are represented in the model. There is no turnover or auto occupancy. Volumes and PnRs will be greater than capacity. Further detailed analysis would be necessary to determine future lot size needs.

Lee Cryer pointed out that the transit model comparisons presented to the TAC are good and relevant, but that to determine future park and ride size, more detailed analysis is necessary. All the numbers presented represent demand identified by the travel demand model and include no capacity constraints at the different lots or turnover during the day. Lee will also find out if the east side of the Thornton pnR is being upgraded with FASTER grant funding. Lee Cryer noted that because DRCOG's model ends near Meade, the travel demand model cannot accommodate transit users driving in from outside the model area and using park-n-Ride and transit services.

Keith discussed an assumption within the transit modeling that the North Metro Commuter Rail Line up to 72nd Avenue is included in the travel demand model. This section is currently included in the Fiscally Constrained RTP. Jeanne Shreve expressed interest in understanding the impacts of the North Metro Commuter Rail Line completion being expedited with full completion to SH 7. Current DynusT modeling does not include the impacts of this improvement to I-25 traffic. A question arose about whether this study should be delayed to adjust the model accordingly. However, based on the North Metro EIS and a preliminary analysis completed in the PEL shows that highway volumes in 2025 are affected by only 2 to 3 percent. This information should be provided to show we need both highway and rail improvements. Further discussions will be needed to determine the best way to evaluate the potential impacts of that improvement to this study.

TAC members asked about the potential for evaluating the impact of extending the I-25 Managed Lanes to SH 7 using RAMP money. Specifically, can these be included in the background network. Further discussions will be needed to determine how to accommodate this improvement alternative into the PEL.

Jay Hendrickson indicated that CDOT will discuss this and advise how to move forward.

VII. Schedule

The next TAC meeting is tentatively scheduled for mid May. It is expected that a couple of alternative packages will be established at that meeting, which will lead directly into Level 2 screening. The Preferred Alternative will be selected following the Level 2 analysis and will consist of a package of components. The next step would be to prioritize and phase the Preferred Alternative package. This would involve a combined TAC/EC meeting. This process would lead directly into an Open House in August.

VIII. Other

Gene Putman thanked CDOT for the transit grant to add a 170-space carpool lot at SH 7. The lot is to be built within two years.

IX. Closing

Andy thanked everyone for their attendance and contributions before closing the meeting.

North I-25 PEL
Sign-in Sheet
April 4, 2013

TECHNICAL ADVISORY COMMITTEE

Representative	Community/Agency	Signature
Annette Marquez	Brighton	
A.J. Euckert	Dacono	
Andy Stratton	CDOT Region 6	
Brook Svoboda	Northglenn	
Carol Parr	CDOT Region 4	
Daren Sterling	Commerce City	
Dave Downing	Westminster	Dave Downing
Dave Lindsay	Firestone	
Deb Obermeyer	Metro North Chamber	
~~Doug Monroe~~	~~RTD~~	
Emily Silverman	City and County of Denver	
Fred Sandal	DRCOG	
Gene Putman	Thornton	
Jay Hendrickson	CDOT Region 6	
Jeanne Shreve	Adams County	
Jennifer Gorek	CDOT Region 4	
Jennifer Kerr	Broomfield Chamber	
Jon Chesser	CDOT Region 6	

North I-25 PEL
Sign-in Sheet
April 4, 2013

Karen Schneiders	CDOT Region 4	
Karen Stuart	Smart Commute TMO	
Kevin Standbridge	Broomfield	
Larry Squires	Federal Transit Administration	
Lee Cryer	RTD	
Leela Rajasekar	CDOT Region 6	
Lizzie Kemp	CDOT Region 6	
Long Nguyen	CDOT Region 4	
Monica Pavlik	FHWA	
Phil Greenwald	Longmont	
Richard Leffler	Frederick	
Russell Pennington	Erie	
Stephanie Salazar	Broomfield EDC	
Steve Cook	DRCOG	
Steve Hersey	CDOT Region 6	
Steve Olson	CDOT Region 6	

North I-25 PEL
Sign-in Sheet
April 4, 2013

Other Attendees

Holly Buck	FHU	Holly Buck
Lyle DeVries	FHU	
Steven Mafitano	FHU	
KEITH BORSHEIM	JACOBS	
Richard Nickson	Town of Frederick	
Chris Primus	JE	
Rush Wickes	DRCOG	Rush Wickes
BART PRZYBYL	APEX DESIGN	
Rebecca White	CDOT	
Alex Pulley	FHU	

Technical Advisory Committee Meeting
June 14, 2013

NORTH I-25 PEL

COLORADO DOT DEPARTMENT OF TRANSPORTATION

Technical Advisory Committee Meeting

Date: June 14, 2013
Time: 1:30 PM – 3:30 PM
Location: Adams County Economic Development
12200 Pecos Street
Westminster, CO 80234 Suite 100

AGENDA

Meeting goal: Present Level 1 screening results.

i) Introductions

ii) April recap

iii) Level 1 evaluation results

iv) Proposed package

v) Prioritization principles

vi) RAMP projects in corridor

vii) Next meeting – Mid to late July with EC

NORTH I-25 PEL

COLORADO DOT DEPARTMENT OF TRANSPORTATION

Technical Advisory Committee

June 14, 2013

Welcome!

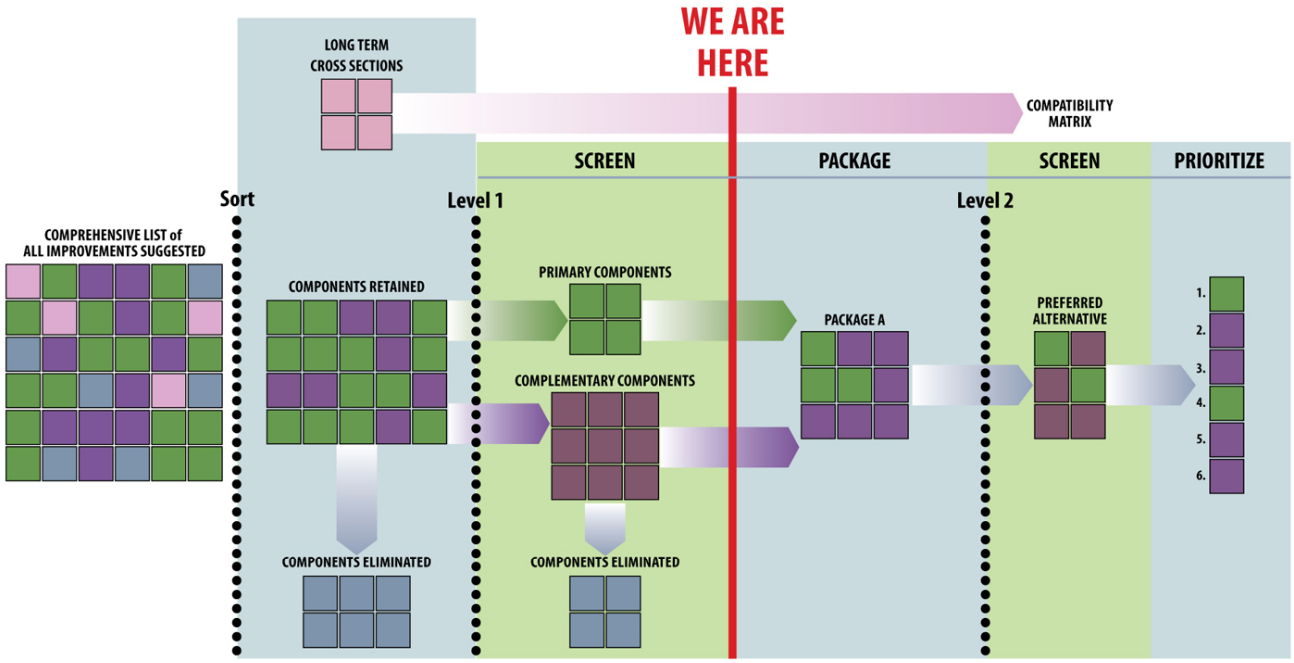
Agenda

Meeting goal: Present Level 1 Screening Results

- Introductions
- April Recap
- Level 1 Evaluation Results
- Proposed Package
- RAMP Projects
- Next Meeting: Prioritization

April Meeting Recap

- Overall process



Level 1 Evaluation

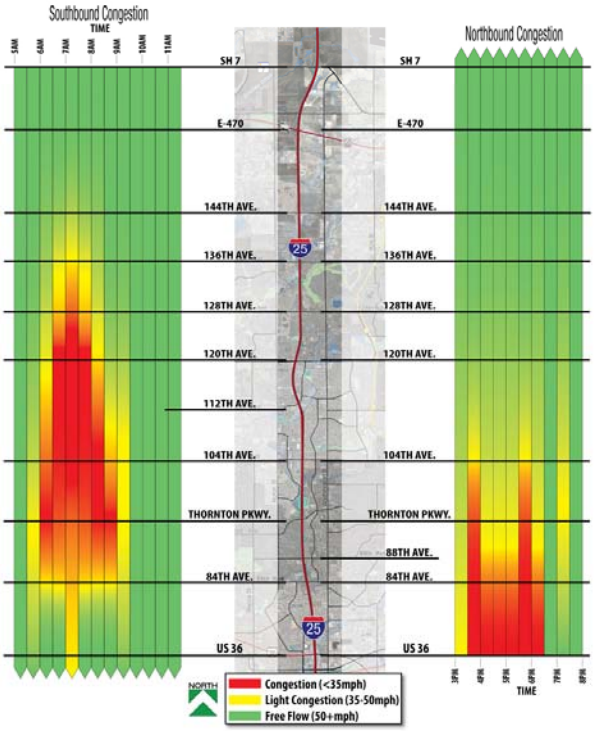
- Prescreen
  - Physical improvements to ramp merge and diverge sections southbound – no deficiencies identified
  - Articulated buses – already implemented
  - ITS improvements – completed as part of I-25 managed lanes
  - Upgrade ramp meters at specific locations – equipment up to date
  - Thornton pnR – Expansion underway by RTD with FASTER funds

Level 1 Evaluation Component Categories

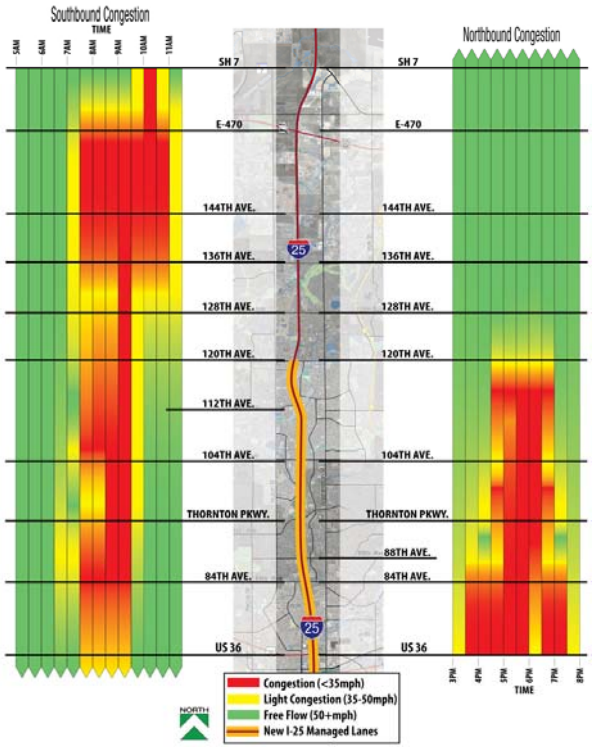
- I-25 Mainline
- Transit Infrastructure
- Park and Ride
- Other Infrastructure
- Intelligent Transportation Systems
- Travel Demand Management
- Transportation Systems Management

Mobility Needs

Existing Conditions



2035 No Action



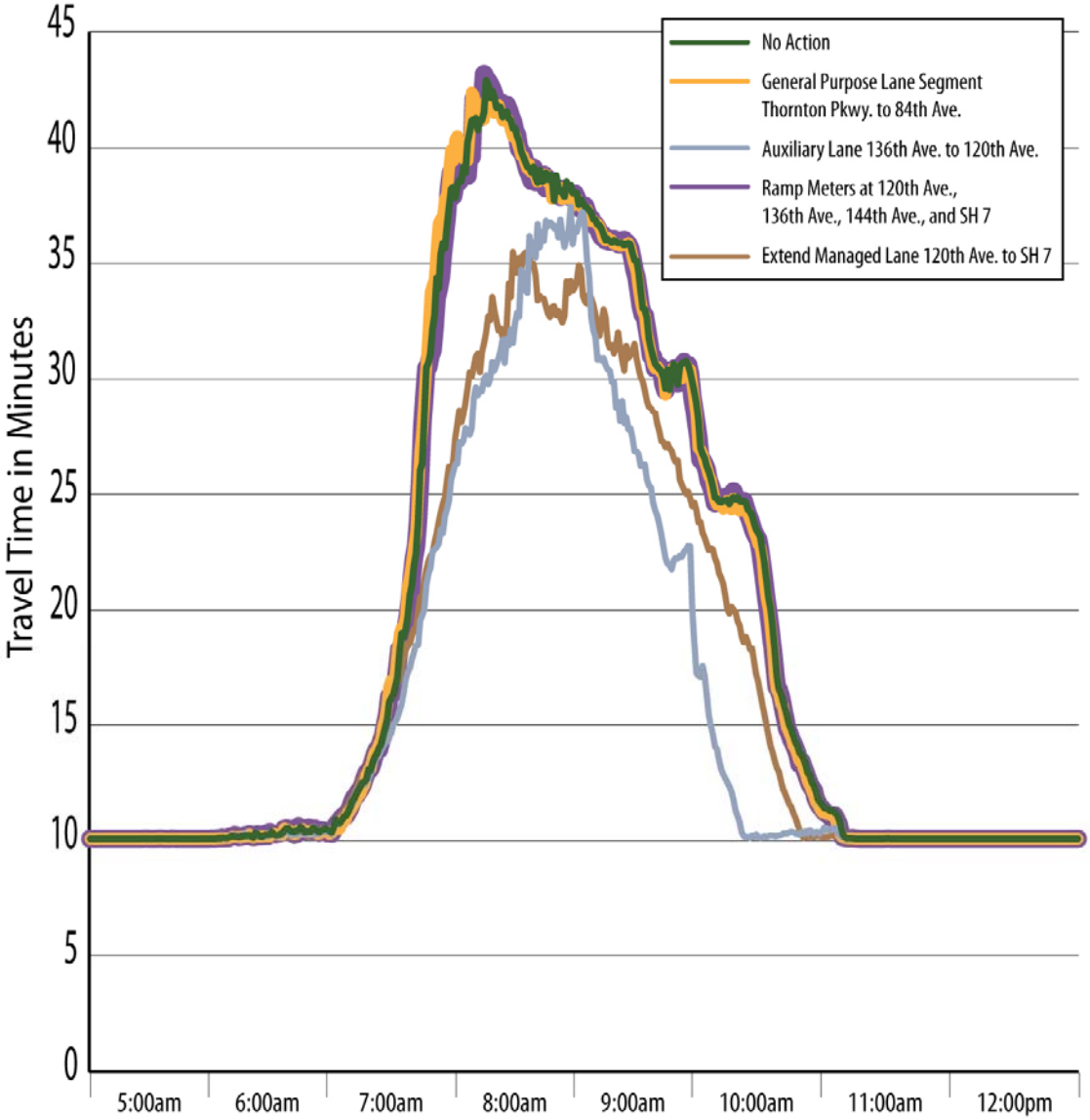
2035 DynusT Findings

- SB Components
  - No Action travel time: 43 min
  - Most Beneficial (5-7 min)
    - Auxiliary lane 136th Ave to 120th Ave
    - Managed lanes extension (SH 7 to 120th Ave)
- NB Components
  - No Action travel time: 24 min
  - Most Beneficial (5-8 min)
    - Auxiliary lanes between interchanges
    - General purpose lane segment 84th Ave to Thornton Pkwy
    - Managed lanes extension (120th Ave to SH 7)
    - Ramp meters at 104th and 120th Aves

Level 1 Evaluation

Travel Time Plot (SH7 to US 36)

2035 Southbound AM Travel Time

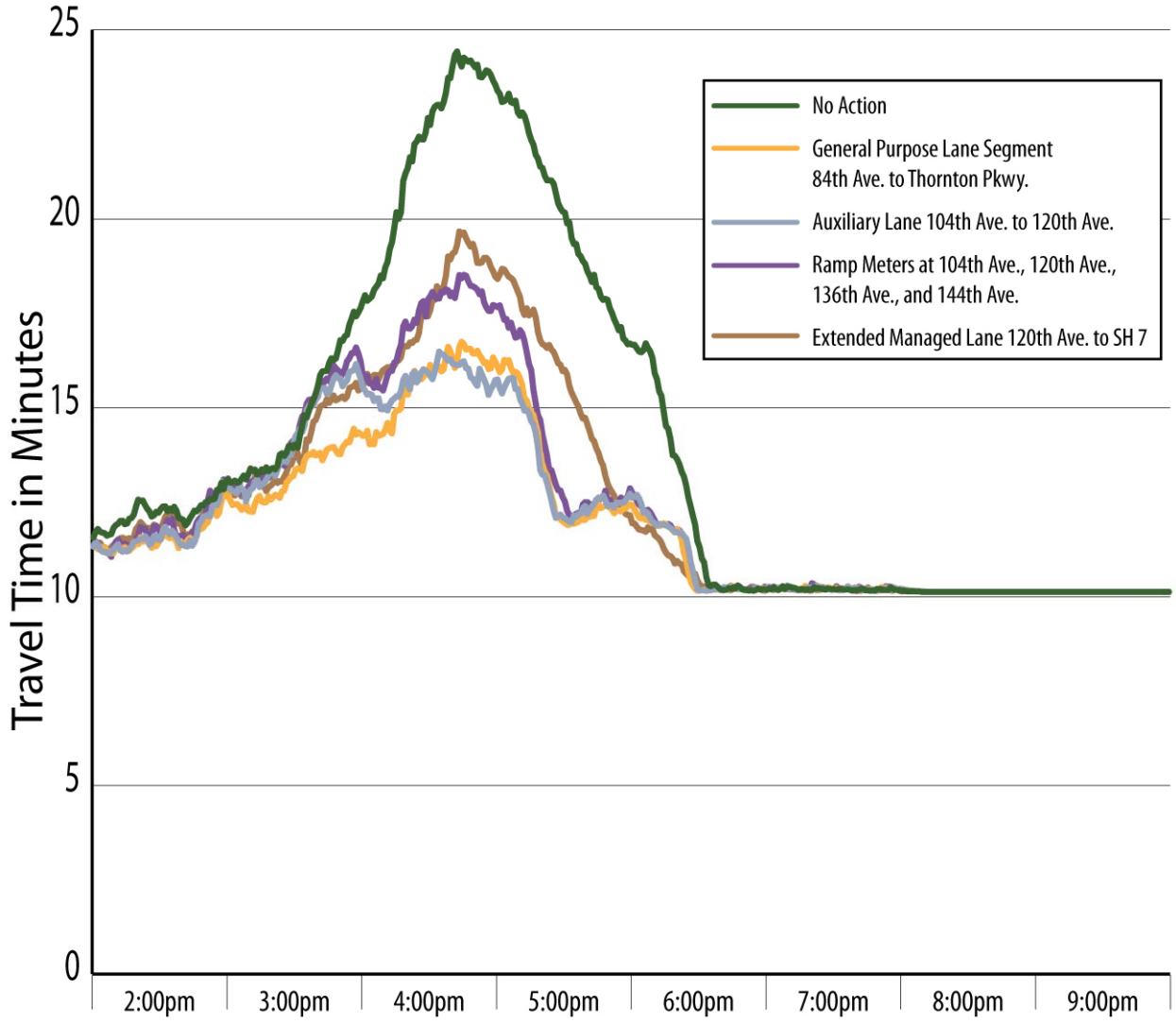


NOTE: Travel time is measured in general purpose lanes. No Action includes construction of I-25 managed lanes (US 36 to 120th Ave.). Best performing auxiliary lane project is shown above.

Level 1 Evaluation

Travel Time Plot (US 36 to SH 7)

2035 Northbound PM Travel Time

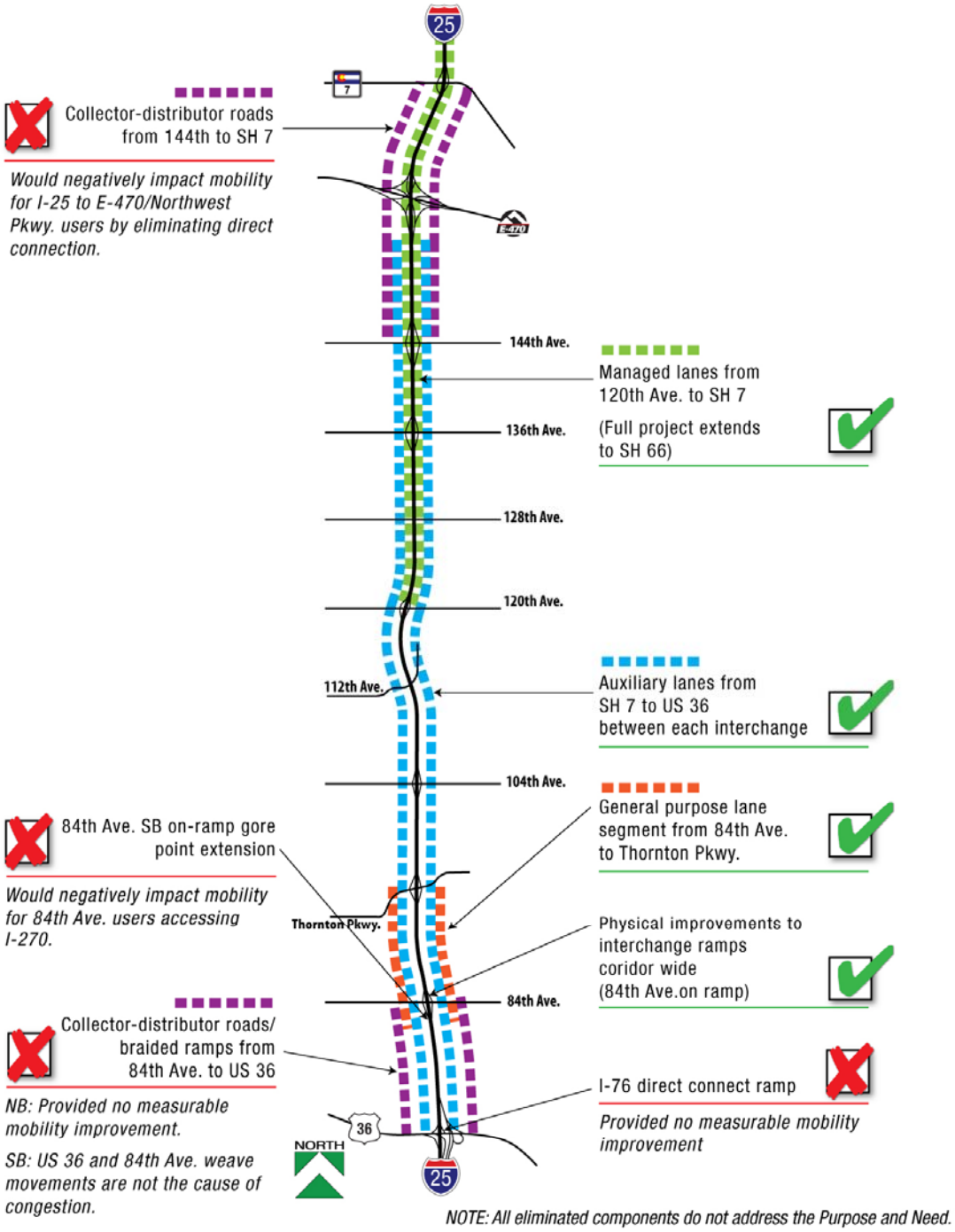


NOTE: Travel time is measured in general purpose lanes. No Action includes construction of I-25 managed lanes (US 36 to 120th Ave.). Best performing auxiliary lane project is shown above.

2015 DynusT Findings

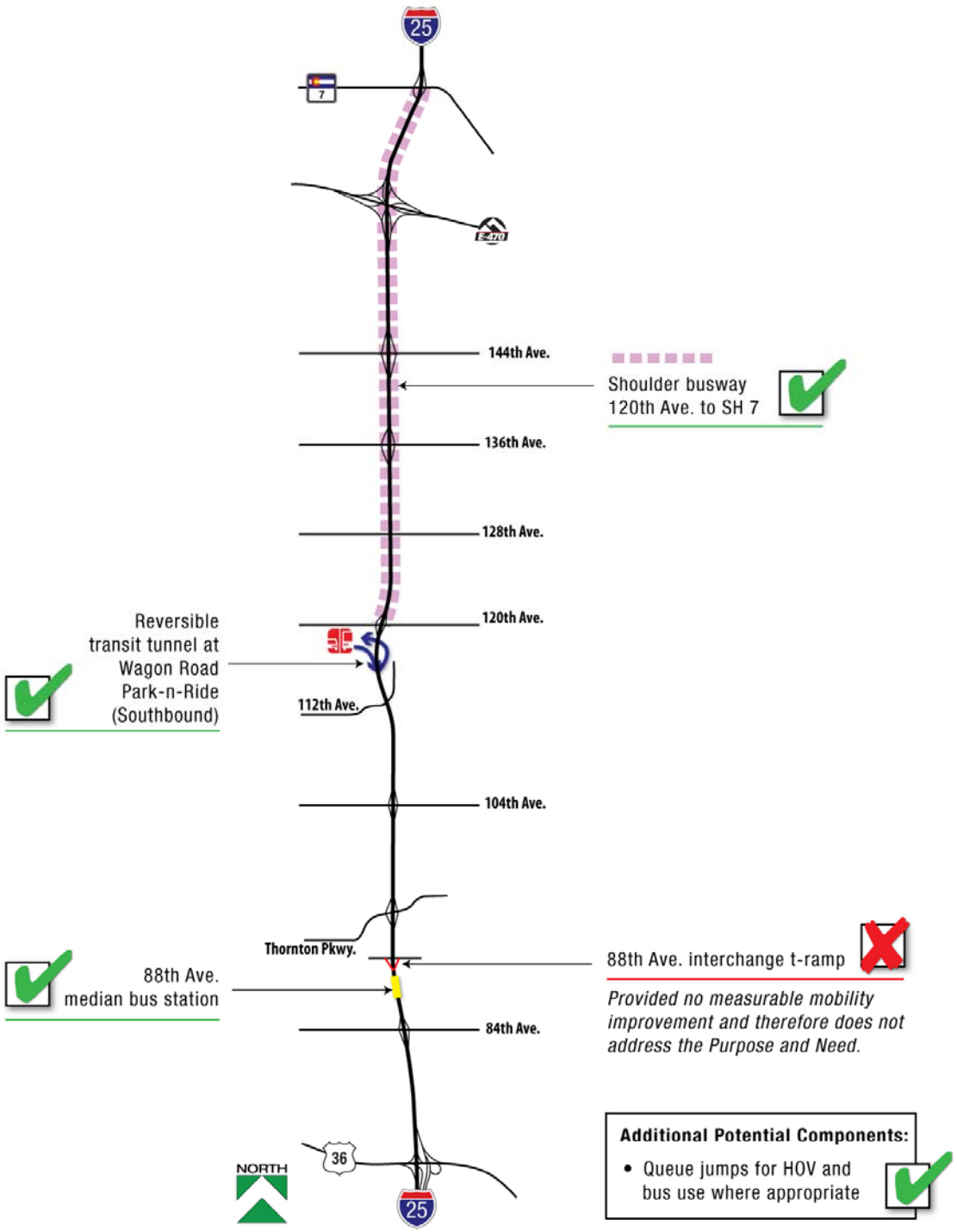
- SB Components
  - Existing: 23 min, No Action: 20 min
  - Most Beneficial (4-6 min)
    - Auxiliary lane 136th Ave to US 36
    - General purpose lane segment Thornton Pkwy to 84th Ave
    - Ramp Meters at 144th, 136th, and 120th Aves
- NB Components
  - Existing: 20 min, No Action: 21 min
  - Most Beneficial (4 min)
    - Auxiliary lanes US 36 to 136th Ave
    - General purpose lane segment 84th Ave to Thornton Pkwy
    - Ramp meters at 104th and 120th Aves

I-25 Mainline Components

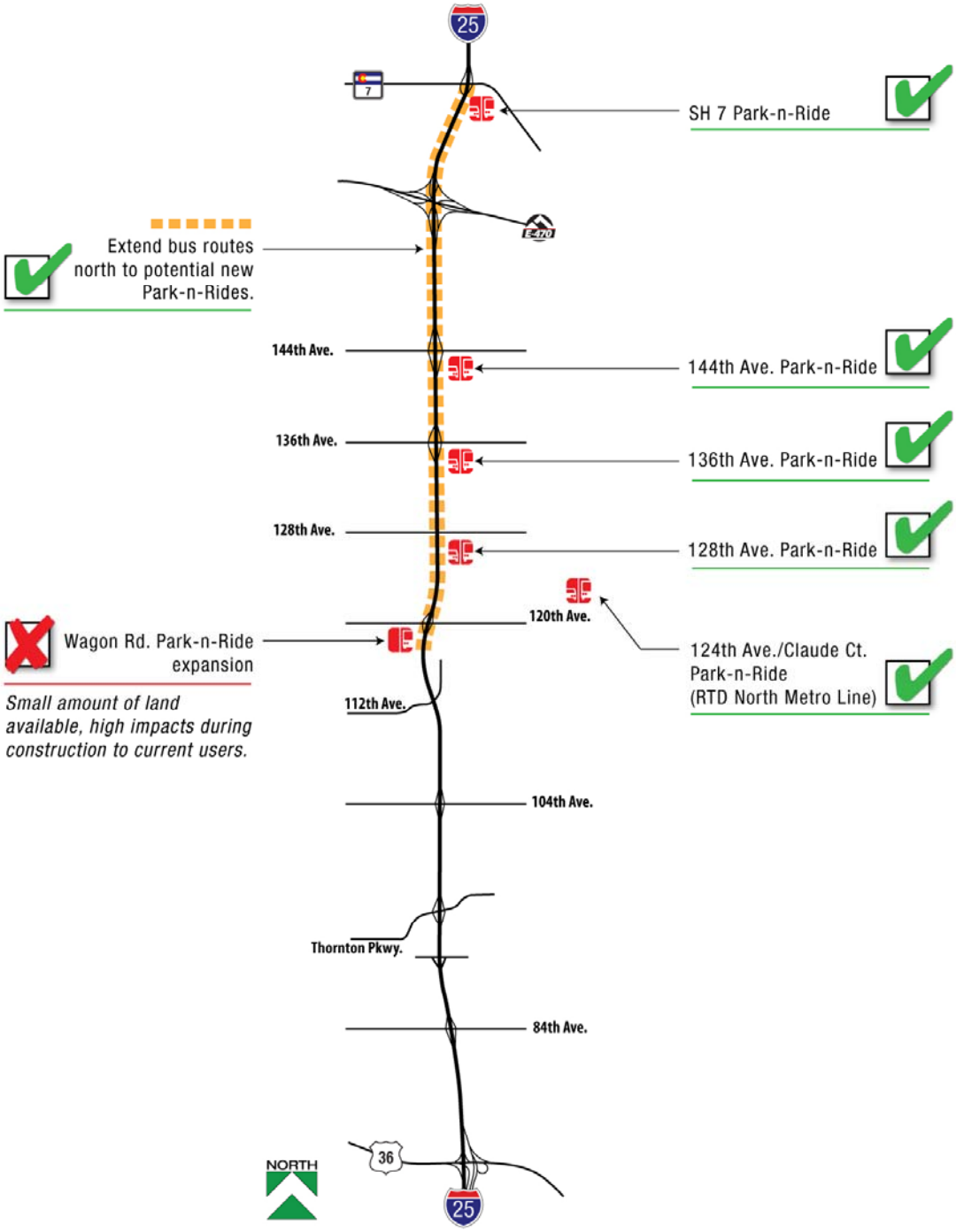


NOTE: All eliminated components do not address the Purpose and Need.

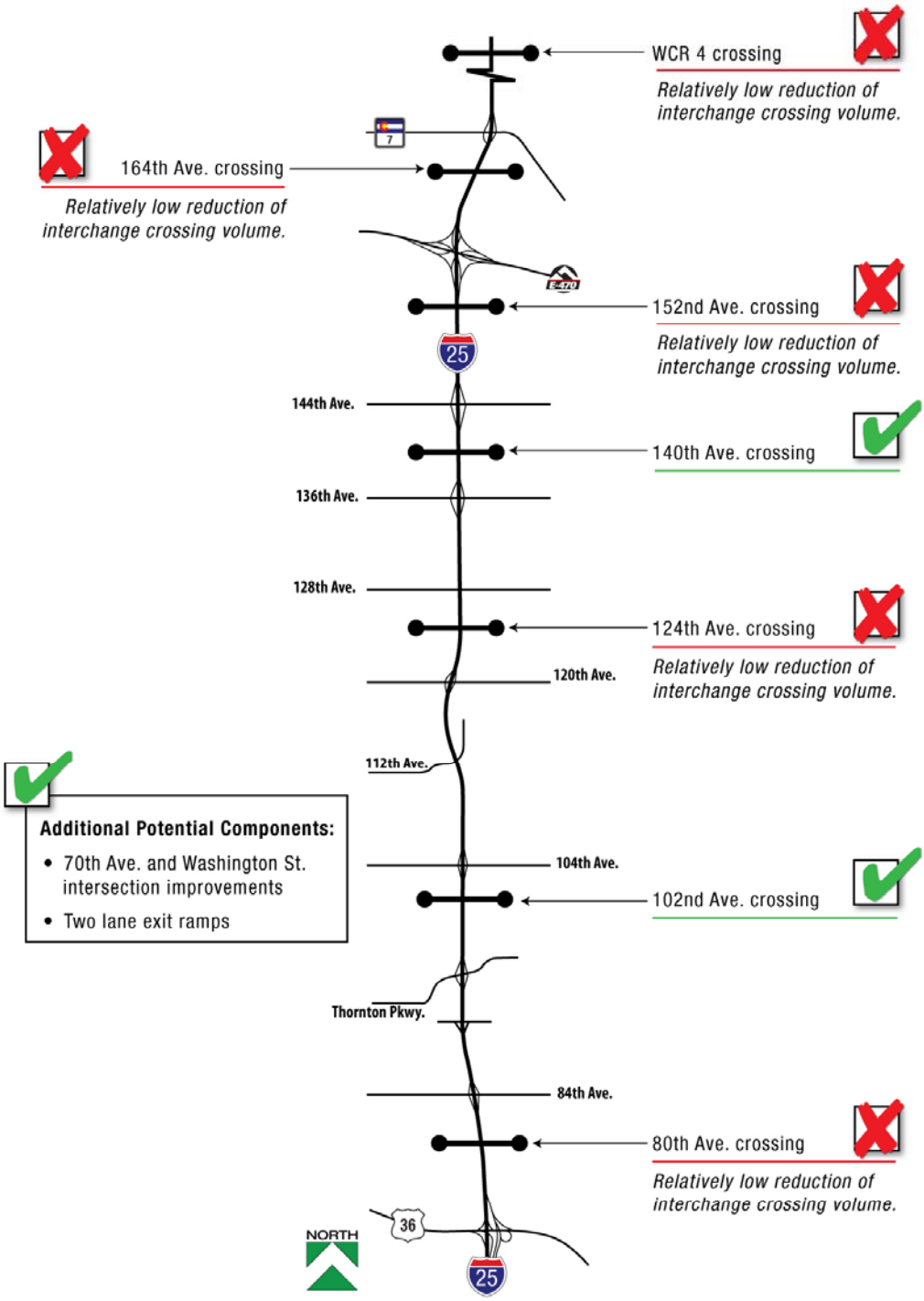
Transit Infrastructure Components



Bus & Park and Ride Components



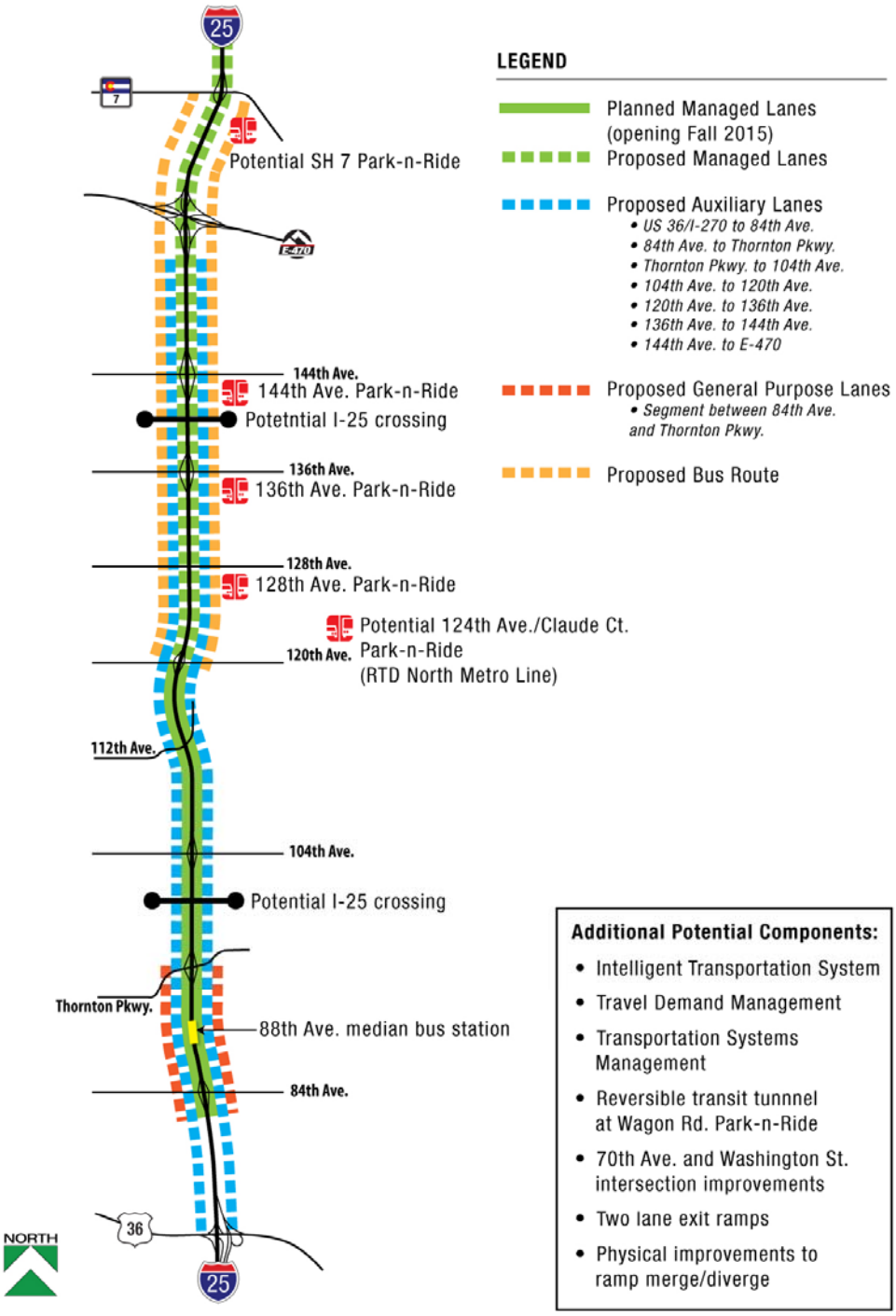
Other Infrastructure Components



NORTH I-25 PEL

COLORADO DOT DEPARTMENT OF TRANSPORTATION

Draft Proposed Package



Additional Potential Components:

- Intelligent Transportation System
- Travel Demand Management
- Transportation Systems Management
- Reversible transit tunnnel at Wagon Rd. Park-n-Ride
- 70th Ave. and Washington St. intersection improvements
- Two lane exit ramps
- Physical improvements to ramp merge/diverge

Draft Prioritization Principles

Prioritize projects that:

- reduce near-term congestion
- minimize adverse operational impacts
- expand transportation options
- are more easily delivered

RAMP Projects

- I-25 Permanent Soundwall Project (Adams County)
- North Metro Rail Corridor (RTD)
- Managed Lane Project between 120th Ave and SH 66 (CDOT R4)

Next Steps

2-week review period for Level 1 Screening, Proposed Package, and Prioritization Principles

Reminder: Please coordinate with your Executive Committee reps!

Next meeting:
late July combined TAC/EC

Public meeting August

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DRAFT N & S Level 1 Screening Matrix			MOBILITY	MULTIMODAL	SAFETY	COST	ENVIRO RESOURCE IMPACTS	GOALS					RECOMMENDATION	
								Expand Transportation Options	Maximize Use of Existing Infrastructure	Complement TMO	Maximize Sustained Mobility Benefits	Minimize Throw-Away	Recommend for Level 2	Comments
Title		Description	Northbound PM											
N.2	C-D system - US 36 to 84th	Consolidate all NB weaving movements on side parallel facility	○	NR	NR	NR	NR	NR	NR	NR	NR	NR	**No**	Provided no measurable mobility improvement and therefore does not address the Purpose and Need.
N.3	Auxiliary Lane - I-270 to 84th	Provide lane add via northbound I-270/US 36/I-76 ramp	●	NA	●	●	◐	○	◐	○	●	○	**Yes**	
N.4	I-76 direct connection to I-25	Slip ramp to mainline I-25 upstream of current connection	○	NR	NR	NR	NR	NR	NR	NR	NR	NR	**No**	Provided no measurable mobility improvement and therefore does not address the Purpose and Need.
N.6	84th to Thornton Parkway - NB	Construct a continuous acceleration/deceleration lane between interchanges; requires replacement of 88th Ave bridge	●	NA	●	○	○	○	◐	○	●	◐	**Yes**	
N.7	Thornton Pkwy to 104th - NB	Construct a continuous acceleration/deceleration lane between interchanges	●	NA	◐	●	○	○	◐	○	●	○	**Yes**	
N.8	104th to 120th - NB	Construct a continuous acceleration/deceleration lane between interchanges	●	NA	◐	◐	○	○	◐	○	●	○	**Yes**	
N.9	120th to 136th - NB	Construct a continuous acceleration/deceleration lane between interchanges	●	NA	◐	●	○	○	◐	○	●	○	**Yes**	
N.10	136th to 144th - NB	Construct a continuous acceleration/deceleration lane between interchanges	◐	NA	◐	●	●	○	◐	○	●	○	**Yes**	
N.11	144th to E-470 - NB	Construct a continuous acceleration/deceleration lane between interchanges	◐	NA	◐	●	○	○	◐	○	●	○	**Yes**	
N.12	Physical improvements to ramp merge and diverge sections - NB	NB on-ramp superelevation correction	NA	NA	◐	●	●	○	◐	○	NA	○	**Yes**	
N.14	144th to SH 7 C-D system	Construct parallel C-D system along I-25 between 144th Avenue and SH 7	○	NA	NR	NR	NR	NR	NR	NR	NR	NR	**No**	Would negatively impact mobility for I-25 to E-470/Northwest Parkway users by eliminating direct connection and therefore would not address the Purpose and Need.
N.15	General Purpose Lane - 84th to Thornton Pkwy	Extend 4th travel lane north to Thornton Pkwy Interchange and replace 88th Ave bridge	●	NA	●	○	○	○	◐	○	●	●	**Yes**	
I.1 (NB)	Extend Managed Lanes north from 120th Ave to SH 7	Extend managed lanes from 120th Ave to SH 7	◐	NA	◐	○	TBD	●	●	●	●	○	**Yes**	
			Southbound AM											
S.1	Braided ramps - 84th Avenue to US 36	Physical grade separation to eliminate some weaving movements	○	NR	NR	NR	NR	NR	NR	NR	NR	NR	**No**	US 36 and 84th Ave weave movements are not the cause of congestion in the I-25 corridor, therefore this component would not address Purpose and Need.
S.2	C-D system - 84th Avenue to US 36	Consolidate all SB weaving movements on side parallel facility	○	NR	NR	NR	NR	NR	NR	NR	NR	NR	**No**	US 36 and 84th Ave weave movements are not the cause of congestion in the I-25 corridor, therefore this component would not address Purpose and Need.
S.3	84th Avenue on-ramp gore point extension	Restrict SB entering traffic from reaching I-270 flyover and eliminate tight right-to-left weaving movement	○	NR	NR	NR	NR	NR	NR	NR	NR	NR	**No**	Would negatively impact mobility for 84th Ave users accessing I-270 and therefore would not address the Purpose and Need.
S.4	Auxiliary Lane - 84th to US 36	Widen I-25 to provide 5 southbound travel lanes between 84th and US 36	●	NA	◐	●	◐	○	◐	○	○	○	**Yes**	
S.5	E-470 to 144th - SB	Construct a continuous acceleration/deceleration lane between interchanges	◐	NA	◐	●	○	○	◐	○	○	○	**Yes**	
S.6	144th to 136th - SB	Construct a continuous acceleration/deceleration lane between interchanges	◐	NA	◐	●	●	○	◐	○	○	○	**Yes**	
S.7	136th to 120th - SB	Construct a continuous acceleration/deceleration lane between interchanges	●	NA	◐	●	○	○	◐	○	●	○	**Yes**	
S.8	120th to 104th - SB	Construct a continuous acceleration/deceleration lane between interchanges	●	NA	●	◐	○	○	◐	○	○	○	**Yes**	
S.9	104th to Thornton Pkwy - SB	Construct a continuous acceleration/deceleration lane between interchanges	●	NA	●	●	●	○	◐	○	○	○	**Yes**	
S.10	Thornton Parkway to 84th - SB	Construct a continuous acceleration/deceleration lane between interchanges; requires replacement of 88th Ave bridge	●	NA	●	○	○	○	◐	○	○	◐	**Yes**	
S.13	SH 7 to 144th C-D system	Construct parallel C-D system along I-25 between SH 7 and 144th Avenue	○	NA	NR	NR	NR	NR	NR	NR	NR	NR	**No**	Would negatively impact mobility for I-25 to E-470/Northwest Parkway users by eliminating direct connection and therefore would not address the Purpose and Need.
S.15	General Purpose Lane - Thornton Pkwy to 84th	Extend 4th travel lane north to Thornton Pkwy Interchange and replace 88th Ave bridge	●	NA	●	○	○	○	◐	○	○	●	**Yes**	
I.1 (SB)	Extend Managed Lanes north from 120th Ave to SH 7	Extend managed lanes from 120th Ave to SH 7	◐	NA	◐	○	TBD	●	●	●	●	○	**Yes**	

NA	Not Applicable.
NR	Not Rated.
○	No Benefit/Adverse Impacts
◐	Moderate Benefit
●	Significant Benefit

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DRAFT B PNR & TI Level 1 Screening Matrix			MOBILITY	MULTIMODAL	SAFETY	COST	ENVIRO RESOURCE IMPACTS	GOALS					RECOMMENDATION	
Title		Description						Expand Transportation Options	Maximize Use of Existing Infrastructure	Complement TMO	Maximize Sustained Mobility Benefits	Minimize Throw-Away	Recommend for Level 2	Comments
PNR.1	Expand Wagon Road Park-n-Ride	Expansion of current Park-n-Ride locations (SURFACE)	NA	○	NA	●	○	○	◐	◐	○	●	**No**	Small amount of land available; construction impacts likely for current pnr users, less sustainable due to relief after North Metro implementation
PNR.1	Expand Wagon Road Park-n-Ride	Expansion of current Park-n-Ride locations (STRUCTURE)	NA	○	NA	○	●	○	○	◐	○	●	**No**	Construction impacts likely for current pnr users, less sustainable due to relief after North Metro implementation, high cost
PNR.3	New Park-n-Ride at 136th Ave and I-25	Construction of new Park-n-Ride locations	NA	◐	NA	●	◐	◐	○	◐	◐	●	**Yes**	Medium effect on Wagon Road demand (model may under-project) ; available land may be limited
PNR.4	New Park-n-Ride at 144th Ave and I-25	Construction of new Park-n-Ride locations	NA	◐	NA	●	◐	●	○	◐	◐	●	**Yes**	Medium effect on Wagon Road demand (model my under-project); available land may be limited
PNR.5	New Park-n-Ride at SH-7 and I-25	Construction of new Park-n-Ride locations	NA	◐	NA	●	●	●	○	◐	◐	●	**Yes**	Medium effect on Wagon Road demand (model my over-project)
PNR.6	New Park-n-Ride at 124th Ave and Claude Court at Eastlake	Construction of new Park-n-Ride locations	NA	◐	NA	●	●	◐	○	◐	●	●	**Yes**	Medium effect on Wagon Road demand (model my under-project)
PNR.7	New Park-n-Ride near 128th Ave and I-25 with median station	Construction of new Park-n-Ride locations, addition of median station	NA	●	NA	NR	NR	◐	○	◐	◐	●	**No**	This component in conjunction with the full I-25 cross-section would require reconstruction or modification of recently constructed structures and therefore would not meet the project Purpose and Need. This component could be reconsidered as a component of the long term cross-section.
TI.1	Bi-directional tunnel for bus access to the Wagon Road P-n-R from the managed lanes	Convert the tunnel to a reversible bus-only connection	NA	◐	NA	●	●	◐	●	●	●	●	**Yes**	This component supports ITS.20, 120th Ave SB ramp meter.
TI.3	Build a shoulder busway from 120th Ave to SH 7	Allows buses only to travel on existing outside shoulder during peak congested conditions. Use of the busway would only be allowed when traffic speeds are less than 35 mph, and busway speed limit would be 35 mph	NA	●	○	●	●	◐	●	●	◐	○	**Yes**	
TI.4	Bus/HOV queue jump lanes and bus ramps at interchanges	Provide HOV and bus bypass around ramp meter.	◐	◐	NA	●	●	●	◐	●	◐	○	**Yes**	Component has potential to address mobility issues when paired with other improvements.
TI.6	88th Ave Median Station	Inline station to prevent buses from weaving and replace 88th Ave bridge	NA	●	◐	○	○	◐	○	●	●	●	**Yes**	
TI.7	88th Ave interchange T-ramp	Add T-ramp to current overpass to serve the managed lane and replace 88th Ave bridge	○	NR	NR	NR	NR	NR	NR	NR	NR	NR	**No**	Provided no measurable mobility improvement and therefore does not address the Purpose and Need.

NA	Not Applicable.
NR	Not Rated.
○	No Benefit/Adverse Impacts
◐	Moderate Benefit
●	Significant Benefit

DRAFT I Level 1 Screening Matrix			MOBILITY	MULTIMODAL	SAFETY	COST	ENVIRO RESOURCE IMPACTS	GOALS					RECOMMENDATION	
Title		Description						Expand Transportation Options	Maximize Use of Existing Infrastructure	Complement TMO	Maximize Sustained Mobility Benefits	Minimize Throw-Away	Recommend for Level 2	Comments
I.4	Construct two-lane interchange ramps	Widen single-lane ramps to provide two lane exit from I-25 at all diamond interchanges	◐	NA	NA	◐	○	○	○	○	◐	○	Yes	Component has potential to address mobility issues when paired with auxiliary lane projects. Resource impacts at Thornton Pkwy SB.
I.5	70th/Washington Intersection	Extend eastbound dual left-turn lane to better accommodate evening peak flows	○	NA	○	●	●	○	○	○	◐	●	Yes	
I.6a	I-25 Crossing at 80th Ave	Construct additional roadway crossing of I-25	◐	●	◐	◐	●	◐	○	◐	◐	●	No	Relatively low reduction of interchange crossing volume.
I.6b	I-25 Crossing at 102nd Ave	Construct additional roadway crossing of I-25	●	●	◐	○	◐	◐	○	◐	◐	●	Yes	
I.6c	I-25 Crossing at 124th Ave	Construct additional roadway crossing of I-25	◐	●	◐	◐	◐	◐	○	◐	◐	●	No	Relatively low reduction of interchange crossing volume.
I.6d	I-25 Crossing at 140th Ave	Construct additional roadway crossing of I-25	●	●	◐	◐	●	◐	○	◐	◐	●	Yes	
I.6e	I-25 Crossing at 152nd Ave	Construct additional roadway crossing of I-25	◐	●	◐	◐	●	◐	○	◐	◐	●	No	Relatively low reduction of interchange crossing volume.
I.6f	I-25 Crossing at 164th Ave	Construct additional roadway crossing of I-25	◐	●	◐	◐	◐	◐	○	◐	◐	●	No	Relatively low reduction of interchange crossing volume.
I.6g	I-25 Crossing at WCR 4	Construct additional roadway crossing of I-25	○	●	◐	◐	●	◐	○	◐	◐	●	No	Relatively low reduction of interchange crossing volume.
I.7	Extend toll lane ingress/egress north	Restrict access to I-25 reversible lanes and managed lanes south of 84th Ave and make first point of access north of 84th Ave	○	NR	NR	NR	NR	NR	NR	NR	NR	NR	No	Would negatively impact mobility for 84th Ave users accessing the reversible lanes and managed lanes and therefore would not address the Purpose and Need.

NA	Not Applicable.
NR	Not Rated.
○	No Benefit/Adverse Impacts
◐	Moderate Benefit
●	Significant Benefit

DRAFT TAC MEETING MINUTES
North I-25 PEL

Technical Advisory Committee
Friday, June 14, 2013
1:30 PM to 3:30 PM

LOCATION: Adams County Economic Development

PREPARED BY: Steven Marfitano, FHU

ATTENDEES: See Attached Sign-in Sheet

I. Welcome and Introductions

Andy Stratton, CDOT Project Manager, gave a quick introduction and welcomed the group. Andy stated the goals of the meeting and presented the agenda.

II. Overall Process

Holly Buck offered a reminder about the overall project process. Based on the April Meeting, which focused on the Screening process, the following presentation focuses on discussion of the packaging process and the upcoming prioritization.

III. Level 1 Evaluation

Holly Buck described the initial Prescreen which examined the complete project listing to determine those components which have already been implemented, those that are being implemented as part of the North I-25 Managed Lanes construction between US 36 and 120th Avenue, and those that are planned.

The remaining components were sorted into seven different categories: I-25 Mainline, Transit Infrastructure, Park and Ride, Other Infrastructure, Intelligent Transportation Systems, Travel Demand Management, and Transportation Systems Management. The following presentation will emphasize the retention of components from the first four categories. The last three categories have been carried through for package evaluation and prioritization.

a. I-25 Mainline Components

Next, Lyle DeVries reminded the committee about the mobility needs throughout the corridor that currently exist and will develop in 2035 with only completion of the North I-25 Managed Lanes between US 36 and 120th Avenue. This led into discussion of the 2035 findings as related to I-25 Mainline Components that were tested using DynusT. Lyle identified that only a couple of components provided congestion relief southbound, which can mainly be attributed to the extreme congestion anticipated throughout the entire corridor from SH 7 to 84th Avenue. Northbound, more components were identified as being beneficial due to the ability to relieve the bottlenecks anticipated to occur at the US 36/I-270/I-76 and I-25 Interchange and at the termination of the managed lanes south of 120th Avenue.

The results were presented in terms of travel time savings through the entire corridor from US 36 to the SH 7 interchanges. Gene Putnam commented that northbound congestion exists south of the US 36 interchange and is not reflected in the travel times presented. Lyle confirmed this observation adding that clearly the bottleneck in our study area creates delay south of the study area, but clarified that these limits were selected to be consistent with the extents of the study.

Lyle then presented a visual representation of the travel times through the corridor in the southbound and northbound directions in 2035. These figures emphasize the reduction in peak travel time that components can deliver while also demonstrating the reduction in overall congestion duration. Gene

Putnam commented that it would be helpful to add the average speed through the corridor to this figure to help the public put the results into context.

Next, the 2015 DynusT findings were presented. This evaluation was conducted to determine which components could be expected to provide congestion relief in the near term after construction of the North I-25 Managed Lanes between US 36 and 120th Avenue. Based on these results, Lyle identified that many more components provide southbound congestion relief than in 2035 and should be considered when determining the preferred package.

The group commented that it would be helpful to clarify that No Action refers to with the North I-25 Managed Lanes between US 36 and 120th Avenue.

Based on the previous data, Holly presented the I-25 Mainline Components figure which identifies each component and if it is eliminated or moved forward to the next level of evaluation. Holly clarified that each component which has been eliminated includes a text discussion of why the component has not been retained for packaging.

Gene Putnam raised a concern about the termination point of the northbound general purpose lane segment from 84th Avenue to Thornton Parkway. He described the steep hill that is encountered by travelers, and especially trucks, and his desire to see the termination of the additional travel lane further north to the hill crest past the Thornton Parkway exit ramp. Lyle agreed to examine this location to determine how construction of this request could be implemented.

b. Transit Infrastructure Components

Holly Buck presented the recommendations from the Transit Infrastructure Components evaluation. Holly clarified that each component which has been eliminated includes a text discussion of why the component has not been retained for packaging.

Jon Chesser clarified that the 128th Avenue Median Station can be moved to the long term cross section alternatives for future consideration but the new structure at this location could not accommodate the median station and DRCOG's Metro Vision cross section.

c. Bus & Park and Ride Components

Chris Primus presented the recommendations for the Bus & Park and Ride Components evaluation. This discussion focused on previously identified potential RTD Park and Ride facility locations along with the bus service which would be provided.

Gene Putnam pointed out that the SH 7 Park-n-Ride would coordinate well with the new car pool lot which recently received transit grant funding.

Karen Stuart started a group discussion about the process for implementing a new Park-n-Ride location. Specifically, Karen asked RTD how the land acquisition and planning process is accomplished, and what steps local municipalities take to support the process. RTD pointed out that new service is determined on an as needed basis at the time of implementation. The municipalities confirmed that planning is completed with RTD close to the time of implementation and that it is difficult to save right of way too far

in advance of the transit need. It was recommended that the final report include a discussion of the coordination steps needed to implement a new Park-n-Ride location.

d. Other Infrastructure Components

Chris Primus presented the recommendations for additional interchange crossings of I-25. The general premise of this analysis being that while interchange crossings do not have a direct impact on congestion on I-25, they can help the operations of interchange ramps with local roadway facilities by relieving east/west through traffic.

The municipalities expressed concern with such detailed presentation of recommended crossing locations. The concerns focused on local costs and the traffic impact on local residents. The committee representatives will request input from each of their agencies over the next two weeks but agreed that provide a general text discussion about the benefits of I-25 crossings without specific locations would be more useful at this level of planning.

e. Draft Proposed Package

Holly Buck presented the Draft Proposed Package based on the previous discussion. Holly explained that initially it was anticipated that two packages would be evaluated and compared to determine the preferred alternative, but based on the projects which survived the evaluation process, only one package appears necessary. Additionally, by only evaluating one package, through the remainder of the project, the team and committees can focus on a detailed prioritization and phasing process.

The group recommended changing the language for the extended bus service to "Proposed Additional Transit Service".

The TAC was in consensus over the evaluation of one package. Holly solicited additional comments over the next two weeks during the comment period.

IV. Prioritization

Holly Buck led a discussion of the draft prioritization principles. This discussion focused on the opportunity for TAC members to clarify what principles should be used to prioritize the projects. Holly emphasized that all analysis will take into account the Region 4 North I-25 Managed Lanes Extension project from 120th Avenue and SH 66.

Gene Putnam identified that it would be helpful to identify current funding scenarios and to identify which projects could be implemented at this time. This evaluation would emphasize to the public the funding gap.

Nataly Erving recommended that "expand transportation options" be changed to "expand and enhance multimodal options".

Jon Chesser identified his desire to see a cost/benefit measure included in the prioritization process.

V. Ramp Projects

Andy Stratton led through a discussion of the RAMP Projects in the corridor.

Jeanne Shreve described the I-25 Permanent Soundwall Project as being more detailed than the name implies.

While working to establish a soundwall through a portion of the corridor, it also asks for funding to clear the right of way in this project's study area for future component construction. She explained that the RAMP request was written so that wherever projects are recommended through this PEL, the RAMP funds can be used to obtain the environmental clearance.

VI. Schedule

The next committee meeting will be a combined TAC/EC meeting and is tentatively scheduled for the end of July. It is expected that the proposed package will be prioritized for discussion at that meeting. This process would lead directly into an Open House in August.

Andy asked that all comments and recommendations be submitted by June 28 or early July. He also emphasized the TAC members coordinating with Executive Committee Representatives.

VII. Closing

Andy thanked everyone for their attendance and contributions before closing the meeting.

North I-25 PEL
Sign-in Sheet
June 14, 2013

TECHNICAL ADVISORY COMMITTEE

Representative	Community/Agency	Signature
Annette Marquez	Brighton	Kimberly Dall for Annette
A.J. Euckert	Dacono	
Andy Stratton	CDOT Region 6	
Brook Svoboda	Northglenn	
Carol Parr	CDOT Region 4	
Daren Sterling	Commerce City	
Dave Downing	Westminster	Dave Downing
Dave Lindsay	Firestone	
Deb Obermeyer	Metro North Chamber	
~~Doug Monroe~~ Natalie Erving	RTD	
Emily Silverman	City and County of Denver	
Fred Sandal	DRCOG	
Gene Putman	Thornton	
Jay Hendrickson	CDOT Region 6	
Jeanne Shreve	Adams County	
Jennifer Gorek	CDOT Region 4	
Jennifer Kerr	Broomfield Chamber	
Jon Chesser	CDOT Region ~~6~~ 1	

North I-25 PEL
Sign-in Sheet
June 14, 2013

Karen Schneiders	CDOT Region 4	
Karen Stuart	Smart Commute TMO	Karen Stuart
Kevin Standbridge	Broomfield	
Larry Squires	Federal Transit Administration	
Lee Cryer	RTD	
Leela Rajasekar	CDOT Region 6	
Lizzie Kemp	CDOT Region 6	
Long Nguyen	CDOT Region 4	
Monica Pavlik	FHWA	
Phil Greenwald	Longmont	
Richard Leffler	Frederick	
Russell Pennington	Erie	
Stephanie Salazar	Broomfield EDC	
Steve Cook	DRCOG	
Steve Hersey	CDOT Region 6	
Steve Olson	CDOT Region 6	

North I-25 PEL
Sign-in Sheet
June 14, 2013

DOT
DEPARTMENT OF TRANSPORTATION

Other Attendees

Lyle DeVries - FHU		
Steven Martitano - FHU		
Debra Baskett	Broomfield	
Chris Pikus	Jacobs	
Joe Smith	Brighton	
Larry Hoy	RTD DIRECTOR	
Holly Buck	FHU	

Executive Committee and Technical Advisory Committee Meeting July 24, 2013

Executive and Technical Advisory Committees

July 24, 2013

Welcome!

Today's Agenda

- Purpose & Need
- Study
- Screening
- Preferred Alternative
- Prioritization
- August Open House
- Next Steps

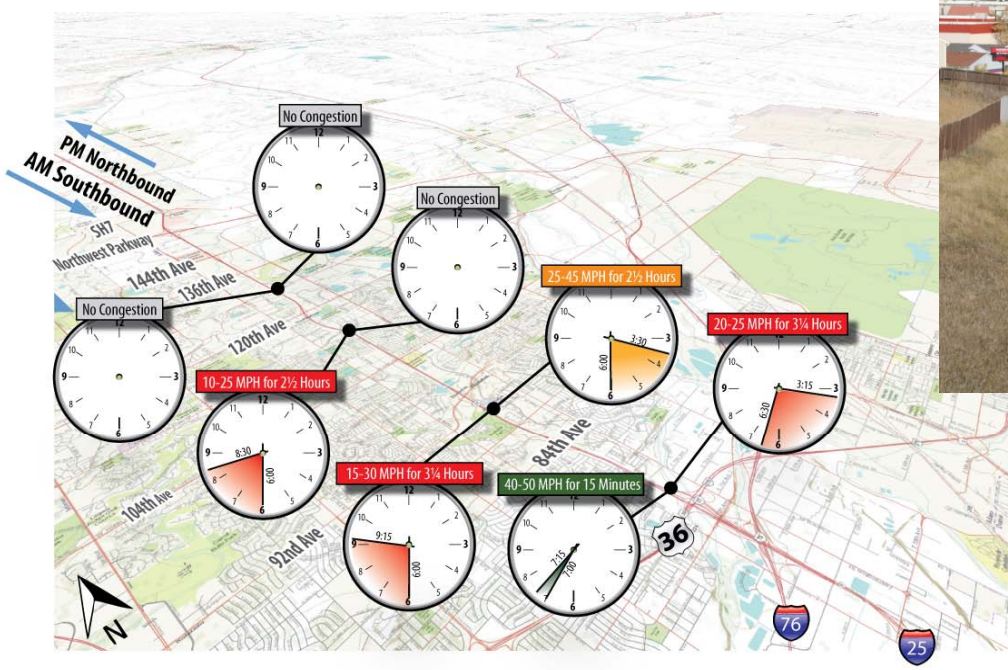
Project Purpose

- To reduce congestion and improve safety on I-25 between US 36 and SH 7
- Implement near-term, multi-modal, and cost-effective transportation improvements that are compatible with recently constructed interchange structures

Project Needs

- Mobility Problem: Traffic congestion resulting from high traffic volumes and incidents
- Safety Problem: Higher than expected crashes due to traffic congestion
- Multimodal Problem: Over capacity multimodal facilities

Mobility Problem

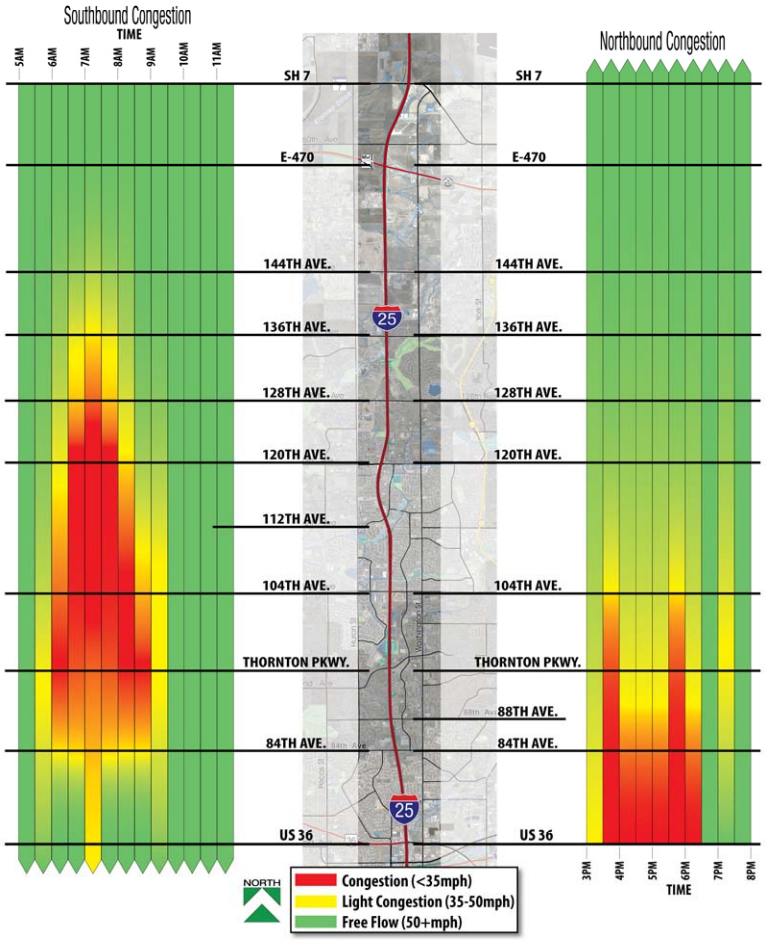


Source: CDOT Doppler Radar Speed Sensor Data

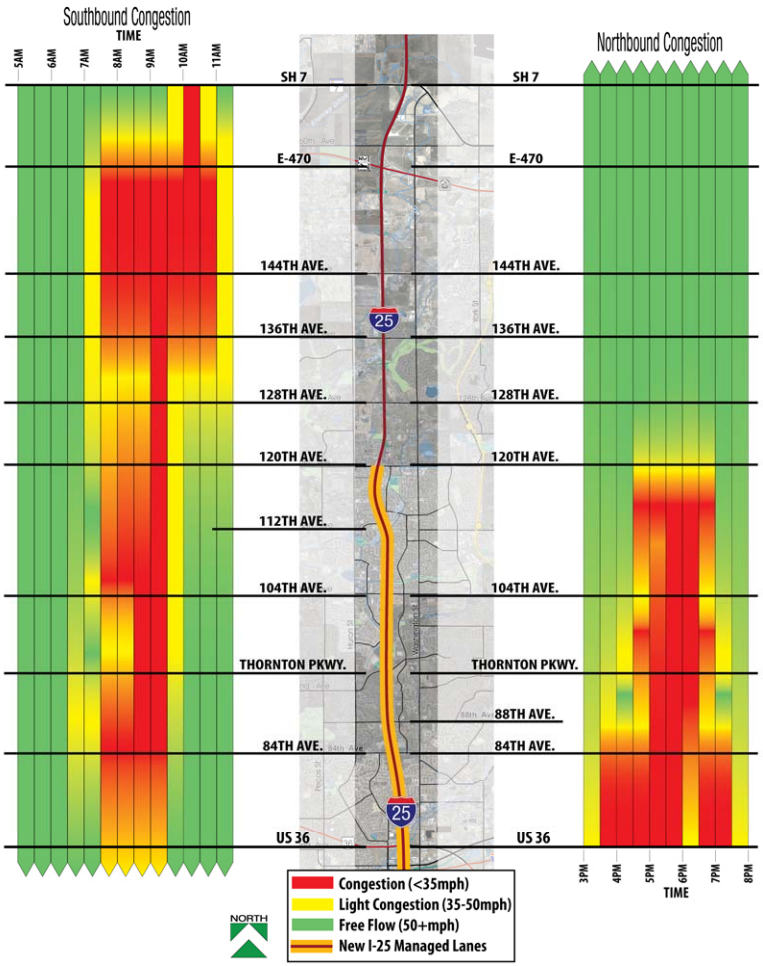
- There is a need to reduce the duration and extent of peak period congestion along the corridor.

Mobility Needs

Existing Conditions

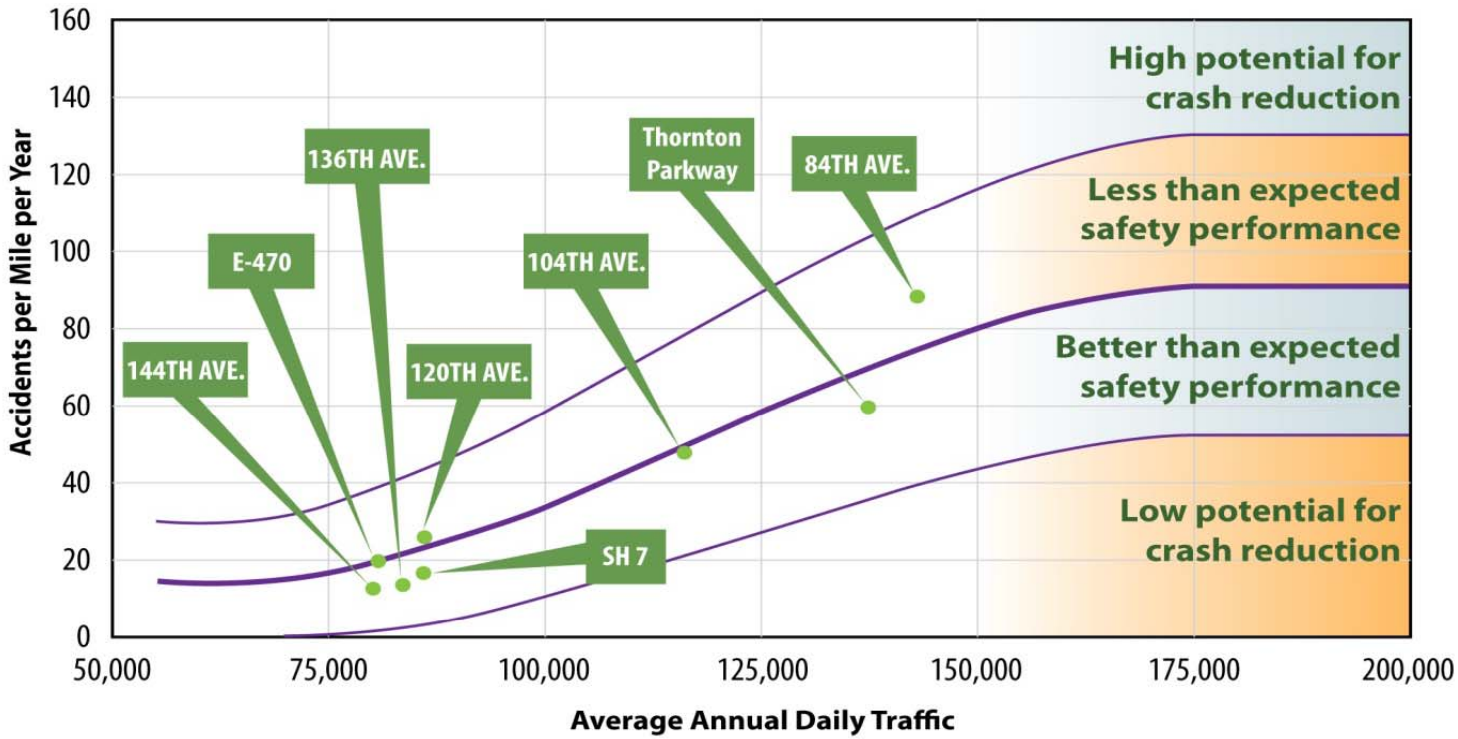


2035 No Action



Safety Problem

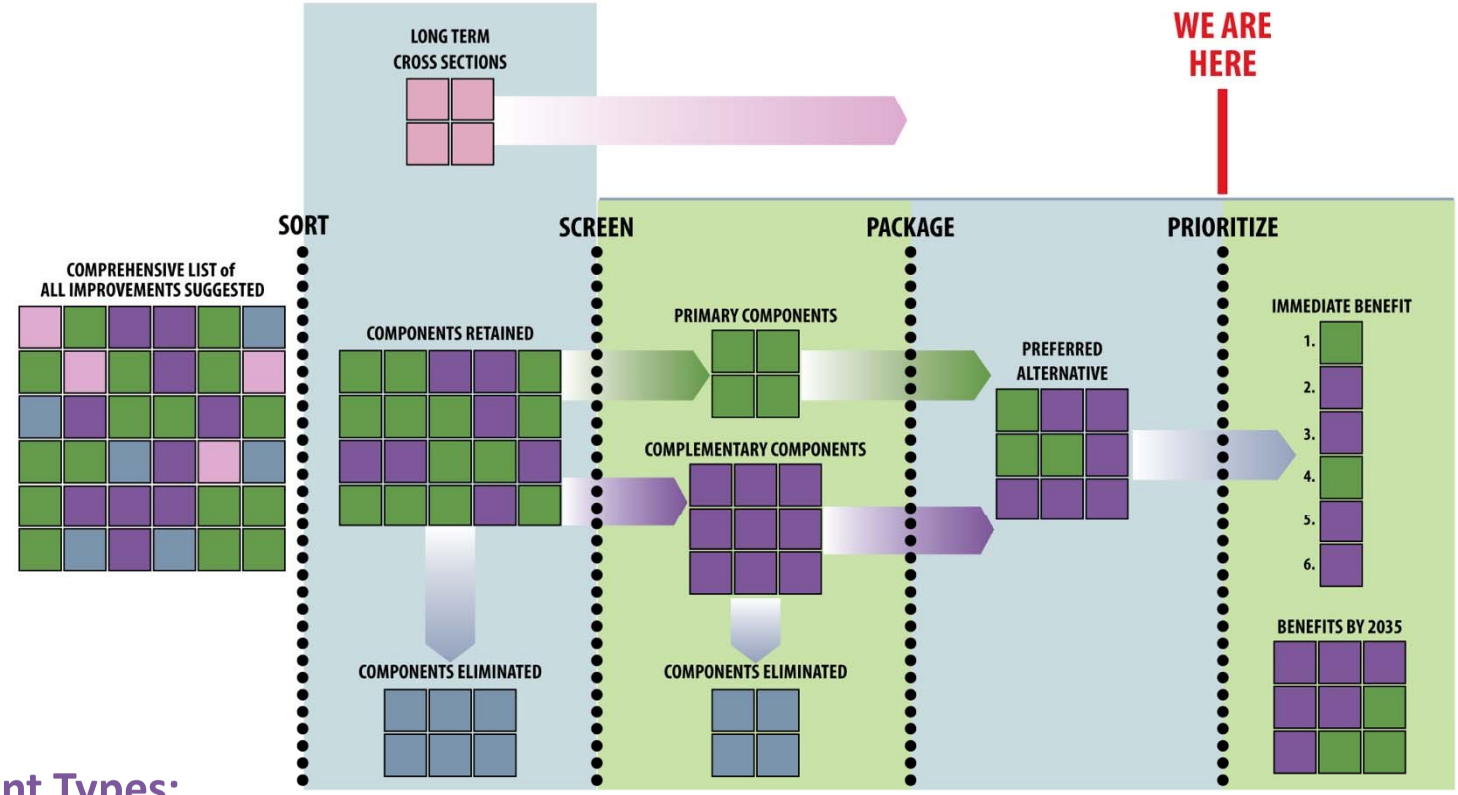
- Higher than expected crashes due to traffic congestion



Multimodal Problem

- Over capacity multimodal facilities
  - Wagon Road park-n-Ride
    - over capacity today
    - 140% increase in demand by 2035
  - Thornton park-n-Ride (eastern side)
    - over capacity today
    - 40% increase in demand by 2035

Overall Process



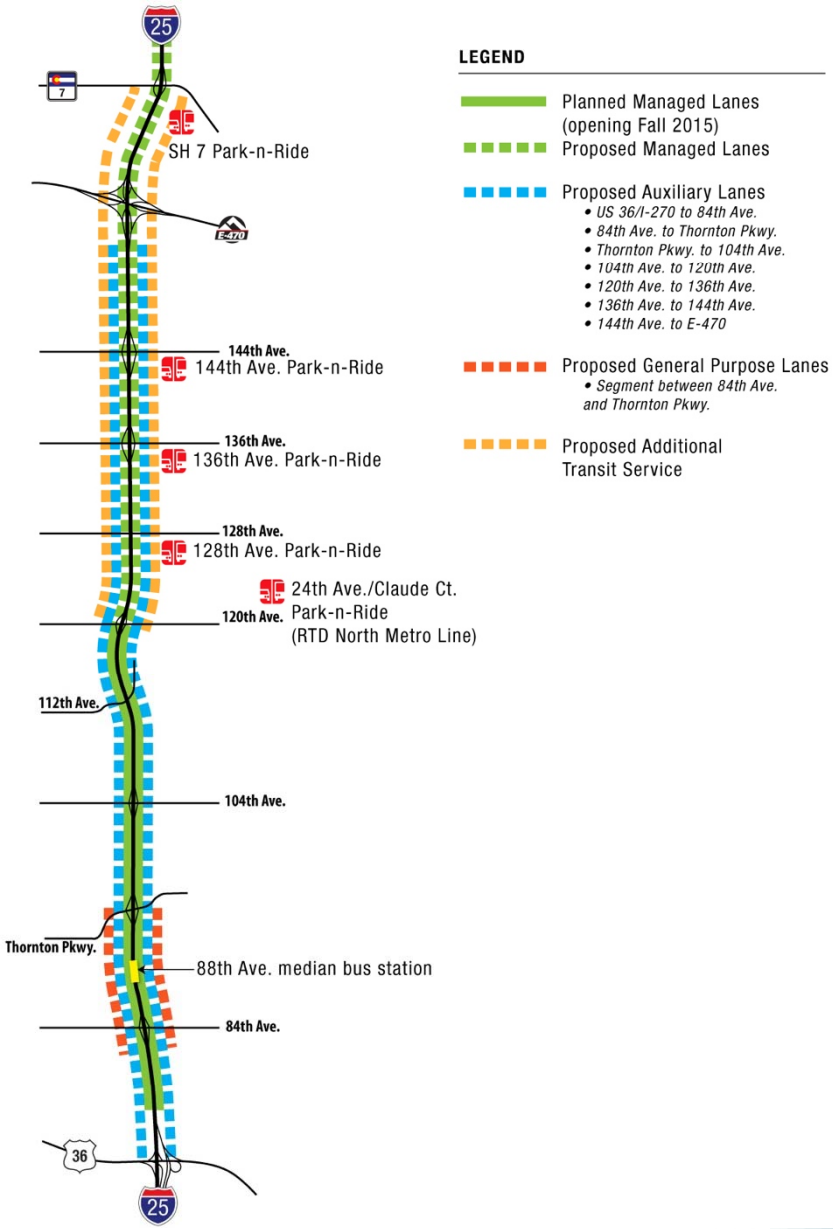
Component Types:

- I-25 Mainline
- Transit Infrastructure
- Park and Ride
- Other Infrastructure
- Intelligent Transportation Systems
- Travel Demand Management
- Transportation Systems Management

Preferred Package

Additional Potential Components:

- Intelligent Transportation System
- Travel Demand Management
- Transportation Systems Management
- Reversible transit tunnnel at Wagon Rd. Park-n-Ride
- 70th Ave. and Washington St. intersection improvements
- Two lane exit ramps
- Physical improvements to ramp merge/diverge
- Additional I-25 crossings



Prioritization Principles

Prioritize projects that:

- reduce near-term congestion while minimizing adverse operational impacts
- expand and enhance multimodal options
- are more easily delivered
- are cost effective

Proposed Prioritization

DRAFT

BENEFITS

IMMEDIATE

Roadway

- 70th Ave. & Washington St. intersection improvements
- Additional general purpose lanes segment 84th Ave. to Thornton Pkwy. (NB & SB)
  [Requires replacement of 88th Ave. bridge]
  Provide accel/decel lane SB Thornton Pkwy. to 84th Ave.
  Provide accel/decel lane NB I-270 to 84th Ave.
  Provide accel/decel lane NB 84th Ave. to Thornton Pkwy.
  Provide accel/decel lane SB 84th Ave. to US 36
- Provide accel/decel lane NB 104th Ave. to 120th Ave.
- Provide accel/decel lane NB Thornton Pkwy. to 104th Ave.
- Provide accel/decel lane SB 104th Ave. to Thornton Pkwy.
- Provide accel/decel lane SB 120th Ave. to 104th Ave.
- Ramp meters SB at 120th Ave., 136th Ave., 144th Ave., and NB at Thornton Pkwy., 104th Ave., and 120th Ave.

Extend I-25 managed lane from 120th Ave. to SH 7 (RAMP funding)

Transit

1. New Park-n-Ride at 124th Ave. and Claude Ct. at Eastlake
2. Convert tunnel at Wagon Road Park-n-Ride to bi-directional tunnel (related to ramp meter SB 120th Ave.)
3. Construct inline median 88th Ave. station (coordinate with additional GP lanes segment between 84th Ave. and Thornton Pkwy.)
4. New Park-n-Ride at 144th Ave. and I-25
5. New Park-n-Ride at SH 7 and I-25

Complementary Strategies

- Bike map
- Carpool lots
- Community cash program
- Corridor transit guide
- Incident management plan
- Implement education campaign to instruct drivers on appropriate use of buffer-separated managed lane
- Peak hour bus-only lanes/transit priority
- Pool program subsidies
- Secure bike facilities
- TDM marketing
- Transit subsidies

BY 2035

Roadway

- Additional I-25 crossings
- Correct NB 84th Ave. on-ramp superelevation
- Implement Active Traffic Management 120th Ave. to SH 7
- Provide accel/decel lane NB 120th Ave. to 136th Ave.*
- Provide accel/decel lane NB 136th Ave. to 144th Ave.
- Provide accel/decel lane NB 144th Ave. to E-470
- Provide accel/decel lane SB E-470 to 144th Ave.
- Provide accel/decel lane SB 144th Ave. to 136th Ave.
- Provide accel/decel lane SB 136th Ave. to 120th Ave.*
- Provide ramp meters NB 136th Ave. and 144th Ave., and SB SH 7

Transit

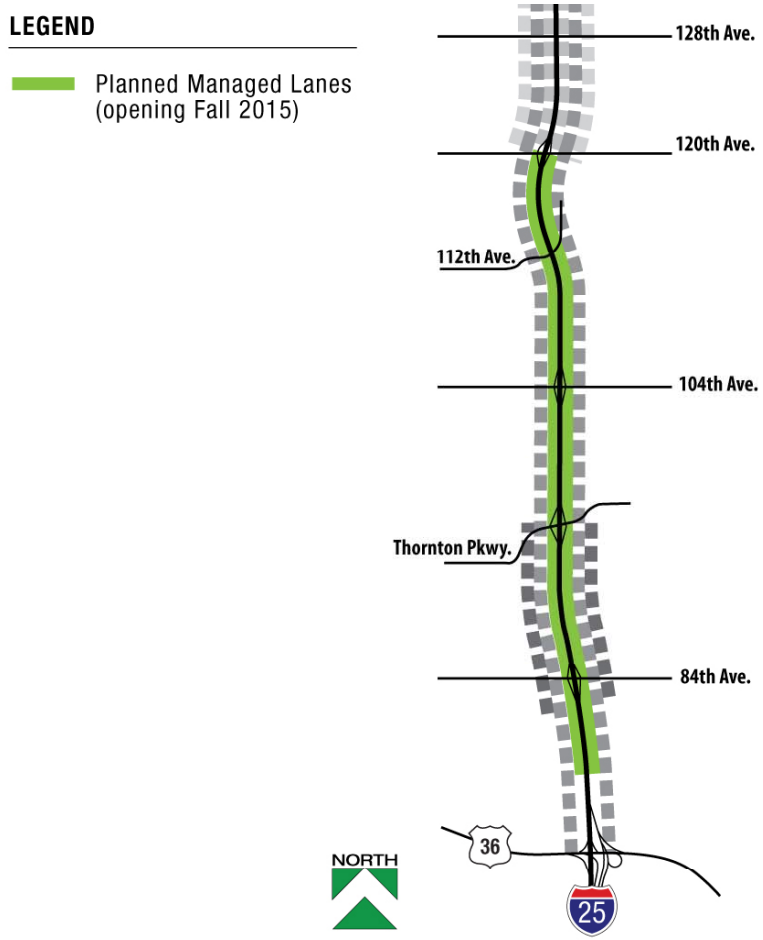
- New Park-n-Ride at 128th Ave. and I-25
- New Park-n-Ride at 136th Ave. and I-25
- Shoulder Busway north of 120th Ave.*

Complementary Strategies

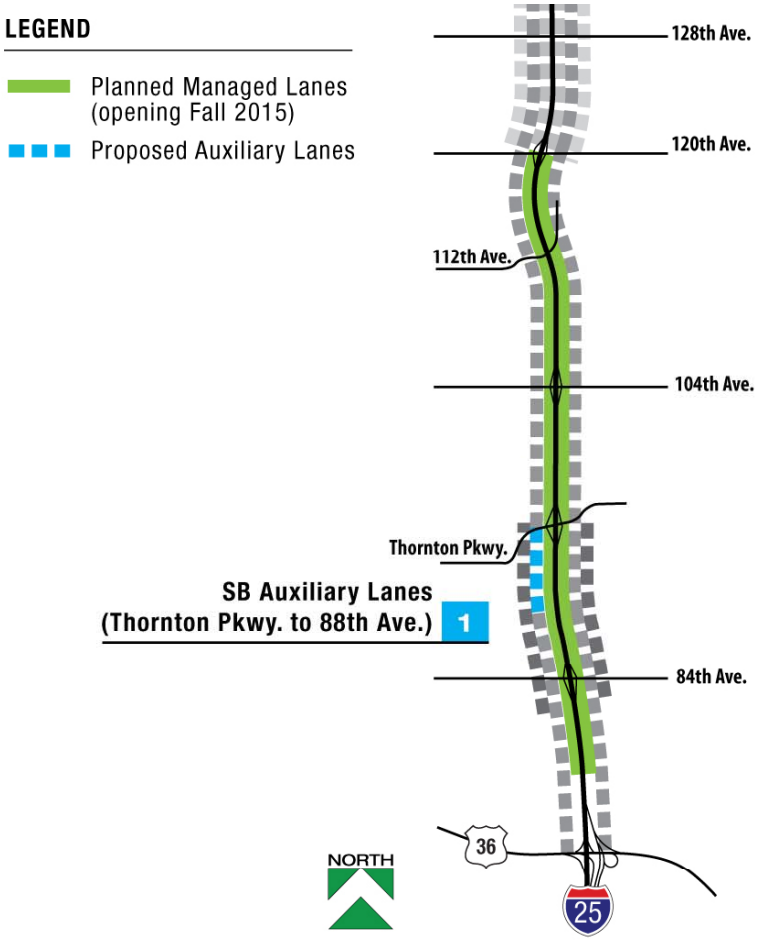
- Bike share program
- Employer outreach
- First or final mile programs
- Flexible work schedule resources
- Master Eco-pass contract
- Telework recognition awards

**Would have immediate benefit without extension of I-25 managed lanes*

NEAR-TERM PHASING PLAN

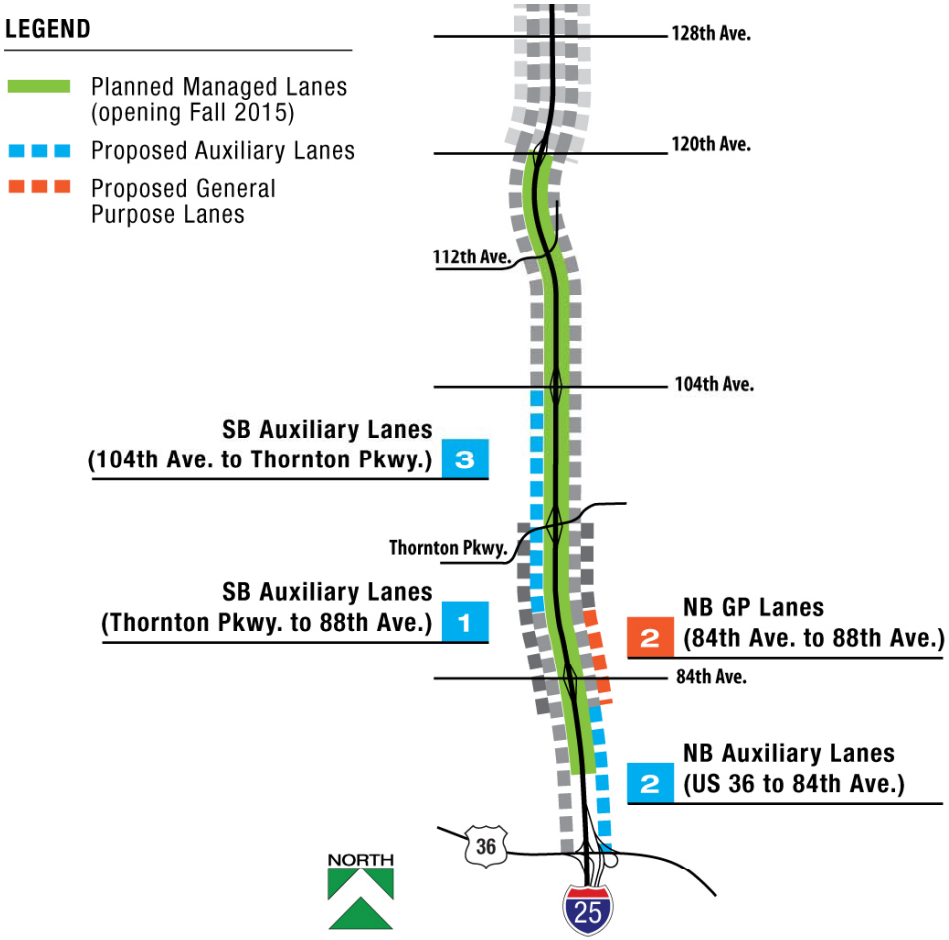


Phase 1 SB Auxiliary Lanes Thornton Pkwy. to 88th Ave.

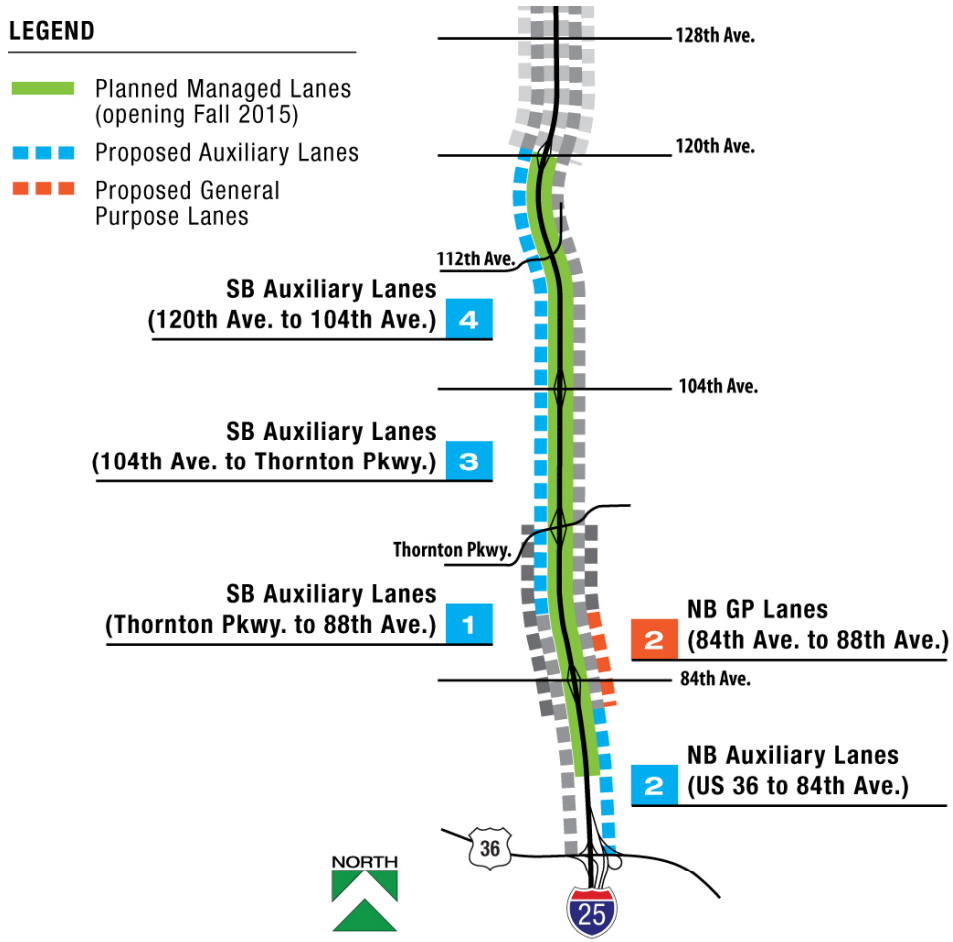


Phase 2 NB GP Lanes (84th Ave. to 88th Ave.) and NB Auxiliary Lanes (US 36 to 84th Ave.)

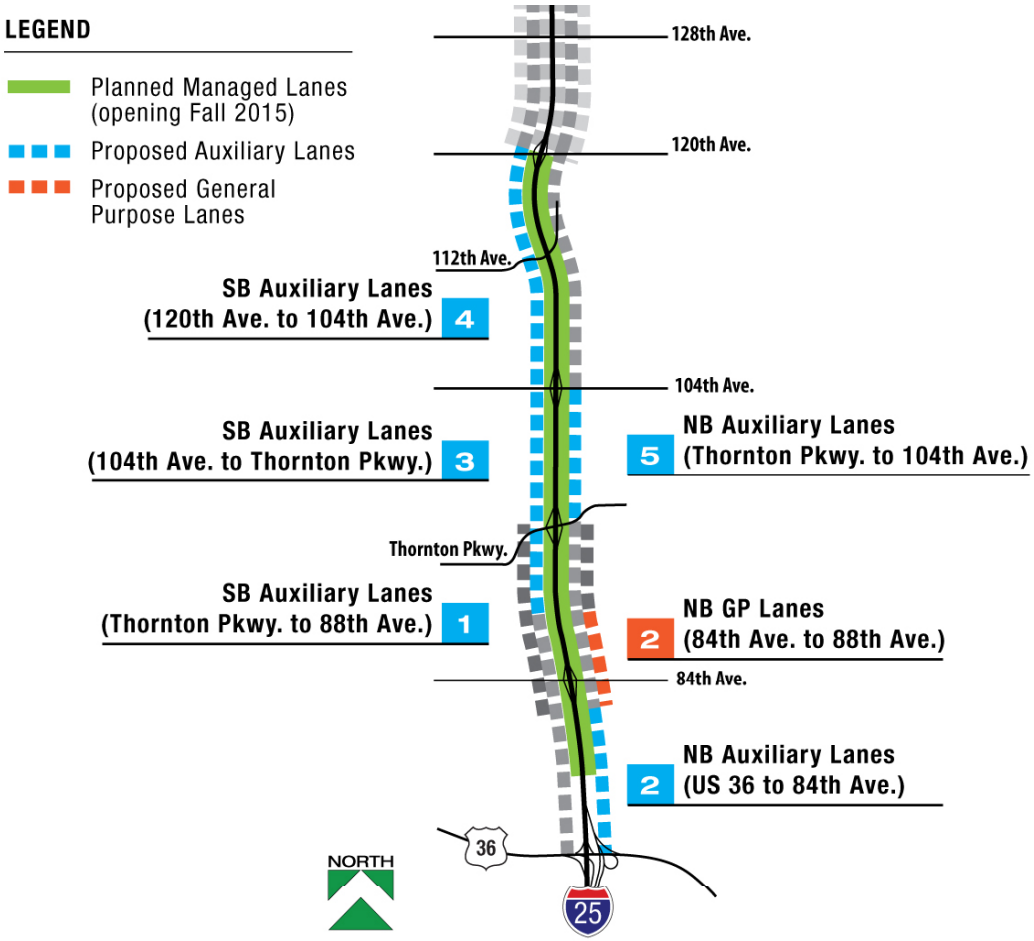
Phase 3 SB Auxiliary Lanes
104th Ave. to Thornton Pkwy.



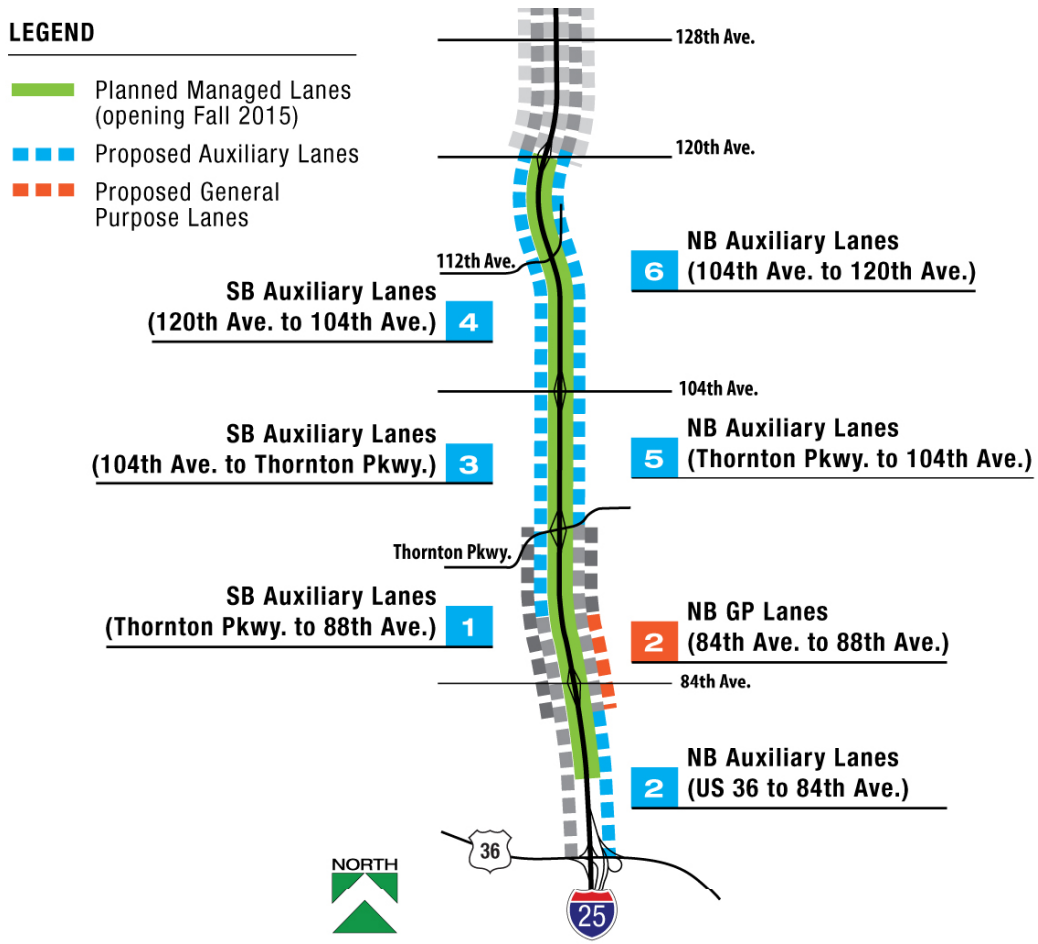
Phase 4 SB Auxiliary Lanes 120th Ave. to 104th Ave.



Phase 5 NB Auxiliary Lanes Thornton Pkwy. to 104th Ave.



Phase 6 NB Auxiliary Lanes 104th Ave. to 120th Ave.

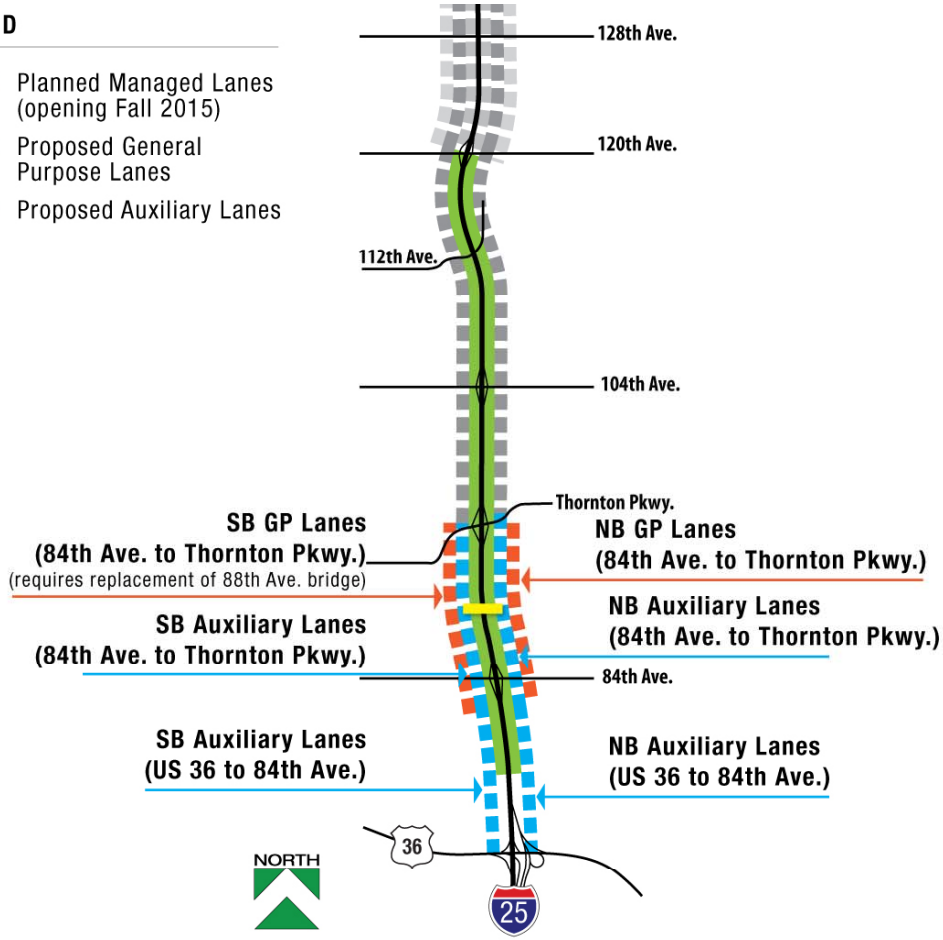


Roadway Project Cost Effectiveness

		No Action	Near-Term Phasing Plan
SOUTHBOUND AM	PEAK TRAVEL TIME: (SH 7 to US 36)	21 min.	17 min.
	VEHICLE HOURS DELAY:	1,440	695
	LIFETIME COST EFFECTIVENESS: ($ per vehicle hour of delay saved)	NA	2.78
	COST	NA	$9.2 M
NORTHBOUND PM	PEAK TRAVEL TIME: (US 36 TO SH 7)	21 min.	16 min.
	VEHICLE HOURS DELAY:	1,970	1,430
	LIFETIME COST EFFECTIVENESS: ($ per vehicle hour of delay saved)	NA	5.93
	COST	NA	$14.3 M
TOTAL	PEAK TRAVEL TIME: (US 36 TO SH 7)	21 min.	16-17 min.
	VEHICLE HOURS DELAY:	3,410	2,125
	LIFETIME COST EFFECTIVENESS: ($ per vehicle hour of delay saved)	NA	4.10
	COST	NA	$23.5 M

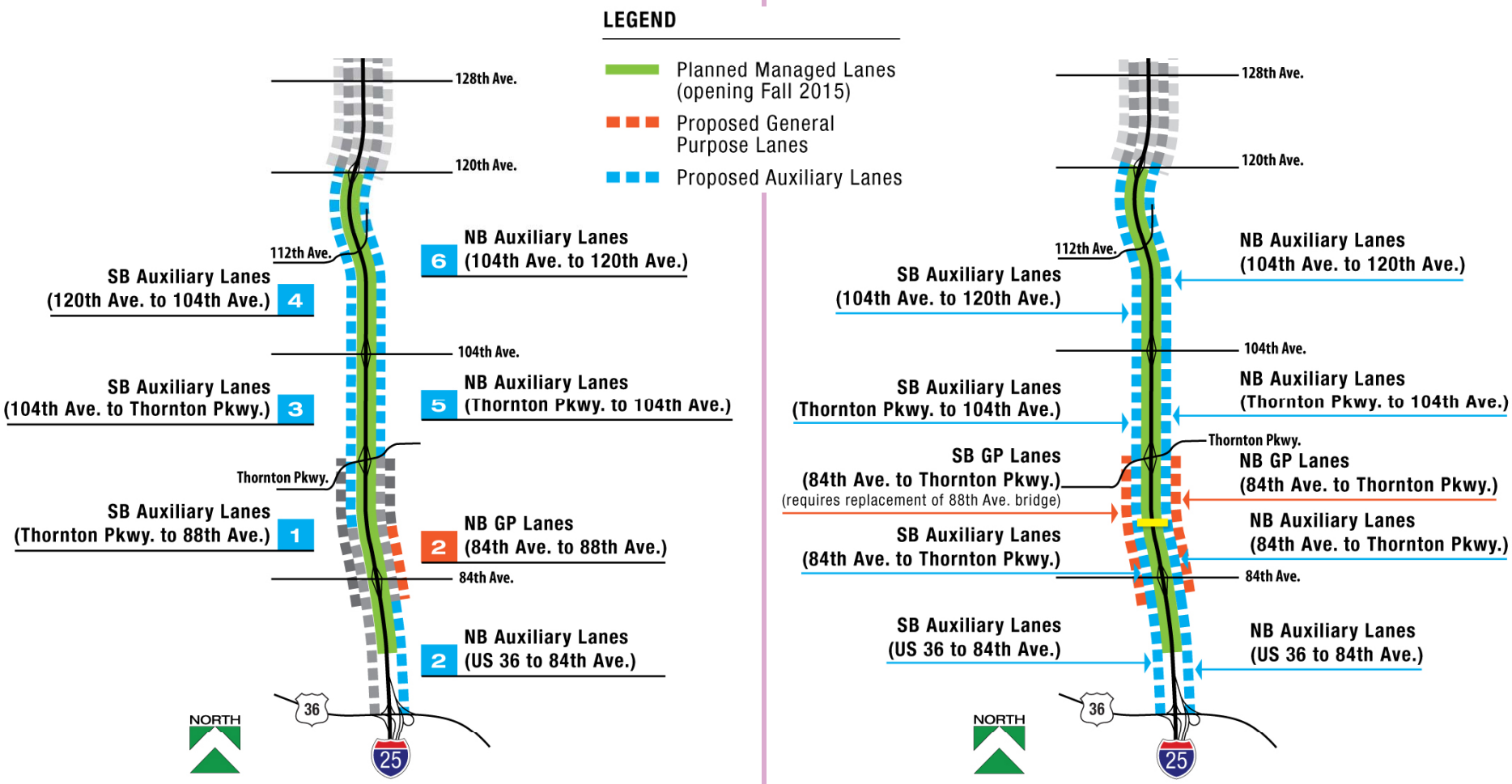
Costs do not include right-of-way or NEPA clearances.

88th Ave. Area Components



Near-Term Phasing Plan

Complete Phasing Plan



Roadway Project Cost Effectiveness

		No Action	Near-Term Phasing Plan	88th Ave. Area Components	Complete Phasing Plan
SOUTHBOUND AM	PEAK TRAVEL TIME: (SH 7 to US 36)	21 min.	17 min.	14 min.	14 min.
	VEHICLE HOURS DELAY:	1,440	695	285	210
	LIFETIME COST EFFECTIVENESS: ($ per vehicle hour of delay saved)	NA	2.78	3.50	4.97
	COST	NA	$9.2 M	$31.2 M	$40.4 M
NORTHBOUND PM	PEAK TRAVEL TIME: (US 36 TO SH 7)	21 min.	16 min.	15 min.	15 min.
	VEHICLE HOURS DELAY:	1,970	1,430	1,040	900
	LIFETIME COST EFFECTIVENESS: ($ per vehicle hour of delay saved)	NA	5.93	0.93	3.81
	COST	NA	$14.3 M	$6.7 M*	$21.0 M*
TOTAL	PEAK TRAVEL TIME: (US 36 TO SH 7)	21 min.	16-17 min.	14-15 min.	14-15 min.
	VEHICLE HOURS DELAY:	3,410	2,125	1,325	1,110
	LIFETIME COST EFFECTIVENESS: ($ per vehicle hour of delay saved)	NA	4.10	2.36	4.43
	COST	NA	$23.5 M	$37.9 M	$61.4 M

**Assumes cost of 88th Ave. bridge and pedestrian bridge improvements have been previously included in SB direction.*

Costs do not include right-of-way or NEPA clearances.

August Open House

- Background
- Process
- Purpose and Need
- Alternatives Development and Evaluation
- Preferred Alternative
- Prioritization
- Comments

Next Steps

- Public Meeting in August
- Draft Document – For Review Early Fall

DRAFT EC/TAC MEETING MINUTES
North I-25 PEL

Technical Advisory Committee
Wednesday, July 24, 2013
1:00 PM to 4:00 PM

LOCATION: Adams County Economic Development

PREPARED BY: Steven Marfitano, FHU

ATTENDEES: See Attached Sign-in Sheet

I. Welcome and Introductions

Andy Stratton, CDOT Project Manager, gave a quick introduction and welcomed the group. Andy stated the goals of the meeting and presented the agenda.

II. Purpose & Need

Holly Buck offered a brief reminder about the overall project purpose. The project was conceived following the North I-25 EIS recognizing that the EIS did not focus specifically on the I-25 corridor between US 36 and SH 7. As a result, CDOT proposed the North I-25 PEL aimed at reducing congestion and improving safety. The study has been focused on implementing near-term, multi-modal, and cost effective solutions along the corridor.

The project needs include focusing on mobility, safety, and multimodal problems along the corridor.

1. Mobility – Significant congestion occurs along the corridor, especially between approximately US 36 and 120th Avenue, which is expected to worsen by 2035 to include significant congestion the length of the corridor.
2. Safety – Crash records along the corridor indicate that locations along the corridor with higher than expected crash histories also experience significant congestion (particularly noticeable in the number of rear-end crashes due to stop and go conditions). By improving the capacity along the corridor, it is expected that the safety along the corridor can be improved.
3. Multimodal – Over capacity conditions at the Wagon Road park-n-Ride and Thornton park-n-Ride (east side) demand additional parking facilities for multimodal travelers along the corridor. The committee suggested that the public should be provided information about when the Thornton pnR will be expanded since it was awarded FASTER money by CDOT.

III. Overall Process

Holly Buck described the study process that has been undertaken.

1. Component Development – A complete project listing was developed through conversations with the Executive Committee, Technical Advisory Committee, CDOT, and members of the public.
2. Sorting – This process broke the component listing into long term cross section concepts designed to utilize right of way the entire length of the study area (to be more fully considered in a future study since these improvements cannot be implemented in the near-term), components retained for further screening, and components eliminated.
3. Screening – This process included technical evaluation of the alternatives to determine the ability for each component to meet the Purpose & Need, a determination of components as primary (meaning they can provide direct benefit to the corridor) or complementary. At this step, components were also eliminated based on their inability to meet the Purpose & Need.
4. Packaging – The remaining primary and complementary components were reviewed and packaged into the Preferred Alternative. This process was originally intended to include the development of two separate packages for comparison, but upon completion of the screening the project team determined that there was no overlap among individual components and all provided benefit worth including in the

preferred package. The TAC approved of the preferred alternative through discussions held at the June TAC meeting.

5. Prioritization – This step was the focus for the meeting and focused on phasing and prioritization of the preferred package. All components included within the preferred alternative were sorted during this step to determine if immediate benefits could be realized, or if benefits would occur by 2035. This process resulted in a list of immediate benefit components which were prioritized.

Jeanne Shreve also asked about the need for additional lanes between SH 7 and E-470. Auxiliary lanes already exist in this location and the PEL improvements are focused on near-term solutions that address current congestion. As a result, additional lanes between SH 7 and E-470 are not included in the preferred alternative.

IV. Prioritization

Holly Buck led a discussion of the prioritization principles, first presented at the June TAC meeting. The principles identified reduction in near-term congestion as the most critical factor in prioritizing projects. The team further clarified that the ability to easily deliver cost-effective components is a key parameter in the prioritization process.

The prioritization process was discussed by breaking the various components into three key categories: roadway, transit, and complementary strategies.

The group discussed the meaning of "Benefits by 2035". The group was informed that efforts are already underway to develop a 2025 DynusT model which will provide additional detail about when improvements in this category are likely to be needed.

<u>Transit</u>

Chris Primus described the prioritization process completed for the immediate benefit components. This listing was developed through a meeting with RTD and determined that in order to address the Purpose and Need, the most critical project is the construction of a new park-n-Ride at 124th Ave and Claude Ct, which will help to alleviate the over capacity conditions at nearby park-n-Ride facilities. The conversion of the bus tunnel at Wagon Road park-n-Ride to a bi-directional facility was included next due to its ability to reduce bus travel times. Third, the construction of an inline median station at 88th Ave was prioritized, followed by new park-n-Rides at 144th Ave and I-25 and SH 7 and I-25.

The group discussed the Thornton park-n-Ride expansion. Lee Cryer will provide additional detail for the project team so that the final report can include discussion of the park-n-Ride expansion timeline.

The group discussed the DTR Regional Commuter Bus Study and its impact on transit throughout the corridor if additional transit service north of the study area is planned.

The group discussed the need to recommend coordination between RTD and CDOT as it relates to future transit stations along the corridor. Specifically, as managed lanes and potential inline median stations are considered/implemented, there will be need to coordinate the design and operations along the corridor.

The group discussed the SH 7 and I-25 interchange. Specifically, the coordination between the SH 7 PEL and this PEL is important as it relates to transit service along the I-25 corridor. The team discussed the upcoming SH 7 carpool lot and the desire to see a future park-n-Ride established at the interchange. Also, the group discussed

the Diverging Diamond Interchange (DDI) carried forward in the SH 7 PEL and the desire to see this project implemented. It was discussed that in order to implement a DDI, a NEPA process will be needed to alter the results of the North I-25 EIS recommendation of a partial cloverleaf to a different interchange design. In the end, the group emphasized the need to reference the SH 7 PEL in this study's final documentation.

Roadway

Lyle DeVries presented the prioritization process for the immediate benefit components. The listing was developed into a Near-Term Phasing Plan and Complete Phasing Plan, with the key difference being the reconstruction of the 88th Avenue bridge and related I-25 widening projects. The purpose for this split is the large cost of the 88th Avenue bridge reconstruction, which includes additional lowering of mainline I-25 and a new pedestrian overpass, and the lack of available funding sources for the reconstruction of a bridge which is structurally sufficient, but operationally deficient. The current bridge is operationally deficient because it will not accommodate any widening of I-25.

First, Lyle presented the Near-Term Phasing Plan which prioritizes all of the roadway projects with immediate benefit (without replacing the 88th Avenue bridge). This begins with two hybrid projects which provide a southbound accel/decel lane between Thornton Pkwy and 88th Ave and a northbound accel/decel lane and general purpose lane between I-270 and 88th Ave. These projects represent the extent of additional capacity which can be implemented. Next, the addition of continuous accel/decel lanes between southbound 104th Ave to Thornton Pkwy and 120th Ave to 104th Ave are followed by continuous accel/decel lanes between Thornton Pkwy to 104th Ave and 104th Ave to 120th Ave.

All of these improvements represent the Near-Term Phasing Plan assuming the completion of the extension of the managed lanes from 120th Ave north beyond SH 7. If the extended managed lanes are not successful in securing RAMP funding, there will be two additional continuous accel/decel lanes recommended between 120th Ave and 136th Ave in the southbound and northbound directions.

Next, Steven Marfitano presented project performance measures, cost, and cost effectiveness for the Near-Term Phasing Plan. This discussion included a comparison of the No Action (which includes the managed lanes between US 36 and 120th Ave) and the Near-Term Phasing Plan for the Southbound AM, Northbound PM, and Total. Performance measures included the peak travel time (described as the time between US 36 and SH 7) and the vehicle hours of delay during the peak periods (which measures the amount of delay experienced by all users traveling through the corridor). The cost and cost-effectiveness provide information about how much, and how well the recommended measures perform. The cost-effectiveness included in this discussion takes into account the useful life of the recommended components (estimated at 20 years) to annualize the total cost over this time period and reports the cost effectiveness in terms of dollars per delay hour saved.

Following discussion of the Near-Term Phasing Plan, Lyle presented the 88th Ave Area Components which are recommended if funding is identified for replacement of the 88th Ave bridge. These improvements include general purpose lanes between 84th Ave and Thornton Pkwy and continuous accel/decel lanes between US 36 and Thornton Pkwy. These improvements all rely on the replacement of the 88th Ave bridge, additional lowering of I-25, and construction of a pedestrian bridge linking the park-n-Ride facilities which has been estimated at $24.4 million. The discussion also identified that by first constructing the Near-Term Phasing Plan and then the 88th Ave Area Components, there will be areas requiring full reconstruction including the roadway immediately adjacent to 88th Ave, representing throw-away among the identified phasing plan.

Next, Steven presented the project performance measures for the 88th Ave Area Components as well as the Complete Phasing Plan. Within this table, the cost-effectiveness of the 88th Ave Area Components was compared to the Near-Term Phasing Plan and Complete Phasing Plan to emphasize the effectiveness of the more costly project, but to once again reiterate that the cost is the main inhibitor.

The group discussed the results of the phasing discussion, focusing on how to pay for the 88th Ave Area Components, since this area represents the most congested area of the corridor and will provide the best step forward in improving travel throughout the entire corridor. As part of this discussion, several funding mechanisms were discussed.

- CDOT (using Federal dollars) – This option very limited due to the lack of available funding sources for the reconstruction of a bridge which is structurally sufficient, but operationally deficient.
- DRCOG (using funding from the 2040 Fiscally Constrained Plan) – This option relies on DRCOG determining what available funding the state will receive and subtracting maintenance costs from this total. The remaining funds may be distributed for new capacity projects throughout the region, but the 88th Ave bridge must compete for funding with other projects.
- MPACT 64 (using potential new sales tax) – This option relies on many unknowns, including if and how the sales tax will be included during the next election. If successful, the 88th Ave bridge must compete for funding with other projects throughout the state.

As a result of this discussion, the group indicated interest in a roadmap document designed to layout how to move forward once this PEL is complete in securing funding for the Complete Phasing Plan as discussed.

At the completion of this discussion, the group was asked to provide comments about the recommended phasing. All comments indicated that at that time, the group was in agreement about the recommended prioritization. The group has been given two weeks to provide additional comment before the results of this study are presented to the public in an upcoming Public Open House.

V. Public Open House

Andrea Meneghel led a discussion of the upcoming Public Open House. The goal is to select a date in late August, where the materials from this presentation and the entire study will be presented to the public for comment and review.

The following comments were collected during the course of the meeting regarding edits to the PowerPoint before the materials are presented:

- Include a note on the Mobility Needs slide indicating that this figure does not include the effects of incidents.
- Extend the Proposed Additional Transit Service north of SH 7 on the Preferred Package slide.
- Show the crossing at 88th Ave on all figures.
- Increase the legend size and shrink the “Additional Potential Components” on the Preferred Package slide.
- Standardize the terminology to use “continuous acceleration/deceleration lane” throughout all documentation and future meeting materials (eliminate auxiliary lane).
- Show an aerial picture of a continuous acceleration/deceleration lane in future meeting materials.
- Include detail on the Cost Effectiveness slide about the annualization of the cost to 20 years and 50 years depending on component.

VI. Schedule

The upcoming Public Open House is tentatively scheduled for the end of August, the TAC and EC will be provided the date as soon as the facility has been reserved. Following the Public Open House, the draft documentation will be sent to the TAC and EC for formal review and comment.

Andy asked that all comments and recommendations based on this presentation be submitted by August 7.

VII. Closing

Andy thanked everyone for their attendance and participation during this project, as this was the final TAC/EC meeting of the project and closed the meeting.

EXECUTIVE COMMITTEE

Community/Agency	Representative	Signature	Alternate	Signature
Brighton	Dick McLean Mayor		Wayne Scott Councilmember	
Broomfield	Pat Quinn Mayor		Kevin Standbridge Deputy CM	
Commerce City	Sean Ford Mayor		Jason McEldowney Councilmember	
Dacono	Charles Sigman Mayor		A.J. Euckert Interim City Manager	
Erie	Cheryl Hauger Mayor Pro Tem		Gary Behlen Public Works Director	
Firestone	Chad Auer Mayor		Wes LaVanchy Town Manager	
Frederick	Eric Doering Mayor		Gary Barbour Interim Town Administrator	
Longmont	Dennis Coombs Mayor		Phil Greenwald Transportation Planner	

North I-25 PEL—Executive Committee Meeting
Sign-in Sheet

Community/Agency	Representative	Signature	Alternate	Signature
Northglenn	Joyce Downing Mayor		Brook Svoboda Director of Planning	
Thornton	Heidi Williams Mayor		Joyce Hunt	
Westminster	Nancy McNally Mayor		~~Ario Otzelberger~~ Senior Mngmt. Analyst	Dave Downing
Adams County	Jim Robinson Administrator		Erik Hansen	
Metro North Chamber	Jonathan Perlmutter (J Perlmutter & Co) Howard Gelt (Polsinelli Shughart PC)		Deb Obermeyer Executive Director	
CDOT Region ~~6~~ 1	Steve Olson, North Program Engineer			
CDOT Region 4	Myron Hora, Planning and Environmental Manager		Johnny Olson RTD	
FHWA	Shaun Cutting, Program Delivery Engineer		Monica Pavlik, Senior Operations Engineer	

North I-25 PEL—Executive Committee Meeting
Sign-in Sheet

Community/Agency	Representative	Signature	Alternate	Signature
RTD	Larry Hoy Director			
City and County of Denver	Brian Mitchell		Michael Finochio	
Federal Transit Administration	David Beckhouse, Sr. Transportation Program Specialist		Larry Squires, Community Planner	
DRCOG	Steve Cook Acting Director, Transportation Planning and Operations	Steve Cook		
Broomfield EDC	Interim Rep: Stephanie Salazar, President and CEO			
Broomfield Chamber	Interim Rep: Jennifer Kerr President and CEO			

OTHER ATTENDEES

Name	Organization	Signature	Phone	Email
Jennifer Gruel	CDOT R4 PE	[illegible]	970 350-2264	jennifer.gruel@state.co.us
Debra Baskett	Broomfield	[illegible]	3438 6385	dbaskett@broomfield.org

North I-25 PEL
Sign-in Sheet
July 24, 2013

TECHNICAL ADVISORY COMMITTEE

Representative	Community/Agency	Signature
Annette Marquez	Brighton	
A.J. Euckert	Dacono	
Andy Stratton	CDOT Region ~~6~~ 1	
Brook Svoboda	Northglenn	
Carol Parr	CDOT Region 4	
Daren Sterling	Commerce City	
Dave Downing	Westminster	
Dave Lindsay	Firestone	
Deb Obermeyer	Metro North Chamber	
Emily Silverman	City and County of Denver	
Fred Sandal	DRCOG	
Gene Putman	Thornton	
Jay Hendrickson	CDOT Region ~~6~~ 1	
Jeanne Shreve	Adams County	
Jennifer Gorek	CDOT Region 4	
Jennifer Kerr	Broomfield Chamber	
Jon Chesser	CDOT Region 6	
Karen Schneiders	CDOT Region 4	

North I-25 PEL
Sign-in Sheet
July 24, 2013

Karen Stuart	Smart Commute TMO	
Kevin Standbridge	Broomfield	
Larry Squires	Federal Transit Administration	
Lee Cryer	RTD	
Leela Rajasekar	CDOT Region 6	
Lizzie Kemp	CDOT Region 6	
Long Nguyen	CDOT Region 4	
Monica Pavlik	FHWA	
Nataly Erving	RTD	
Phil Greenwald	Longmont	
Richard Leffler	Frederick	
Russell Pennington	Erie	
Stephanie Salazar	Broomfield EDC	
Steve Cook	DRCOG	
Steve Hersey	CDOT Region 6	
Steve Olson	CDOT Region 6	

North I-25 PEL
Sign-in Sheet
July 24, 2013

DOT
DEPARTMENT OF TRANSPORTATION

Other Attendees

Lyle DeWites	FHU	
Chuck Attardo	CDOT R1 Plan+Env	chuck.attardo@state.co.us
Chris Primus	Jacobs	
Marvinetta Hartwig	Hartwig & Associates	mhartwig@hartwigeng.com
Joe Smith	Brighton	jsmith@brightonco.gov
BART PRZYBYL	APEX DESIGN, PC	BART.PRZYBYL@APEXDESIGNPC.COM
ANDREA MENEGHEL	CDR ASSOCIATES	ameneghel@mediate.org
Holly Buck	FHU	Holly.Buck@fhueng.com
Steven Manfreda	FHU	

Stakeholder Interviews

North I-25 Planning and Environmental Linkage
Stakeholder Interviews Summary

Date: 1/4/2012

This report summarizes the findings of stakeholder interviews conducted by members of the North I-25 Planning Environmental Linkage (PEL) Project Team from the Colorado Department of Transportation (CDOT), Felsburg Holt and Ullevig (FHU), and CDR Associates (CDR). The purpose of the interviews was to document goals, issues and concerns expressed by stakeholders regarding the North I-25 PEL study. Input received does not establish project direction or decisions. The feedback will be incorporated into the study's collaborative visioning efforts among stakeholders and the project team.

This summary captures the themes provided by the following parties and provides points of emphasis for upcoming project visioning efforts. Interviews were conducted with the following entities:

- Adams County
- CDOT Office of Policy and Government Relations
- CDOT Region 4
- CDOT Region 6
- Denver Regional Council of Governments (DRCOG)
- City and County of Broomfield
- City and County of Denver
- City of Northglenn
- City of Thornton
- City of Westminster
- Federal Transit Administration (FTA)
- Federal Highway Administration (FHWA)
- Regional Transit District of Denver (RTD)

The summary is organized into the following two sections

I. **Highlights of Stakeholder Feedback**
II. **Detailed Summary**

I. HIGHLIGHTS OF STAKEHOLDER FEEDBACK

Several points were emphasized by multiple stakeholders during the interviews, highlighted as follows:

- The relationship between the PEL and the North I-25 EIS needs to be clearly defined and communicated to the stakeholders and general public.
- The PEL should be a study of the long term vision and near term opportunities to address operations and safety. Some expressed a focus on long-term vision and others focused more on near-term opportunities.
- Park-n-Ride facilities along I-25 need to be upgraded to accommodate significant demand.
- It is important for the study to recognize future projects and plans that local agencies have within the study area and coordinate closely with the respective parties.

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- It is important for the PEL to analyze the impacts and consider future improvements to parallel roads. Problems on the highway can cause spillover on the parallel arterials and vice versa.
- The I-25 PEL needs to be coordinated with the State Highway 7 PEL, which is proceeding concurrently.
- Travel Demand Management (TDM) solutions could be implemented in the I-25 corridor to enhance service. It would be beneficial to develop strategies to get more people in buses and carpooling and have the Transportation Management Organization (TMO) support those strategies.
- The North Area Transportation Alliance (NATA) will continue to be very involved in the PEL. It will be helpful to include NATA updates as agenda items for the I-25 PEL Executive Committee (EC)/Technical Advisory Committee (TAC) meetings and for CDOT to periodically provide updates at NATA meetings.

II. DETAILED SUMMARY

The input received during the interview process is organized into the following seven categories:

1. *North I-25 PEL Framework*
2. *Corridor Vision vs. Near-Term Improvements*
3. *Corridor Issues*
4. *Alternatives and Improvements*
5. *Transportation Analysis and Modeling*
6. *Stakeholder Engagement and Public Involvement*
7. *Prioritization, Phasing, and Funding*

The input received is listed within each category followed by a listing of Visioning Emphasis items. The Visioning Emphasis items will form the basis for the upcoming PEL Visioning process.

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1. North I-25 PEL Framework

The following recommendations and opinions were expressed by stakeholders regarding their desires for the PEL study:

- A framework for this PEL is to identify the transportation needs at a broad perspective, prioritize those needs and then move to fix the most severe problems within the context of the study area. The project should be developed by focusing on the users (customers) of the transportation system. Solutions must be practical, avoiding or minimizing "throw-away" projects, which are projects that would provide a benefit in the near term, but would have to be removed or reconstructed to implement future projects.
- Multiple improvements and strategies will need to be developed that can be implemented independent of one another.
- Multi-modal/transit needs should be addressed, with park-n-Ride (p-n-R) access and capacity to be considered.
- It is important to document the process so that subsequent National Environmental Policy Act (NEPA) actions can take advantage of the PEL work without revisiting issues and analysis.
- The PEL should identify projects that can be advanced quickly and efficiently through the NEPA process, preferably using Categorical Exclusions, when appropriate.
- It is important for the EC/ TAC to make project recommendations, but also to allow traffic and engineering data along with funding opportunities to drive the outcomes.
- This study needs to clearly describe the relationship between the I-25 EIS and the PEL. DRCOG first looks to honor the Record of Decision (ROD) commitments from the N. I-25 EIS. Next, DRCOG considers other operational and safety improvements, which may or may not be in the TIP or RTP; and then finally, considers other identified capacity improvements.
- It will be important for this study to coordinate with the SH 7 PEL. The two studies should coordinate to assess the feasibility of ideas along the corridors and for the SH 7/ I-25 interchange.
- The issues associated with specific interchanges should be closely analyzed within this study.

VISIONING EMPHASIS:
Based on the above opinions expressed during the interviews, the Visioning Workshop should focus on the following topics related to the PEL Framework:

- Further define the relationship between this PEL study and recent and future NEPA processes.

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2. Corridor Vision Versus Interim Improvements

The following recommendations and opinions were expressed by stakeholders regarding their desires for consideration of a corridor vision and nearer interim improvements:

- Success will be achieved by identifying and prioritizing what improvements can be included in the TIP, or in the DRCOG Fiscally Constrained 2040 Plan. The PEL Projects should be implementable by 2020 without precluding the long-term vision. Recommendations should differentiate between needs and desires.
- The ultimate configuration will serve as an umbrella that smaller projects should fit within. The smaller projects should not preclude construction of the ultimate configuration.
- A stakeholder communicated that while discussions can occur with stakeholders regarding the ultimate vision for the corridor, the discussion/analysis does not need to be at the level of detail where it is determined whether a solution is as specific as "adding general purpose lane or managed lanes." It is sufficient to determine whether or not there are capacity improvements needed, and then the other shorter/low-cost operational and safety improvements can fit into this overall vision.
- However, another stakeholder communicated that, the expected goal of this study is to develop and address the short term (~2016) and long term (2035/2040) needs of the I-25 corridor in the north area. For the short term, the study needs to address current congestion and the safety and operational deficiencies needed now. For the long term, the study needs to identify:
    - How much additional capacity will be needed by 2035/2040;
    - When the HOT/HOV lanes will be needed
    - What improvements are needed for RTD
    - Which TDM/TSM strategies best alleviate traffic congestion
    - Operational and capacity benefits of using the inside shoulders for interim capacity increases
- The traffic issues in this area need to be addressed. It was stated that the greater needs of the area should be clearly understood to help in prioritizing near-term projects.

VISIONING EMPHASIS:

Based on the above opinions expressed during the interviews, the Visioning Workshop should focus on the following topics related to Corridor Vision versus Interim Improvements:

- The project's consideration of long-term and near-term solutions
    - Clarify expectations for what will be studied and addressed in the PEL and what will not.
- To define the project focus, limitations, and constraints.

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3. Corridor Issues

The following opinions were expressed by stakeholders regarding issues that need to be addressed or considered along the corridor:

- *Congestion*—Traffic congestion is a major problem within the study area.
- *Northern Colorado Users*—A considerable amount of traffic and users are coming into the corridor from Weld and Larimer Counties; DRCOG regional modeling can shed light on traffic patterns through the area.
- *Parallel Arterials*—Problems on the highway can cause spillover on the parallel arterials and vice versa. There needs to be an analysis of the relationship between the two. Parallel arterials mentioned by interviewees included Huron Street, Pecos Street, Federal Boulevard, and Washington Street.
- There are substantial problems with vehicles that are merging in and out of the managed lane as well as on- and off- ramps.
- The north region has the most capacity constrained p-n-Rs in the RTD system; the Wagon Road p-n-R is the largest in RTD's system and is over capacity. Improvements are needed for the Thornton p-n-R, as well.
- *Accidents, Speeds and Design*—It was stated that I-25 experiences a high rate of accidents related to speed and congestion. Additional details offered by law enforcement personnel included:
  - The majority of accidents happen in the innermost left travel lane
  - The innermost left lane is typically closed off by a crash, and cars involved in an accident are moved to it when an accident occurs to allow traffic to continue to flow. Consideration needs to be given to what will need to happen operationally to the innermost lane for dealing with accidents when there is no longer an inside shoulder. Lane closures typically last about two hours for accident clearance.
- At times, emergency responders avoid using I-25 due to congestion.
- The PEL needs to address speeds and speed differentials which are seen as contributing to incidents; including the association of segment speeds and ramp designs.
- The noise walls (fencing) along I-25 between 106th Ave and 108th Ave are in poor condition and need to be replaced. The wall adjacent at 106th Ave is often struck by vehicles.
- The PEL should understand what drainage improvements have been made along the corridor as well as where utility lines are located. Concern has been expressed about additional drainage impacts along the corridor.

VISIONING EMPHASIS:

Based on the above opinions expressed during the interviews, the Visioning Workshop should focus on the following topics related to Corridor Issues:

- Define the extent to which parallel arterials will be considered in relationship to I-25. Confirm the issues identified in stakeholder interviews as an appropriate starting point for the corridor assessment.

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4. Alternatives and Improvements

The following captures suggestions for improving mobility within the study area:

- Key issues of focus should include increasing access and capacity.
- Consider opportunities for implementation of continuous auxiliary or acceleration/ deceleration lanes to better accommodate weaving between interchanges and to keep users off the mainline.
- Optimize metered ramps and provide new ramp metering for existing ramps that don't have it.
- Employ growth management strategies in the corridor and integrate land use plans into that management component. Apply these strategies to the communities to the north as well, and understand what that would mean for the corridor.
- Consider adding General Purpose lanes.
- Explore the possibility of the inside shoulder being designated as a freight/truck-only lane, or a HOV/BRT only lane.
- Look for ways to integrate bicycle and pedestrian facilities, as well as make connections within the study area.
- Consider speed harmonization and using variable speed limits responsive to conditions.
- Consider converting ramps from one-lane to two-lane ramps.
- Consider applications of Intelligent Transportation Systems (ITS) technology, with particular focus on collecting real-time data.
- Look at the U.S. 36 Construction RFP for examples of TDM solutions that could be implemented in the I-25 corridor to enhance service. It would be beneficial to develop strategies to get more people in buses and carpooling and have the TMO support those strategies.
- It was suggested for the study to have both a mainline and a parallel arterial focus because the issues between the facilities are related. The main issues include not enough capacity, lack of access, ramps backing up on the highway, constrained weaves, sign spacing, "operational killers" and safety impacts.
- I-25/SH 7 Interchange: It is important for this study to closely analyze improvements and anticipated development at this interchange. The following was noted:
    - A Diverging Diamond Interchange (DDI) concept has been developed for this interchange. The design includes a p-n-R and would not need to utilize land area previously designated for a loop ramp. A partial cloverleaf interchange design was also mentioned.
    - Support was expressed for establishing a p-n-R that would serve the interchange and emphasize parking availability with minimum right-of-way impacts.
- A managed lane could improve incident responses by reducing congestion and by providing pullouts as refuge for an accident. Emergency responder and traffic enforcement operations should be taken into account, not only as to what their needs are, but also directions or instructions for how they should operate to optimize and maintain traffic flows.
- In addition to general purpose lanes, managed lanes are needed in order to spread the current levels of congestion by incentivizing carpooling and improving bus service.
- Add capacity for increasing multimodal transit alternatives resulting in fewer single-occupancy vehicle trips.
- Include transit solutions as part of this study.
- Include an educational component to communicate the correct use of buffer separated lanes, if included.

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- Congestion in the corridor supports the need for transit improvements. Improved access to p-n-Rs is important in general, specifically the 88th Avenue and Wagon Road p-n-Rs. There is support for establishing additional RTD service and p-n-Rs (locations for potential consideration include 136th Avenue or State Highway 7). Strong support was also expressed for adding more parking vertically at existing p-n-Rs to reduce the need for a larger footprint.
- Consider integrated infrastructure improvements, such as Transit Oriented Development (TOD), that maximize space to accommodate facilities to benefit RTD service. Suggestions included integrating p-n-R designs into planned developments while minimizing Right of Way impacts, and the extension of the managed lane.
- It was stated that RTD is committed to improving bus service in the I-25 corridor and providing the North Metro rail service. It is important to define how both services integrate and will serve the region. North Metro is considered to be a future reliever of congestion at p-n-Rs along I-25, and its benefits should be considered.
- There are substantial bus improvements included with the implementation of the North Metro line. It was stated that new p-n-R's are planned for SH 7 and for the 136th Avenue or 144th Avenue interchange.
- Focus on highway improvements that help transit.
- Optimize the 88th Avenue p-n-R by creating an in-line station.
- Establish queue jumps for buses.

VISIONING EMPHASIS:
Based on the above opinions expressed during the interviews, the Visioning Workshop should focus on the following topics related to Alternatives and Improvements:

- Explore the types of alternatives to be considered
- Identify which type of alternatives should be the focus of the EC/TAC.
- Define the role of transit within the PEL study
- Define the types of solutions that could be evaluated that involve transit

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5. Transportation Analysis and Modeling

The following opinions were expressed by stakeholders regarding the analysis and evaluation of alternatives for the corridor:

- Metrics from the traffic analysis should include travel time index and average speeds. Compare peak to non-peak traffic and how quickly a facility recovers from the peak period.
- Questions to be addressed by the analysis include: "Where is the traffic coming from? Where is it going? What is the cause of the congestion?" Answering these questions will lead to the appropriate solutions for this corridor.
- DynusT is an efficient tool for large areas to get a grasp of the origins and destinations and the operational problems. It is an appropriate tool for the analysis of near-term operational and safety alternatives. The study needs to consider the effects of routes changing beyond Level of Service.
- Consider modeling the effects a managed lane would have to traffic congestion between 120th Avenue and 136th Avenue
- It is important for the PEL to complement analysis that has already been established through the EIS.
- The traffic analysis should address both recurring and non-recurring congestion.

VISIONING EMPHASIS:

Based on the above opinions expressed during the interviews, the Visioning Workshop should focus on the following topics related to Transportation Analysis and Modeling:

- Define the types of questions or information needs that exist for this study.
- Define the analysis and modeling approach for the PEL.
- What about: Describe how the PEL transportation analysis will complement the EIS information

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6. Stakeholder Engagement and Public Involvement

The following opinions and suggestions were expressed by stakeholders regarding the public outreach activities for the study:

- CDOT and FHWA stated that they are very committed to the stakeholder engagement process and will listen closely to the interests and needs of the corridor's local agencies and involve regional partners such as RTD, DRCOG, NATA and others. The better the needs are identified and understood, the easier it is to identify effective strategies to address the issues. Because managing the system is a shared responsibility by the stakeholders, their involvement is critical for reaching out and communicating within their communities to key groups and businesses.
- Input from all the stakeholders must be heard at the EC/TAC meetings for project success. The EC/TAC meetings will be where issues will need to be addressed and agreements confirmed that won't be undone "away from the table."
- While it has been suggested to set aside 15–20 minutes during each TAC meeting for public input and make the public aware of those opportunities, it has also been noted that conversations at TAC meetings often involve material that can be difficult for a non-technical audience to understand. EC meetings where public-policy issues and project recommendations will be discussed may be a more appropriate setting for public comment and participation. It would be helpful for the public to submit their questions in advance so they can be addressed at the meetings.
- NATA will be very influential in this study. There is sufficient representation on the EC and TAC by NATA members to keep NATA informed of the EC/TAC activities and vice versa. It will be helpful to include NATA updates as agenda items for EC/TAC meetings and for CDOT to periodically provide updates at NATA meetings. The Metro North Chamber is important to keep involved. CDOT Transportation Commissioner Heather Berry's "Bagels with Berry" events take place periodically in the corridor, are typically attended by elected officials and the interested public, and can be a place to provide project updates.
- *N I-25 PEL Web Page*—If the project web page is to serve as a primary channel of communicating information it must be updated and provide key project information. The web page will also be a channel for the public to communicate about the project and provide questions and comments.
- *North Metro Transportation Management Organization (TMO)*—The TMO that is being established by NATA is expected to be active by February 2012. It should be utilized to provide information to the project team or to distribute and communicate project announcements to the public and its members, such as area businesses and other private sector stakeholders. The TMO can be used to develop incident management plans, coordinate around implementation of improvements or operational strategies for integrating transit in the corridor.
- *Future Plans, Projects and Coordination*—It is important for the study to recognize future projects and plans that local agencies have within the study area and coordinate closely with the respective parties. Each local agency described unique projects within their boundaries that could affect the corridor.
- It is important to determine how the actions on I-25 will tie into the improvements to the north, the system to the south and improvements that can be made within local jurisdictions.
- Local agencies, along with CDOT and RTD, should regard the system within a regional context to understand what kinds of solutions can be implemented and who would be responsible for doing so, whether it would be to I-25, additional transit service or to local roads and operations. It is important for RTD to contribute funding to potential improvements which would benefit or relate to its service.

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VISIONING EMPHASIS:
Based on the above opinions expressed during the interviews, the Visioning Workshop should focus on the following topics related to Stakeholder Engagement and Public Involvement:

- To discuss and understand the roles and responsibilities of each of the parties participating in the PEL and responsibilities for implementing solutions.
- Define how the Project Team will interact and engage with the EC, TAC, and corridor stakeholders.
- Determine what decisions and recommendations will be made, how they will be made and when.
- Define the public outreach responsibilities of all parties.
- Decide upon the appropriate method for public interaction with the EC & TAC and public involvement during those meetings.

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7. Prioritization, Phasing, and Funding

The following opinions and suggestions were expressed by stakeholders regarding prioritization, phasing and funding of the potential projects that could come out of this study:

- NATA has prioritized improvements on I-25 and the completion of North Metro FasTracks as its top priorities.
- Look for ways to package and prioritize alternatives – if an option is prioritized, determine how it will relate to the other costs and inter-operability of the benefits of other improvements.
- *Phasing and Suggested Sections of Focus*—Consider implementing smaller projects with independent utility (i.e., small projects that are prioritized and can be bundled and implemented as funding allows) that can be done in different sections of the corridor. Suggested sections to target include the section south of 88th Avenue, the section from 88th Avenue to 104th Avenue, a section from 104th Avenue to 120th Avenue and a northernmost section beyond 120th Avenue.
- The long-term goals, desires, and solutions are included in the Metro Vision; however, specific improvements will have to be defined and identified to be included in the fiscally constrained plan.
- Consider factoring tolling revenue from a managed lane into ways in which funding could be identified, and identify what that amount could become available.
- There was support for seeking funding opportunities, once improvements are identified, that would tie in I-25 improvements to those planned for U.S. 36 in order to attract larger federal grants.
- One percent of RTD's operating budget is available over the life of FasTracks to address priorities for improving operations of bus service. It is possible that outside of existing planned improvements in the North Metro region, there are additional improvements that are developed through the PEL that display the criteria needed to qualify.
- *Identify innovative funding strategies*—look to establish public-private partnerships where possible, such as for the purpose of establishing new p-n-Rs.

VISIONING EMPHASIS:

Based on the above opinions expressed during the interviews, the Visioning Workshop should focus on the following topics related to Prioritization, Phasing, and Funding:

- Discuss the principles for how projects will ultimately be prioritized and implemented.
- Discuss the initial perspectives on phasing strategies for project implementation.
- Address funding questions and issues in the context of regional coordination.
- Explore the process for prioritizing potential solutions in the alternative development process.

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Visioning Workshop
February 2, 2012

North I-25 Planning and Environmental Linkage
Visioning Workshop Meeting Summary
(Final 03/02/12)

Date: Thursday, February 2, 2012, 1:00-5:00 p.m.
Location: Thornton Police Department Training Center, 9551 Civic Center Drive, Thornton, CO 80229

WELCOME, INTRODUCTIONS AND AGENDA REVIEW

Andy Stratton, Project Manager of the North I-25 Planning and Environmental Linkage (N. I-25 PEL) Study from the Colorado Department of Transportation (CDOT), welcomed the group. He described the purpose of the workshop to:

- Confirm the goals and outcomes of N. I-25 PEL study;
- Outline operating protocols related to how the dialogue is going to work among the Executive Committee (EC), Technical Advisory Committee (TAC) and the public, and
- Obtain initial input on improvement ideas for the corridor, which will be discussed in detail at future meetings. He facilitated introductions.

Jonathan Bartsch, facilitator, reviewed the workshop agenda. He highlighted the two decision points at this meeting: 1) to confirm agreement on the Operating Protocols and 2) to ensure there is agreement on the goals and focus of the study. He noted that the meeting was designed to be an opportunity to share their initial issues, concerns and ideas for the corridor. While input had been provided previously through individual stakeholder interviews, the Visioning Workshop was an opportunity for the stakeholders to come together and share information with each other and CDOT for the first time in this study.

PROJECT OVERVIEW

Overview of Previous Studies and Efforts

Lizzie Kemp, CDOT Region 6, provided a project overview and described related studies that had been completed in the past. Key points included:

- The North Metro Transportation Study (2001) was envisioned to be a pre-NEPA study. It identified 202 foot envelope for this corridor, from U.S. 36 to 120th Ave.

- The Denver Regional Council of Governments (DRCOG) 2035 Regional Transportation Vision Plan (2011) includes one additional general purpose lane and a High Occupancy Vehicle (HOV) lane in each direction for the study area.
- The North I-25 Environmental Impact Statement (EIS) (2011) and Phase I Record of Decision (ROD) show a managed lane in each direction for I-25.
- The North Area Transportation Alliance (NATA) Resolution (2010) raised concerns regarding the general purpose lane 'gap' and CDOT responded that although there was a lack of funding to construct additional general purpose lanes, CDOT indicated that there is an the opportunity to identify other short-term improvement opportunities that can be implemented. NATA agreed to support the N. I-25 PEL and passed a resolution.
- While the TIGER III Grant Request (2011) was unsuccessful CDOT will reapply through a TIGER IV application.

Comments

- Gene Putman, City of Thornton, asked what needed to be done to modify a future TIGER submission in order to increase the chance for success for a TIGER IV grant. Lizzie responded that CDOT received positive feedback about the I-25 project, but that any new application needed to have more safety benefits outlined and that the reviewers were disappointed in the limited local funding that was included. It was suggested to review other projects for which TIGER grants had been awarded and to try and emulate the strengths of those proposals. CDOT will work with local governments to strengthen the TIGER IV application.

PEL Defined and N. I-25 PEL Objectives

Jon Chesser, CDOT Region 6 Environmental, explained the purpose for doing a PEL study and defined the objectives of the N. I-25 PEL. Importantly, information documented in a PEL study can be carried forward into subsequent NEPA studies, if required, in order to make NEPA studies more efficient and more focused. The Project Team will closely follow FHWA guidance to ensure the PEL process is carried out accurately. The N. I-25 PEL Study objectives include the following:

- Identify the multi-modal objectives and visions of the jurisdictions in the corridor
- Complete the study in accordance with the FHWA PEL process
- Identify existing and future problem areas and issues of importance
- Recommend a set of phased improvements
- Establish a priority list for planned improvements
- Estimate costs of improvements

Comments

- It was noted that the study should use DRCOG's 2035 Regional Transportation Vision Plan land use assumptions and it was not necessary to evaluate land use scenarios.
- CDOT has committed $15.5 million to fund improvements that are identified through this study.
- If TIGER IV application is made, the use of the $15.5 million dollars for the managed lanes on existing infrastructure will be discussed again.

ROLES OF THE EXECUTIVE COMMITTEE, TECHNICAL ADVISORY COMMITTEE AND OUTREACH TO THE PUBLIC

Jonathan Bartsch explained the roles and responsibilities of the EC and TAC members as described in the draft Operating Protocols. He highlighted the members' responsibilities include the balancing of advocating for their specific jurisdiction while considering the needs of the broader corridor. Andrea Meneghel, facilitator, described the public involvement and outreach program (See final Operating Protocols).

Comments

- Andy Stratton will serve as the primary point of contact for this project.
- The group agreed to allow members of the public to attend and provide comment at EC meetings, rather than at TAC meetings.
- There was a request for the project team to explore opportunities to conduct public outreach through social media channels and to provide tools such as web based public meetings for those that may not be able to attend in person. The project team will explore what opportunities exist and will discuss the options with the TAC at a future meeting.

Decision Point: The EC and TAC expressed agreement with the Operating Protocols as articulated.

STAKEHOLDER INTERVIEWS

Lyle DeVries, Felsburg Holt and Ullevig (FHU), summarized the input from the stakeholder interview process. The Project Team conducted over 15 individual and small group interviews in December 2011/January 2012. They were held with FHWA, FTA, CDOT, RTD, DRCOG and the corridor's local agency governments to solicit and document stakeholder goals, issues and concerns. Information from the interviews shaped the Visioning Workshop agenda and provided input for the study. Andrea Meneghel explained that summaries from the individual interviews were drafted, documented and distributed to the stakeholders interviewed to ensure that the Project Team understood their issues correctly and the interviewees had an opportunity to review and confirm that the summaries were accurate.

Key themes from the interviews included the following:

- The relationship between PEL and North I-25 EIS needs to be defined and communicated
- The PEL should study both long-term options and near-term solutions to address operations and safety
- Park-n-Ride facilities need to be upgraded
- It is important to recognize planned projects of local agencies
- Impacts and future improvements to parallel roads need to be considered
- Coordination needs to occur with the SH 7 PEL
- Explore Transportation Demand Management (TDM) solutions to enhance service

- Keep NATA and the public involved throughout the process

Comments

- It is important for the project team to find ways to communicate with, inform and engage the business community and property owners along the corridor. The Project Team is coordinating with TAC members to obtain contact lists that can be incorporated into the project's communication database.
- It will be important for the Project Team to involve and coordinate the Transportation Mobility Organization that is being established by NATA. Karen Stuart was recently appointed Executive Director of the TMO.

PROJECT FOCUS, PEL PROCESS AND EXPECTATIONS

Project Focus

Lizzie Kemp described that the PEL study focus on short-term, operational improvements, due to a lack of funding, not because of technical issues. CDOT is focused on identifying lower cost improvement that can be readily implemented in this PEL.

It was noted that the corridor has a wide inside shoulder that could be used as an interim lane, which is what the TIGER III application was intending on using. Despite the fact that the grant was not awarded, the application was touted as having a significant cost/benefit. It is a low cost investment with economic development benefits and a potentially 20-minute travel time savings for commuters. This remains a very good project to continue to try and obtain funding for.

The PEL Process and Expectations

Holly Buck, FHU, described what the N. I-25 PEL Study includes and what it will not include. She emphasized the visioning workshop goal of having everyone support the outlined goals and understand the constraints, which include:

This PEL will:

- Investigate existing corridor conditions
- Develop a purpose and need statement
- Propose a range of alternatives that will improve capacity and safety in the near term
- Assess the number of years each improvement will provide congestion relief
- Consider long-term future needs
- Develop a list of long-term options to fit within the 202' envelope
- Consider solutions that are compatible with the North I-25 EIS and ROD
- Develop a compatibility matrix comparing near-term solutions with long-term options. The purpose of this is to ensure we do not preclude any long-term options.

This PEL will <u>not</u>:

- Devote extensive analysis and expense toward evaluating or screening long-term options

- Conduct a separate operational analysis of long-term options
- Preclude any planned and approved future improvements
- Determine the specific lane type for long-term options
- Result in a NEPA decision

Comments

- Shawn Cutting, FHWA, indicated support for the N. I-25 PEL Study approach as outlined. He sees FHWA's role as helping to work with and coordinate among resource agencies. The idea of promoting short-term capacity improvements while exploring long-term options is worthwhile.
- Steve Rudy, DRCOG, asked whether this study should be looking beyond the 2035 DRCOG land use projections. Shawn Cutting added that in NEPA you would have to use DRCOG projections, but PEL Studies can be more flexible. Monica Pavlik, FHWA, added that anything that looks beyond 2035 land use is going to have a different land use than what DRCOG has included in its projections.
- Gene Putman stated that the DRCOG's 2035 projections should be used and that the study should use the Metro Vision cross section (202' envelope) as the finite goal. He also added that the local agencies support near-term improvements staying within the 202 foot envelope and not precluding DRCOG's 2035 Metro Vision.
- The group agreed that the focus of the study should be on current capacity needs.
- The PEL will not identify a single preferred alternative; it will develop a list of near-term alternatives, which will then have to be prioritized. This approach was suggested to take advantage of different funding opportunities to finance the projects and/or to implement improvements through Categorical Exclusions.
- Lizzie Kemp clarified that the PEL Study does not have to be completed before improvements can begin. For example, the TIGER IV project fits within the I-25 EIS. Also the $15.5 million that is set aside for the STIP in 2014 and can be used to implement identified improvements. This could potentially be advanced for the TIGER IV grant, which can be discussed at a later date.
- Lizzie also clarified that the PEL Study is using 202 ft width and is not constrained to DRCOG's Metro Vision for 4 lanes and an HOV lane. This is an unfunded vision and the NEPA process has not looked at all options.

Decision Point: Jonathan Bartsch asked each EC and TAC member to confirm that they can support the outlined PEL Study focus, including the project constraints. There was full agreement among the group.

SMALL GROUPS AND STATIONS FOCUSED ON ISSUES, IDEAS, AND OPTIONS

Small group facilitated conversations were setup to occur around stations. Attendees were encouraged to visit each station area in order to share issues and initial improvement ideas. A full group report-out and discussion followed. The small group topics included:

- The I-25 Mainline
- Parallel Arterials

- Transit, Bicycle and Pedestrian
- Intelligent Transportation Systems and Transportation Demand Management

I-25 Main Line

The following issues and ideas for addressing those issues were discussed in relation to the I-25 main line:

Issues:

- Congestion within the study area is related to what is occurring beyond it to the north and south.
- Bottlenecks occur after vehicles emerge from the HOV lanes and integrate back in with general purpose traffic.
- Northbound weaving between I-76 and 84th Ave.
- Using a 202 foot wide footprint will have right-of-way impacts upon property owners because there are areas where homes are butting up to I-25; pinch points exist.
- The SH 7/I-25 interchange is at capacity and needs to be widened or replaced. SH 7 bridge deck needs to be widened/replaced.
- Transitions on I-25 outside of study area (Denver) – what's occurring north of and south of study area.
- Construction within the study area would create additional impacts on top of current conditions. Any construction that occurs needs to be phased to minimize delays during peak hours.
- Wagon Road park-n-Ride is very busy.
- The 88th park-n-Ride is at capacity and the bridge needs to be replaced or widened. Operational/safety issues at 88th Ave. bridge it is narrow.

Ideas:

- Implement a managed lane from U.S. 36 to SH 7.
- Congestion could be alleviated by completing the Jefferson Parkway and creating a beltway to divert traffic off of I-25.
- Analyze what increased capacity at park-n-Rides would do to traffic; how will that affect the distribution of traffic or the amount of vehicles on I-25?
- Consider a center loading bus station at 88th Ave. and replacing the bridge.
- Bus/3+ HOV lane.
- Vanpool.
- Add capacity at SH 7 interchange.

Parallel Arterials

The discussion at the Parallel Arterials table focused on issues associated with the arterials and possible solutions to those issues. The Parallel Arterials discussed were Washington Street to the east and Huron Street to the west.

The following issues were identified and discussed:

- Capacity limitations at the SH 7 interchange are becoming or will be more apparent issues in the near future.
- There are congestion issues on the cross connection feeders to the parallel arterials. For example, 84th Avenue between I-25 and Washington Street.
- There are limited variable message signs (VMS) along this stretch of I-25
- There is heavy northbound traffic on in the afternoon on Washington Street south of 84th Avenue.
- It was suggested that the study should look at congestion on parallel arterials that is caused by back-ups to northbound I-25. He described that traffic using Washington St comes from areas as far as Pecos St. on US 36 and traffic coming from I-76.

The following solutions were identified and discussed:

- There should be increased education/messaging (VMS, Intelligent Transportation System (ITS), CoTrip) to guide travelers during incidents to utilize I-25 mainline for regional trips and the arterials for local trips.
- Consider adaptive traffic signal timing on arterials during non-recurring congestions (i.e., accidents, large sporting events, etc.)
- Increase education on the use of the local transportation network, rather than I-25 for local trips.
- Complete the implementation of capacity improvements on Washington Street at the southern end of the project area.

Transit, Bicycle and Pedestrian

The discussion at the Transit, Bicycle and Pedestrian table focused on issues associated with the multimodal capacity. The following was discussed:

- Coordinate with the SH 7 PEL regarding RTD bus service on SH 7 and at the I-25/SH 7 interchange; coordinate with SH 7 PEL regarding a new park-n-Ride facility at the I-25/SH 7 interchange.
- The Wagon Road park-n-Ride facility is undersized to meet demand. There is a need to expand the facility and also to explore structured parking options there.
- The Thornton park-n-Ride is undersized and over capacity. A solution proposed is to expand the east side of the facility.
- The study needs to investigate delays in bus travel time based on current congestion and look at a dedicated bus lane on I-25 as a potential solution.
- The study needs to clarify RTD's role in the PEL and their participation in implementing solutions along the corridor.
- The study needs to investigate a center-median RTD facility at 88th Ave.

- It was suggested that RTD could look at criteria for contributing its 1% yearly operating budget for service improvement funds within the I-25 corridor. Lee Kemp, RTD Board, responded that there would have to be some very “concrete” ideas or projects and then those solutions would be evaluated or considered if they meet certain criteria which RTD looks at to distribute those dollars.

The following written comment was submitted regarding transit:

It is important to look at the recipients of the TIGER III grants as well as those who received TIFIA funds, to enhance the TIGER IV application. The U.S. DOT, as well as Secretary LaHood have clearly expressed a preference for high speed rail as well as transit, BRT in particular, when administering funds and building for the future.

In this limited funding environment, it will be essential to look at this challenge as an opportunity for innovation rather than an obstacle. This being said, any future plan ought not to pit transit against private vehicle traffic, but rather enhance and support a symbiotic relationship.

While there are limitations to what can be done at the current $44 mil. price tag, it is critical that we do not tie our hands for future improvements (possible BRT being one of these). This can be accomplished in 3 phases, while still conforming to the proposed budget and “envelope”. The ultimate goal being to include BRT, the element missing within the TIGER III Grant.

Phase 1 – Directional lanes. Implementing the two 12’ lanes and two 12’ shoulders proposed as HOV/transit lanes ala the current US 36/I-25 lane configuration. This will allow for speedy transit and HOVs through the area in question as well as removing transit from the GP lanes.

Phase 2 – These directional lanes will form the foundation of an eventual BRT build-out. If we are able to designate these lanes we will be able to add BRT stations/bridges as funds become available. RTD will need to buy a new sub-fleet for operation on the US 36 BRT corridor, so it would only make sense to make this (I-25) corridor’s fleet of buses compatible and interchangeable with the US 36 fleet. RTD would possibly be receptive to the use of vehicles with doors on both sides if the fleet could be used along the US 36/I-25 corridors. This allows for innovative cost-saving measures when it comes to future infrastructure along the I-25 corridor.

Phase 3 – Finally BRT stations could eventually be replaced by rail without too much modification if need be in the distant future.

Intelligent Transportation Systems (ITS) and Transportation Demand Management (TDM)

The following was discussed about issues, options and ideas for improving I-25 at the station focused on ITS and TDM:

TDM

- The Wagon Road park-n-Ride is over capacity and additional parking is needed. There is also a need for additional relief by establishing a park-n-Ride at I-25 and SH 7. The City and County of Broomfield is not supportive of large surface area parking lots to serve a station there, but would consider a multi-level structure that would be incorporated into a mixed use development. Additional discussion should take place amongst the EC and TAC about the location and expansion of park-n-Rides along I-25.
- An outlying bus hub with more frequent and direct bus service could be provided.
- CDOT and RTD need to coordinate with NATA and the new TMO to address the issues and develop solutions.
- TDM strategies need to be conveyed to employers to inform them on the goals of the corridor and how they can help.
- TDM strategies should be explored, such as encouraging staggered work hours among employers, vanpool program expansion, neighborhood EcoPass program, and Cash for Commuters.

ITS

- Support was expressed for developing an Incident Management Plan.
- Encourage quick incident responses and clearing of accidents/disabled vehicles.
- Consider ITS at interchanges, such as adaptive/traffic responsive signal timing, transit signal priority, queue bypass lanes, and additional ramp meters.
- Enhance Courtesy Patrol by extending coverage and frequency of service.
- Make better use of Variable Messaging Services to relay traveler information and traffic conditions.
- There is strong support for Bus Rapid Transit in the corridor.

CLOSING AND NEXT STEPS

- Reza Akhavan, CDOT Region 6 Director, emphasized CDOT's commitment to identifying options and solutions to provide relief to the current transportation problems experienced within the study area. He encouraged the group to collaborate in order to identify solutions so that CDOT can make a strong argument for TIGER IV funding for this corridor.
- The Project Team will be attempting to identify dates and times for EC and TAC meetings. They will be scheduled every 6-8 weeks. It was mentioned that that Tuesday and Wednesday are not good days. Instead of scheduling with the full group, Andrea reminded everyone to fill in their availability on the sign in sheet. The Project Team will be in touch with potential dates.

MEETING MATERIALS

- N. I-25 PEL Visioning Workshop Agenda
- N. I-25 PEL Visioning Workshop Powerpoint Handout
- N. I-25 PEL Study Area and Comparison of Cross Sections
- N. I-25 PEL Executive Committee and Technical Advisory Committee Operating Protocols
- N. I-25 PEL Stakeholder Interviews Summary

MEETING ATTENDEES

Participants	Affiliation
1. Erik Hansen	Adams County
2. Jeanne Shreve	Adams County
3. Jeanne Shreve	Adams County
4. Scott Thomas	Apex Design
5. Stephanie Salazar	Broomfield EDC
6. Carol Parr	CDOT Region 4
7. Karen Schneiders	CDOT Region 4
8. Myron Hora	CDOT Region 4
9. Andy Stratton	CDOT Region 6
10. Dave Kosmiski	CDOT Region 6
11. Jay Hendrickson	CDOT Region 6
12. Jon Chesser	CDOT Region 6
13. Kevin Radel	CDOT Region 6
14. Leela Rajasekar	CDOT Region 6
15. Lizzie Kemp	CDOT Region 6
16. Reza Akhavan	CDOT Region 6
17. Andrea Meneghel	CDR Associates
18. Jonathan Bartsch	CDR Associates
19. Laura Sneeringer	CDR Associates
20. Kevin Standbridge	City & County of Broomfield
21. Emily Silverman	City and County of Denver
22. Phil Greenwald	City of Longmont
23. Brook Svoboda	City of Northglenn
24. Gene Putman	City of Thornton
25. Heidi Williams	City of Thornton
26. Aric Otzleberger	City of Westminster
27. Dave Downing	City of Westminster
28. Steve Rudy	DRCOG
29. Alex Pulley	Felsburg Holt and Ullevig
30. Holly Buck	Felsburg Holt and Ullevig
31. Kevin Maddoux	Felsburg Holt and Ullevig
32. Lyle DeVries	Felsburg Holt and Ullevig
33. Thor Gjelsteen	Felsburg Holt and Ullevig
34. Monica Pavlik	FHWA
35. Shaun Cutting	FHWA
36. Dave Beckhouse	FTA
37. Chris Primus	Jacobs Engineering
38. Gina McAfee	Jacobs Engineering

Participants	Affiliation
39. Karen Stuart	NATA TMO
40. Lee Kemp	RTD Board
41. Doug Monroe	RTD FasTracks
42. Lee Cryer	RTD FasTracks
43. Nate Diaz	RTD FasTracks
44. Cheryl Hauger	Town of Erie
45. Russell Pennington	Town of Erie
46. Dave Lindsay	Town of Firestone
47. Richard Nickson	Town of Fredrick

*Several attendees did not sign in and are unaccounted for.

Public Open House
May 9, 2012

WELCOME to the

North I-25 Planning Environmental Linkage (PEL)

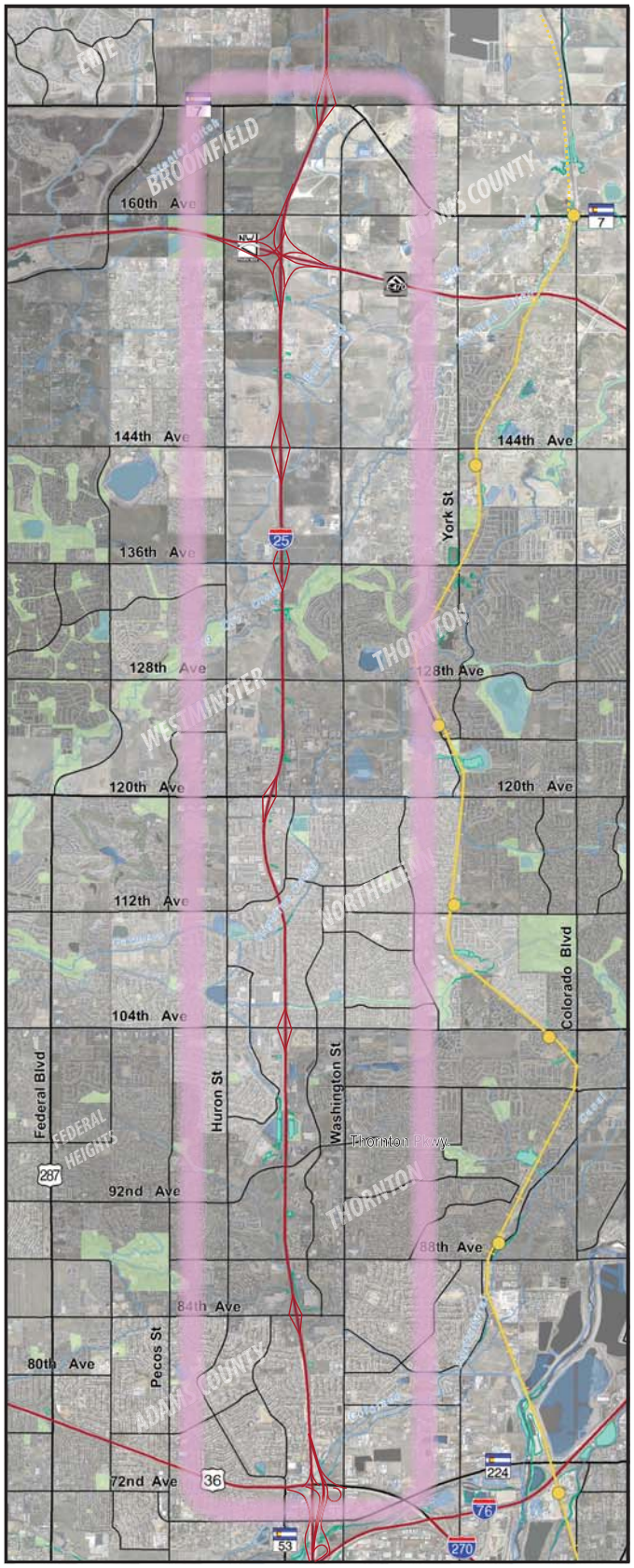
Public Open House

May 9, 2012

COLORADO DOT
DEPARTMENT OF TRANSPORTATION

This study has been initiated to evaluate near-term improvements to address congestion on I-25 between US 36 and SH 7.

Study Area


ELDE
BROOMFIELD
160th Ave
144th Ave
136th Ave
128th Ave
120th Ave
112th Ave
104th Ave
92nd Ave
84th Ave
80th Ave
72nd Ave
WESTMINSTER
NORTHGLENN
THORNTON
ADAMS COUNTY
Federal Blvd
FEDERAL HEIGHTS
Huron St
Washington St
Pecos St
York St
Colorado Blvd
Thornton Pkwy
88th Ave
25
7
287
36
53
224
76
270

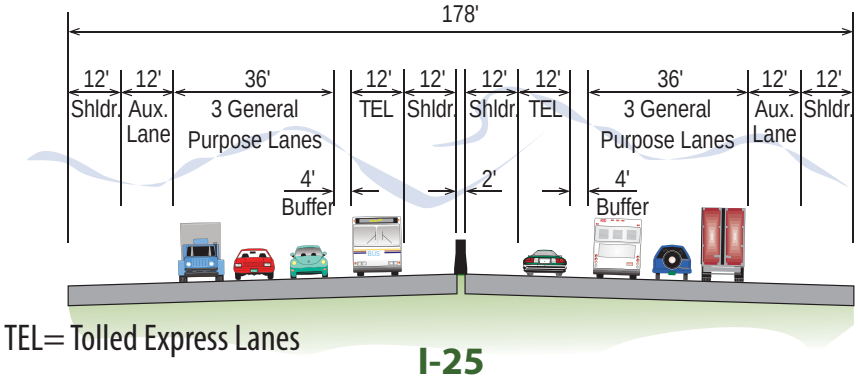
Corridor History

2001 North Metro Transportation Study (2001)

- Identified need for additional capacity
- New capacity included in Denver Regional Council of Governments (DRCOG) Metro Vision 2035 Plan

North I-25 EIS (2011)

- Considered only a limited set of improvements in the metro area



I-25
US 36 to SH7

CDOT and Community Recognition

- Community requests study to address congestion
- CDOT proposes Planning Environmental Linkage Study (PEL)

North Area Transportation Alliance

- Passed resolution (Feb. 2010) supporting PEL approach

North I-25 PEL initiated October 2011

What is a PEL?

PEL stands for Planning Environmental Linkage. It is an approach to transportation decision-making that considers environmental, community, and economic goals early in the planning stage and carries them through project development, design, and construction. It is a process developed by the Federal Highway Administration (FHWA).

- **PEL is a process with a variety of applications**

  - Can be applied to typical planning studies (corridor feasibility studies, interchange studies, etc…) with greater overall benefits

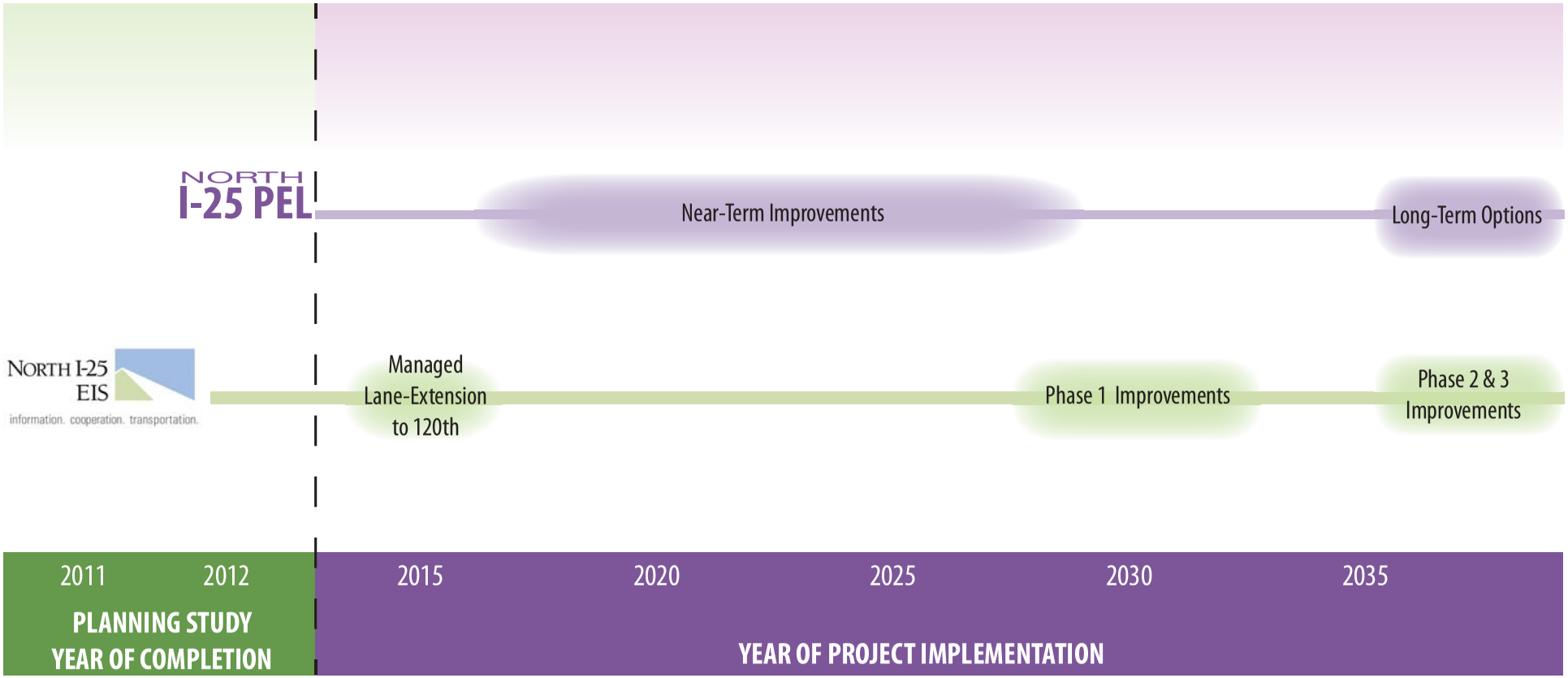
- **Not a National Environmental Policy Act (NEPA) process, but elements can be carried forward into NEPA**

  - Purpose and need, alternatives screening, public involvement

- **Early involvement of resource agencies and public communities**

- **Requires comprehensive documentation to minimize reevaluation during the NEPA process**

Chronology of Corridor Improvements

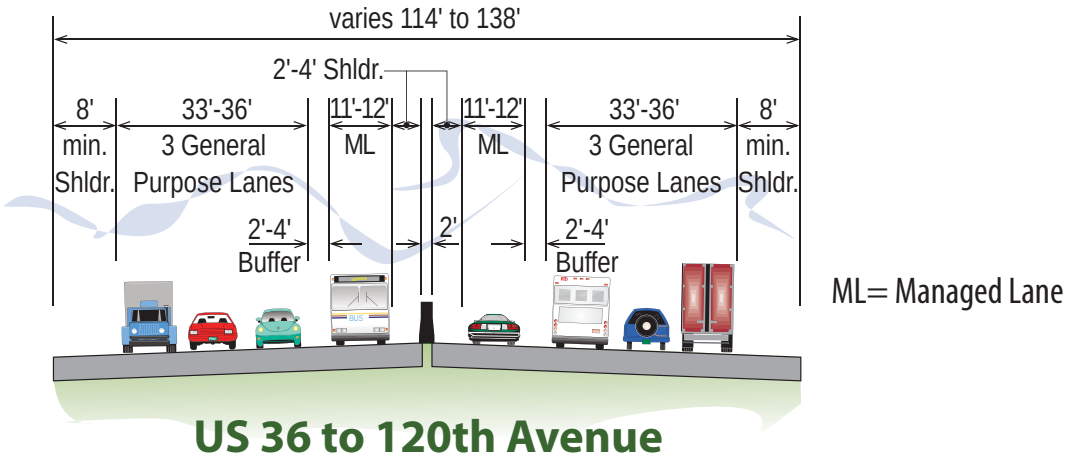


Managed Lane Extension to 120th Avenue

North I-25 EIS- Wellington to Denver, Completed in 2011

- Phase 1 includes managed lanes from US 36 to 120th
- Phase 1 Cleared in Record of Decision December 2011

Interim managed lane project using existing pavement



Anticipated completion date :

2015-2025 (funding in the DRCOG 2035 Fiscally Constrained Plan)
2015 (if USDOT TIGER Grant is successful)

Included as base case assumption for this PEL study

CDOT applied for USDOT TIGER IV grant for supplemental funding

- Award notification anticipated for June 2012

North I-25 PEL Project Tasks

- [x] Establish Purpose and Need
- [x] Identify Corridor Issues
- [ ] Identify Long-Term Options
- [ ] Identify and Evaluate Near-Term Alternatives
- [ ] Estimate Costs of Near-Term Alternatives
- [ ] Confirm Compatibility of Near-Term Alternatives with Long-Term Options
- [ ] Recommend and Prioritize Near-Term Alternatives

Legend

- [x] Today's Meeting
- [ ] Future Meeting

Existing and Future Peak Hour Volumes

Peak Hour Volumes:

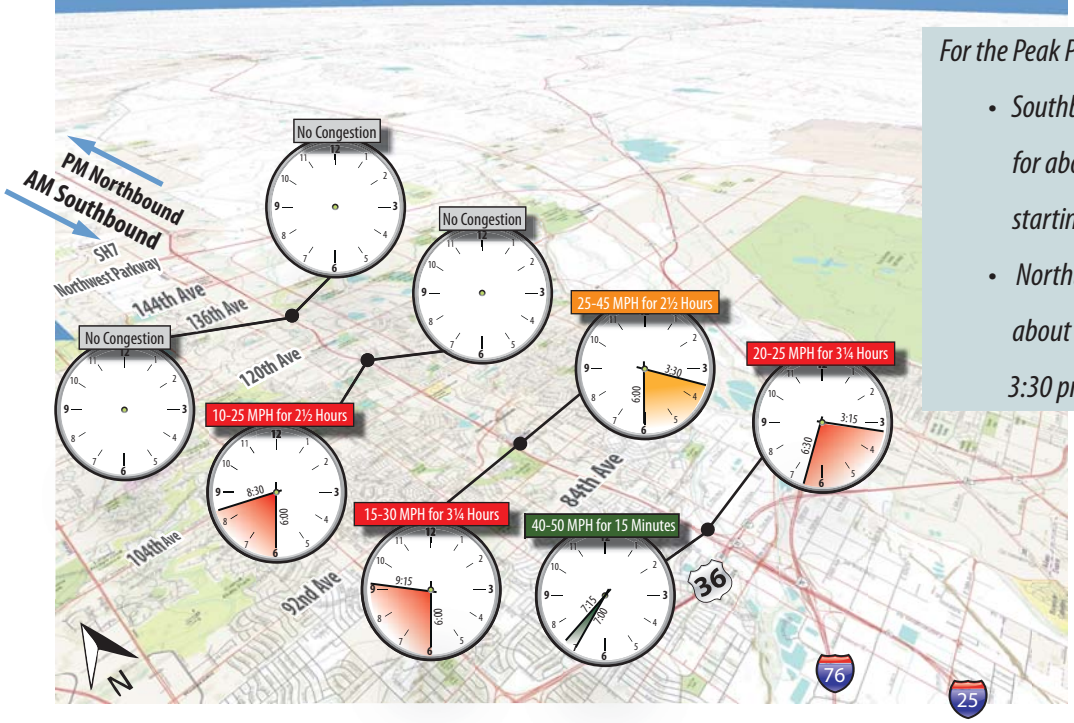
- *Most of the corridor is expected to operate at or above its comfortable capacity by 2025.*

LEGEND:

- Future (2025) Traffic
- Comfortable Operating Capacity
- Existing (2010) Traffic

Source: CDOT & Project Team Traffic Counts and DRCOG 2025 Regional Travel Demand Model

Duration of Peak Period Congestion



For the Peak Period Congestion:

- *Southbound traffic is typically stop-and-go for about 3 hours in the morning, starting at 6:00 am, between 120th and US 36.*
- *Northbound traffic is typically stop-and-go for about 3 hours in the afternoon, starting at 3:30 pm, between US 36 and 120th.*

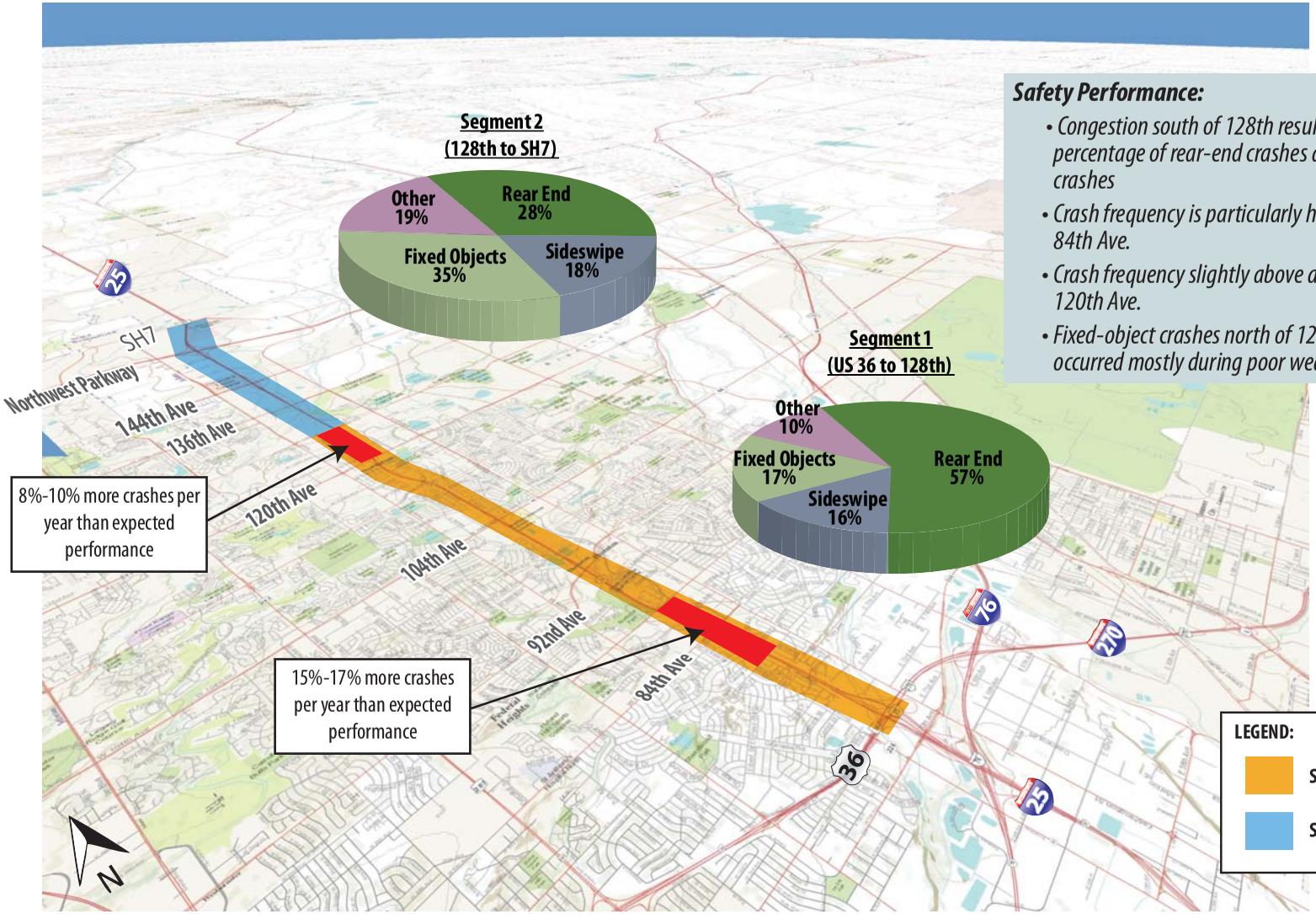
LEGEND:

Duration

- 65 MPH — Free Flow
- 40 MPH
- 10 MPH — Stop and Go

Source: CDOT Doppler Radar Speed Sensor Data

Safety Performance - Crashes



Safety Performance:

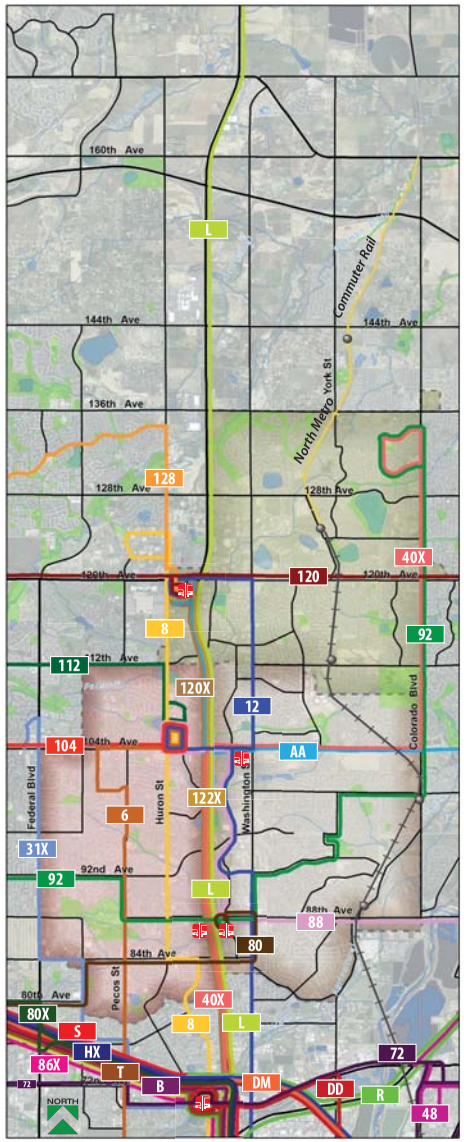
- *Congestion south of 128th results in a high percentage of rear-end crashes and side-swipe crashes*
- *Crash frequency is particularly high near 84th Ave.*
- *Crash frequency slightly above average north of 120th Ave.*
- *Fixed-object crashes north of 128th Ave. occurred mostly during poor weather and at night*

Source: CDOT Safety and Traffic Engineering Branch, Safety and Crash Data

COLORADO DOT
DEPARTMENT OF TRANSPORTATION

Transit

Existing Services in Study Area



LEGEND

- park-n-Ride
- 80X = West 80th Express
- 104 = 104th Ave.
- 120 = 120th Ave. / Brighton
- HX = 28th St. / Civic Center
- 72 = 72nd Ave.
- 80 = 80th Ave. - 80
- 92 = 92nd Ave. - 92
- DM = Boulder / Anschutz-Fitzsimons
- DD = Boulder / Colorado Blvd.
- AB = Boulder / DIA
- B = Boulder / Denver
- T = Boulder / Greenwood Plaza
- R = Brighton / Denver
- 128 = Broomfield / Wagon Rd.
- S = Denver / East Boulder
- 12 = Downing St.
- 48 = East 48th Ave. / Commerce City
- 6 = E. 6th Ave. / North Pecos
- L = Longmont Denver
- 8 = North Broadway / Huron
- 40X = North Colorado Express
- 31X = North Federal Express
- 88 = Northglenn / Commerce City / Stapleton
- 122X = Wagon Rd. / Civic Center Express
- AA = Wagon Rd. / DIA
- 120X = Wagon Rd. / Thornton Express
- 112 = West 112th Ave.
- 86X = Westminster Center Express
- = Federal Heights call-n-Ride
- = South Thornton / Northglenn call-n-Ride
- = Thornton / Northglenn call-n-Ride

Source: RTD

Service/Facilities at or Near Capacity

Wagon Road Park-n-Ride

Capacity:
1,540 vehicles

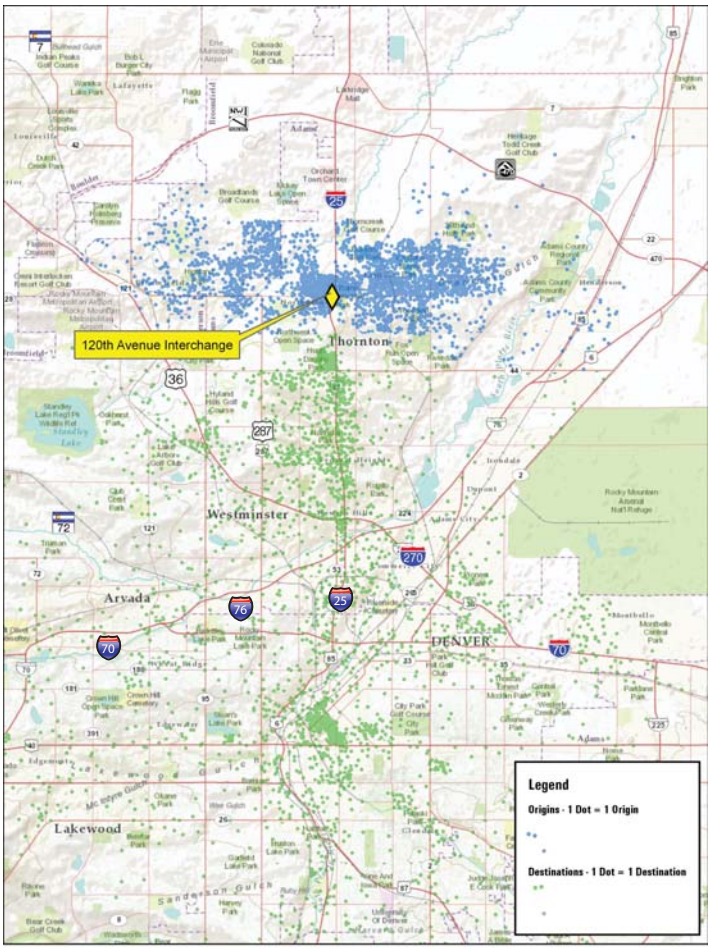
Utilization: 100%

Express Routes Serving Downtown Denver

Average Express Boardings per hour:	*41.4*
120X:	*53.1*
122X:	*71.0*

Current Corridor Travel Characteristics

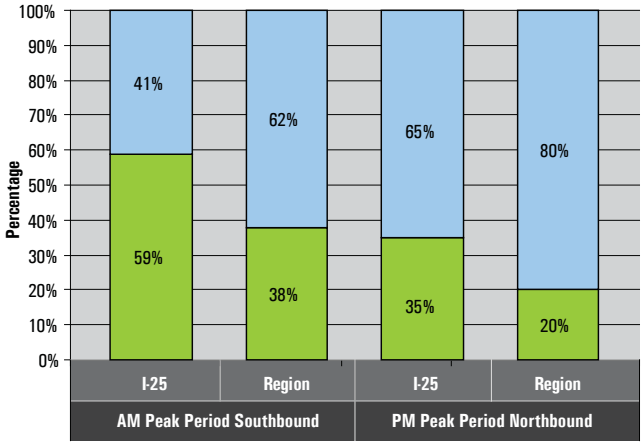
Origin & Destination Analysis



- Origins of trips using the 120th Avenue interchange are concentrated near 120th, destinations concentrated in Downtown Denver and near I-25 within the Study Area
- The 120th Avenue interchange is representative of interchanges in the corridor, but similar maps for the other interchanges are available in the Transportation flip chart.

Source: DRCOG Base Year 2010 Regional Travel Demand Model, AM Peak Period Southbound Conditions

Commuter Share



- There are a high percentage of commuters on I-25, meaning travelers are generally familiar with the corridor.

LEGEND:
Other
Commuter

Traffic Composition

- There are very few through trips, and a high percentage of local trips.

Source: DRCOG Base Year 2010 Regional Travel Demand Model, AM Peak Period Southbound Conditions

LEGEND:
Local Trips - Travelers who both access I-25 and exit I-25 within the study area.

Through Trips - Travelers who use I-25 for the entire length of the study area.

Regional Trips - Travelers who either a) enter I-25 north of the study area and exit within it, or b) access I-25 in the study area and continue south beyond US-36.

Environmental Considerations

Resources Evaluated:

- Air Quality
- Environmental Justice
- Floodplains
- Hazardous Material Sites
- Historic Sites
- Land Use (Existing and Future)
- Noise
- Parks and Trails
- Wetlands
- Wildlife

Purpose and Need Statement

- Describes the intention of the project (project purpose)
- States the problems (project needs)
- Determines and limits the range of alternatives
- Not mode specific or biased toward a particular solution

Draft Project Purpose and Need

DRAFT

Project Purpose:

The purpose of the project is to reduce congestion and improve safety on I-25 between US 36 and SH 7 by implementing near-term, multi-modal, and cost-effective transportation improvements that are compatible with long-term options and the recently constructed interchange structures.

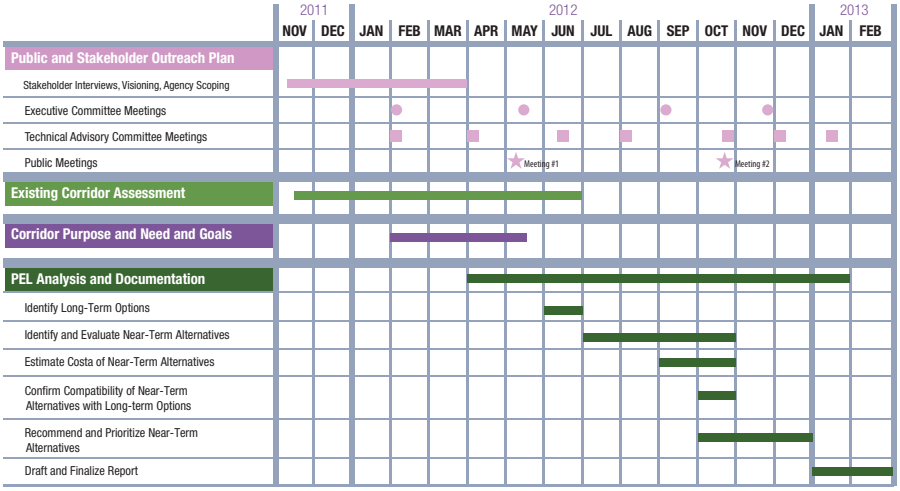
DRAFT

Needs:

- Mobility Problem: Congestion resulting from high traffic volumes and incidents
- Safety Problem: Higher than expected crashes due to traffic congestion
- Multimodal Problem: Over capacity multimodal facilities

Next Steps / Schedule

- Solicit Public Input
- Identify Long-Term Options
- Identify and Evaluate Near-Term Alternatives
- Estimate Costs of Near-Term Alternatives
- Confirm Compatibility of Near-Term Alternatives with Long-Term Options
- Recommend and Prioritize Near-Term Alternatives
- Conduct Public Meeting October 2012 (specific date to be determined)



Please tell us what you think!

THANK YOU!

NORTH
I-25 PEL

COLORADO
DOT
DEPARTMENT OF TRANSPORTATION

Public Open House
August 27, 2013

WELCOME to the

North I-25 Planning Environmental Linkage (PEL)

Public Open House

August 27, 2013

COLORADO DOT
DEPARTMENT OF TRANSPORTATION

This study was initiated to evaluate near-term improvements to address congestion on I-25 between US 36 and SH 7.

What is a PEL?

PEL stands for Planning Environmental Linkage. It is an approach to transportation decision-making that considers environmental, community, and economic goals early in the planning stage and carries them through project development, design, and construction. It is a process developed by the Federal Highway Administration (FHWA).

- **A process with a variety of applications**
- **The process includes development of a Purpose and Need statement, alternatives screening, and public involvement**
- **The process includes early involvement of resource agencies, communities, and the public**
- **Elements can be carried forward with comprehensive documentation to minimize re-evaluation during the NEPA process**
- **Not a NEPA process**

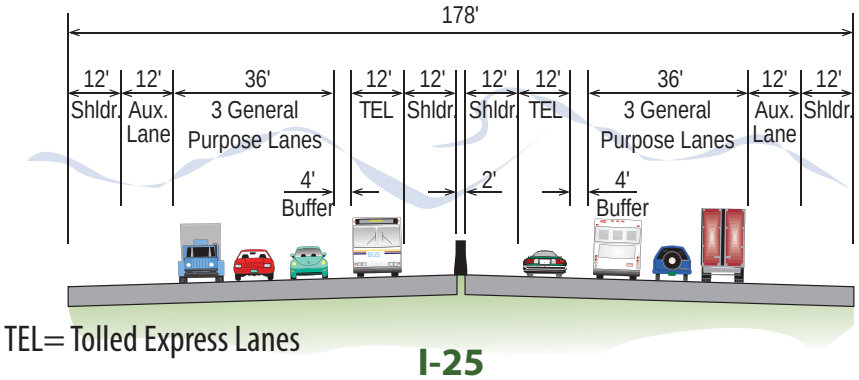
Corridor History

2001 North Metro Transportation Study (2001)

- Identified need for additional capacity
- New capacity included in Denver Regional Council of Governments (DRCOG) Metro Vision 2035 Plan

North I-25 EIS (2004 - 2011)

- Considered only a limited set of improvements between US 36 and SH 7



I-25
US 36 to SH7

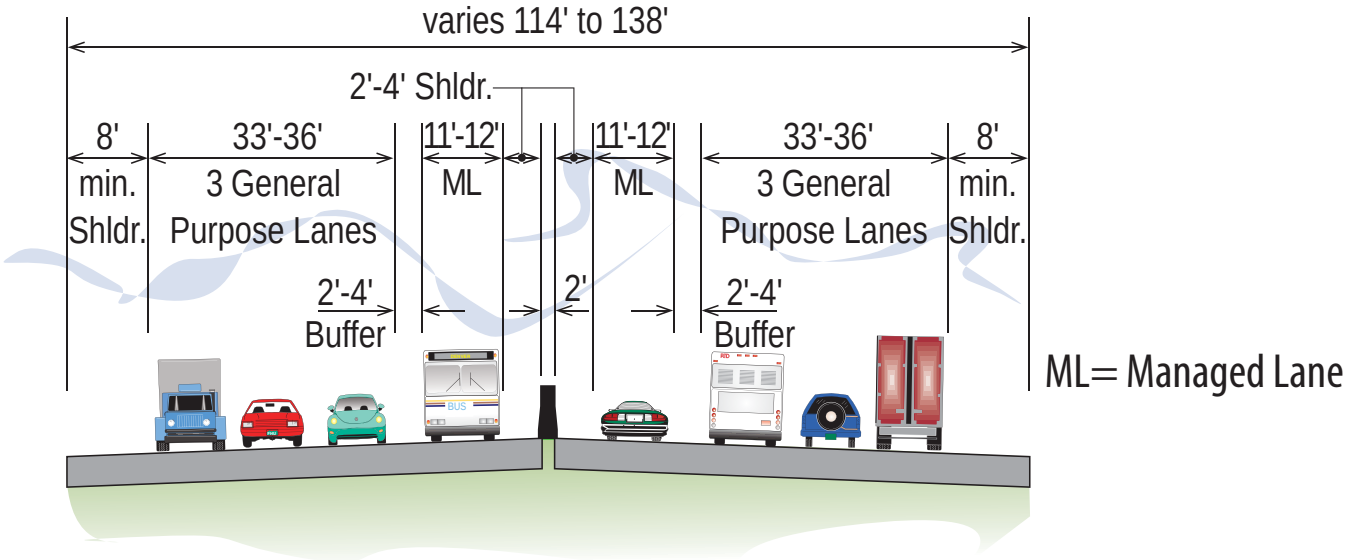
CDOT and Community Recognition

- Community requests study to address congestion (2009)
- CDOT proposes Planning Environmental Linkage Study (PEL) (2010)
- North Area Transportation Alliance
  - Passed resolution (Feb. 2010) supporting PEL approach
- North I-25 PEL initiated October 2011

Managed Lane Extension to 120th Avenue

- **Interim managed lane project using existing pavement**

Planned Cross-Section

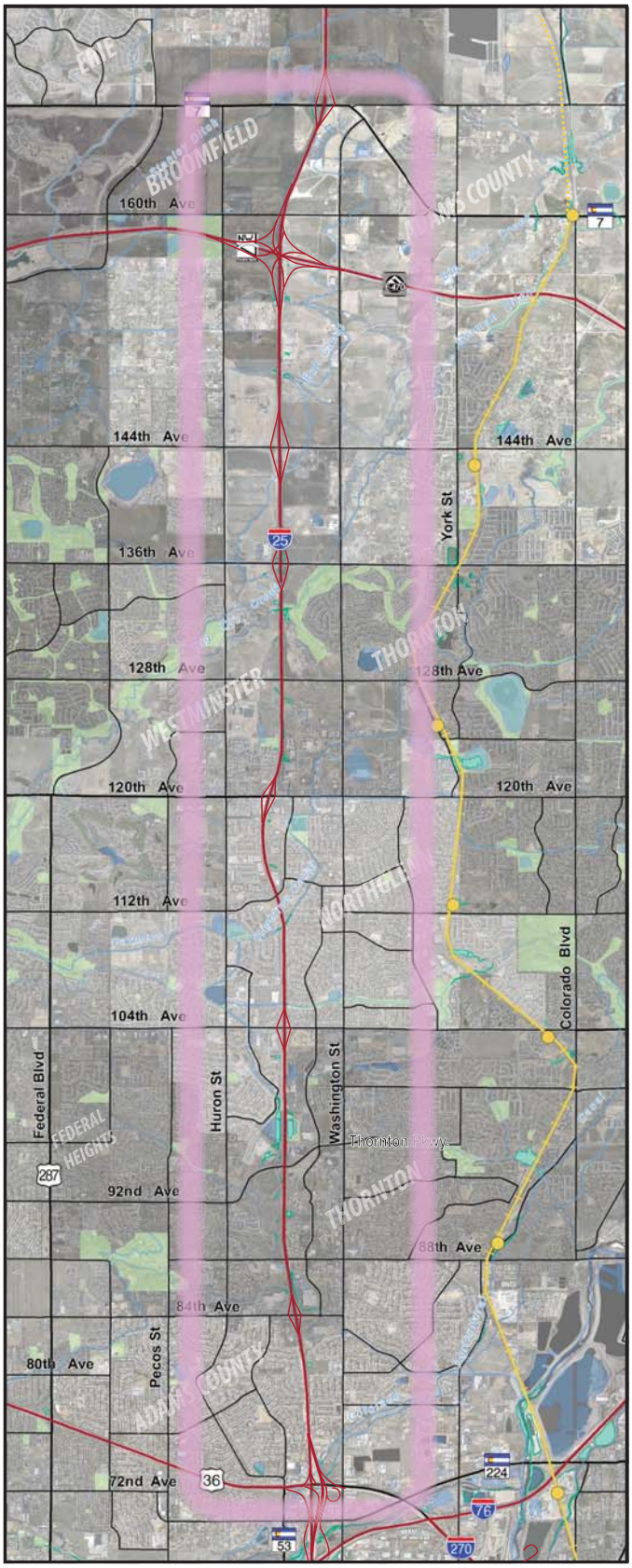


US 36 to 120th Avenue

- **Anticipated construction: Fall 2013 to Fall 2015**

- **Included as base case assumption for this PEL study**

Study Area



What is a Purpose and Need Statement?

A Purpose and Need Statement describes the intention of the project (project purpose), and states the problem (project needs). It also determines and limits the range of alternatives without being mode specific or biased towards a particular solution.

I-25 PEL Project Purpose:

The purpose of the project is to reduce congestion and improve safety on I-25 between US 36 and SH 7 by implementing multi-modal, cost-effective transportation improvements that provide benefit prior to 2035, and are compatible with long-term options and the recently constructed interchange structures.

NORTH

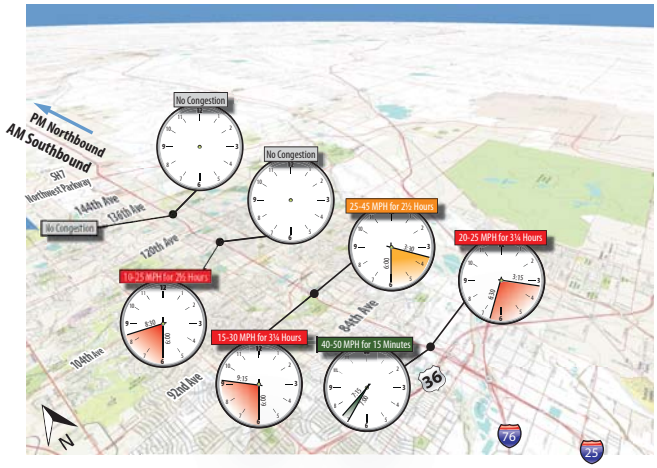
I-25 PEL Project Needs:

Evaluation of the system identified three problems to be addressed by this project.

Congestion

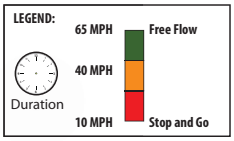
- Congestion resulting from high traffic volumes and incidents

Duration of Peak Period Congestion



For the Peak Period Congestion:

- *Southbound traffic is typically stop-and-go for about 3 hours in the morning, starting at 6:00 am, between 120th and US 36.*
- *Northbound traffic is typically stop-and-go for about 3 hours in the afternoon, starting at 3:30 pm, between US 36 and 120th.*

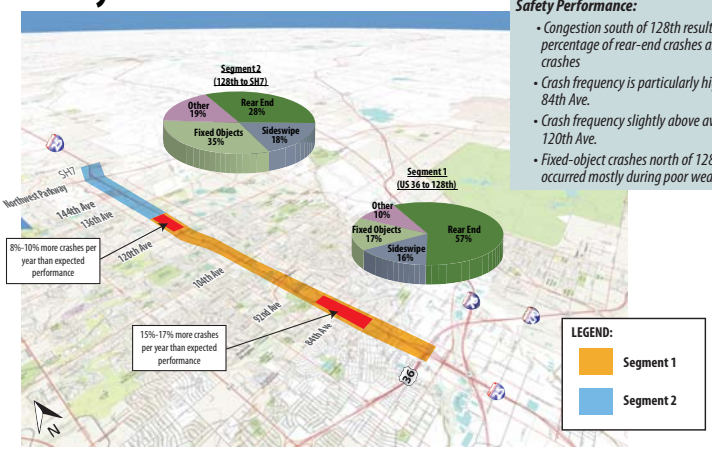


Source: CDOT Doppler Radar Speed Sensor Data

Safety

- Higher than expected crashes due to traffic congestion

Safety Performance - Crashes



Safety Performance:

- *Congestion south of 128th results in a high percentage of rear-end crashes and side-swipe crashes*
- *Crash frequency is particularly high near 84th Ave.*
- *Crash frequency slightly above average north of 120th Ave.*
- *Fixed-object crashes north of 128th Ave. occurred mostly during poor weather and at night*

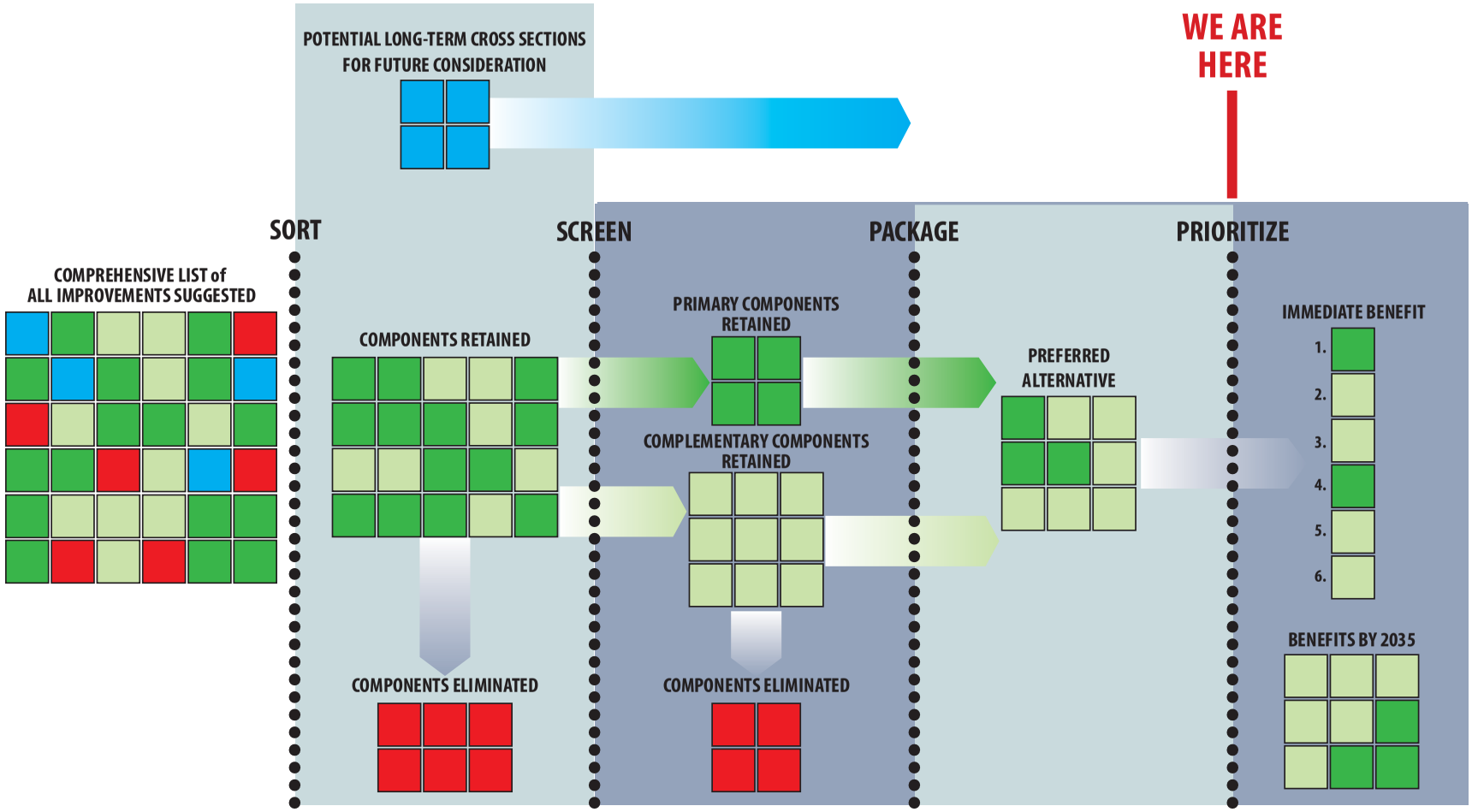
Source: CDOT Safety and Traffic Engineering Branch, Safety and Crash Data

Multi-modal Capacity

- Over capacity multi-modal facilities

Wagon Road Park-n-Ride
Thornton Park-n-Ride (east side)

PEL Alternative Development and Screening Process



Component Types

- I-25 Mainline
- Transit Infrastructure
- Park and Ride
- Other Infrastructure
- Intelligent Transportation Systems
- Travel Demand Management
- Transportation Systems Management

Environmental Resources Evaluated

- Air Quality
- Environmental Justice
- Floodplains
- Hazardous Material Sites
- Historic Sites
- Land Use (Existing & Future)
- Noise
- Parks and Trails
- Wetlands
- Wildlife

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Sorting and Screening Results

Components Retained

REF. NO.	Potential Infrastructure Improvements	
1	Continuous acceleration/deceleration lane - I-270 to 84th, northbound	These components could potentially address the need to reduce congestion and improve safety between 84th Avenue and US 36.
2	Continuous acceleration/deceleration lane - 84th to US 36, southbound	
3	Braided ramps - 84th Avenue to US 36, southbound	
4	I-76 direct connection to I-25 upstream of current connection	
5	84th Avenue on-ramp gore point extension - restrict SB entering traffic from reaching I-270 flyover	
6	Extend toll lane ingress/egress north of 84th (no access at 84th)	
7	70th/Washington Intersection, extend eastbound dual left turn	
8	88th Avenue T-ramp	These components could potentially address the need to reduce congestion and improve safety between Thornton Parkway and US 36.
9	General purpose lanes I-270 to Thornton Parkway northbound	
10	General purpose lanes Thornton Parkway to I-76 southbound	
11	Continuous acceleration/deceleration lane 84th to 136th Avenue(between each interchange), northbound	These components could potentially address the need to reduce congestion and improve safety between 84th Avenue and 136th Avenue.
12	Continuous acceleration/deceleration lane 84th to 136th Avenue(between each interchange), southbound	
13	Add I-25 Crossings	
14	Upgrade ramp merge and diverge sections to meet current design standards	These components could potentially contribute to addressing operations, safety and capacity needs.
15	Construct continuous acceleration/deceleration lanes between interchanges north of 136th Avenue	
16	Construct parallel C-D system along I-25 between 144th Avenue and SH 7	
17	Construct two-lane interchange ramps	

Components Retained

REF. NO.	Potential Transit Improvements	
18	Expand Thornton Park-n-Ride	These components could potentially address multi-modal capacity needs and efficacy of various locations.
19	New Park-n-Ride at 136th Avenue and I-25	
20	Expand Thornton Park-n-Ride	
21	New Park-n-Ride at 136th Avenue and I-25	
22	New Park-n-Ride at 144th Avenue and I-25	
23	New Park-n-Ride at SH 7 and I-25	
24	New Park-n-Ride at 124th Avenue and Claude Court at Eastlake	
25	Increase bus frequency during peak period	These components have potential to address multi-modal capacity needs.
26	Increase use of articulated buses	
27	Provide bus service farther north	
28	Convert 120th Avenue bus tunnel to be a bi-directional facility (to and from south)	
29	88th Avenue Median Station	This component has potential to address operating condition needs by eliminating bus weave from managed lane to Thornton Park-n-Ride at 88th Avenue.
30	Build a shoulder busway from 120th Avenue to 144th Avenue	This component could potentially contribute to addressing the Purpose and Need. However, it will only be considered if alternatives recommend additional bus service north of 120th Avenue.
31	Bus queue jump lanes and bus ramps at interchanges	This component could potentially contribute to addressing the Purpose and Need. However, it will only be considered if bus service recommendations include use of interchange ramps.

Components Retained

REF. NO.	Potential TDM, ITS, TSM Improvements	
32	Travel Demand Management Measures (e.g., guaranteed ride home, carpooling, bike maps, bike share programs, marketing, etc.)	These components could potentially contribute to addressing the need to improve operations, safety and capacity.
33	Intelligent Transportation Systems (e.g. ramp metering, travel time indicators, variable message signing, radar vehicle detection, active traffic management, etc.)	
34	Incident management	
35	Driver education campaigns (e.g., use of buffer separated lanes)	

Potential Long-Term Cross Sections for Future Consideration

REF. NO.	Potential Infrastructure Improvements	
36	Extend Managed Lanes north from 120th Ave. to SH 7	These cross sections may meet long-term needs and fit within the Metro Vision Plan of a 202 foot corridor and therefore would not require reconstruction of recently constructed structures.
37	Additional General Purpose Lanes 84th Avenue to SH 7	
38	Extend reversible managed lanes on I-25 to SH 7	
39	Provide two managed lanes in each direction between US 36 and SH 7	
40	128th Avenue Median Station	This component could potentially contribute to addressing the Purpose and Need. However, it will only be considered if alternatives include new transit station/Park-n-Ride at 128th Avenue.

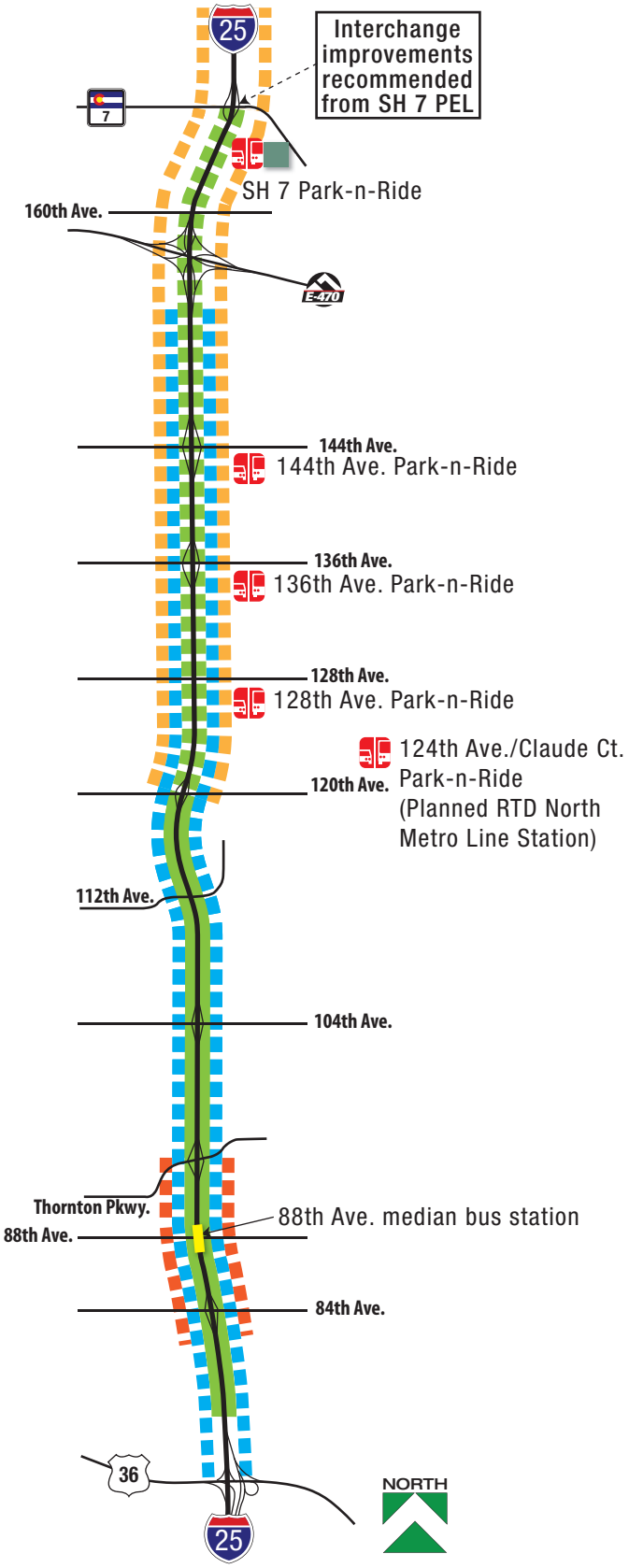
Components Eliminated

REF. NO.	Infrastructure Components Eliminated	
41	Pre-mainline merge [merge all ramps (I-270, US 36 and I-76) prior to I-25 northbound entry]	Would reduce capacity of merge point and result in longer queues on the merging facilities and therefore would not contribute to meeting the Purpose and Need.
42	Convert left-side I-270 flyover to right-side ramp	Would require reconstruction or modification of recently constructed structures and therefore would not meet the project Purpose and Need.
43	84th Avenue interchange T-ramp	
44	Construct new north/south route for trucks parallel to I-25	Construction of a new facility could not be accomplished in the near-term due to cost, property impacts or NEPA process and therefore would not meet the project Purpose and Need.
45	Northbound braided ramps US 36 to 84th Avenue	Could not be implemented in near-term due to anticipated property impacts and/or NEPA process and therefore would not meet the project Purpose and Need.
46	C-D system - US 36 to 84th, northbound	Provided no measurable mobility improvement and therefore would not meet the project Purpose and Need.
47	C-D system - 84th Avenue to US 36, southbound	US 36 and 84th Ave. weave movements are not the cause of congestion and therefore would not contribute to meeting the Purpose and Need.
48	I-76 direct connection to I-25 upstream of current connection	Provided no measurable mobility improvement and therefore does not meet the Purpose and Need.
49	88th Avenue T-ramp	Provided no measurable mobility improvement and therefore does not address the Purpose and Need.
50	C-D system along I-25 between 144th Avenue and SH 7	Would negatively impact mobility for I-25 to E-470/Northwest Pkwy. users by eliminating direct connection and would not contribute to meeting the Purpose and Need.

REF. NO.	Transit Components Eliminated	
51	Light rail on I-25	Considered during an extensive study of the North Metro corridor. Not considered as favorable as the commuter rail solution ultimately identified in the Environmental Impact Statement.
52	120th Avenue Median Station	Would require reconstruction or modification of recently constructed structures and therefore would not meet the project Purpose and Need.
53	Add structure to 120th Avenue bus tunnel to facilitate bus access to the managed lanes (to and from the north)	Would require reconstruction or modification of recently constructed structures and therefore would not meet the project Purpose and Need.
54	Shift 120th Avenue bus tunnel from left side to right side of northbound I-25	Extension of managed lanes north to 120th (opening 2014) would allow the buses to enter the bus tunnel without changing lanes therefore this component would create an unnecessary weave on I-25. This would not address the Purpose and Need.
55	Expand Wagon Road Park-n-Ride	Lack of adjacent undeveloped property would require construction of a parking structure; parking structure construction would eliminate available spaces for existing transit lanes, and therefore does not have the ability to address multi-modal capacity deficiencies described in the Purpose and Need.

REF. NO.	TDM, ITS, TSM Components Eliminated	
56	Limit large trucks and buses to the right most three lanes of I-25	Not compatible with new managed lane and therefore would not contribute to meeting the Purpose and Need.
57	Designate inside lane of I-25 for trucks only	
58	Implement $2 toll all day	The existing dynamic toll structure serves to maximize revenue and person through-put, therefore this does not meet the project Purpose and Need.

Preferred Package



LEGEND

- Planned Managed Lanes (opening Fall 2015)
- Proposed Managed Lanes
- Proposed Continuous Acceleration/Deceleration Lanes
  - *US 36/I-270 to 84th Ave.*
  - *84th Ave. to Thornton Pkwy.*
  - *Thornton Pkwy. to 104th Ave.*
  - *104th Ave. to 120th Ave.*
  - *120th Ave. to 136th Ave.*
  - *136th Ave. to 144th Ave.*
  - *144th Ave. to E-470*
- Proposed General Purpose Lanes
  - *Segment between 84th Ave. and Thornton Pkwy.*
- Proposed Additional Transit Service
- Proposed Park-n-Ride Options
- Proposed Median Station
- Planned Carpool Lot

Additional Potential Components:

- Intelligent Transportation System
- Travel Demand Management
- Transportation Systems Management
- Reversible transit tunnel at Wagon Rd. Park-n-Ride
- 70th Ave. and Washington St. intersection improvements
- Two lane exit ramps
- Physical improvements to ramp merge/diverge
- Additional I-25 crossings

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Complete Proposed Phasing Plan

Roadway

BENEFITS NOW

Listed in order of priority:

1. ☒ SB general purpose lanes segment 84th Ave. to Thornton Pkwy. [Requires replacement of 88th Ave. bridge]
2. ☒ Continuous acceleration/deceleration lane SB 84th Ave. to US 36
3. ◪ Continuous acceleration/deceleration lane SB Thornton Pkwy. to 84th Ave.
4. ◪ NB general purpose lanes segment 84th Ave. to Thornton Pkwy.
5. Continuous acceleration/deceleration lane NB I-270 to 84th Ave.
6. ☒ Continuous acceleration/deceleration lane NB 84th Ave. to Thornton Pkwy.
7. Ramp meters SB at 120th Ave., 136th Ave., 144th Ave., and NB at Thornton Pkwy., 104th Ave., and 120th Ave.
8. Continuous acceleration/deceleration lane SB 104th Ave. to Thornton Pkwy.
9. Continuous acceleration/deceleration lane SB 120th Ave. to 104th Ave.
10. Acceleration/deceleration lane NB Thornton Pkwy. to 104th Ave.
11. Acceleration/deceleration lane NB 104th Ave. to 120th Ave.
12. 70th Ave. & Washington St. intersection improvements

Extend I-25 managed lane from 120th Ave. to SH 7 (RAMP funding)

BENEFITS BY 2035

- Additional I-25 crossings
- Correct NB 84th Ave. on-ramp superelevation
- Implement Active Traffic Management 120th Ave. to SH 7
- Continuous acceleration/deceleration lane NB 120th Ave. to 136th Ave.*
- Continuous acceleration/deceleration lane NB 136th Ave. to 144th Ave.
- Continuous acceleration/deceleration lane NB 144th Ave. to E-470
- Continuous acceleration/deceleration lane SB E-470 to 144th Ave.
- Continuous acceleration/deceleration lane SB 144th Ave. to 136th Ave.
- Continuous acceleration/deceleration lane SB 136th Ave. to 120th Ave.*
- Ramp meters NB 136th Ave. and 144th Ave., and SB SH 7

Transit

Listed in order of priority:

1. New Park-n-Ride at 124th Ave. and Claude Ct. at Eastlake
2. Convert tunnel at Wagon Road Park-n-Ride to bi-directional tunnel (related to ramp meter SB 120th Ave.)
3. Construct inline median 88th Ave. station (coordinate with additional GP lanes segment between 84th Ave. and Thornton Pkwy.)
4. New Park-n-Ride at 144th Ave. and I-25
5. New Park-n-Ride at SH 7 and I-25

- New Park-n-Ride at 128th Ave. and I-25
- New Park-n-Ride at 136th Ave. and I-25
- Shoulder Busway north of 120th Ave.*

Complementary Strategies

- Bike map
- Carpool lots
- Community cash program
- Corridor transit guide
- Incident management plan
- Implement education campaign to instruct drivers on appropriate use of buffer-separated managed lane
- Peak hour bus-only lanes/transit priority
- Pool program subsidies
- Secure bike facilities
- TDM marketing
- Transit subsidies

- Bike share program
- Employer outreach
- First or final mile programs
- Flexible work schedule resources
- Master Eco-pass contract
- Telework recognition awards

**Would have immediate benefit without extension of I-25 managed lanes*

☒ *Projects removed from the Phasing Plan if 88th Ave. bridge reconstruction does not occur*

◪ *Projects partially constructed if 88th Ave. bridge reconstruction does not occur*

- *#3 SB continuous acceleration/deceleration lanes (Thornton Pkwy. to 88th Ave.)*
- *#4 NB GP lanes (84th Ave. to 88th Ave.)*

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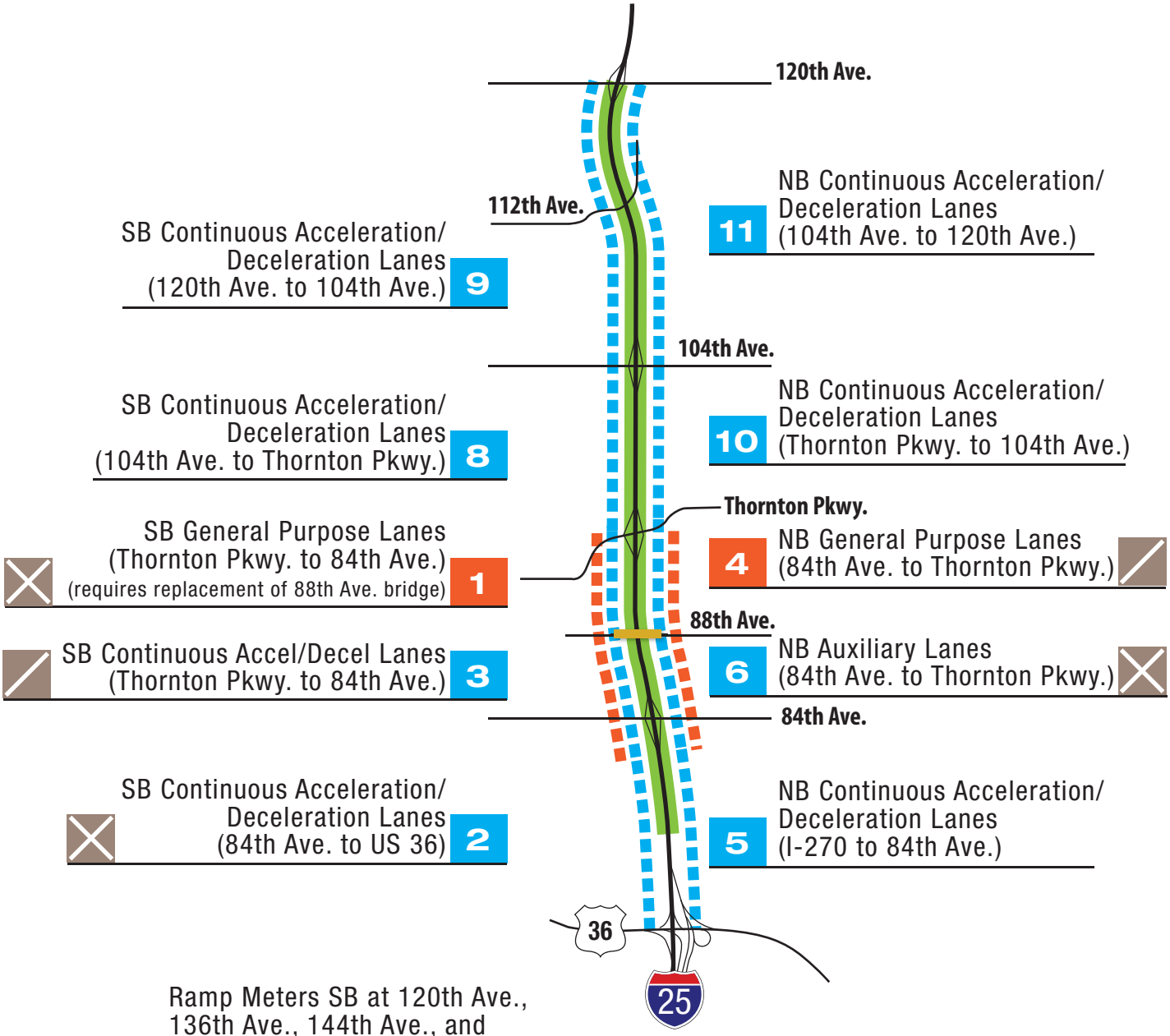
Roadway Phasing Plan

LEGEND

- Planned Managed Lanes (opening Fall 2015)
- Proposed General Purpose Lanes
- Proposed Continuous Acceleration/Deceleration Lanes
- Projects Removed from the Phasing Plan if 88th Ave. Bridge Replacement does not occur
- Projects Partially Constructed if 88th Ave.Bridge Replacement does not occur
  - *#3 SB continuous Acceleration/Deceleration Lanes (Thornton Pkwy. to 88th Ave.)*
  - *#4 NB General Purpose Lanes (84th Ave. to 88th Ave.)*



7 Ramp Meters SB at 120th Ave., 136th Ave., 144th Ave., and NB at Thorton Pkwy., 104th Ave., and 120th Ave.

12 70th Ave. and Washingon St. Intersection Improvements

NORTH

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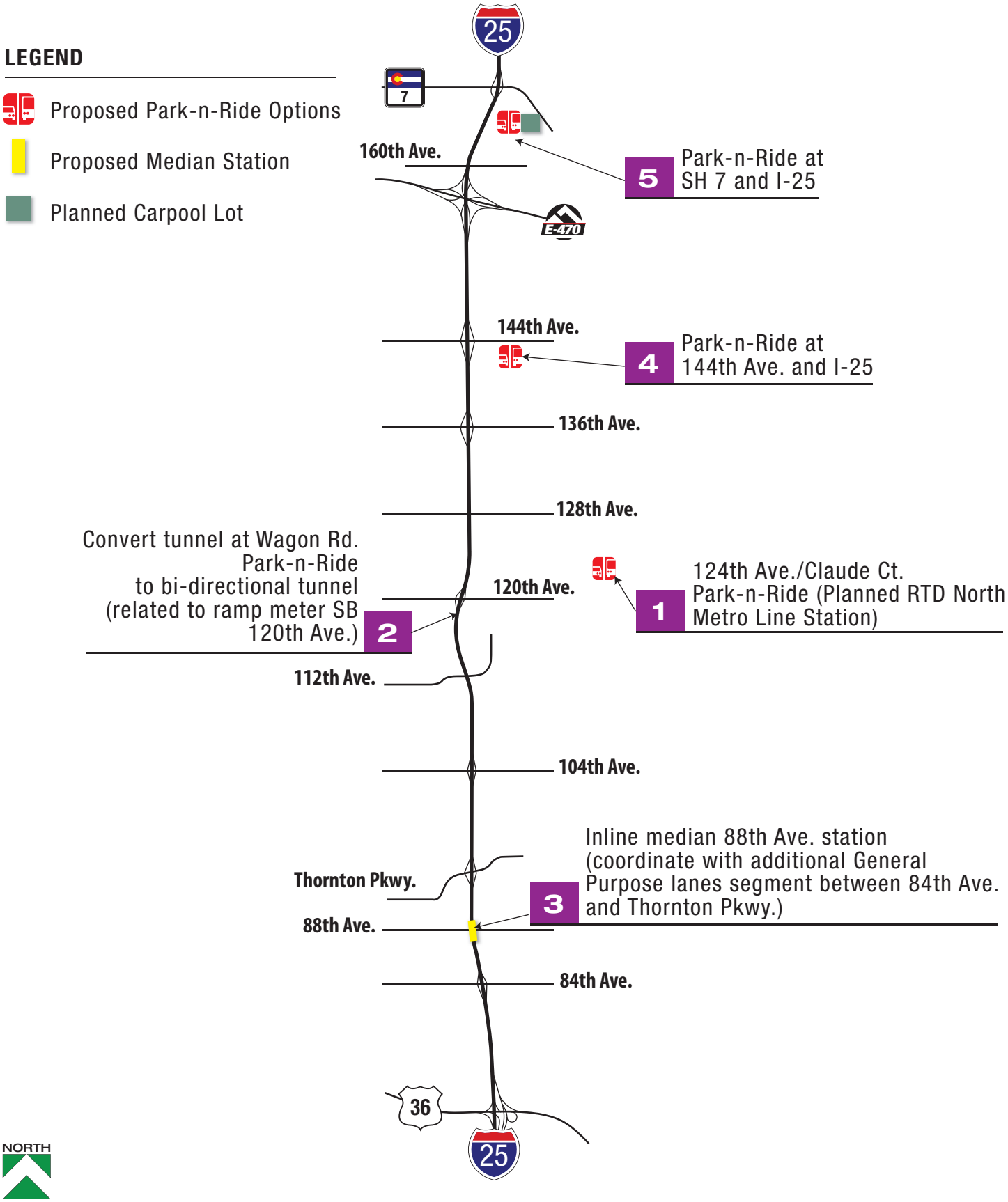
2015 Roadway Project Cost Effectiveness

		No Action	Phasing Plan without 88th Ave. Bridge Replacement	88th Ave. Area Components	Phasing Plan with 88th Ave. Bridge Replacement
SOUTHBOUND AM	PEAK TRAVEL TIME: (SH 7 to US 36)	21 min.	17 min.	14 min.	14 min.
	VEHICLE HOURS DELAY:	1,440	695	285	210
	COST	NA	$9.2 M	$31.2 M*	$40.4 M*
	LIFETIME COST EFFECTIVENESS: ($ per vehicle hour of delay saved)	NA	$2.78/vhd	$3.50/vhd	$4.97vhd
NORTHBOUND PM	PEAK TRAVEL TIME: (US 36 TO SH 7)	21 min.	16 min.	15 min.	15 min.
	VEHICLE HOURS DELAY:	1,970	1,430	1,040	900
	COST	NA	$14.3 M	$6.7 M	$21.0 M
	LIFETIME COST EFFECTIVENESS: ($ per vehicle hour of delay saved)	NA	$5.93/vhd	$0.93/vhd	$3.81/vhd
TOTAL	PEAK TRAVEL TIME: (US 36 TO SH 7)	21 min.	16-17 min.	14-15 min.	14-15 min.
	VEHICLE HOURS DELAY:	3,410	2,125	1,325	1,110
	COST	NA	$23.5 M	$37.9 M	$61.4 M
	LIFETIME COST EFFECTIVENESS: ($ per vehicle hour of delay saved)	NA	$4.10/vhd	$2.36/vhd	$4.43/vhd

**Assumes cost of $10M 88th Ave. bridge and $14M new pedestrian bridge and lowering I-25. Cost included in southbound direction to address the highest priority first.*
Costs do not include right-of-way or NEPA clearances and are in 2012 dollars.

Transit Phasing Plan



Next Steps

- Solicit Public Input on Preferred Package and Phasing
- Develop Implementation Road Map
- Complete Draft and Final PEL Report

Please tell us what you think!

THANK YOU!

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I-25 PEL

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