Multimodal System Inventory for Metropolitan Areas

Statewide Technical Advisory Committee Meeting #2

March 5, 2025

2:00 pm – 4:00 pm

Oregon Department of Transportation

Agenda

1. Welcome: Add your name and role in the chat
2. Meeting purpose, STAC role and feedback needed today
3. Project updates
4. Data gaps, coordination and processing
5. Project datasets
6. Long-term data management and maintenance
7. Next Steps

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

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

Today, we want your thoughts on…

1. Data gaps, coordination and processing
   - **How do we ensure local agency needs are met?**
2. Project datasets
   - **Does our process for identifying data sources make sense?**
   - **Are there other datasets that should be included that we didn't discuss?**
3. Long-term data management and maintenance
   - **What do you want or need longer term?**
   - **What should we be considering if we want to maintain a long-term dataset?**

STAC #1 Recap


5 CENTER STREET
M
5 CENTER STREET
TO LANCASTER DRIVE
113
LIMITED SEATING
AVAILABLE
3-6 feet

STAC #1 Recap

- Confirmation on overall approach
- TM#1 Data Needs and Attributes
- Confirmation of STAC Role and ODOT partnership

Project Updates

Project Updates

- **2024 Pilot group updates:**
  - Ashland, Albany, Beaverton, Millersburg, Salem, Keizer
  - Draft gap analysis by jurisdiction complete
  - Some draft data sets delivered for jurisdictional review
  - Received first batch of AI-derived data
  - Lessons learned so far

Project Updates

2025 Cohort:

- Scheduling kick off calls
- Acquiring data in preparation for gap analysis

Bend
Clackamas County (Metro)
Coburg
Deschutes County (Bend)
Eagle Point
Forest Grove
Gold Hill
Hillsboro
Jackson County
Jacksonville
Medford
Multnomah County (Metro)
Phoenix
Portland
Sherwood
Springfield
Tualatin
Washington County (Metro)
Wilsonville

Project Updates

- **Working Groups** convened to refine data attributes and sources for:
  - Land Use Context
  - Street and Sidewalk Condition
  - Bike Facility Type

- **AI vendor agreements** executed with Ecopia and Vexcel
  - 2024 cohort data has been delivered to ODOT
  - All other AI data delivered to ODOT by end of summer 2025

Data Gaps, Coordination, and Processing to Support TSP Work

TM #2: Data Gap Analysis

Purpose

1. Identify gaps in existing data relative to TPR requirements
2. Ensure existing data can be conflated at regional and state level
3. Document methodology for identifying gaps in spatial & attribute data
4. Develop a list to new data sets the MM Inventory project will collect
5. Identify opportunities to use statewide data in lieu of local data
6. Ensure gap analysis process is efficient, accurate, and repeatable

TM #2: Data Gap Analysis

Findings

- No jurisdiction or transit agency has all required layers or attributes
- Many jurisdictions lack pedestrian routes, bicycle routes, and pedestrian and bike crossing data
- No jurisdiction has needed intersection point data
- No transit agency has needed Transit Priority Infrastructure data

TM #2: Data Gap Analysis

Recommendations

- Utilize *Jurisdiction / Transit Agency Data Summary Spreadsheets*
- Develop project wide pedestrian route, bike route, and pedestrian and bike crossings datasets
- Develop project wide intersection point data layer for facilities identified as collector and above
- Utilize ODOT's curated GTFS data as a statewide source for developing Transit Line and Transit Support Facility (Stops) datasets

TM #2: Data Gap Analysis

Concerns

- Calculating condition for roadways and pedestrian and bicycle routes within budget at project scale will be difficult
- Working groups needed for:
  - Determining standards and methods for the Land Use Context attribute for roadways
  - Selecting bikeway facility types that are suitable for all jurisdictions
- Need to select a common source for roadway AADT data

LESSONS LEARNED SO FAR

- Initial findings on existing data availability were correct
- Most jurisdictions maintain existing data out to the UGB
- No jurisdictions have all the CFEC required attributes
- The process is opening dialogs between organizations that share data
- Jurisdiction feedback has been critical to refining our proposed process

Example here?
Common gaps, but high variability in gaps across jurisdictions (provide example here)

TM #3: AGENCY COORDINATION

Technical Coordination Goals

1. Process transparency
2. Confirm level of participation and address any issues
3. Technical coordination for data processing
4. Discuss long-term data management strategies

TM #3: AGENCY COORDINATION

Technical Coordination Steps

1. Project surveys
2. Project introduction calls
3. Gap analysis coordination calls
4. Existing data coordination calls
5. Jurisdiction existing data review
6. New data integration
7. Long-term maintenance discussions

TM #3: AGENCY COORDINATION

- How can we make this process easy and successful for local jurisdictions?

Project Datasets

Identifying Proposed Data Sources

1. Identify project datasets (Tech Memo #1)
2. Identify potential data sources
3. Evaluate potential data sources
4. Evaluate gaps in existing data sources (Preliminary Gap Analysis)
5. Propose project dataset sources

Step 1: Identify Project Datasets (Tech Memo #1)

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

Step #2: Identify Potential Data Sources

Existing Data

- Federal Sources
- State Sources
- Regional Sources
- Local Sources
- Open Streetmap

New Data Sources

- Desktop Digitizing
- Jurisdiction Input
- GPS Field Data Collection
- Mobile Scanning
- Third Party (Proprietary Data)
- Artificial Intelligence

Step #3: Evaluate Potential Data Sources

- Fatal Flaws
- TPR Compliance
- Accuracy
- Cost Effectiveness
- Efficiency
- Quality Control and Consistency
- Long-term Data Management

DATA SOURCE / COLLECTION METHOD	FATAL FLAW(S)
OPEN STREET MAP	• **Accuracy:** While OpenStreetMap is a large and relatively spatially complete dataset, it's primarily developed through public crowdsourcing. There is also little quality control associated with the OpenStreetMap datasets. This presents challenges for developing accurate, authoritative datasets.
GPS FIELD DATA COLLECTION	
MOBILE SCANNING	
MANUAL CREATION MANUAL DATA CREATION – DESKTOP GIS DIGITIZING	

PROJECT DATASET	DATA SOURCE / COLLECTION METHOD	TPR COMPLIANCE	ACCURACY	COST EFFECTIVENESS	EFFICIENCY	QUALITY CONTROL & CONSISTENCY	LONG-TERM DATA MGMT.
ROADWAYS	USDOT Tiger Line Files (Federal)	-	+	-	-	+	-
Strengths Tiger line files undergo quality and consistency control and are considered reasonably accurate.							
Weaknesses Compared with other datasets, Tiger line files do not include many of the TPR required attributes, which would also impact the cost effectiveness, as initial attribution would take longer than comparable sources.							
ROADWAYS	ODOT TransGIS Roadways (State)	+	+	-	-	+	-
Strengths TransGIS Roadways, and the TransGIS LRS in general, include several TPR required attributes in a standardized format and the system undergoes quality control and consistency processes.							
Weaknesses TransGIS Roadways have a limited amount of information for local roads which will be most of the roadway facilities within the subject jurisdictions; it would require additional cost and would be less efficient to populate attributes for these local roads than using other data sources. Long-term maintenance of the data would also be more difficult than using local sources for non-ODOT facilities.							
ROADWAYS	Metropolitan Planning Agencies (Regional) Example Metro RLIS Roads	+	+	+	+	-	-
Strengths Regional governments and planning agencies typically have several standardized attributes that would comply with TPR requirements and the ability to use one standard dataset for multiple jurisdictions would be cost effective and efficient.							

Step #4: Evaluate Gaps in Existing Data Sources

- No jurisdiction or transit agency has all required layers or attributes
- Many jurisdictions lack pedestrian routes, bicycle routes, and pedestrian and bike crossing data
- No jurisdiction has needed intersection point data
- No transit agency has needed Transit Priority Infrastructure data

Step #5: Propose Project Dataset 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.

Step 5: Identify Project Datasets (Tech Memo #1)

VEHICULAR + FREIGHT FACILITIES

- **Roadways**
  - Primary Source: City
  - Alternate Source: County / MPO / COG
- **Freight Routes**
  - Primary Source: ODOT
  - Alternate Source: Jurisdiction Input
- **Freight Terminals**
  - Primary Source: ODOT / USDOT
  - Alternate Source: Jurisdiction Input

BICYCLE + PEDESTRIAN FACILITIES

- **Bicycle Routes**
  - Primary Source: City / County / MPO
  - Alternate Source: AI
- **Pedestrian Routes**
  - Primary Source: City / County / MPO
  - Alternate Source: AI
- **Pedestrian and Bicycle Crossings**
  - Primary Source: City / County / MPO
  - Alternate Source: AI

Step 5: Identify Project Datasets (Tech Memo #1)

TRANSIT FACILITIES

- **Transit Lines***
  - Primary Source: ODOT GTFS
  - Alternate Source: Transit Agency / Jurisdiction Input
- **Transit Supportive Facilities (Stops)***
  - Primary Source: ODOT GTFS
  - Alternate Source: Transit Agency / Jurisdiction Input
- **Transit Priority Infrastructure**
  - Primary Source: Transit Agency (TriMet & LTD)
  - Alternate Source: Jurisdiction Input

OTHER RELEVANT DATA

- **Key Destinations**
  - Primary Source: Jurisdiction Input
- **Crashes**
  - Primary Source: ODOT*
  - Alternate Source: Jurisdiction Input
- **Intersection Points**
  - Primary Source: AI
  - Alternate Source: None

* = Automated process

Step 5: Identify Project Datasets (Tech Memo #1)

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*

Bold = Update existing jurisdiction data
Italic = Develop using AI
* = Jurisdictions to populate during TSP
** = Processed by Project Team

Overview of AI Data Vendor Agreement

- Datasets provided by AI Vendors include:
  - **Bikeways, sidewalks, off-street facilities, crossings, intersection points**
  - *Edge of pavement, vehicle lanes, medians, planting strips*
- Jurisdictions and project partners (including consultants) have full access to vendor datasets

Bold = Project Datasets
Italic = Project Dataset Attribute Inputs

Project Datasets

Does our process for identifying data sources make sense?

Are there other datasets that should be included that we didn't discuss?

DATA GAPS & COORDINATION

How do we ensure local jurisdictions' needs are met?

Let’s take a break.

See you in 5.

Introduction to Long-term Data Management and Maintenance

Project Goals

- Establish a foundational dataset that meets TPR requirements and can be used at the local, regional and state level
- Establish sustainable and repeatable methods for data collection and quality control
- Convene partners to lay a framework for long term data management

Long-term maintenance - Questions

- How do we keep the project datasets up-to-date?
- Who owns and maintains project datasets?
- How frequently should project datasets be updated?
- What steps can the project take to support long term data maintenance?

Long-term maintenance - Considerations

- **Update frequency**

  How often are datasets updated.

- **Redundancy**

  We want to avoid having redundant datasts.

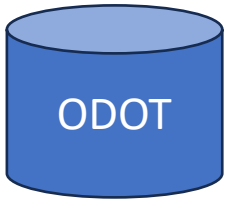
- **Level of Effort**

  How much effort will it require to keep datasets updated compared to current.

- **Additional Uses**

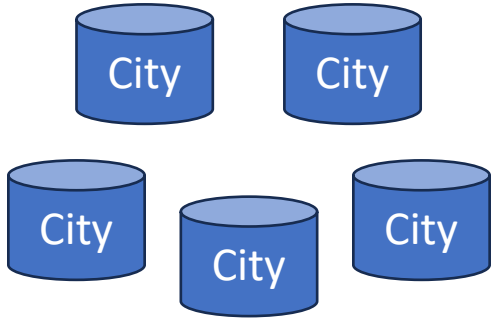
  How will ownership and maintenance affect other uses of the data beyond TSPs / CFEC.

Long-term maintenance - Options



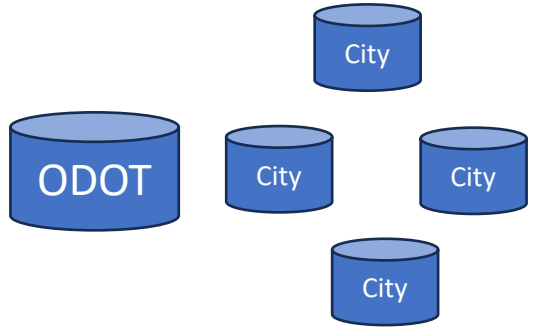
Centralized

Data is owned and maintained by ODOT.



Distributed (Decentralized)

Data is owned and maintained by jurisdictions / counties / MPOs / COGs



Hybrid

Ownership and maintenance are split between ODOT and jurisdictions based on update frequency and local usage.

Long-term maintenance – if we continue the status quo

JURISDICTIONS

- Roadways
- Pedestrian Facilities
- Bike Facilities
- Pedestrian & Bike Crossings
- Key Destinations
- Intersection Points

ODOT

- Freight Routes
- Freight Terminals
- Transit Lines
- Transit Stops
- Transit Priority Infrastructure
- Crashes

BENEFITS

- Local ownership of frequenty used datasets
- Reduces redundant datasts
- Enables local owners to use authoritative data for other purposes
- Distributes the level of effort
- Maintains the ability to create “point in time” statewide datasets

Help us start to explore long-term options:

1. How are the current ODOT, MPO, and local agency roles working, when it comes to GIS data resources?
2. Where do you see opportunities to improve how we all manage and maintain data?
3. How can we get the most value from this data "down payment"?
4. What should the project team be thinking about to find sustainable and realistic solutions?

Next Steps

STAC To-dos:

- Send Theresa feedback on memos by March 14th

Project Schedule:

- Feb/Apr –
  - Team will complete pilot data collection, post-processing, and delivery
  - Team will continue 2025 cohort coordination and jurisdictional gap analysis
- MISC #3 – May
- STAC #4 – May/June
- Virtual Briefing – June/July