February 9, 2024

Deep Dive 3 – Effectiveness, Safety, and Diversion Impacts of Gantry Locations

Special Subcommittee on Transportation Planning – Meeting #4

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Urban Mobility STRATEGY

Oregon Department of Transportation

Agenda

- Defining toll diversion
- Measuring toll diversion
- Addressing toll diversion

Working together on innovative transportation solutions

- **2015-2016:** Governor led transportation visioning panel with meetings around the state

- **2017-2018**: **House Bill 2017 passed** identified core projects and gave direction to study and implement a toll program for congestion relief
- **Value Pricing Feasibility Analysis** developed and evaluated pricing concepts

- **2020-2021**: **Urban Mobility Strategy adopted** to coordinate all projects for climate, equity, safety and mobility

- **2021**: **House Bill 3055 passed** allows for financial flexibility to deliver core projects, including toll program development.
- Reaffirmed tolling as funding and congestion tool.

Urban Mobility Strategy Map

ODOT Projects

- System Improvement Project
- Bike/Pedestrian Crossing Project
- Regional Mobility Pricing Project*
- I-205 Toll Project

Partner Project with ODOT Support

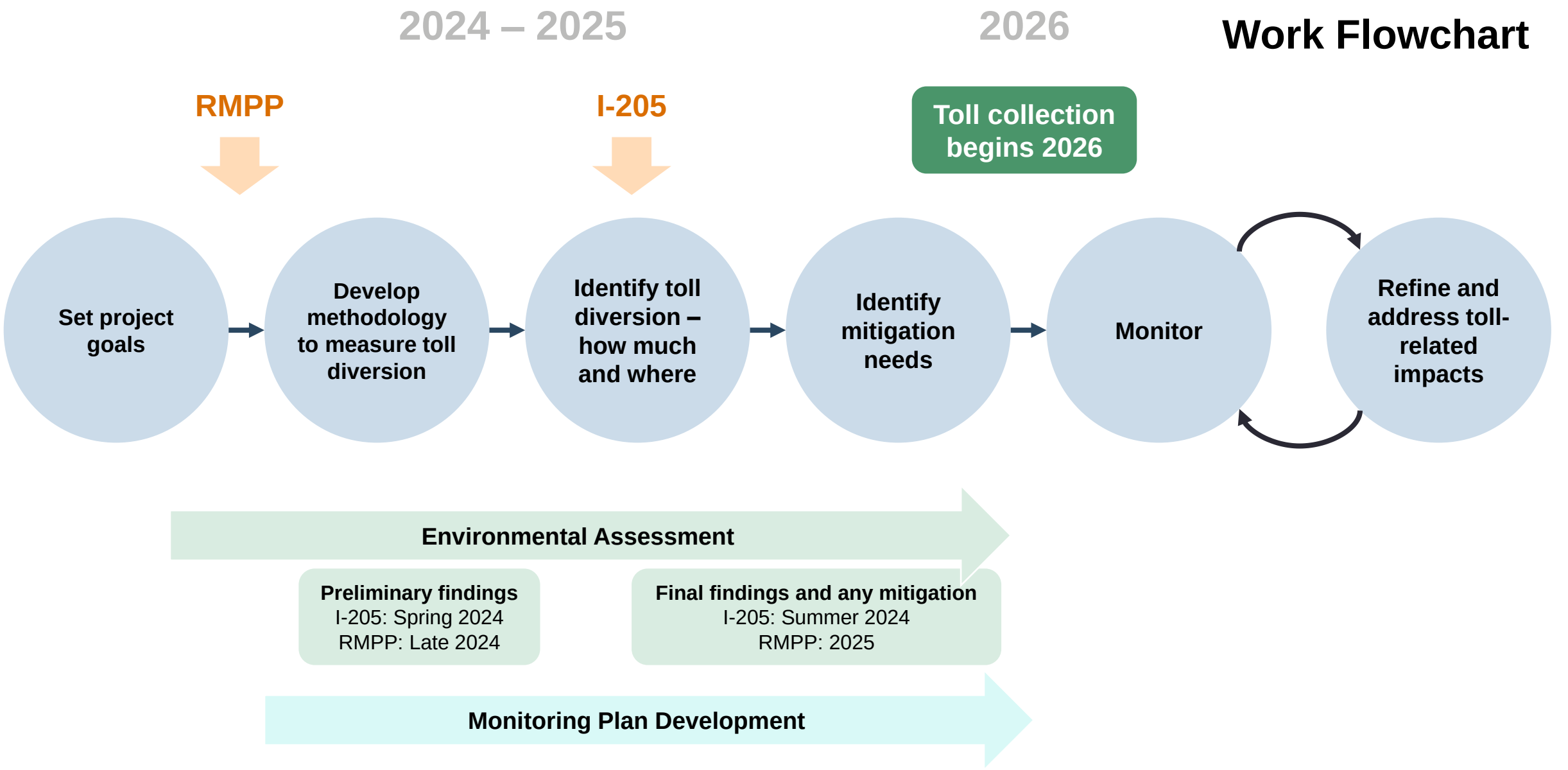
- System Improvement Project
- Bike/Pedestrian Crossing Project
- Bus on Shoulder Pilot
- TriMet Project
- Multimodal/Community Study
- Amtrak Cascades – Expanded daily service between Portland and Seattle

** The exact locations where tolls will be applied on I-5 and I-205 as part of the Regional Mobility Pricing Project will be determined during the federal National Environmental Policy Act (NEPA) process.*

Note: Core project names are boxed

Urban Mobility STRATEGY

Diversion Technical Work Flowchart



Toll diversion overview

What is toll diversion?

- Toll diversion occurs when travelers **avoid a toll** by changing the following or a combination of them:
  - **Route** (priced vs. not priced)
  - **Time of travel** (peak to off-peak)
  - **Destination**
  - **Mode** (driving to taking public transportation, biking, carpooling, etc.)
  - **Combining trips** (two to one trip)

Why is the definition important?

- Tolling can incentivize desirable forms of toll diversion to **optimize** transportation system performance and user experience.
- Toll diversion helps **redistribute vehicle traffic** to allow **existing supply** to serve **demand** more efficiently.
- Toll diversion is an effect of **pricing**, while rerouting can happen for a variety of reasons.

Toll diversion: A change in travel behavior in response to pricing

Conditions for travel decisions

- Pricing

Responses to conditions

- Change route
- Change time
- Change destination
- Change mode
- Consolidate trips

Rerouting: Choosing an alternative route instead of the preferred route

Conditions for travel decisions

- Congestion, speed
- Pricing
- Driver comfort
- Ease of wayfinding
- Mid-route destinations
- Habit, familiarity

Responses to conditions

- Change route

Rebalancing demand to optimize roadways

- State and regional policies support **using local roads for short trips** and **using the highway for longer trips**.
- Using the highway for a short trip or a local road for a long trip disrupts the balance of these roadways.
- Pricing is a tool to **rebalance demand** to allow the existing supply of roads to serve the vehicle demand more efficiently.

Not all traffic on the local system has the same impact.

Through-trip: starts and ends outside the local area

When a through-trip reroutes from the interstate to the local system, it adds **new traffic** to local streets that otherwise wouldn't be present.

Local trip: starts and ends within the local area

A local trip is **likely already using local arterials and streets** to get to and from the interstate.

More time on the local system would have a smaller impact than adding an entirely new trip to the system.

Not all toll diversion causes adverse impacts.

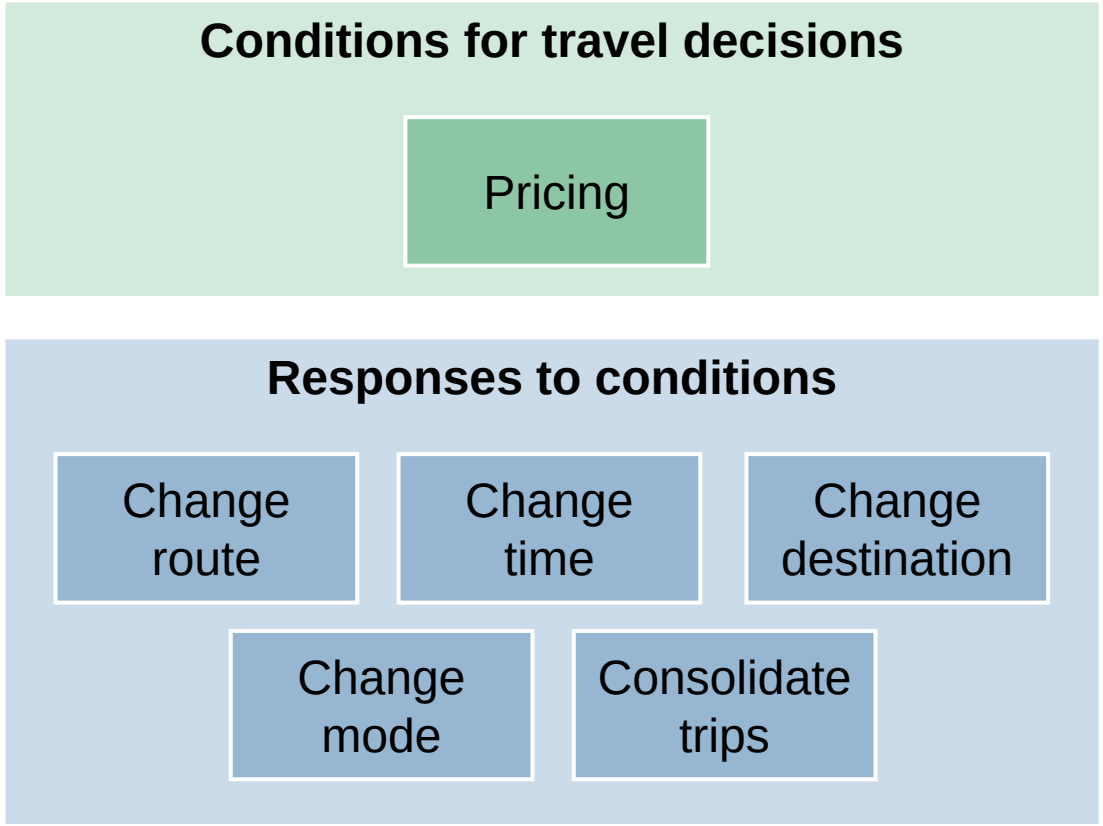
- Some toll diversion is needed to rebalance demand and is an intended effect of congestion price tolling.
- Depending on time of day and location, **some local roads have capacity** to accommodate more trips.
- The road system can be optimized by:
  - **Retaining longer, through-trips on the interstate** and prevent them from rerouting to the local network.
  - **Encouraging shorter, local trips to stay on the local network** instead of traveling on the interstate.

Measuring toll diversion

Measuring toll diversion – Methodology

VMT = vehicle miles traveled
VHT = vehicle hours traveled

Toll diversion: A change in travel behavior in response to pricing



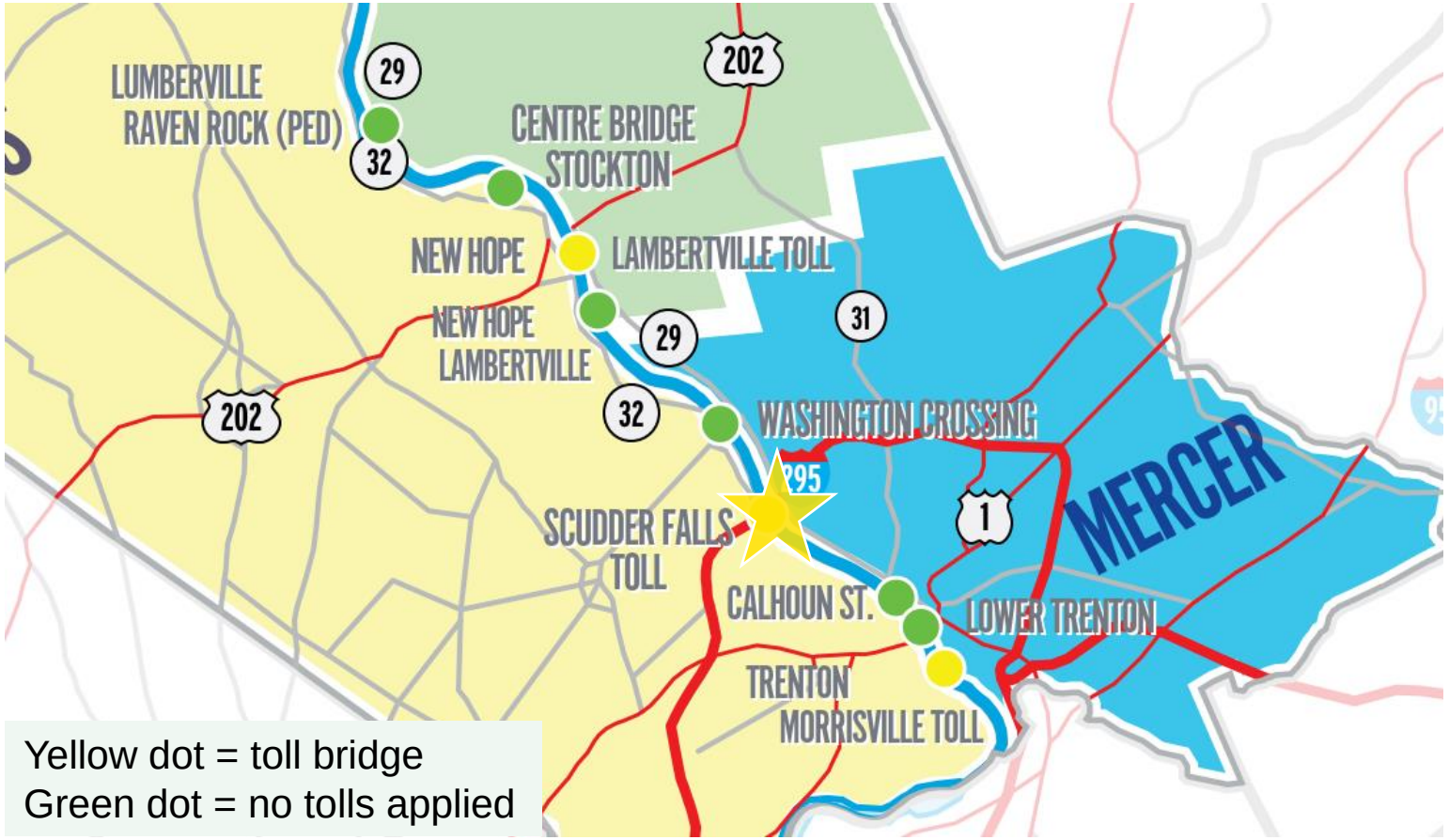
- Toll program modeling reflects various traffic, roadway, and land use characteristics and assumptions to analyze the effects of the program.
- Transportation analysis for each toll project looks at:
  - Change in VMT and VHT on vs. off the highway network
  - Regional VMT and VHT at various time periods of the day
  - Daily traffic volume changes on the tolled facilities and other highways, arterials, and local roads in the project analysis area

Modeling toll diversion

- **Metro's models** are peer-reviewed and used as a basis for transportation and land use planning in the region.
- Models are one of our best analysis tools to estimate toll diversion and identify route choices.
- Modeling identifies **potential** problem areas and likely severity of the issue before implementation.
- Monitoring once tolling begins will compare modeled results with **observed conditions** and help us pinpoint the location and determine appropriate action.

Example: Scudder Falls Bridge, PA-NJ

- Authority: Delaware River Joint Toll Bridge Commission
- Carries I-295 between Ewing, NJ and Lower Makefield, PA

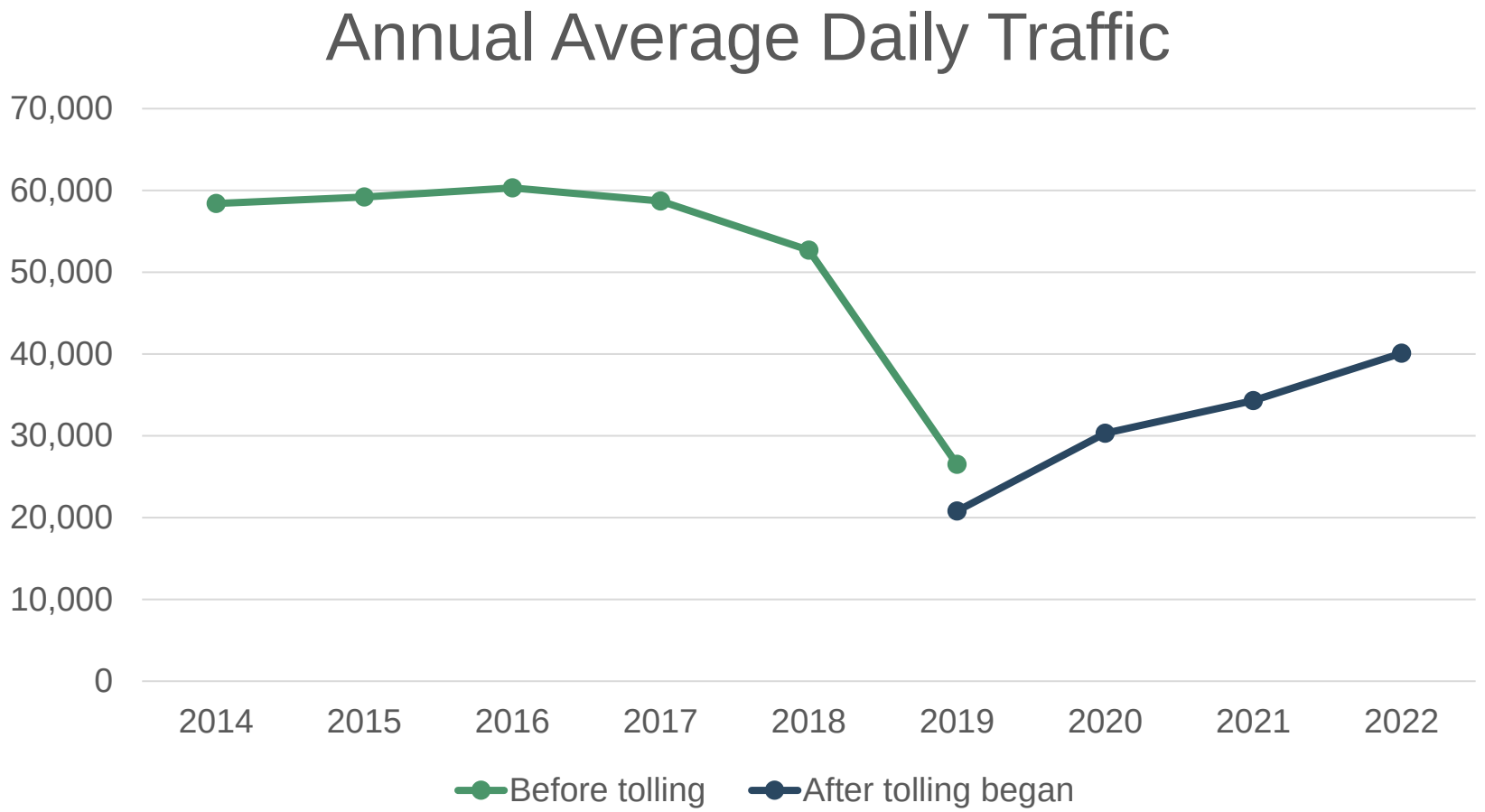


Yellow dot = toll bridge
Green dot = no tolls applied

Source: 2022 Annual Report (Delaware River Joint Toll Bridge Commission)

Example: Scudder Falls Bridge, PA-NJ

- **July 2019:** PA-bound direction opened and tolling began.
- **August 2021:** NJ-bound direction opened (no tolling).
- **October 2022:** Bridge replacement fully completed.



Sources: 2018 Annual Report and 2022 Annual Report (Delaware River Joint Toll Bridge Commission)

Example: Scudder Falls Bridge, PA-NJ

Diversion:

- Estimated: 17.0%
- Observed: 16.8%

Scudder Falls Bridge Traffic Diversions Due to Tolling

Bridge	Vehicle Class	2019 Calculated Diversion ADT (%)	Jacobs Report Estimated Diversion ADT (%)
From Scudder Falls	Passenger cars	-4,168 (15.1%)	-4,131 (16.0%)
	Trucks	-859 (36.7%)	-613 (34.0%)
	All Vehicles	-5,027 (16.8%)	-4,744 (17.0%)
To Trenton-Morrisville Toll Bridge	All Vehicles	1,910 (38%)	1,809 (38%)
To Toll Supported Bridges (Lower Trenton, Calhoun St, Washington Crossing)	All Vehicles	1,592 (32%)	2,935 (62%)
To Other Routes/Bridges (Includes PA Turnpike)	All Vehicles	1,525 (30%)	

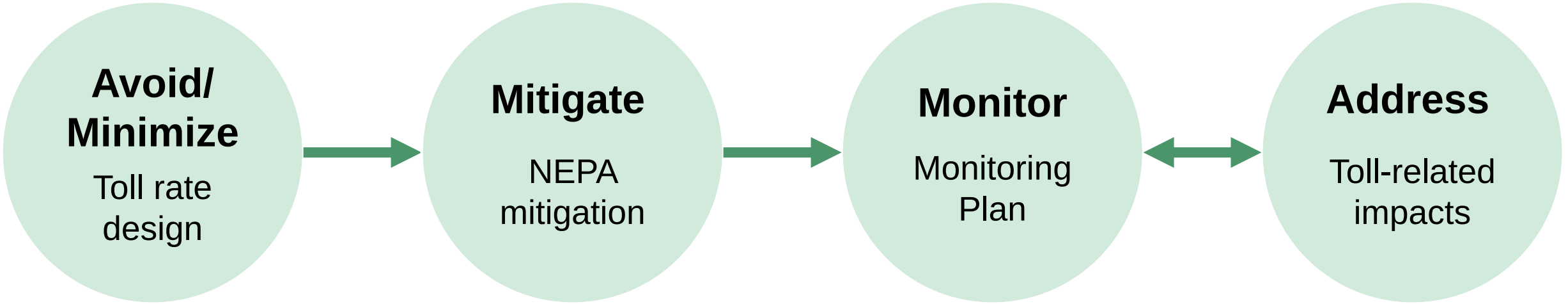
Source: 2019 Traffic Engineering Report (Delaware River Joint Toll Bridge Commission, 2020)

Strategies to address toll diversion

Traffic will change and restabilize.

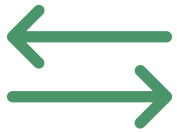
- Other toll programs show:
  - Right after toll collection begins, traffic patterns can change drastically, with many vehicles rerouting from the tolled facilities.
  - As travelers adapt to the new conditions, travel patterns **stabilize** and become more similar to modeled results.
- The value of paying a toll depends on the anticipated travel time across available alternatives, purpose of travel, time of day, personal preferences, and other factors.
- **Support for tolling tends to grow as people see the benefit of paying a toll for a quicker and more reliable trip.**

Multiple strategies to address toll diversion impacts

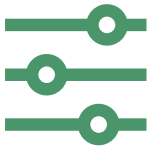


Minimize: Toll rate design

Setting toll rates that meet revenue targets and manage congestion, while minimizing adverse impacts from toll diversion.



We don’t need a drastic change to improve congestion.



There are **multiple toll rate structures** possible to achieve project goals.

Low-income toll program is being designed to bring some drivers back to the highway who would have otherwise diverted due to toll costs.

How the Oregon Toll Program is minimizing toll diversion

- The tradeoffs analyses help us understand the **balance** between revenue, congestion, and toll diversion.
- We can reach the **I-205 Toll Project** revenue target with multiple toll rate structures.
- **RMPP** tradeoff analysis results expected in Spring 2024.

The Oregon Transportation Commission is providing direction on the rate scenarios to analyze and eventually inform toll rate setting.

More on I-205 rate scenario tradeoffs at Deep Dive 5 (Feb. 23).

National Environmental Policy Act Mitigation

How does NEPA define mitigation?

Mitigation means **measures that avoid, minimize, or compensate** for effects caused by a proposed action.

What does NEPA require?

- While NEPA requires **consideration** of mitigation, **it does not mandate the form or adoption** of any mitigation.
- FHWA considers whether mitigation costs represent a **reasonable public expenditure**.
- FHWA requires mitigation **determined appropriate** for implementation to be incorporated into the project.

The project environmental documents will provide more detail on mitigation.

Toll project mitigation cannot address all transportation needs in the project area.

Source: 40 CFR 1508.1(s)

Monitor: Project Monitoring Plan

Purpose

- Plan for monitoring, reporting, and addressing observed traffic effects associated with tolling
- Account for the difference between modeled and observed toll diversion (routes, modes, times)

Process

Will be developed through robust engagement with regional partners

Respond

Results of the post-tolling analysis will be used to respond to and address impacts on corridors that are being monitored

Monitor: Project Monitoring Plan

Before tolling begins:

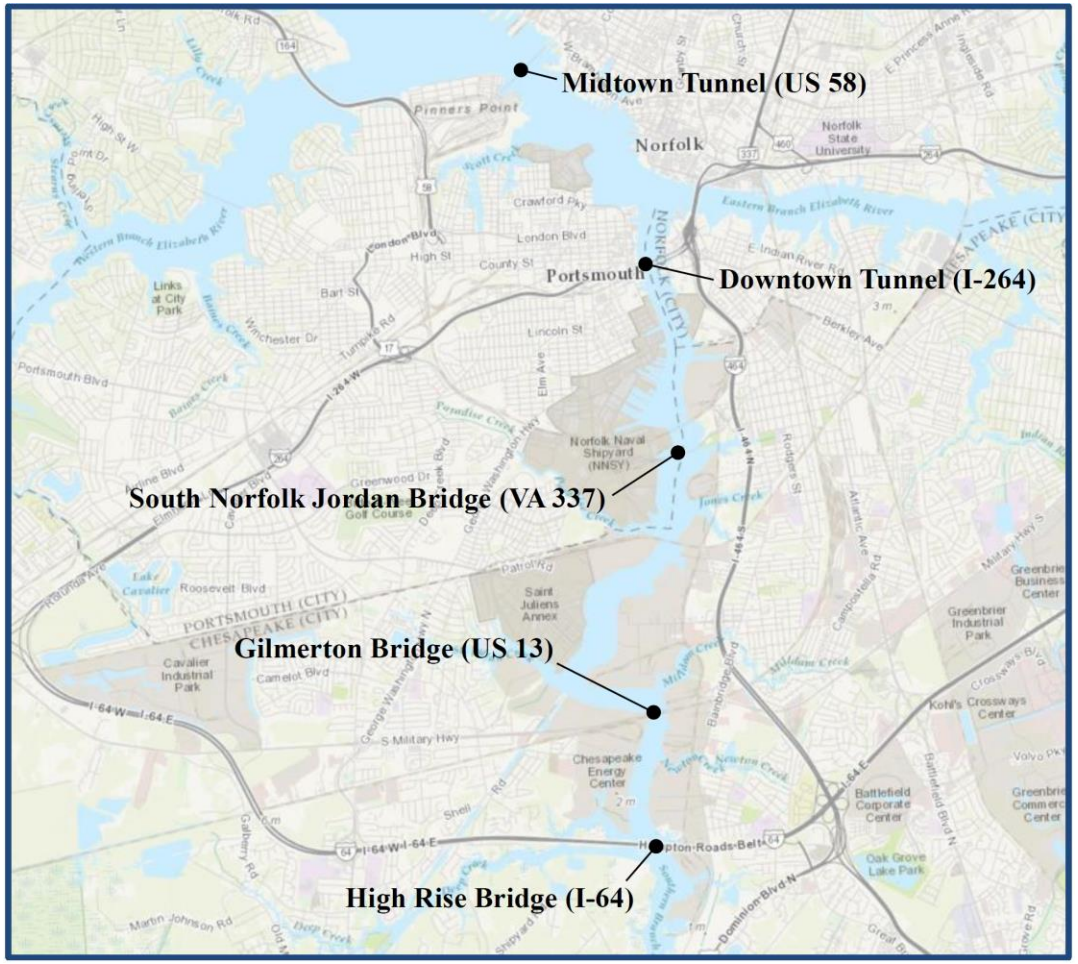
1. Identify corridors and frequency to monitor.
2. Establish pre-tolling baseline conditions at identified corridors.

After tolling begins:

1. Monitor identified corridors and continually evaluate data against performance thresholds.
2. If conditions exceed performance thresholds, begin detailed analysis to determine if additional action is needed.

Example: Elizabeth River Crossings, VA

- Previously toll-free Midtown and Downtown Tunnels
- Variable pricing applied in Feb. 2014
- Complemented the recently completed and tolled South Norfolk Jordan Bridge
- Gilmerton and High Rise Bridges remained as free alternatives



Source: Analyzing The Impact Of Implementing New Tolls On Existing Roadway Facilities (HRTPO, 2015)

Elizabeth River: Pre- and Post-Tolling Conditions Study

- Tolling began February 2014
- The analysis focused on:
  - **Before tolling**: 7 months, May-November 2013
  - **After tolling began**: 7 months, May-November 2014, starting 3 months after tolls began to allow for **stabilization**.
  - **5 crossings** of the Elizabeth River and **8 other locations** in the study area

Source: Analyzing The Impact Of Implementing New Tolls On Existing Roadway Facilities (HRTPO, 2015)

Elizabeth River: Tolling Conditions Study Results

- Total **peak period delays** crossing the Elizabeth River were **reduced by 32%** after tolls were implemented.
- Decrease in weekday traffic volumes at the Midtown and Downtown Tunnels:
  - Anticipated: **20%** and **43%** drop
  - Observed: **8%** and **20%** drop
- Changes in **truck** volumes varied based on the local conditions and nearby activity centers.

Source: Analyzing The Impact Of Implementing New Tolls On Existing Roadway Facilities (HRTPO, 2015)

Address: Identify actions with partners

- ODOT will work with partners to identify appropriate actions.
- The Oregon Transportation Commission will review and evaluate toll rates periodically as part of ongoing toll system optimization.

Key takeaways

Toll diversion and **rerouting** are challenging to define and measure, but important to distinguish.

Experience with other toll programs suggest that, as traffic **restabilizes**, some vehicles return to the system.

Modeling for future conditions is paired with **mitigation**, **monitoring**, and **adjustments** to understand actual effects of tolling implementation and address adverse effects.

Variable-rate tolling can **rebalance demand** among available supply so both interstate and local systems are more efficient.

Regional investments

The toll program can’t address all the region’s transportation needs. Other multimodal investments at the state, county, and local levels are needed.

Upcoming SSTP meetings:
- 2/16: Toll collection logistics
- 2/23: Toll rates

Diversion Technical Work Flowchart

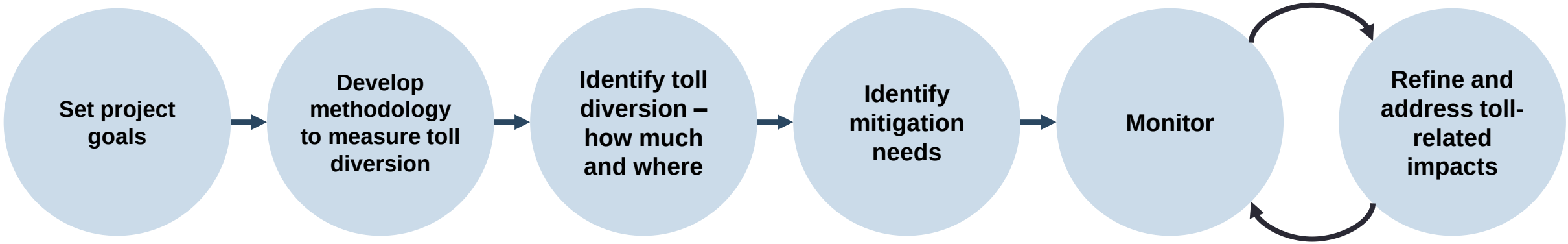
2024 – 2025

2026

RMPP

I-205

Toll collection begins 2026



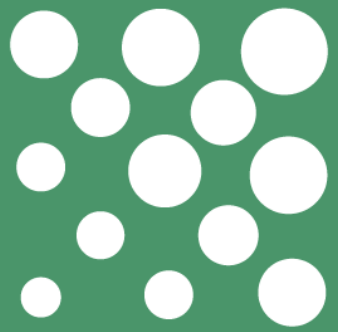
Environmental Assessment

Preliminary findings
I-205: Spring 2024
RMPP: Late 2024

Final findings and any mitigation
I-205: Summer 2024
RMPP: 2025

Monitoring Plan Development

Thank you!



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