January 10, 2024

Deep Dive 2 – Expected Outcomes of Tolling on Driver Behaviors and Travel Patterns

Special Subcommittee on Transportation Planning – Meeting #3

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Urban Mobility STRATEGY

Oregon Department of Transportation

Agenda

- Tolling overview
- Congestion causes and management
- Oregon Toll Program goals, design, and outcomes
- Takeaways and next steps

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Oregon Department of Transportation

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

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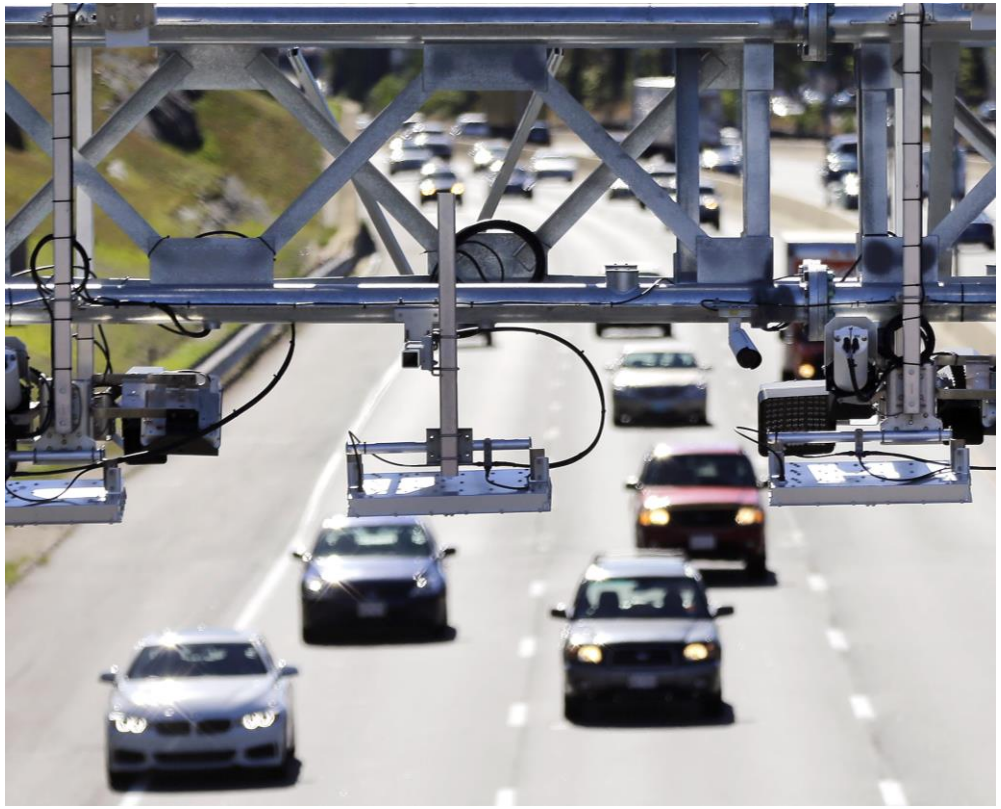
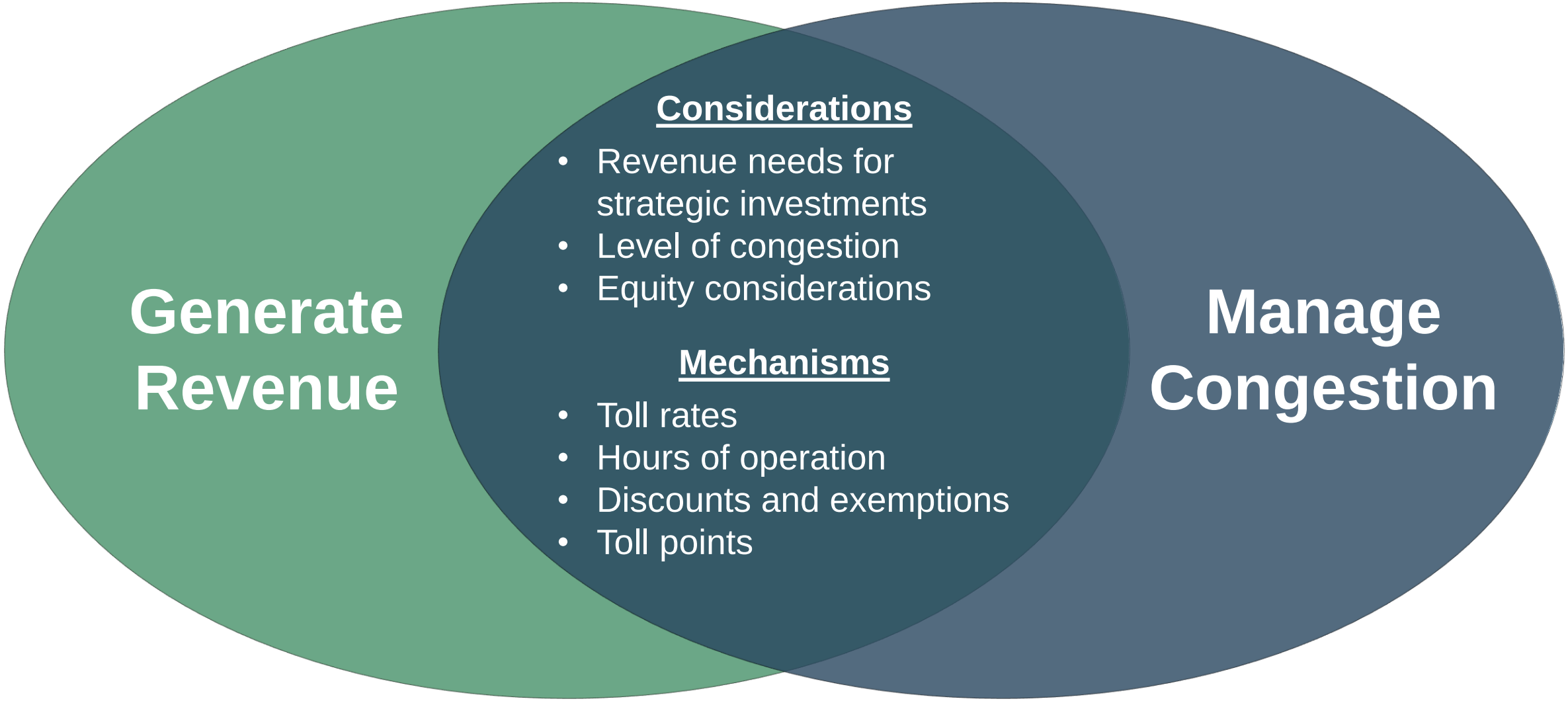
Tolling Overview

Tolling Overview

- Tolling can be designed to achieve **different outcomes** based on project purposes
- Common goals are to **generate revenue** and **manage congestion**
- Oregon Toll Program is set up to **do both**
- The **Oregon Transportation Commission** is the tolling authority



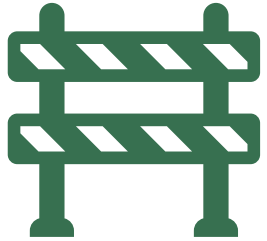
Oregon Toll Program Dual Objectives



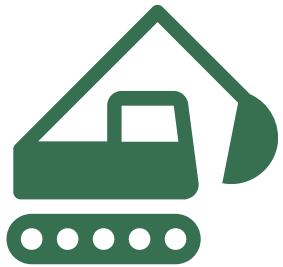
Typical Uses of Toll Revenue

Routine operations and maintenance

Periodic capital repair and replacement



Capital improvements



Congestion Causes and Management

Supply and Demand in Traffic

Demand = Number of vehicles

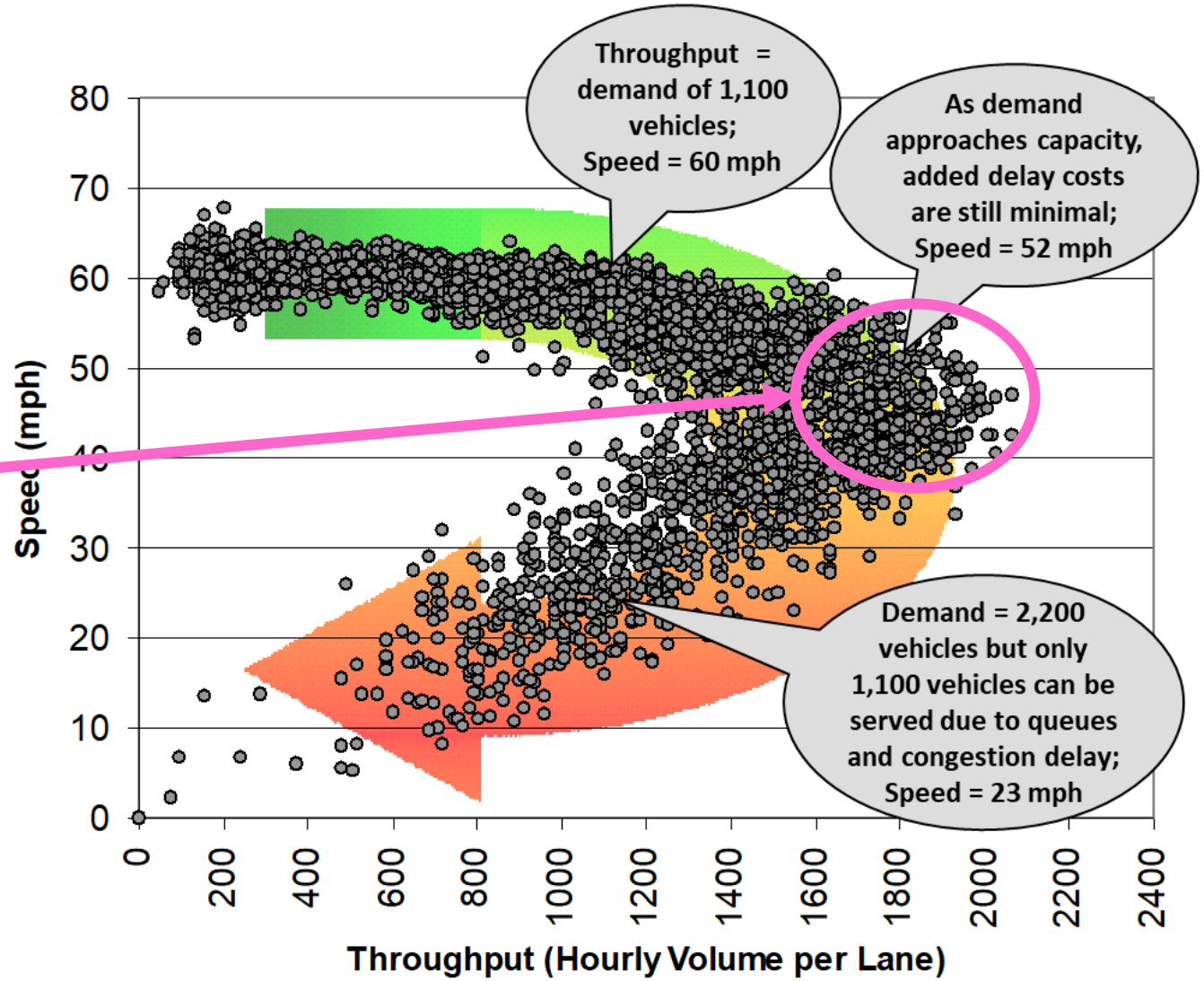
Supply = Roadway capacity

The supply of roadway capacity is relatively stable. What changes is the demand in terms of number of cars on the road. **Congestion occurs when demand exceeds supply.**

Optimizing Highway Throughput

Maximum throughput occurs around **45 MPH**

If you can reduce demand by a little during peak hours, the available supply (roadway) can serve more vehicles.



Data from Seattle on I-405 northbound at 24th NE for weekdays in May 2001

(Hidden) Costs of Driving

Driving has various costs, but they're often **hidden, delayed, or shared** with other people. These costs include travel time, fuel, vehicle maintenance, GHG emissions, and polluting air particles.

When increased costs are obvious, demand falls **naturally**, such as when drivers…

- spend so much **time** stuck in traffic
- or waste so much **fuel** in stop-and-go conditions

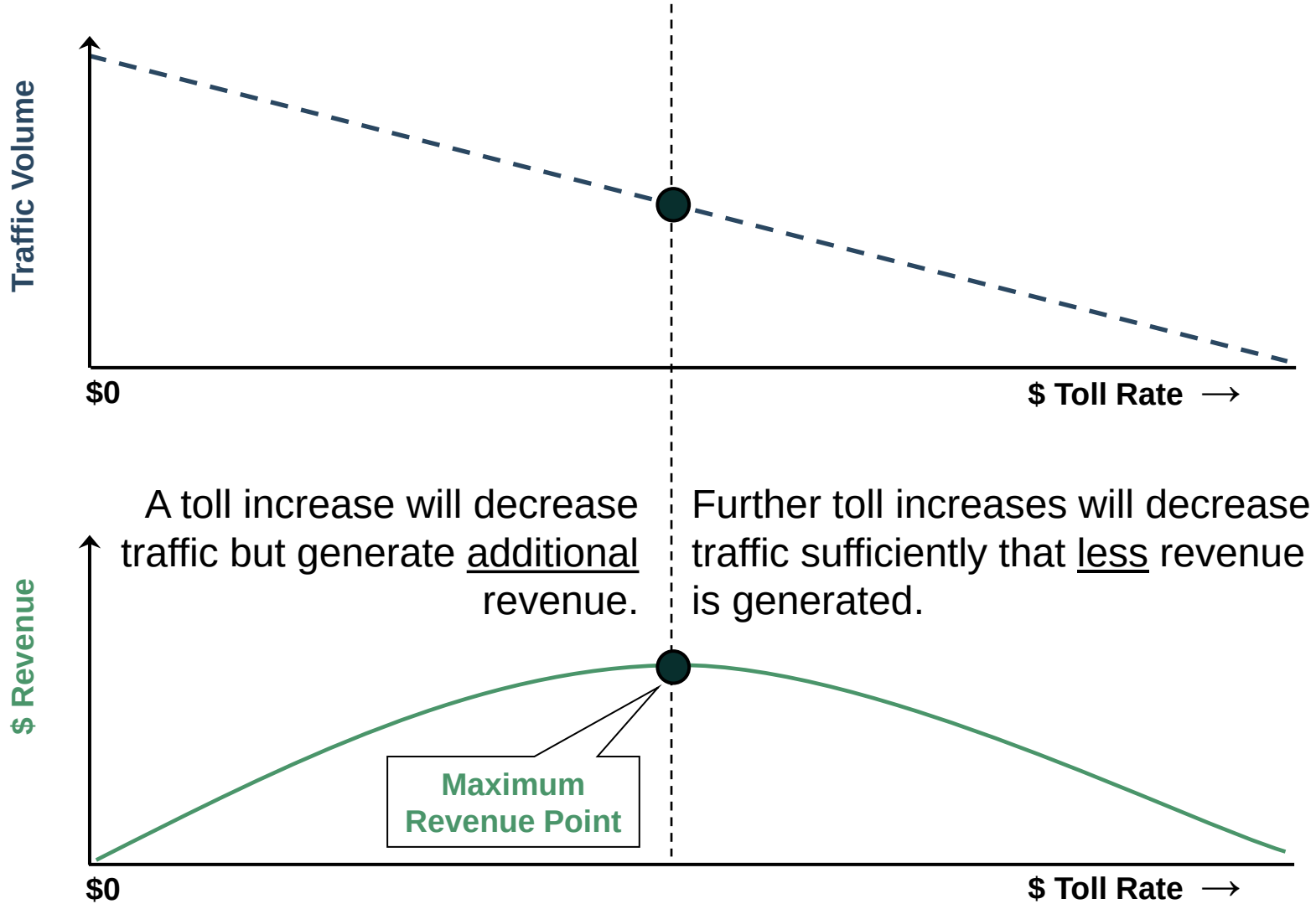
…that they decide to look for alternatives (a different route, time, mode, etc.)

When increased costs aren't obvious, demand can be decreased **by design**, such as by…

- making the hidden costs apparent
- or using tolls to capture each individual's contribution to the societal costs of driving.

This is how congestion pricing works.

Toll Rate, Demand, and Revenue Relationships



Demand Curve:
Traffic volume decreases as toll rate increases

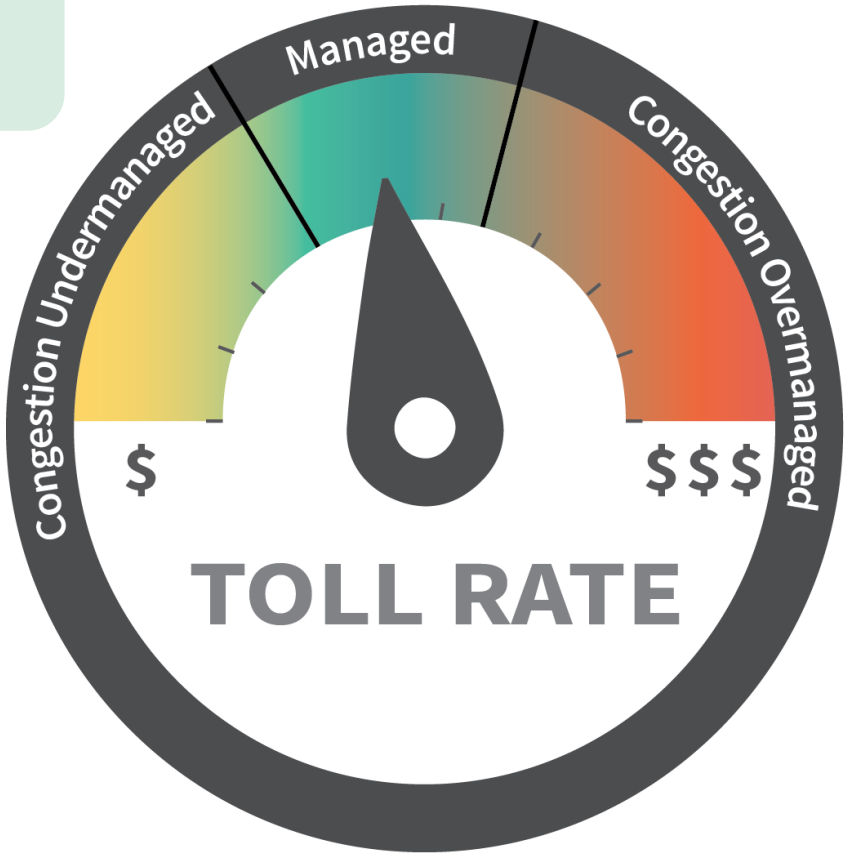
Demand also depends on alternative routes, modes, an individual's situation, and other factors

Revenue Curve:
Revenue = toll rate × traffic volume

Balancing Congestion Management and Revenue Generation

The best project will do both.

The optimal toll rate to balance the two goals will depend on time of day, toll location, and direction of travel.



UNDERMANAGED

- High probability of congestion on the tolled highway.
- Little travel time benefit for tolled users.
- Rerouting effects on other routes are minimal.

MANAGED

- Low probability of congestion on the tolled highway.
- Travel time benefit for tolled users.
- During off-peak times, the minimum toll to optimize throughput may be zero.
- Rerouting effects on other routes are limited.*
- Potential to generate net toll revenue to support capital improvements.

OVERMANAGED

- Lowest probability of congestion on the tolled highway.
- Travel time benefit forfewer tolled users.
- Rerouting effects on other routes may be susbtantial.

*In some cases rerouting may be improved relative to toll-free conditions where travelers avoid freeways due to hypercongestion.

SR 520 Example

Example: SR 520 Floating Bridge, WA

- **Location:** Connects I-5 (Seattle) to I-405 (Bellevue)
- **Purpose:** Manage congestion and raise $1.2 billion to help fund the construction, safety, and maintenance of the new bridge.

Tolls vary by time of day:

- $1.25 (lowest overnight)
- $4.50 (highest, during AM / PM peak hours)
- $2.00 surcharge for license plate billing

Source: WSDOT

Example: SR 520 Floating Bridge, WA

Over the first year of tolling:

- Traffic volumes decreased by 34%.
- **Travel time decreased by 25-41% depending on time of day and direction of travel:**
  - Decreased 25% morning peak in both directions and afternoon peak eastbound.
  - Decreased 41% afternoon peak westbound.

- Across SR 520 and three interconnected freeway facilities, **VMT decreased by 2.7% and CO2 decreased by 3.0%.**
- Traffic increased slightly on the alternate I-90 route.
- With increased transit service from King County Metro and Sound Transit, transit ridership grew by 38%.

Source: FHWA 2015

Toll Project Design

Both the I-205 Toll Project and the RMPP have **dual goals** to generate revenue and manage congestion. However, there are some differences.

Project Goals	Project Design
I-205 Toll Project has a specific toll funding target to be met by borrowing against future toll revenues. Variable tolls also help to manage congestion.	**Rates** will be set to yield future net toll revenues sufficient to **meet the funding target** with rates varying by time of day to help **manage congestion.**
Regional Mobility Pricing Project is being designed to manage congestion and also generate revenues.	**Rates** will be set to **manage congestion**, varying by time of day; **net revenue generated** may be used to help fund future improvements**.**

The RMPP's **regional scale** and **number of toll points** allows it to be effective at congestion management and distributed revenue generation.

The optimal toll rate to achieve both goals will depend on time of day, toll location, and direction of travel.

RMPP will have toll points along I-5 and I-205 between the Boone Bridge and the Columbia River.

Rates at each toll point will vary by time of day to account for expected demand at that location.

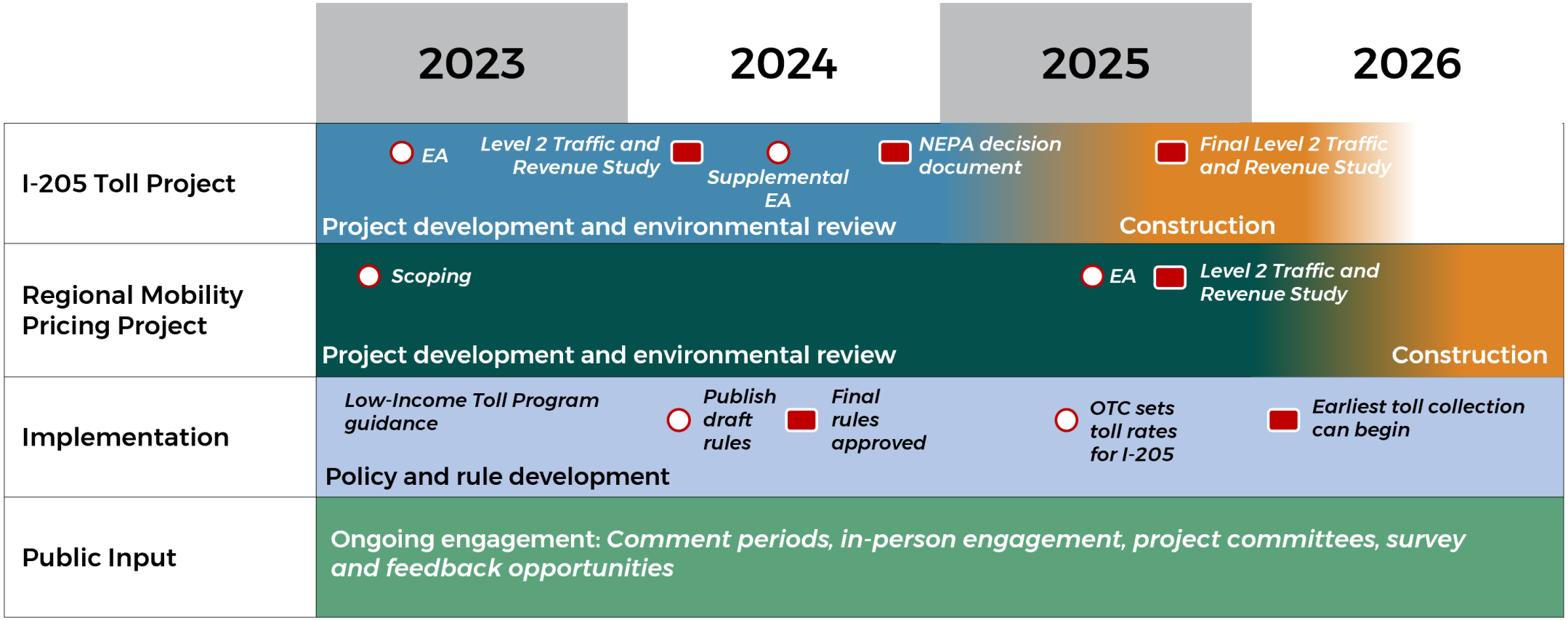
This variation means RMPP will be able to achieve both goals.

Toll Program Design Takeaways

- **Toll projects can emphasize different goals.** Some will lean towards revenue generation (Abernethy Bridge), and others will lean towards congestion management (RMPP).
- **No two toll programs are the same.** We need to balance tradeoffs between congestion relief, diversion effects, revenue, and simplicity.
- **The two effects of tolling are not mutually exclusive.** It's not only possible – it is desirable to achieve both congestion management and revenue generation.

Next Steps

February short session: Deep Dives 3-5



Schedule updated January 2024. Subject to change

Public comment opportunity

Project milestone

***EA**: Environmental Assessment*

***Scoping**: Initiate environmental review*

***NEPA**: National Environmental Policy Act*

***OTC**: Oregon Transportation Commission*

Thank you!

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