# Multimodal System Inventory for Metropolitan Areas

Statewide Technical Action Committee Meeting #1

October 1, 2024

10:30 am – 12:00 am

**Oregon Department of Transportation**

# Welcome and Introductions

# Team Introductions

## ODOT Project Management Team

**PROJECT MANAGER**
**Theresa Conley, Principal Planner**
STATEWIDE PLANNING SECTION

**DEPUTY PROJECT MANAGER**
**Sarah Peters, Senior Planner**
STATEWIDE PLANNING SECTION

**Erik Havig, Manager**
PLANNING SECTION

**Chris Wright, GISP, Manager**
TRANSPORTATION DATA SECTION

**Peter Schuytema, TPAU Team**
TRANSPORTATION PLANNING ANALYSIS UNIT

**Brian Hurley, Mitigation Program Manager**
ODOT CLIMATE OFFICE

**Ian Clancy / Sara Pimental, Multimodal Program Analyst**
PUBLIC TRANSPORTATION DIVISION

## Consultant Team

**PROJECT MANAGER**
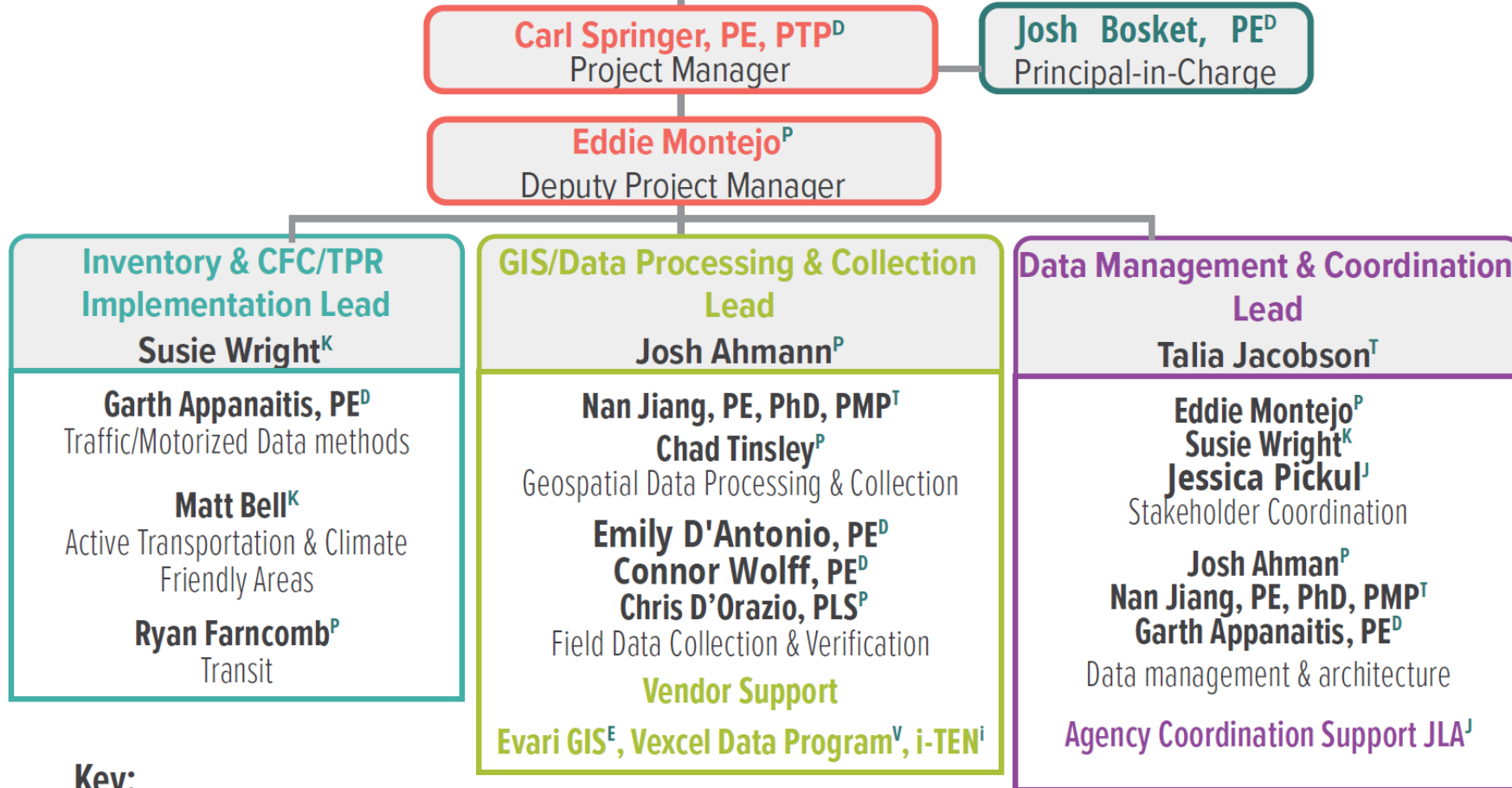**Carl Springer, DKS**

**DEPUTY PROJECT MANAGER**
**Eddie Montejo, Parametrix**

Team comprised of staff from DKS, Parametrix, Kittelson, JLA, Toole Design and i-Ten

# INTRODUCTIONS

## CONSULTANT TEAM ROLES & RESPONSIBILITIES

**Oregon Department of Transportation**

**Carl Springer, PE, PTP[D]**
Project Manager

**Josh Bosket, PE[D]**
Principal-in-Charge

**Eddie Montejo[P]**
Deputy Project Manager

### Inventory & CFC/TPR Implementation Lead
**Susie Wright[K]**

**Garth Appanaitis, PE[D]**
Traffic/Motorized Data methods

**Matt Bell[K]**
Active Transportation & Climate Friendly Areas

**Ryan Farncomb[P]**
Transit

### GIS/Data Processing & Collection Lead
**Josh Ahmann[P]**

**Nan Jiang, PE, PhD, PMP[T]**
**Chad Tinsley[P]**
Geospatial Data Processing & Collection

**Emily D'Antonio, PE[D]**
**Connor Wolff, PE[D]**
**Chris D'Orazio, PLS[P]**
Field Data Collection & Verification

**Vendor Support**

**Evari GIS[E], Vexcel Data Program[V], i-TEN[i]**

### Data Management & Coordination Lead
**Talia Jacobson[T]**

**Eddie Montejo[P]**
**Susie Wright[K]**
**Jessica Pickul[J]**
Stakeholder Coordination

**Josh Ahman[P]**
**Nan Jiang, PE, PhD, PMP[T]**
**Garth Appanaitis, PE[D]**
Data management & architecture

**Agency Coordination Support JLA[J]**

**Key:**

**D- DKS Associates**   **K- Kittelson and Associates**   **P- Parametrix**   **E - Evari GIS**   **T- Toole Design**   **J- JLA Public involvement (W/DBE)**

**i - i-TEN and Associates (M/DBE)**   **V- Vexcel Data Program**

**Project Overview**

# Project Purpose

Assist local jurisdictions in defining and collecting data needed to comply with the updated Transportation Planning Rules (TPR) adopted through the 2022 *Climate Friendly and Equitable Communities rulemaking*

# Project Objectives

Do expensive work efficiently and support cities & counties

Establish datasets for CFEC-compliant Transportation System Plans

Establish long-term data management and maintenance protocols

Ensure ongoing access to the data for planning, analysis, and performance monitoring purposes

# Key Project Outcomes

Standarized, multimodal datasets to comply with TPR updates
*(Geometry & Attributes)*

CFEC-Supportive Data Methodologies for Collection, Processing, and QA/QC

Long-Term Data Management and Maintenance Framework

# Scope and Task Overview

Scope includes 48 Jurisdictions and 11 Counties

Task 1: Project Management

Task 2: Agency Partner Engagement and Communications

**1**

Task 3: Assess Multimodal Inventory Data Needs

**2**

Task 4: Gather Existing Data and Identify Gaps

Task 5: Process Existing Data for CFEC Requirements; Quality Assurance Methods

**3**

Task 6: Develop Data Definition and New Collection Methods

Task 7: Collect Prioritized New Data and Process New CFEC Data

**4**

Task 8: Long-Term Data Management and Maintenance Framework

**#** STAC Meetings

# Technical Approach

**1** **Multimodal Data Inventory Needs Analysis**

**2** **Spatial & Attribute Gap Analysis**

**3** **Process Existing & New Data**

**4** **Long-Term Data Management & Maintenance Framework**
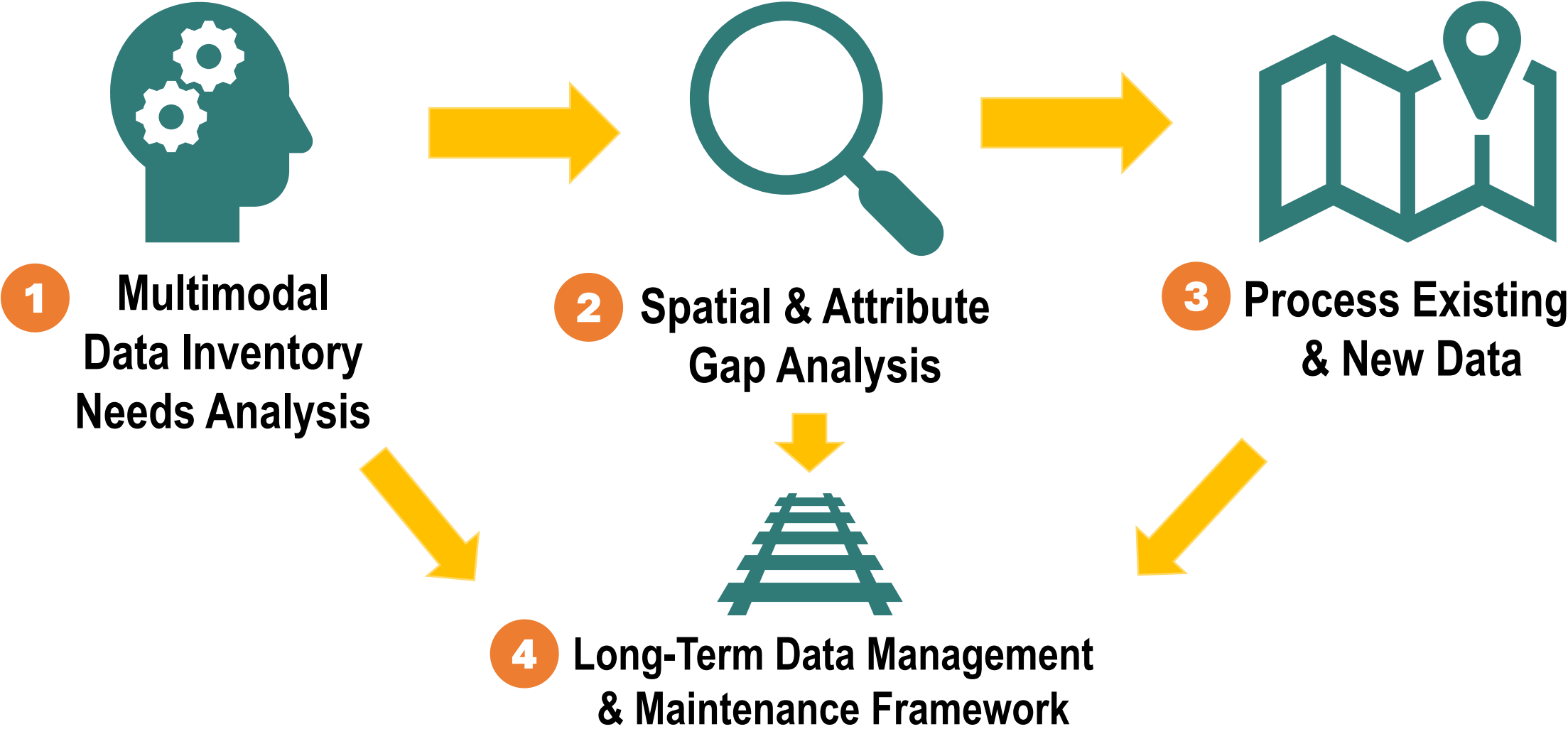
**1 Data Inventory and Needs Analysis**

**PROCESS**

**TPR Map Layers**
- Roadways
- Pedestrian Facilities
- Bicycle Facilities
- Transit

**Attribute Requirements**
- Ownership
- Maintenance
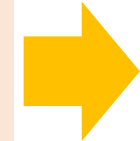- Classification
- Primary Uses
- Primary Users
- Land Use Context
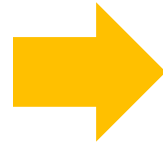
**OUTCOMES**

**Memo #1:** Data Inventory & Attribute List

Working Data Definitions and Standards
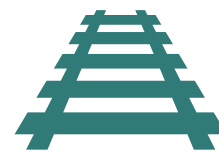
Long-Term Data Framework

**2** Spatial & Attribute Gap Analysis

**2** **Spatial & Attribute Gap Analysis**

**PROCESS**

**Preliminary**
*Completed Winter 2024*

☑ Presence / Absence

**Detailed**
*Yearly*

△ Geometry

⊞ Attributes
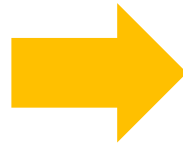
**OUTCOMES**

**Memo #2:**
Data Gap Analysis

**Memo #5**
Data Definition +
Collection Methodology

Long-Term
Data Framework

**3**
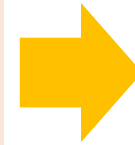
Process
New &
Existing
Data

# 4 Long-Term Data Management & Maintenance Framework

**Data Management** – Ownership, access, roles and responsibilities across a variety of use cases

**Data Distribution** – How data will be accessed, shared, and distributed among different partners

**Data Maintenance** – Update protocols, roles and responsibilities, long-term consistency with TPR and other key uses (e.g. TSP updates)

# How will we process data for so many jurisdictions?

- "Cohort Model" based predominantly on TSP Start Year

- Proximity (grouping)



2024
6 jurisdictions

2025
11 jurisdictions

2026
31 jurisdictions

2024
2.5k mi

2025
5.5k mi

2026
5.7k mi
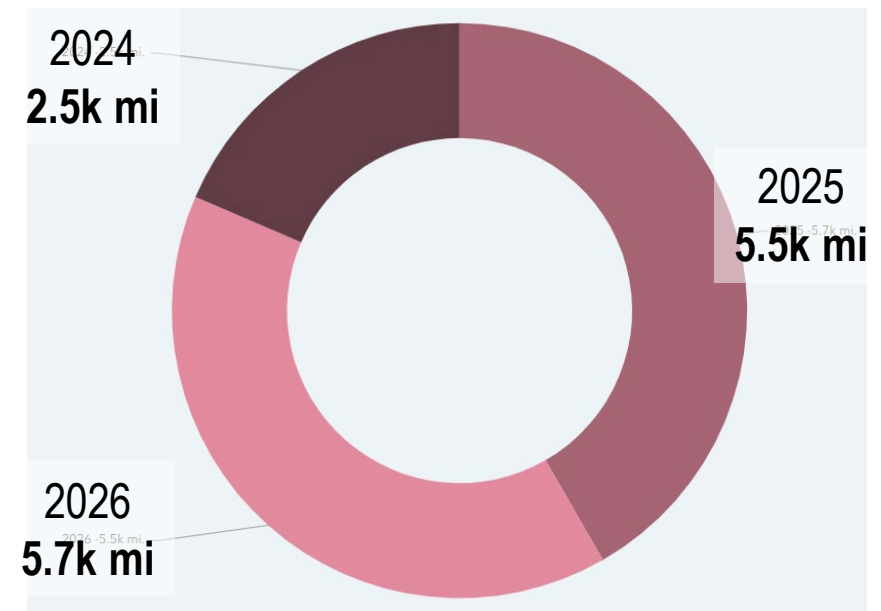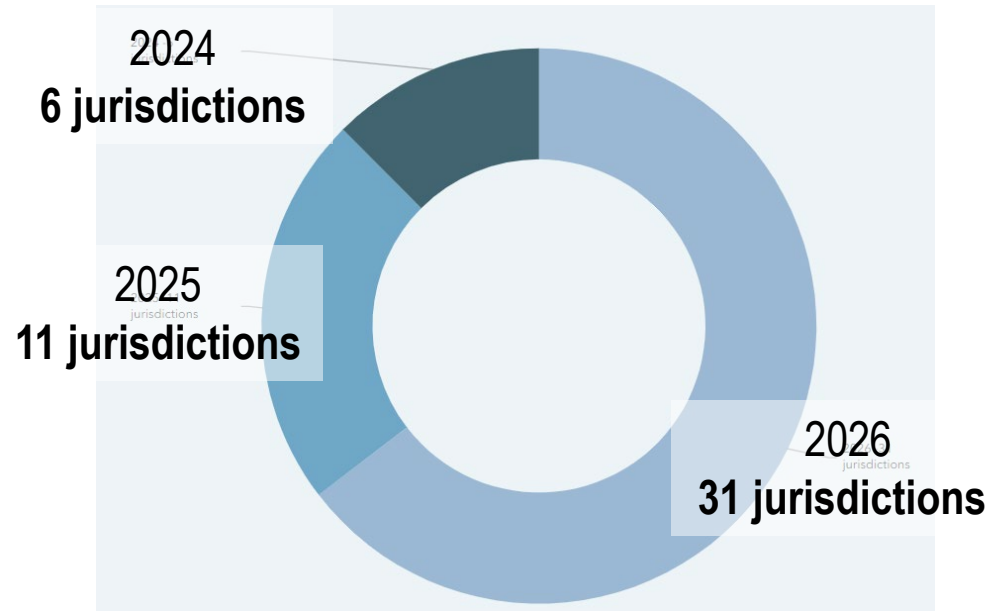
# Draft Cohorts – 2024

- Albany

- Millersburg (data maintained by Albany)

- Ashland

- Beaverton

- Salem

- Keizer

# Draft Cohorts – 2025

- Bend
- Forest Grove
- Jacksonville
- Milwaukie
- Portland
- Sherwood

- Talent
- Tualatin
- Turner
- Wilsonville

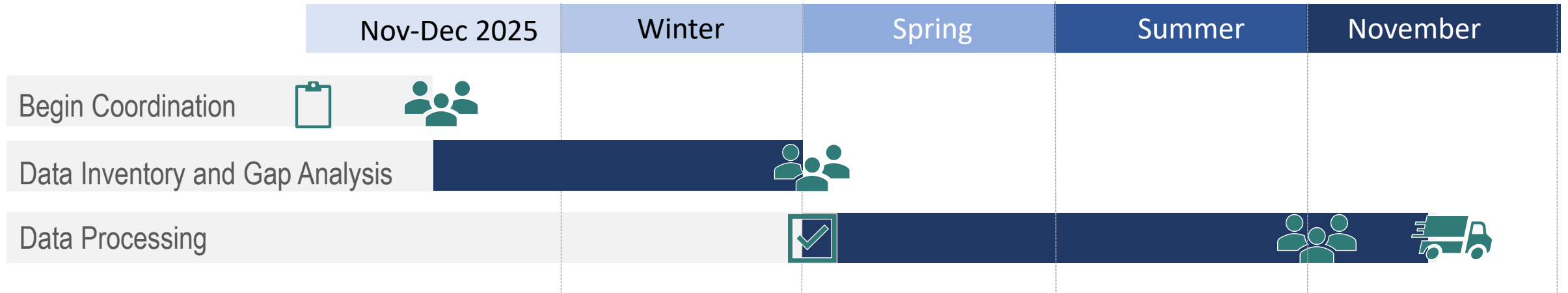- Clackamas County
- Multnomah County
- Washington County

# Draft Cohorts – 2026

- Adair Village
- Central Point
- Coburg
- Cornelius
- Corvallis
- Durham
- Eagle Point
- Eugene

- Fairview
- Gladstone
- Gold Hill
- Grants Pass
- Gresham
- Jefferson
- Happy Valley
- Hillsboro

- Jefferson
- Johnson City
- King City
- Lake Oswego
- Maywood Park
- Oregon City
- Philomath
- Phoenix

- Rogue River
- Springfield
- Tangent
- Tigard
- Troutdale
- West Linn
- Wood Village

# Annual Data Processing Schedule (2025 and 2026)

| | Nov-Dec 2025 | Winter | Spring | Summer | November |
|---|---|---|---|---|---|
| Begin Coordination | | | | | |
| Data Inventory and Gap Analysis | | | | | |
| Data Processing | | | | | |

Coordination   Survey   Data Check-out / Check-in   Data Delivery

# Questions

- Q1. Do you have any comments or question about the overall project purpose or approach?

- Q2. What project outcomes are most important to you?

# Statewide Technical Advisory Committee (STAC) Role

# Role of STAC

**Discuss and provide feedback on topics such as:**

- Consistency between jurisdictions
- Maintenance implications
- Data standards and compatibility with existing systems
- How the data can support other uses

# Role of STAC

- Discuss the process with your agency and bring feedback to these meetings.

- Help ODOT identify critical voices in your organization:

  - GIS staff

  - Planners

  - Public works / asset managers

- Timeframe for comments – generally two weeks but flexible

# Partner Engagement

# Partner Engagement and Coordination

## Goals

- Reach consensus on data collection & management approach

- Make the data as useful as possible, within budget

- Understand internal and external data needs, priorities, and opportunities

- Gain commitment to long-term data management framework

- Educate internal and external partners on multimodal data

# Partner Engagement and Coordination

**On-going coordination with partners with data & CFEC responsibilities, including:**

- Cities and counties in MPOs

- Regional governments

- Transit agencies with metro area data

- DLCD

- ODOT staff: planning, analysis, data services, programs and research

# Partner Engagement and Coordination
## Ways We'll Engage

| Activity | Audience | Frequency |
|---|---|---|
| Multimodal Inventory Steering Committee (MISC) | Internal | 6x, every few months |
| Statewide Technical Advisory Committee (STAC) | External | 5x, every few months |
| End User Survey | External | *Open now* |
| Data Intake Form | External | *Coming soon* |
| Virtual Briefings | All | 3x, every 6-9 months |
| ODOT Coordination Meetings | Internal | As needed for coordination between projects |

# Partner Engagement and Coordination
## End User Survey Summary

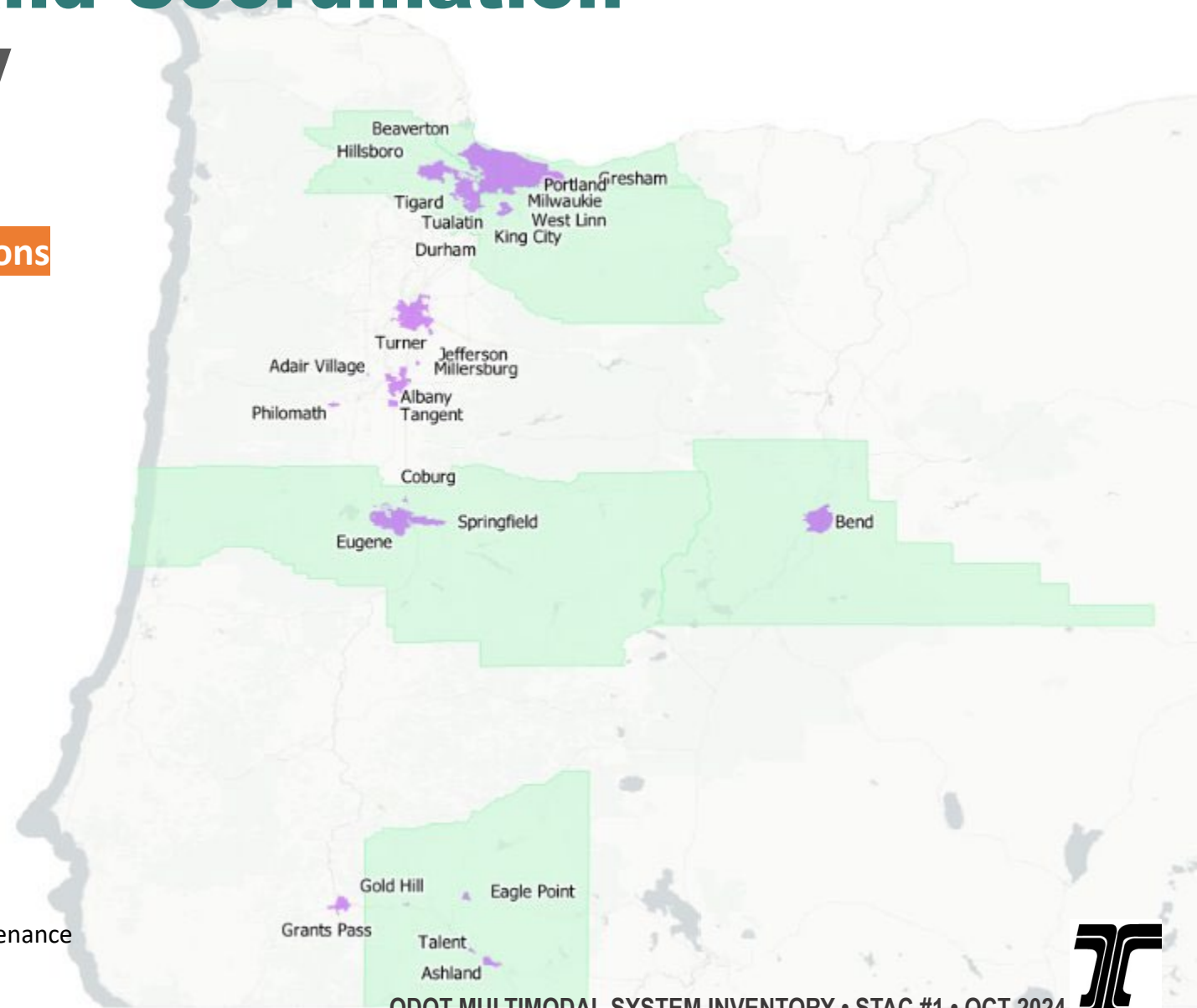**47**

Responses

| Category | Count |
|---|---|
| City | 34 |
| County | 6 |
| MPO | 6 |
| State agency | 1 |
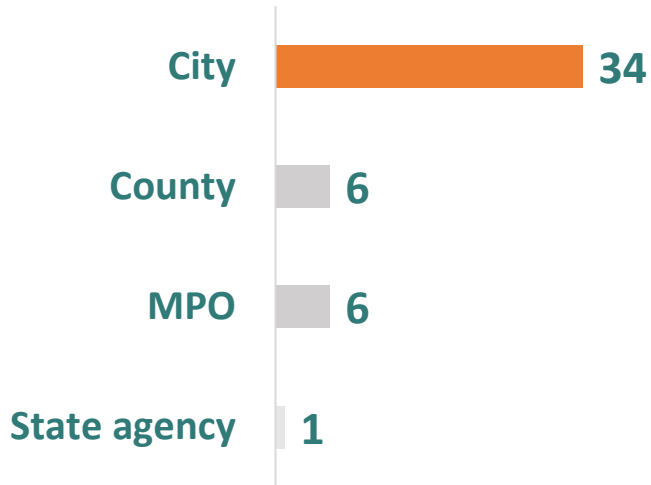
**Roles and Positions**

**57%**
Planning

**40%**
Management

**23%**
GIS/IT

**17%**
Engineering, Design, Maintenance

# End User Survey: Use Cases and Opportunities

## Status Quo

**More than 50% of respondents currently use GIS this way or have used it in the past:**

- Asset management/Inventory

- Gaps and deficiencies

- Identify safety-related issues and needs

- Develop planning-level project concepts

- Evaluate transportation impacts on equity populations

- Evaluate impacts of transportation projects

- Identify and prioritize infrastructure investments

## Wishlist

More than half of respondents would like to use the data for:

- Nonmotorized traffic count program

- First/last mile transit access

- Multimodal Level of Service

- VMT per capita Estimation

*While most of these uses are outside of scope, it's important for ODOT to understand ways to potentially support future uses aligned with CFEC principles.*

# End User Survey: Use Cases and Opportunities

**Takeaways**

- CFEC / TPR compliance is a top priority

- More clarity needed about CFEC, this effort, and ODOT's role

- Lots of excitement around better multimodal data

- VMT analysis is a recurring focus (out of scope)

- Jurisdictions with more robust GIS programs concerned about coordinating this effort with their own work

- Overall, ongoing education/communication needed

# Questions

- Q3. Is there anything missing from our partner engagement approach?

**Technical Memorandum (TM) #1: Attribute List & Data Inventory Needs**

# TM #1: Attribute List & Data Inventory Needs
## Attribute List

- Defines terminology
- Groups data into five categories
- Provides a description, identifies geometry type, data source, project phase, and other key characteristics:

  - Attribute name
  - Type
  - TPR Reference

  - Domain values
  - TPR use
  - Desciption

# TM #1: Attribute List & Data Inventory Needs
## Data Inventory Needs and Uses

### Transportation System Inventories
- Detailed inventories are required for the pedestrian, bicycle, public transportation, and street and highway systems
- Inventories provide the basis for identifying gaps, deficiencies, and needs, as well as developing solutions and numerous required elements of TSPs

### Prioritization Framework
- Used to develop and evaluate alternative solutions and prioritize solutions in TSPs
- Relies on transportation system inventory and other data as input to prioritization

### Land Use and Transportation Performance Meaures
- Indicators used to assess the performance of the transportation system
- Relies on transportation system inventory and other data for reporting on progress

### Other Agency Goals
- Active transportation performance measures
- Oregon Bicycle and Pedestrian Safety Implementation Plan
- Active Transportation Needs Inventory (ATNI)
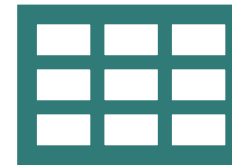
# TM #1: Attribute List & Data Inventory Needs
## TPR Requirements

A set of infrastructure layers and attributes necessary to meet the requirements of Oregon Administrative Rule (OAR) 660-012.

## Map Layers

0505

0605

0705

0150
0805

## Attributes

- Ownership
- Maintenance Responsibility
- Classificaton
- Primary Uses
- Primary Users
- Land Use Context
- Functional Class
- Federal Functional Class
- Condition
- Number of Travel Lanes

# TM #1: Attribute List & Data Inventory Needs
## TPR Requirements

**VEHICULAR + FREIGHT FACILITIES**
- **Roadways**
- **Freight Routes**
- **Freight Terminals**

**BICYCLE + PEDESTRIAN FACILITIES**
- *Bicycle Routes*
- *Pedestrian Routes*
- *Pedestrian and Bicycle Crossings*

**TRANSIT FACILITIES**
- **Transit Lines**
- **Transit Supportive Facilities (Stops)**
- **Transit Priority Infrastructure**

**OTHER RELEVANT DATA**
- **Key Destinations***
- **Crashes***
- *Intersection Points*

**NON-MODAL**
(used for context and gap analysis)
- **Urban Growth Boundaries**
- **MPO Boundaries**
- **City Limits**
- **Climate Friendly Areas**
- **Metro 2040 Regional Growth Centers**
- **Primary and Secondary Schools**
- **Primary and Secondary Schools ¼-mile Buffer**
- **US Census (Blockgroups)**
- **Underserved Populations**

**Bold = Existing Data**
*Italic = New Data*
   \* = Updated during TSP

# Data Sources

**JURISDICTIONS / AGENCIES**
- Use existing GIS datasets and attributes provided by jurisdictions or agencies.
- Jurisdictions / Agencies will be required to populate some attributes during the TSP processs.

**ARTIFICIAL INTELLIGENCE (AI)**
- Pedestrian Routes, Bicycle Routes, and Intersection Points will be developed using machine learning and 2024 high-resolution aerial photos (7.5 cm)
- AI will populate attributes for widths and several BLTS / PLTS attribute inputs.

**PROJECT TEAM**
- Builds missing datasets from available Jurisdication / Agency sources.
- Populate attributes using exsiting Jurisdiction / Agency sources and GIS analysis.

# Roadway Attributes

## VEHICULAR + FREIGHT FACILITIES

- **Roadways**
- Freight Routes
- Freight Terminals



### REQUIRED TPR ATTRIBUTES

- Location
- Ownership
- Maintenance Responsibility
- Classificaton
- Primary Uses
- Primary Users
- Land Use Context
- Functional Classificaton
- Condition
- Number of Travel Lanes
- Lane Width
- Center Turn Lane
- Center Turn Lane Width
- Interchange Location
- Interchange Type
- Pricing Strategy

### SECONDARY ATTRIBUTES

- Travel Spped
- Traffic Volume
- Roadway Width
- Roadway Width Type
- Federal Functional Classification
- Access Density

**Description:** All roadway facilities, including local roads, collectors, arterials, and expressways on public rights of way within a UGB.

**Geometry Type:** Line

**Source:** Jurisdiction (Existing)

**Relevant TPRs:** -0150, -0155, -0805

**Project Phase:** Primary

# Freight Route and Terminal Attributes

## VEHICULAR + FREIGHT FACILITIES
- Roadways
- **Freight Routes**
- **Freight Terminals**

### ROUTES REQUIRED TPR ATTRIBUTES
- Location
- Ownership
- Maintenance Responsibility
- Classificaton
- Primary Uses
- Primary Users
- Designation
- Intermodal Connectors

### TERMINALS REQUIRED ATTRIBUTES
- Location
- Ownership
- Maintenance Responsibility
- Freight Terminal



**Description:** Designated freight routes and intermodal connectors on public rights of way within a UGB.

**Geometry Type:** Line

**Source:** USDOT National Multi-modal Freight Network and Jurisdictions

**Relevant TPRs:** 0155, -0805
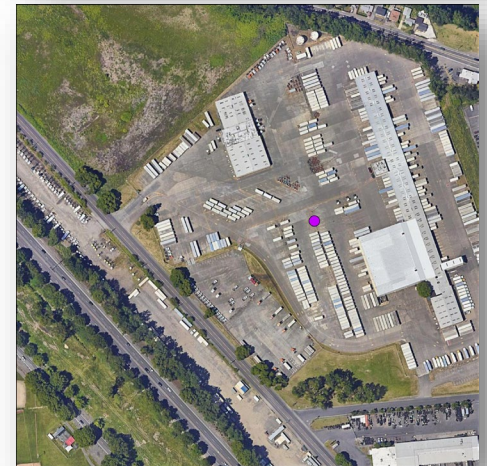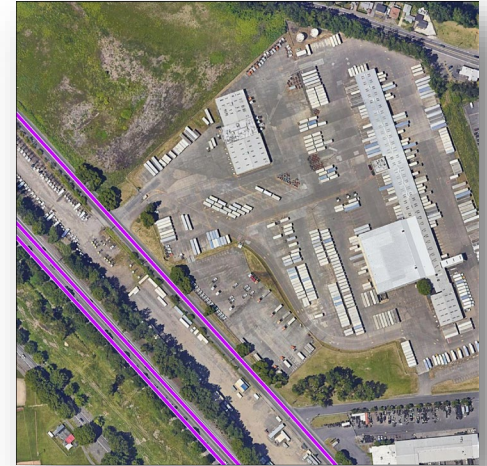
**Project Phase:** Primary



**Description:** Freight terminals accessible from public rights of way within a UGB.

**Geometry Type:** Point

**Source:** USDOT National Multi-modal Freight Network and Jurisdictions

**Relevant TPRs:** 0155, -0805

**Project Phase:** Primary

# Bicycle Route Attributes



**BICYCLE + PEDESTRIAN FACILITIES**

- *Bicycle Routes*
- *Pedestrian Routes*
- *Pedestrian and Bicycle Crossings*

**REQUIRED TPR ATTRIBUTES**

- Location
- Type
- Width
- Condition
- Classification/Designation

**SECONDARY ATTRIBUTES**

- Level of Traffic Stress Inputs *
- Crash Risk Inputs *

*\* Data inputs only; no analysis outcomes*

**Description:** All paved, marked bicycle facilities on public rights of way within a UGB.

**Geometry Type:** Line

**Source:** Jurisdiction (Existing) + AI

**Relevant TPRs:** -0605(1), -0610(1), -0150(4)(a), -0155(5)(a), -0905(2)(b)(A)

**Project Phase:** Primary

# Pedestrian Route Attributes



**BICYCLE + PEDESTRIAN FACILITIES**
- *Bicycle Routes*
- *Pedestrian Routes*
- *Pedestrian and Bicycle Crossings*

**REQUIRED TPR ATTRIBUTES**
- Location
- Type
- Width
- Condition
- Classification/Designation

**SECONDARY ATTRIBUTES**
- Level of Traffic Stress Inputs *
- Crash Risk Inputs *

*\* Data inputs only; no analysis outcomes*

**Description:** All paved pedestrian and shared use facilities on public rights of way within a UGB.

**Geometry Type:** Line

**Source:** Jurisdiction (Existing) + AI

**Relevant TPRs:** -0150, -0155, -0505, -0905

**Project Phase:** Primary

# Bicycle + Pedestrian Crossing Attributes



**BICYCLE + PEDESTRIAN FACILITIES**
- *Bicycle Routes*
- *Pedestrian Routes*
- *Pedestrian and Bicycle Crossings*

**REQUIRED TPR ATTRIBUTES**
- Location
- Type
- Crossing Distance
- Closed Crossings
- Curb Ramp Present

**SECONDARY ATTRIBUTES**
- Distance Between Crossings
- Crossing Treatment

**Description:** Pedestrian and bicycle crossings with striping on public rights of way within a UGB.

**Geometry Type:** Point

**Source:** Jurisdiction (Existing) + AI

**Relevant TPRs:** -0505(1)(b), 0155(5)(a), -0605(1), -0155(5)(a), -0905(2)(b)(A)

**Project Phase:** Primary

# TM #1: Attribute List & Data Inventory Needs
## Overview

- Proposes a set of infrastructure attributes needed to meet TPR requirements:
    - **Transportation system inventory**
    - Prioritization framework
    - Performance standards
    - Performance measures
    - Other agency goals
- Differentiates between primary and secondary attributes
- Identifes potential data sources

# Transit Line Attributes



**TRANSIT FACILITIES**
- **Transit Lines**
- Transit Supportive Facilities (Stops)
- Transit Priority Infrastructure

**REQUIRED TPR ATTRIBUTES**
- Location
- Coverage Type
- Service Type
- Route #
- Transit Lane
- Minimum Headway
- Maximum Headway
- Service Span
- Classification / Designation

**Description:** Existing Transit Service Lines on public rights of way within a UGB.

**Geometry Type:** Line

**Source:** GTFS (primary source) with Transit Agencies/Jurisdictions providing input and review

**Relevant TPRs:** -0705, -0150

**Project Phase:** Primary

# Transit Supportive Facility Attributes



**TRANSIT FACILITIES**
- Transit Lines
- **Transit Supportive Facilities (Stops)**
- Transit Priority Infrastructure

**REQUIRED TPR ATTRIBUTES**
- Location
- Type
- Major Station
- Amenities – Shelter
- Amenities – Signage
- Amenities – Ancillary Facilities
- ADA Accessibility

**Description:** Existing Transit Stops on public rights of way within a UGB.

**Geometry Type:** Point

**Source:** GTFS (primary source) with Transit Agencies/Jurisdictions providing input and review

**Relevant TPRs:** -0705(1), -0700(4)(a)

**Project Phase:** Primary

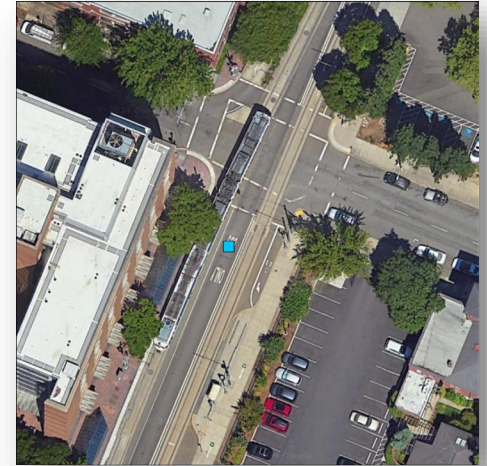# Transit Priority Infrastructure Attributes



**TRANSIT FACILITIES**

- Transit Lines
- Transit Supportive Facilities (Stops)
- **Transit Priority Infrastructure**

**REQUIRED TPR ATTRIBUTES**

- Location
- Type

**Description:** Existing infrastructure to support transit movement on public rights of way within a UGB.

**Geometry Type:** Point

**Source:** Jurisdictions (Existing)

**Relevant TPRs:** -0705(1)

**Project Phase:** Primary

# Key Destination + Crash Attributes



## OTHER RELEVANT DATA
- **Key Destination***
- **Crashes***
- *Intersection Points*

### KEY DESTINATION REQUIRED TPR ATTRIBUTES
- Location
- Type

### CRASHES REQUIRED TPR ATTRIBUTES
- Crash ID
- Year
- Injury Severity
- Participant Type

**Description:** Key destinations to support vehicle, transit, pedestrian, and bicycle users.

**Geometry Type:** Point

**Source:** Jurisdictions (Existing)

**Relevant TPRs:** -0360(2), -0700(2)(C ),-0905(2)(d)(C ), -0155(3)(e ), -0600(2)(c ), -0500(2)(c ), -0800(2)(c)

**Project Phase:** Primary

**Description:** Crash locations for 5-years.

**Geometry Type:** Point

**Source:** ODOT

**Relevant TPRs:** -0505(2), -0605(3), -0805(2), 0155(3)(c )

**Project Phase:** Primary

# Intersection Point Attributes



## OTHER RELEVANT DATA
- Key Destination*
- Crashes*
- *Intersection Points*

### INTERSECTION ATTRIBUTES
- Lanes per direction
- Parking Presence
- Parking Width
- Frequent Blockage
- Bike Lane Buffer Presence
- Bike Lane Buffer Width
- Bike Lane Buffer Type
- Right Turn Lane Type for Bicycle Users
- Right / Left Turn Lane Length
- Right / Left Turn Lane Vehicle Speed
- Bicycle Left Turn Lanes Crossed
- Intersection Type
- Median Refuge
- Median Refuge Width
- Unsignalized One-way or Two-way
- Unsignalized Prevailing Speed

### INTERSECTION ATTRIBUTES
- Roundabout Entry / Exit Type
- Roundabout Entry / Exit Approach
- Roundabout # of Circulating Lanes
- Sidewalk Buffer Type
- Sidewalk Buffer Width
- Illumination Presence
- Sidewalk Ramps
- Treatments - Markings
- Treatments – Roadside Signage
- Treatments – PHB or RRFB
- Treatments – Street Signs
- Treatments – Curb Extensions
- Treatments – Raised Crosswalk
- Treatments – Flashing Beacon

**Description:** Points for each road entering an intersection. This dataset will be used primarily for BLTS and PLTS analyses. This dataset would only apply to collector and arterial streets. Typically, this dataset is developed manually, and it may not be possible to develop a statewide dataset with the specified level of detail.

**Geometry Type:** Point

**Source:** AI + Project Team

**Relevant TPRs:** -0905(2)(b)(A)

**Project Phase:** Contingency

# Attribute Working Groups

- Provide definitions, suitable values, and GIS processes for populating select attributes.
- Identify solutions that are technologically and economicall feasible to develop and maintain
- Develop solutions that capture conditions for small and large jurisdictions.
- Includes discipline experts from various jurisdictions.
- Working groups outputs will feed into the Attribute List.

**ROADWAYS**
- Condition
- Land Use Context

**BICYCLE + PEDESTRIAN ROUTES**
- Condition
- Bicycle Facility Type

# STAC Feedback

- Q4. What current or anticipated challenges face your organization with regard to meeting TPR-requirements?

- Q5. What should we prioritize as we work with statewide partners to create a consistent, multimodal dataset?

- Q6. Did we miss anything? Is there anything that you wish we would have talked about more?

# Next Steps

- Data Intake Form for all Jurisdictions

- 2024 Cohort Gap Analysis

- Working Group Meetings to advance data standards and definitions

- Process existing data and order new AI data

Thank You!