

Transportation Performance Management Webinar Series

Webinar 33

Freight Performance Management

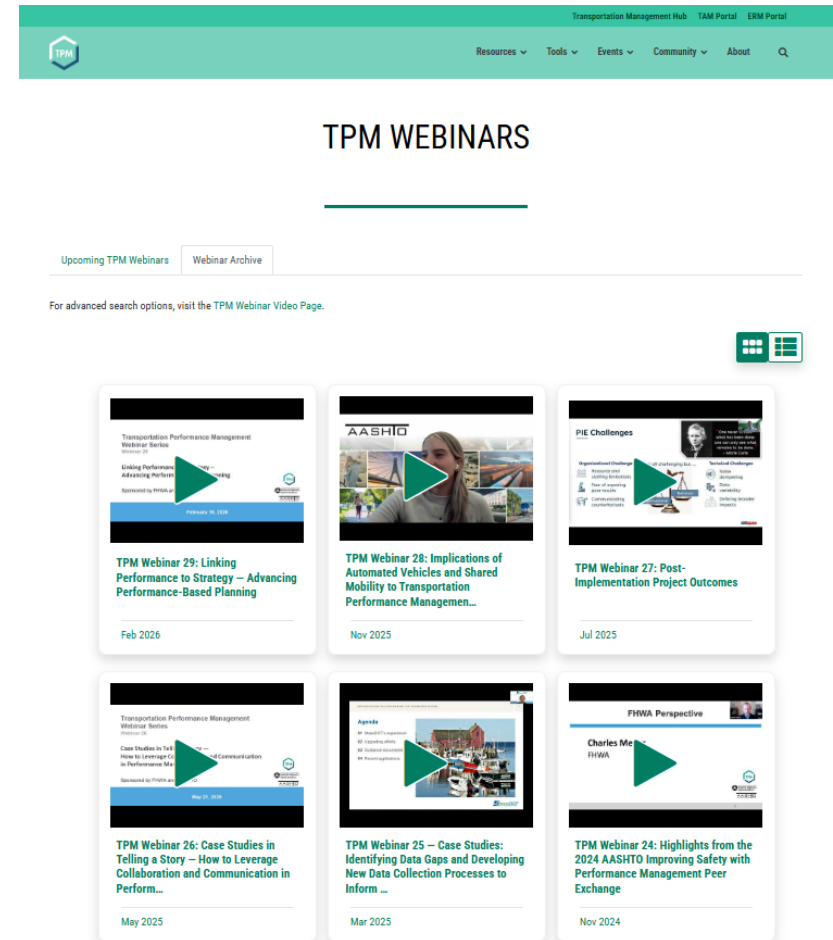
Sponsored by FHWA and AASHTO



October 21, 2026

Welcome!

- Today is the **33rd** webinar in our bimonthly series, held on Wednesdays at 2:00 PM ET
- Webinars cover a variety of topics with a performance management focus
 - You will be able to find the materials from this webinar on the TPM Portal: <https://www.tpm-portal.com/event-directory/tpm-webinars/>
- We are always welcoming ideas for webinar topics and presentations!
- Use the webinar chat to submit questions for today's presenters and ideas for future webinars



Webinar Objectives

- **Feature** new ideas, tools, and partnerships that are helping align local freight needs with state goals
- **Explore** emerging resources for addressing the challenges of multimodal freight data gaps and freight-specific challenges like truck parking
- **Highlight** how DOTs and regional agencies are measuring success along freight corridors in the context of broader performance efforts
- **And as always, share** lessons learned, ideas, and knowledge!!!





Webinar Agenda

- 2:02 Webinar Overview and AASHTO Welcome**
Christos Xenophontos, Rhode Island Department of Transportation
Anna McLaughlin, AASHTO
- 2:15 Learning Objectives and Agenda**
Lori Richter, Spy Pond Partners
- 2:20 *Federal Highway Administration Freight Transportation Performance Management***
Jeff Purdy, FHWA
- 2:37 *State Freight Planning Using Telematics for Corridor Benchmarking***
Riley Keller, Caltrans
- 2:54 *Intersecting Freight Planning, Operations, and Performance Management***
Caroline Mays, Texas Department of Transportation
- 3:11 *Colorado Operations and Planning in Freight Performance***
Craig Hurst, Colorado Department of Transportation
- 3:28 *Snapshot of Collaboration on Local Freight Delivery***
Rachel Vierstra and John Kaliski, Cambridge Systematics
- 3:45 Panelist Discussion**
- 3:58 Wrap Up**
Lori Richter



Federal Highway Administration Freight Transportation Performance Management

Jeff Purdy, AICP, PTP
Freight Programs Team Leader
Office of Operations
Federal Highway Administration

Source: FHWA



U.S. Department of Transportation
Federal Highway Administration

Disclaimers



U.S. Department of Transportation
Federal Highway Administration

The U.S. Government does not endorse products or manufacturers. Trademarks or manufacturers' names appear in this presentation only because they are considered essential to the objective of the presentation. They are included for informational purposes only and are not intended to reflect a preference, approval, or endorsement of any one product or entity.

Except for the statutes and regulations cited, the contents of this presentation do not have the force and effect of law and are not meant to bind the States or the public in any way. This presentation is intended only to provide information regarding existing requirements under the law or agency policies.

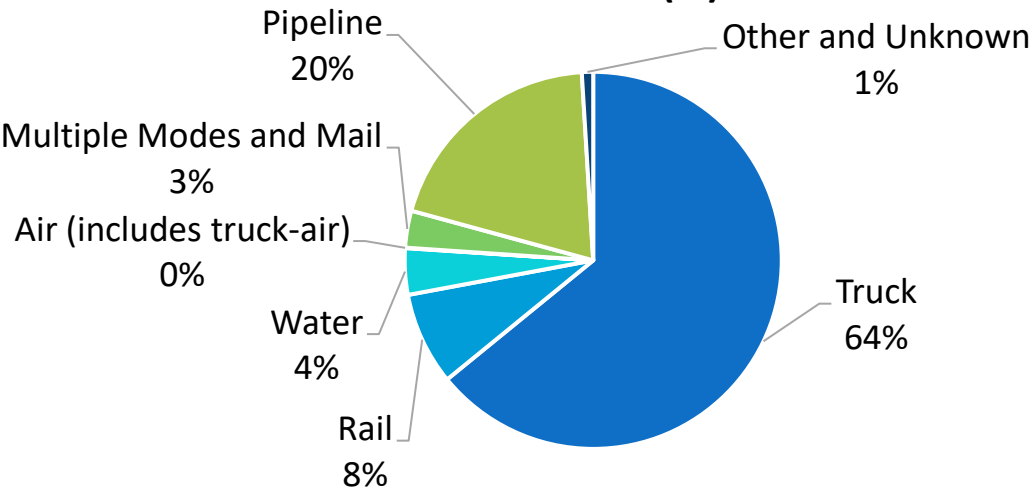
The Federal Highway Administration (FHWA) is the source of all images in this presentation unless otherwise indicated.

Trucking Leads Freight Growth in Weight and Value

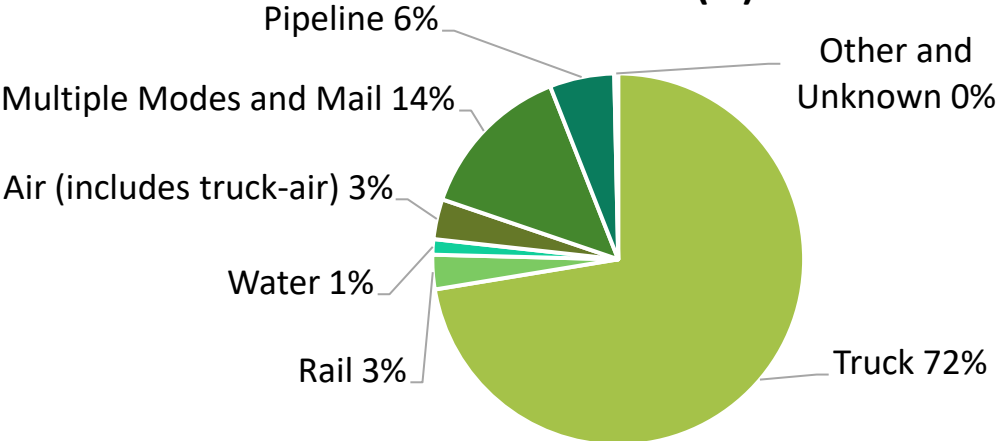


U.S. Department of Transportation
Federal Highway Administration

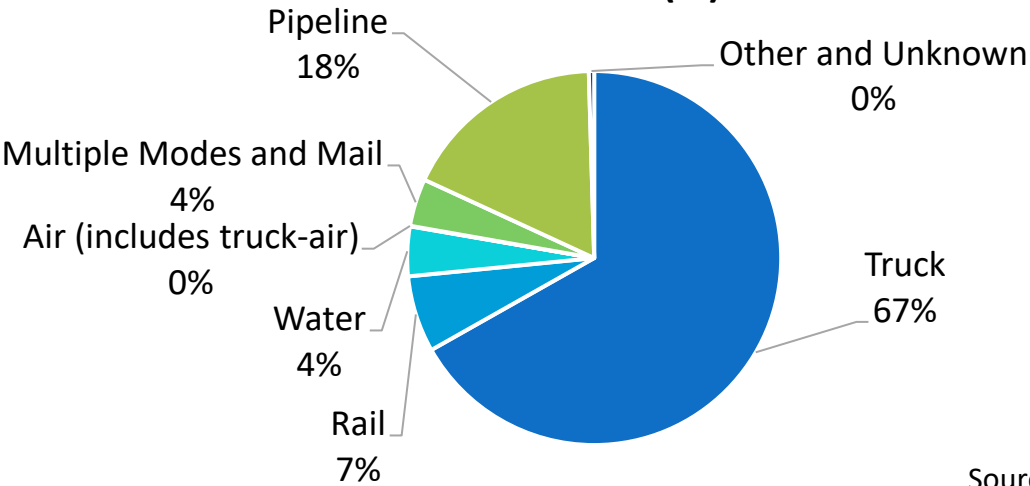
2022 Tons (%)



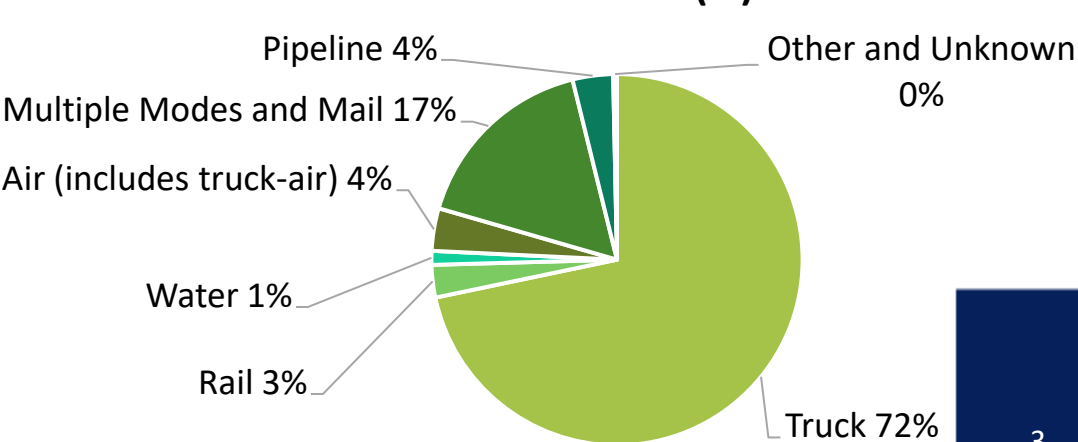
2022 Value (%)



2050 Tons (%)



2050 Value (%)

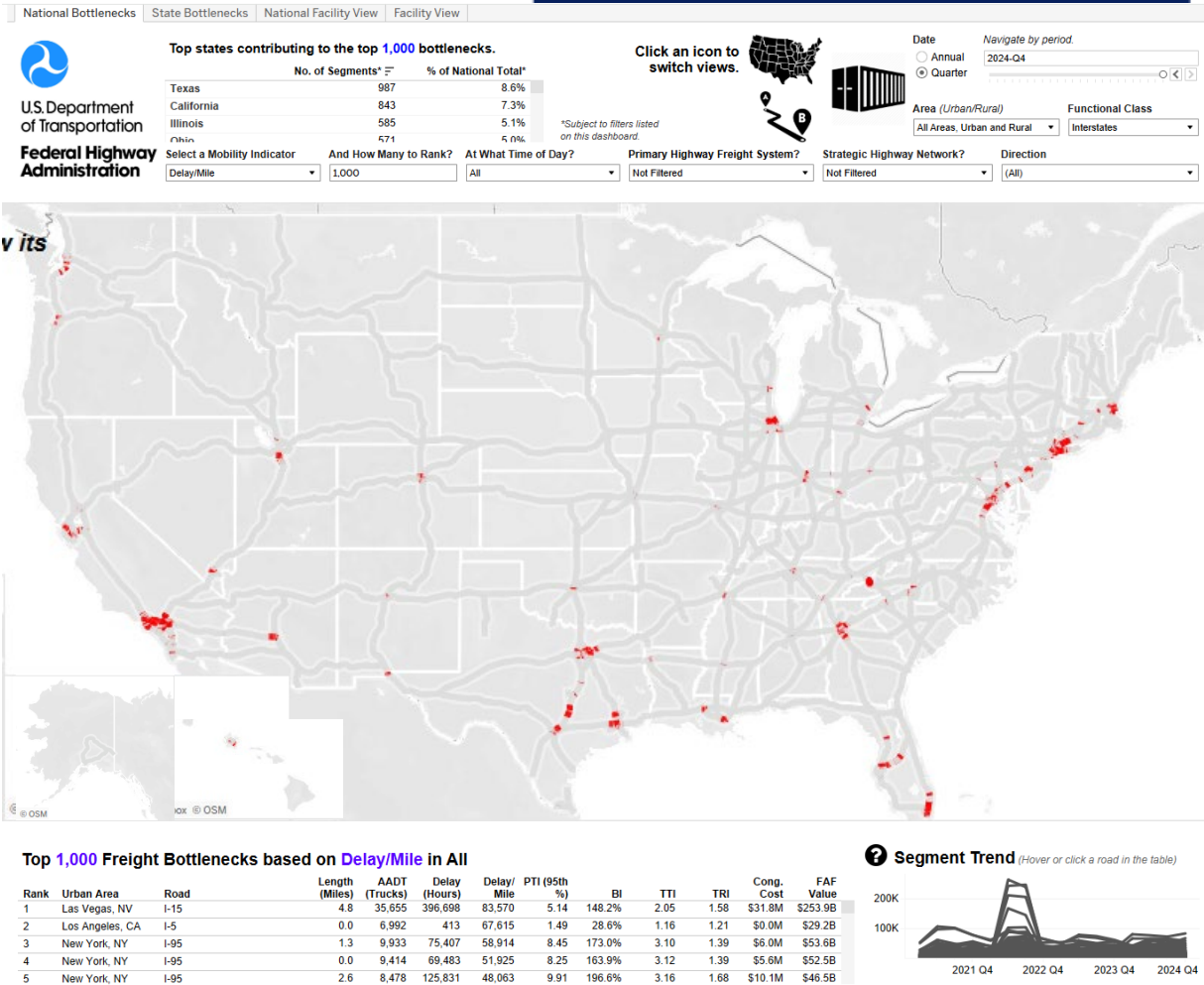


Congestion, Operations, and Freight Productivity



U.S. Department of Transportation
Federal Highway Administration

- Improving freight movement, productivity, and economic competitiveness
- Freight performance management
 - Truck travel time reliability
 - Freight bottlenecks and congested corridors
 - Infrastructure investment needs
- Freight operations and technology
 - Freight Traveler Information Systems
 - Freight intermodal connector efficiency
 - Inland ports
 - Border wait time technology
 - Truck lanes
 - Traffic Signal Timing for Trucks
 - Work Zone Management for Trucks



Improving Performance of Freight Intermodal Connectors



U.S. Department of Transportation
Federal Highway Administration

Research strategies to improve the capacity and performance of National Highway System freight intermodal connectors so that they can continue to serve the increasing volume of goods, including:

- Evaluating performance of freight intermodal connectors in terms of safety, capacity, efficiency, reliability, and performance
- Identifying transportation systems management and operational strategies to improve the efficiency of freight movement to and from freight intermodal facilities
- Assessing vulnerabilities of freight intermodal connectors to extreme weather and natural disasters and what can be done to address supply chain vulnerabilities
- Considering the critical link that intermodal connectors play in the larger supply chain and how these connectors can support supply chain performance
- Examining extent that freight movement on other local roads can be mitigated

Truck Parking Safety and Efficiency



U.S. Department of Transportation
Federal Highway Administration

Truck Parking Availability

Demand Estimation

Supply–Demand Balance

Forecasting

Truck Parking Safety Impacts

Drive When Fatigued or Beyond Hour of Service

- » Crashes involving fatigued drivers
- » Crashes involving parked trucks
- » Cargo theft and driver safety

Park in Undesignated Location

Source: stock.adobe.com.

Truck Parking Efficiency Impacts

Unused Drive Time

- » Increased trucking costs
- » Decreased trucking speeds/reliability
- » Increased congestion and emissions
- » Infrastructure deterioration

Detour To Find Parking

Source: stock.adobe.com.

Truck Project Development and Prioritization

Opportunity Identification

Modeling of Transportation Impacts

Project Prioritization



U.S. Department of Transportation
Federal Highway Administration



Source: FHWA

For more information, please contact:

Jeff Purdy, AICP, PTP

Freight Programs Team Leader

Office of Operations

Federal Highway Administration

jeffrey.purdy@dot.gov



State Freight Planning Using Telematics for Corridor Benchmarking

TPM Webinar 33: Freight Performance Management

Riley Keller

Chief, Technical Freight Planning and Project
Integration

Caltrans

October 21, 2026

Presentation Overview

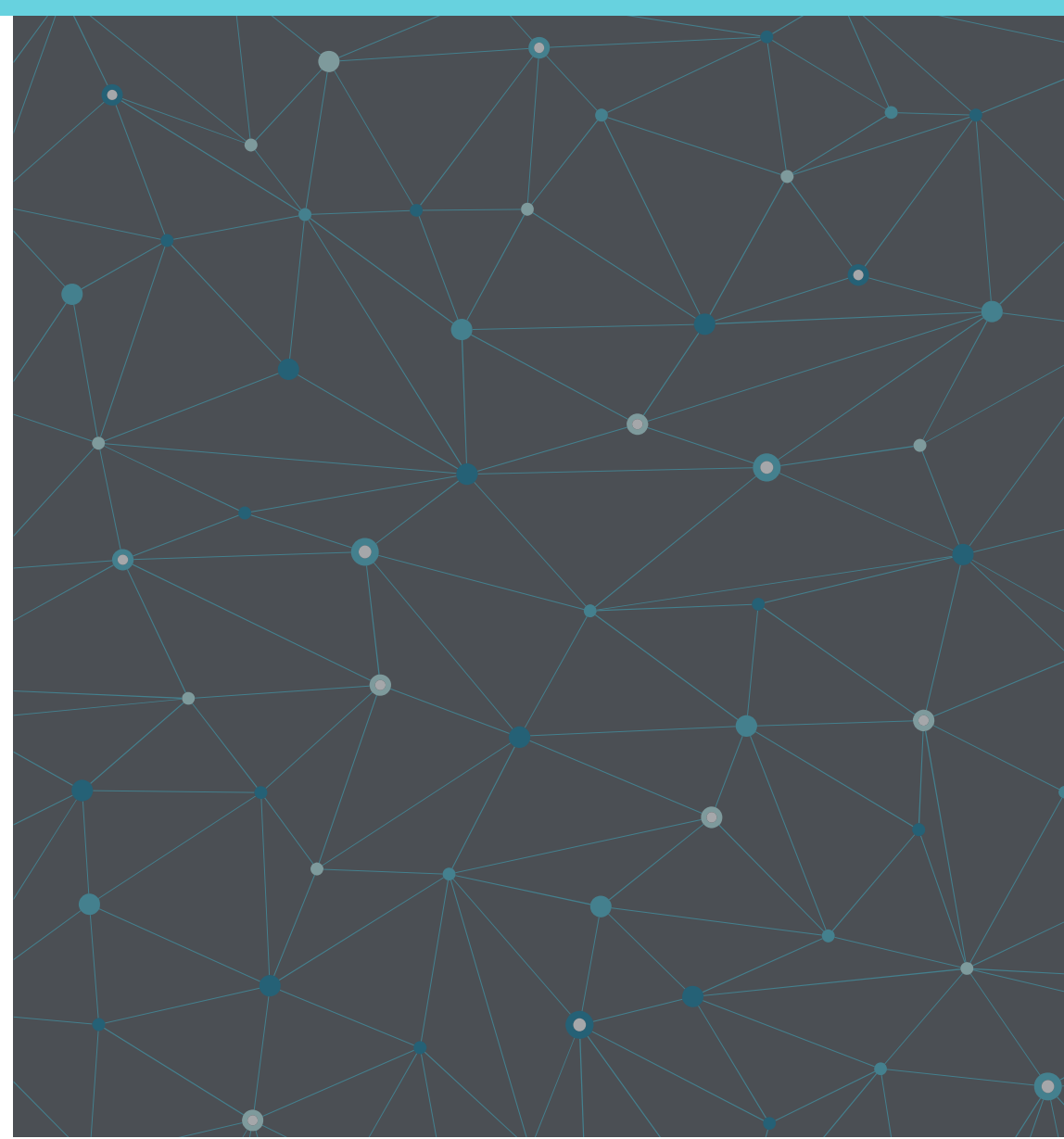
**Freight Planning and Corridor Benchmarking:
Traditional Data Sources**

**Moving Beyond Traditional Data and Performance
Management: Telematics**

**Sample Use Case: Truck Parking Patterns in Rural
Areas**

**Sample Use Case: Monitoring Driver Behavior Post
Intervention**

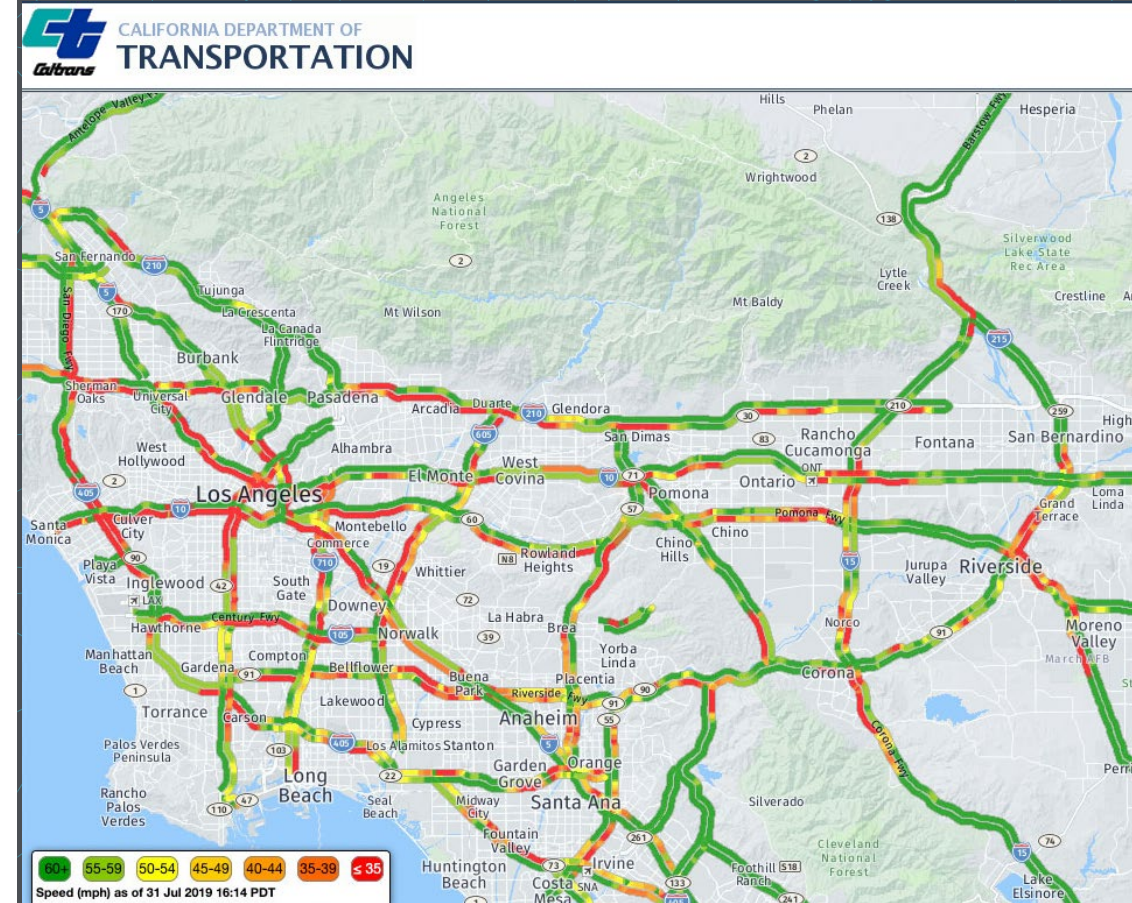
Conclusion



Freight Planning and Corridor Benchmarking

TRADITIONAL DATA SOURCES

- Historical data sources:
 - speeds, volumes, safety incidents, reliability indices.
- Common measures:
 - Average Speed, Travel Time Index, Truck Travel Time Reliability Index, congestion hours, vehicle hours of delay, crash rates.
- Understanding performance gaps in comparison to goals and objectives of your plan and corridors.

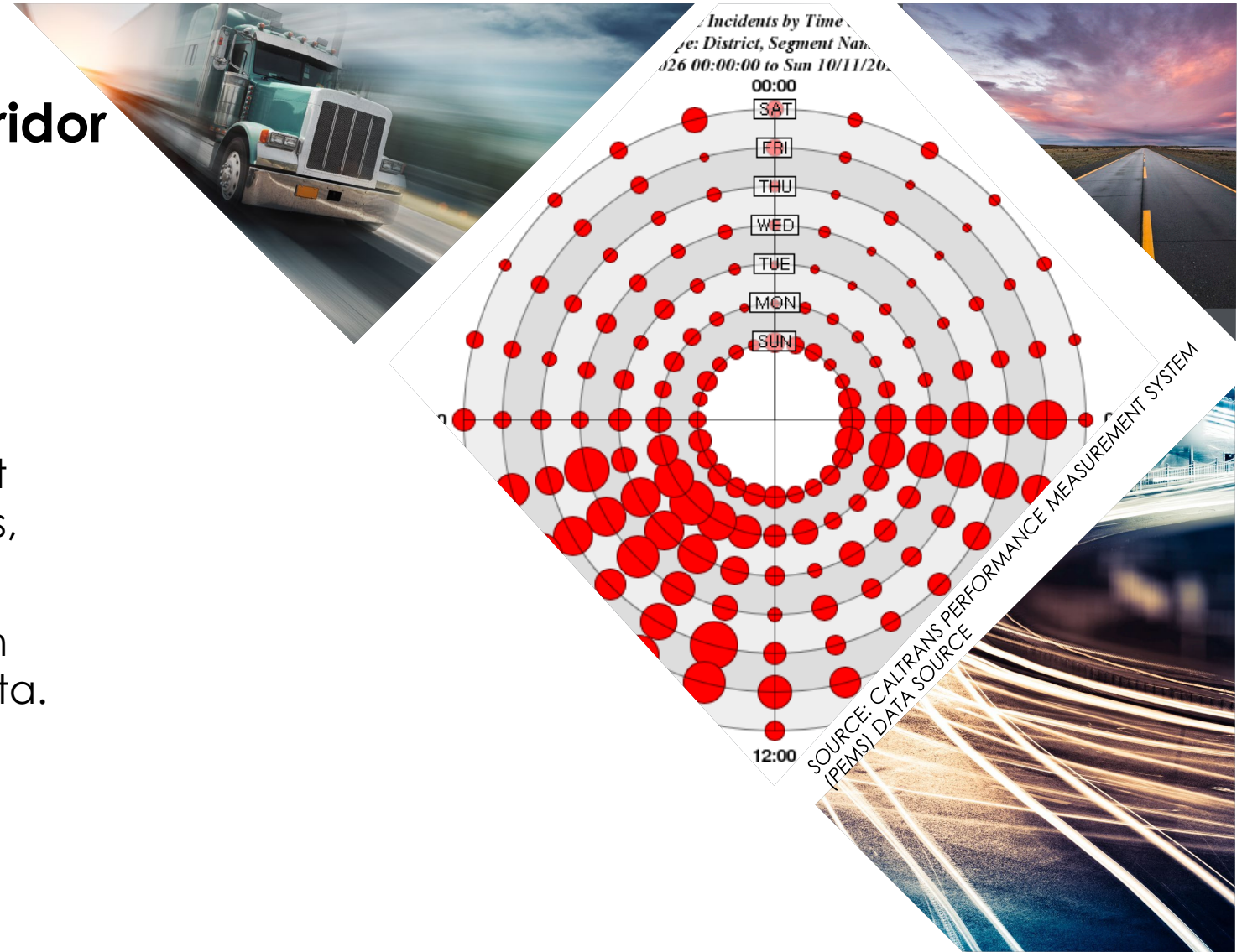


SOURCE: CALTRANS PERFORMANCE MEASUREMENT SYSTEM (PEMS) DATA SOURCE

Freight Planning and Corridor Benchmarking

TRADITIONAL DATA SOURCES

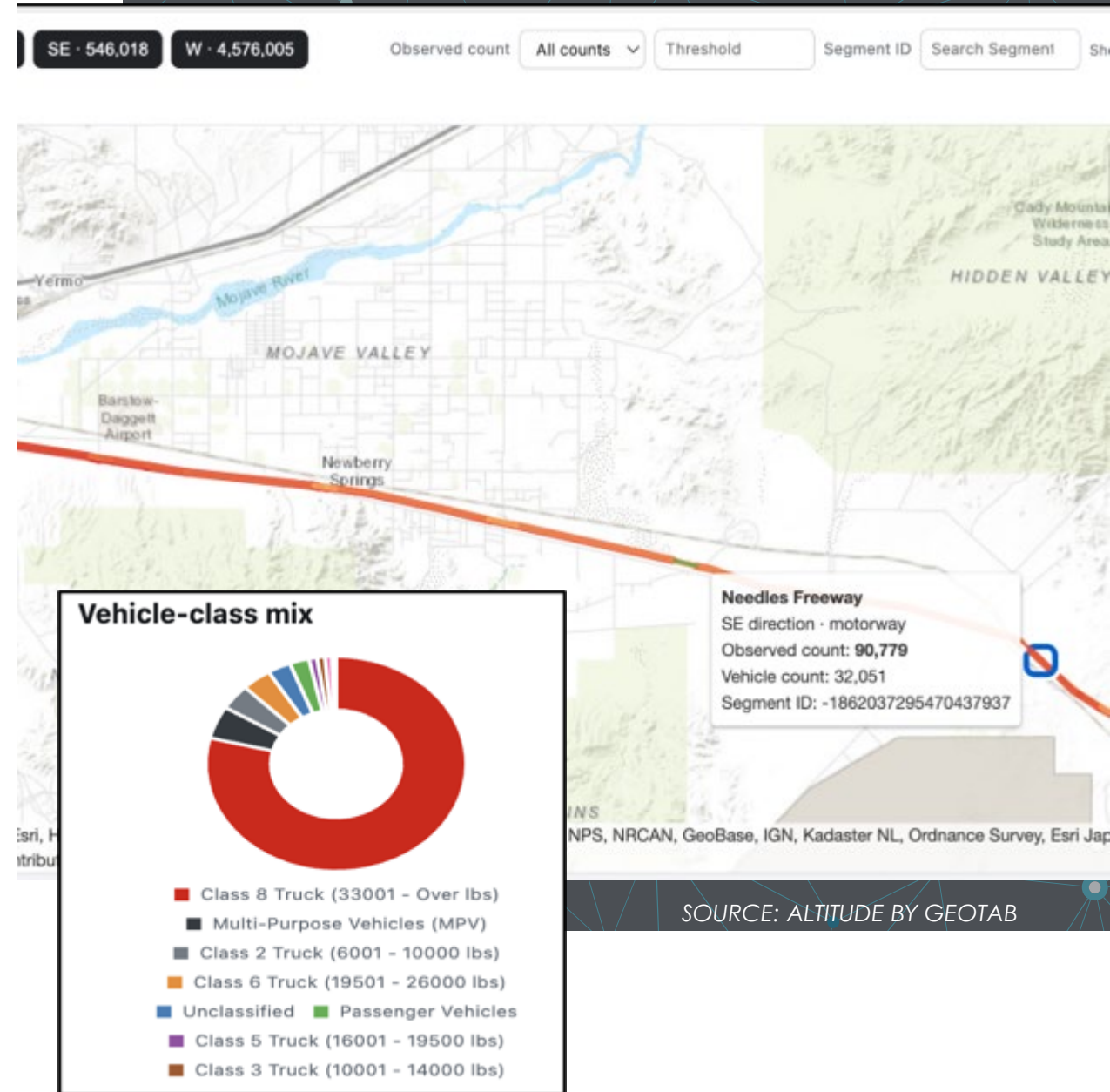
- Data is often months or years behind real-world conditions.
- Limited behavioral insights that focus on aggregate outcomes, not driver actions.
- Truck specific insights are often lumped into general traffic data.
- Reactive performance management.



Moving Beyond Traditional Data

TELEMATICS DATA

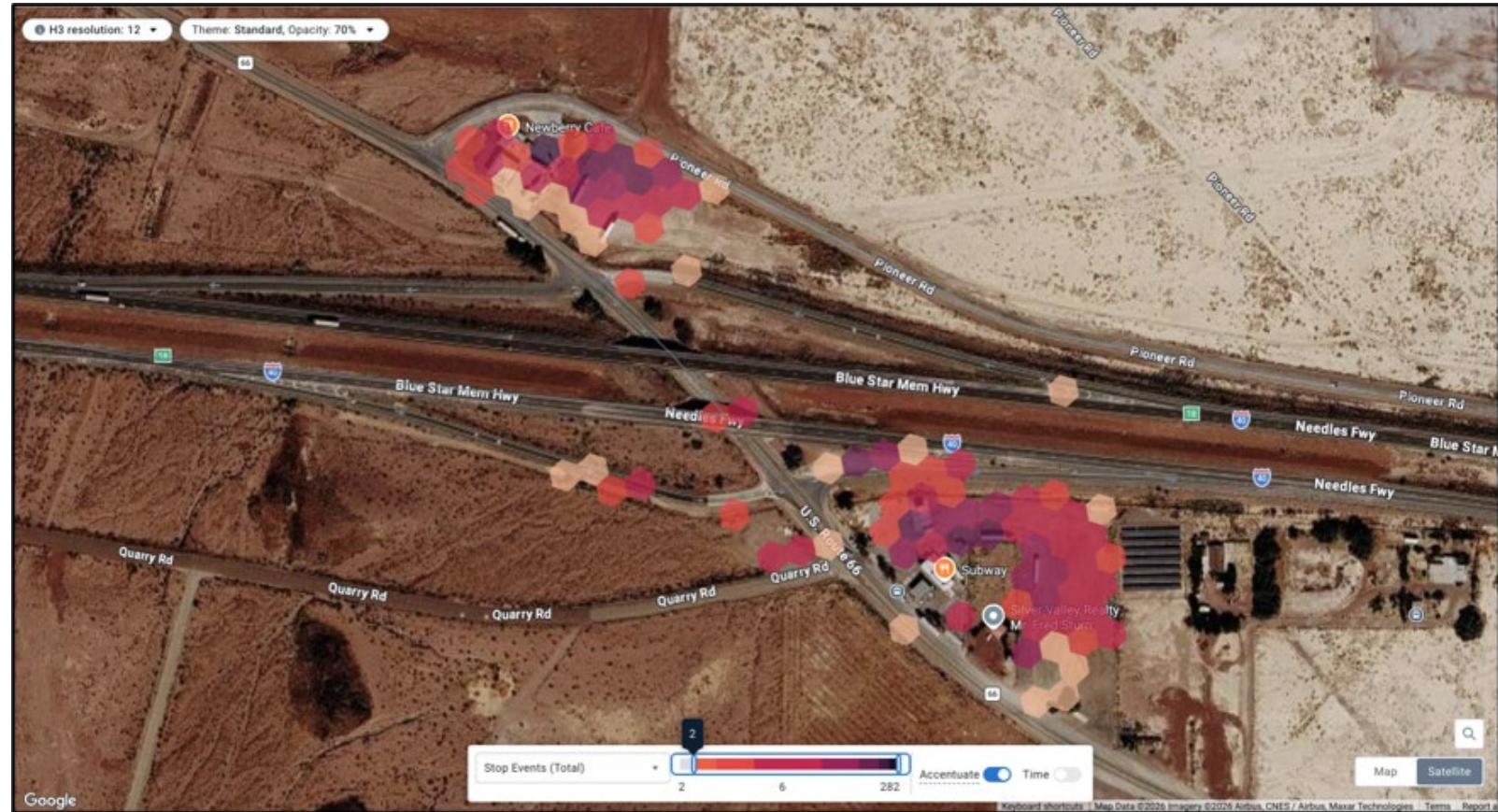
- Real-time or near real-time data from connected vehicles utilizing geospatial position system technology.
- Rapid availability: data can be accessed within days, not years.
- Behavioral insights and classification information.
- Proactive monitoring and emerging performance measures.
- Timely revaluation after project close-out.



Sample Use Case : Truck Parking Patterns in Rural Areas

I-40 Desert Oasis SRRA INFRA Grant Application

- Medium and Heavy-duty trucks 30 minutes and longer stops.
- Enables us to track parking patterns and unauthorized parking.
- Ability to track if behavior changes within days of interventions.

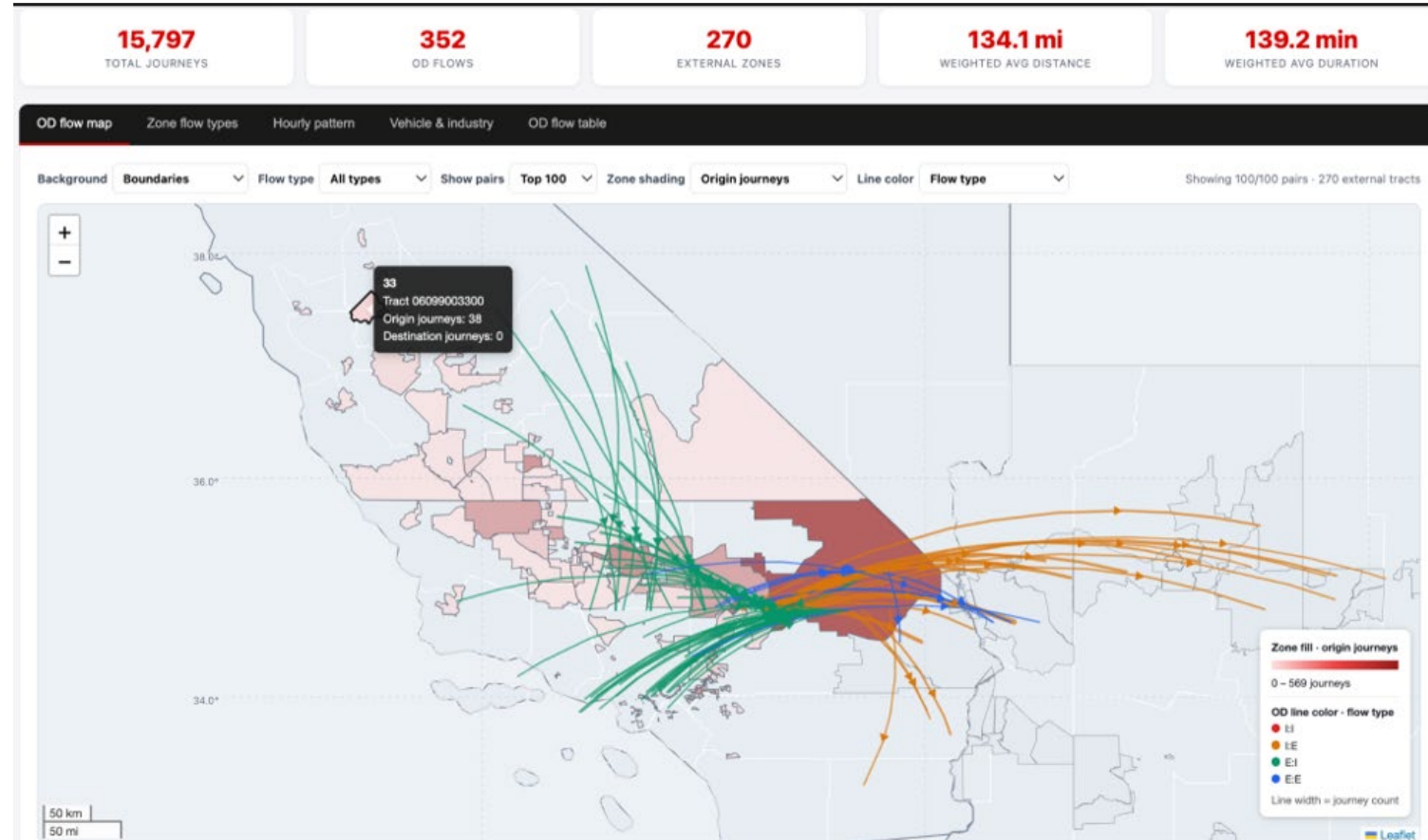


SOURCE: ALTITUDE BY GEOTAB

Sample Use Case : Truck Parking Patterns in Rural Areas

I-40 Desert Oasis SRRA INFRA Grant Application

- Origin and Destination (OD) data to understand where trucks are coming from to this location and where they going after.
- Significant long-haul truck traffic coming from the Central Valley.
- Desert Oasis Rest Area is located at a key location to serve regional and national freight.

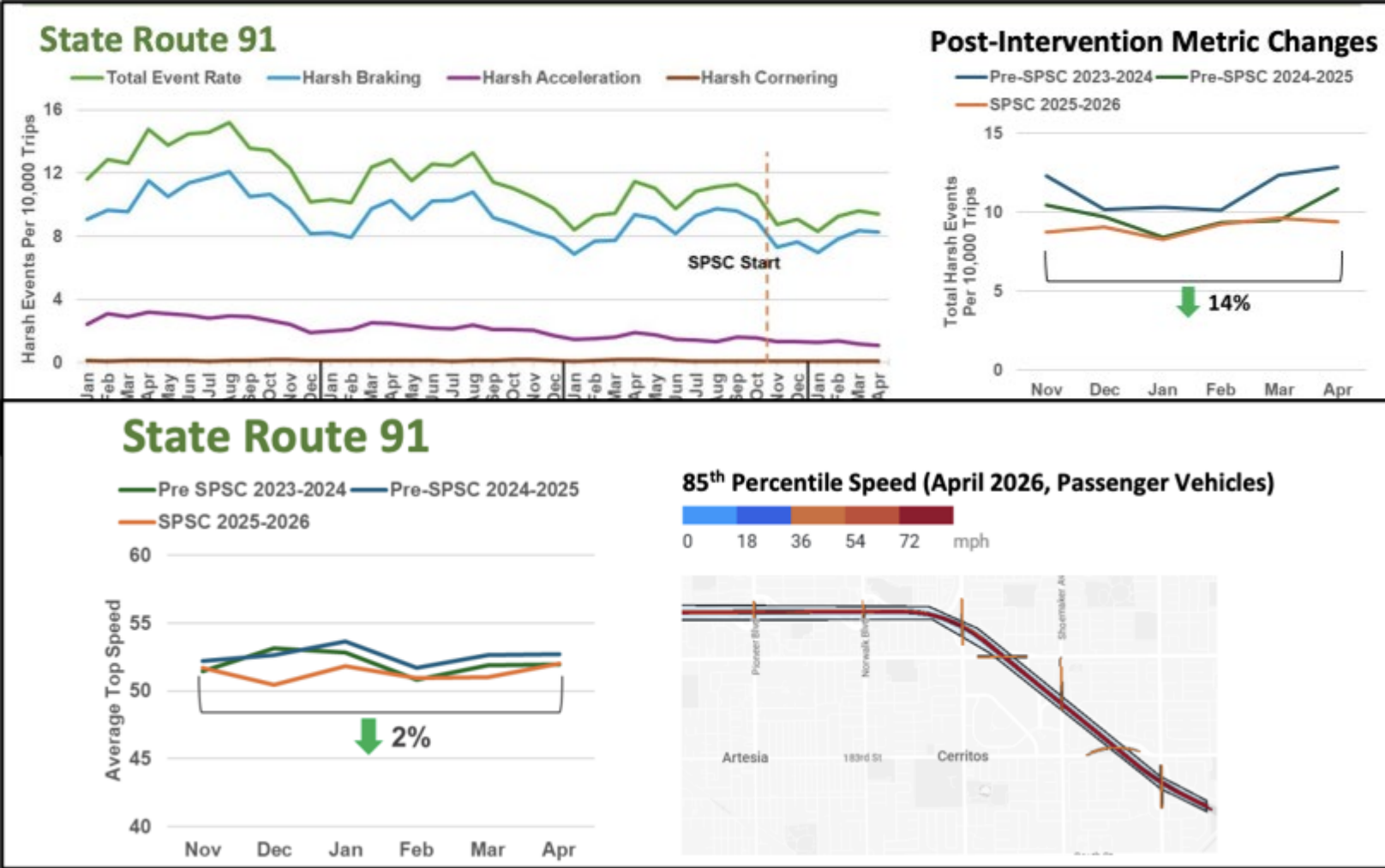


SOURCE: ALTITUDE BY GEOTAB

Sample Use Case: Monitoring Driver Behavior Post Interventions

SAFE SYSTEMS APPROACH: STATE PRIORITY SAFETY CORRIDORS

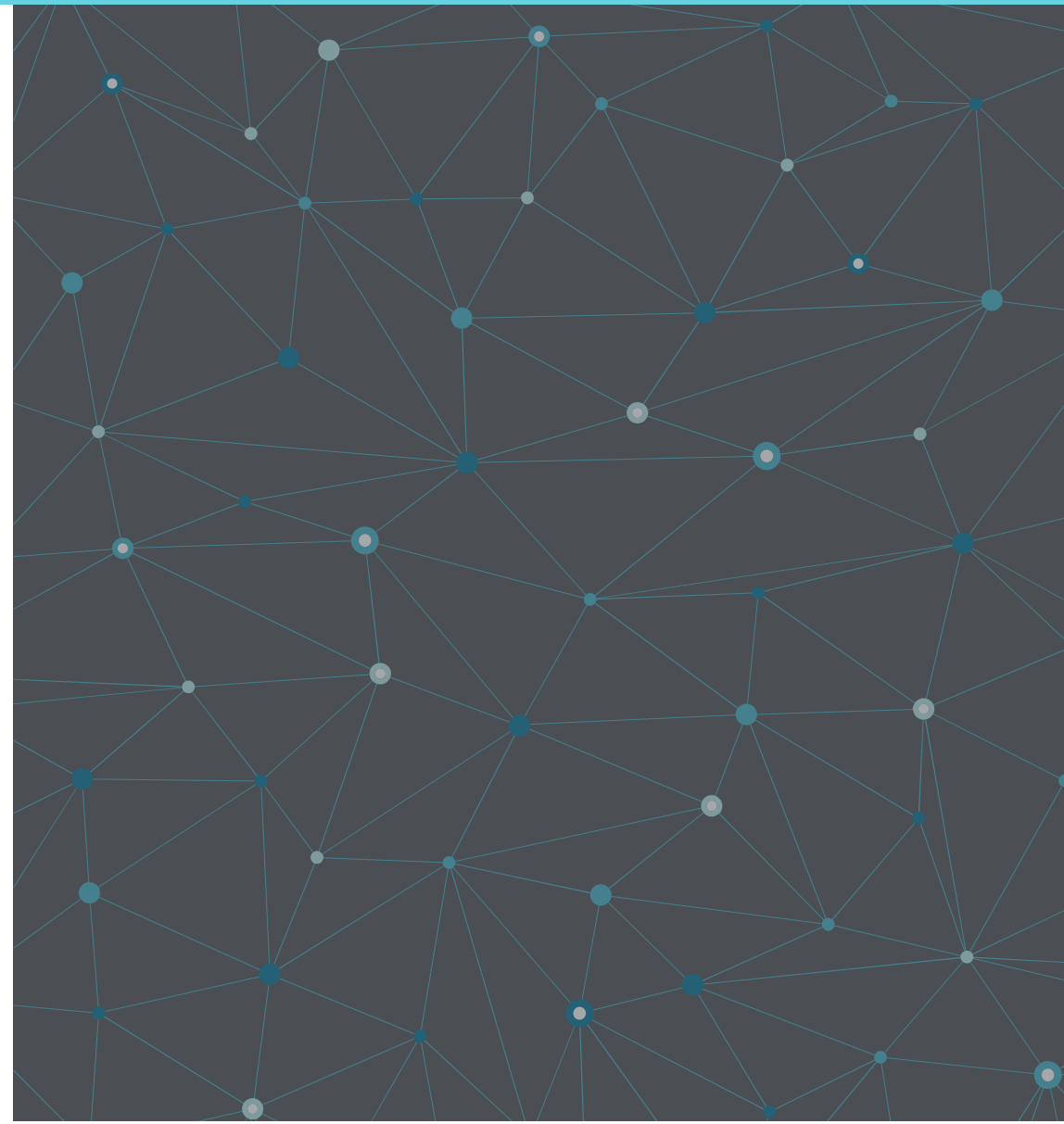
- Multi-Jurisdictional effort
- California aims to cut traffic fatalities 30% by 2035.
- harsh events reduced 14% and top speeds fell 2%.
- Telematics data effectively tracks trends each month and enables driver behavior to be tracked as a performance target.



Conclusion

FREIGHT PLANNING AND CORRIDOR BENCHMARKING USING TELEMATICS DATA

- Data Timeliness:
 - Traditional sources: lagged, sometimes by years.
 - Telematics: real time or near real-time.
- Proactive Potential:
 - Use behavioral data to anticipate and mitigate safety and congestion issues.



THANK YOU!!

Contact information:

Riley.Keller@dot.ca.gov



INTERSECTING FREIGHT PLANNING, OPERATIONS, AND PERFORMANCE MANAGEMENT

From corridor reporting to integrated, outcome-based freight decisions

Caroline A. Mays, AICP
Senior Director, Planning and Modal Programs, TxDOT
Chair, AASHTO Special Committee on Freight

AASHTO CPBM TPM Webinar | October 21, 2026

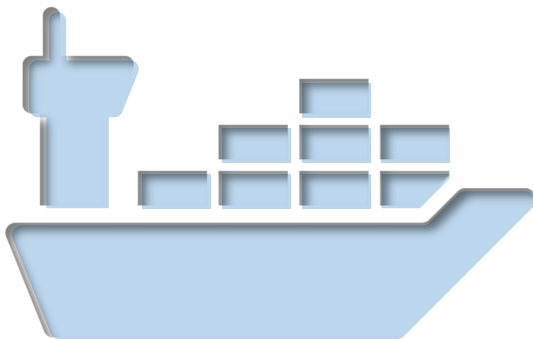
OUTLINE

- 1** | Texas' Freight Performance
- 2** | Statewide Framework Connects Vision to Action
- 3** | Data Is Changing the Freight Conversation
- 4** | Freight Fluidity
- 5** | Building Performance Through Partnerships
- 6** | Call to Action

Texas Freight Performance Issues are Global Freight Performance Issues

#1

**U.S. EXPORTER
FOR 23 YEARS IN A
ROW**



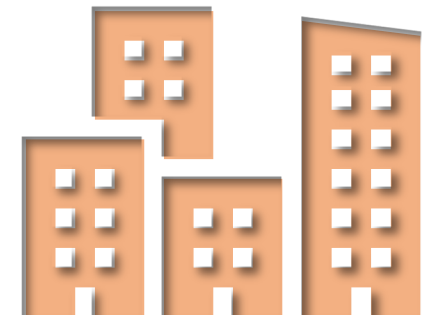
**8th LARGEST
ECONOMY IN
THE WORLD***

*If Texas were a nation

\$2.2

TRILLION

**GROSS STATE PRODUCT
(2024)**





Texas Freight Performance

Scale makes integration, reliability, and resilience essential.

1.5B truck-freight tons in 2024, valued at **\$2.1 trillion**

308M rail-freight tons in 2024, valued at **\$1.1 trillion**

234M maritime-freight tons in 2024, valued at **\$207 billion**

58% projected growth in value of Texas goods to 2050

Connecting you with Texas

A STRONGER TEXAS MOVES THE NATION

Intersecting Freight Planning, Operations, and Performance Management

From corridor reporting to integrated, outcome-based freight decisions

Caroline A. Mays, AICP
Senior Director, Planning and Modal Programs, TxDOT
Chair, AASHTO Special Committee on Freight

AASHTO CPBM TPM Webinar | October 21, 2026

Icons: HIGHWAYS, RAIL, PORTS, WATERWAYS, AVIATION, PIPELINES, BORDERS, FIRST/LAST-MILE ACCESS

TEXAS FREIGHT. A STRONGER TOMORROW.

The performance question is not simply “How fast are trucks moving?” It is whether the full supply chain is safe, reliable, resilient, and connected.

Freight Planning Goals & Objectives in Texas



Move Texas Freight Safely

Plan, build, and maintain a safe and secure transportation system for all users.



Prioritize the Most Impactful Investments

Identify, prioritize, and implement investments within the Unified Transportation Program (UTP) that offer the greatest value to the multimodal freight network, economy, and Texas communities.



Optimize Freight System Performance

Implement a freight system that leverages innovation to improve intermodal connectivity, reduce congestion, and enhance network performance.



Reinforce Security on the Freight Network

Design a system that is resilient and secure against physical, digital, and operational threats to goods movement, infrastructure, and supply chains.



Deliver an Adaptive Freight Network

Deliver an adaptive freight network that withstands disruptions and responds to evolving economic, environmental, and technological conditions.



Promote Responsible Stewardship of Resources

Advance a freight system that continues the responsible and efficient use of fiscal and natural resources while supporting efficient goods movement.



One Statewide Framework Connects Freight Vision to Action

Plans set direction; performance information shapes programs, projects, and operations.



Practical Performance Loop

- 1 Define outcomes
- 2 Observe conditions
- 3 Diagnose causes
- 4 Prioritize response
- 5 Monitor results

Performance management is the connective tissue between strategy and delivery.

Data is Changing the Freight Conversation



SEE

Reveal bottlenecks, parking demand, routing, and network utilization.

ANTICIPATE

Project commodity flows, supply-chain growth, and emerging operational pressure.

ACT

Target operations, project development, and investment where outcomes can improve.

Texas Examples

Freight Fluidity Tool • Truck Congestion Analysis Tool •
Telematics-based truck parking



Texas is Linking Tools to Real Freight Planning and Programming Decisions

The emphasis is on decision use, not simply visualization.

FREIGHT FLUIDITY TOOL

Shows key commodities, trip paths, typical routes, value, tonnage, and trip performance.

Corridor and supply-chain diagnosis

TRUCK CONGESTION ANALYSIS TOOL

Provides truck mobility performance measures on major Texas roads from 2017 to the present.

Bottleneck monitoring and UTP context

FREIGHT PROJECT TRACKER

Monitors letting status for projects in the Freight Investment Plan.

Identify corridor and district delivery gaps

TRUCK PARKING TELEMATICS

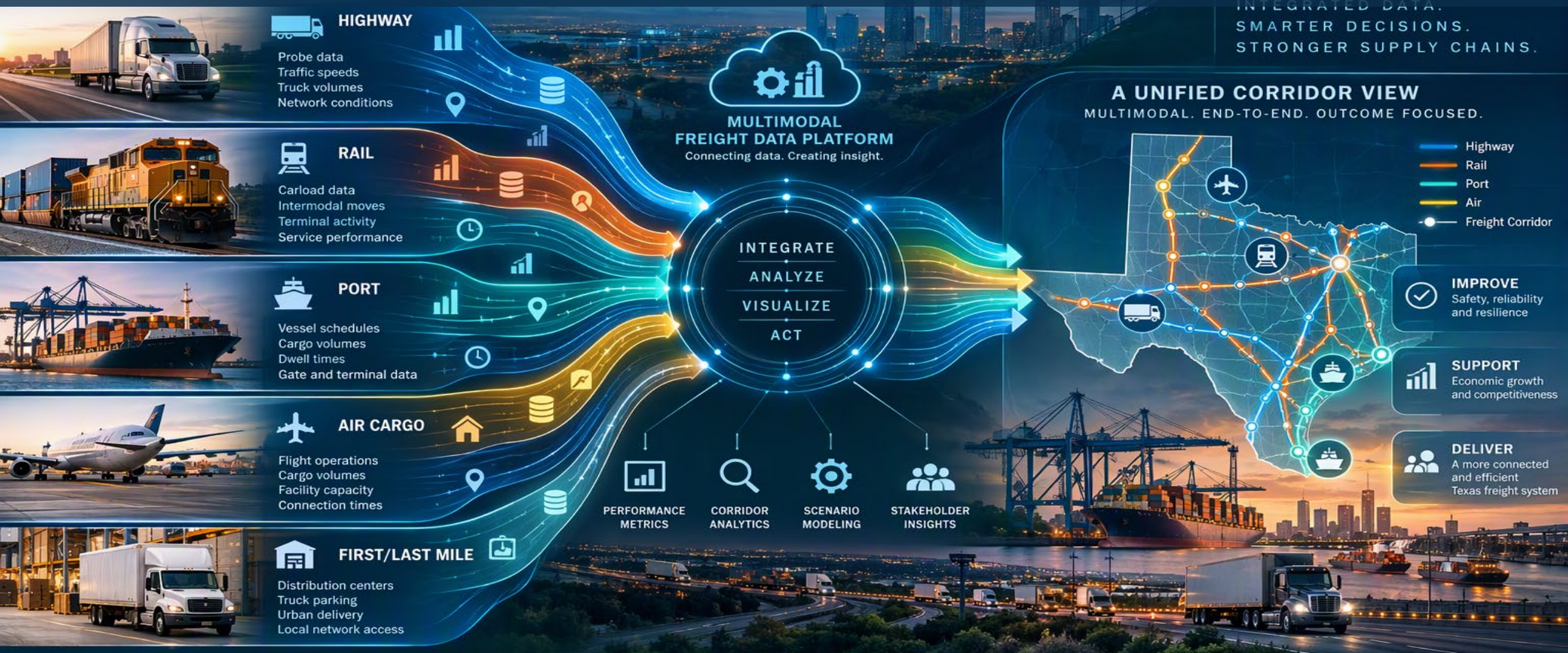
Uses observed demand patterns to complement static parking inventories.

Target operational and infrastructure responses

Texas operating principle: observe conditions → diagnose causes → select a response → monitor results

THE CHALLENGE IS CONNECTING THE DATA

INTEGRATED DATA.
SMARTER DECISIONS.
STRONGER SUPPLY CHAINS.



A STRONGER

National opportunity: common definitions + minimum multimodal data standards + trusted public-private sharing

PERFORMANCE

COMMUNITIES

SUPPLY CHAINS

ECONOMIC OPPORTUNITY

PEOPLE AND PLACES

RESULTS



Texas Performance Pressure Visible in the Numbers

Freight scale, congestion, and trade gateways make performance management an operating necessity.

34.9M

**truck delay
hours**

2024 statewide

\$2.58B

**truck
congestion cost**

2023 dollars

54.3M

**gallons of
wasted fuel**

2024 statewide

\$498B

**U.S.–Mexico trade
by truck**

Texas POEs, 2025

Where the Pressure Concentrates

HOUSTON

I-45, I-69, I-610 and Beltway 8; port and industrial demand shape truck congestion.

DALLAS–FORT WORTH

US 75, I-30, I-35E and I-35W; congestion is expanding into suburban counties.

TEXAS–MEXICO BORDER

El Paso, Laredo and the Rio Grande Valley connect international gateways to statewide corridors.

Texas operating principle: observe conditions → diagnose causes → select a response → monitor results

TEXAS' FREIGHT FLUIDITY MEASURED END TO END

A STRONGER TEXAS. A MORE RESILIENT NATION.

PEOPLE + PLACES + PARTNERSHIPS + PERFORMANCE

TEXAS MOVES
THE WORLD



GLOBAL MARKETS
STRONGER COMMUNITIES
BRIGHTER TOMORROW



TIME

Faster, more predictable trips



RELIABILITY

Consistent, trusted performance



THROUGHPUT

More goods, more opportunity



FRICTION

Fewer delays, less cost



RESILIENCE

Prepared for today and tomorrow



**FREIGHT KEEPS
TEXAS AND THE WORLD
MOVING FORWARD**



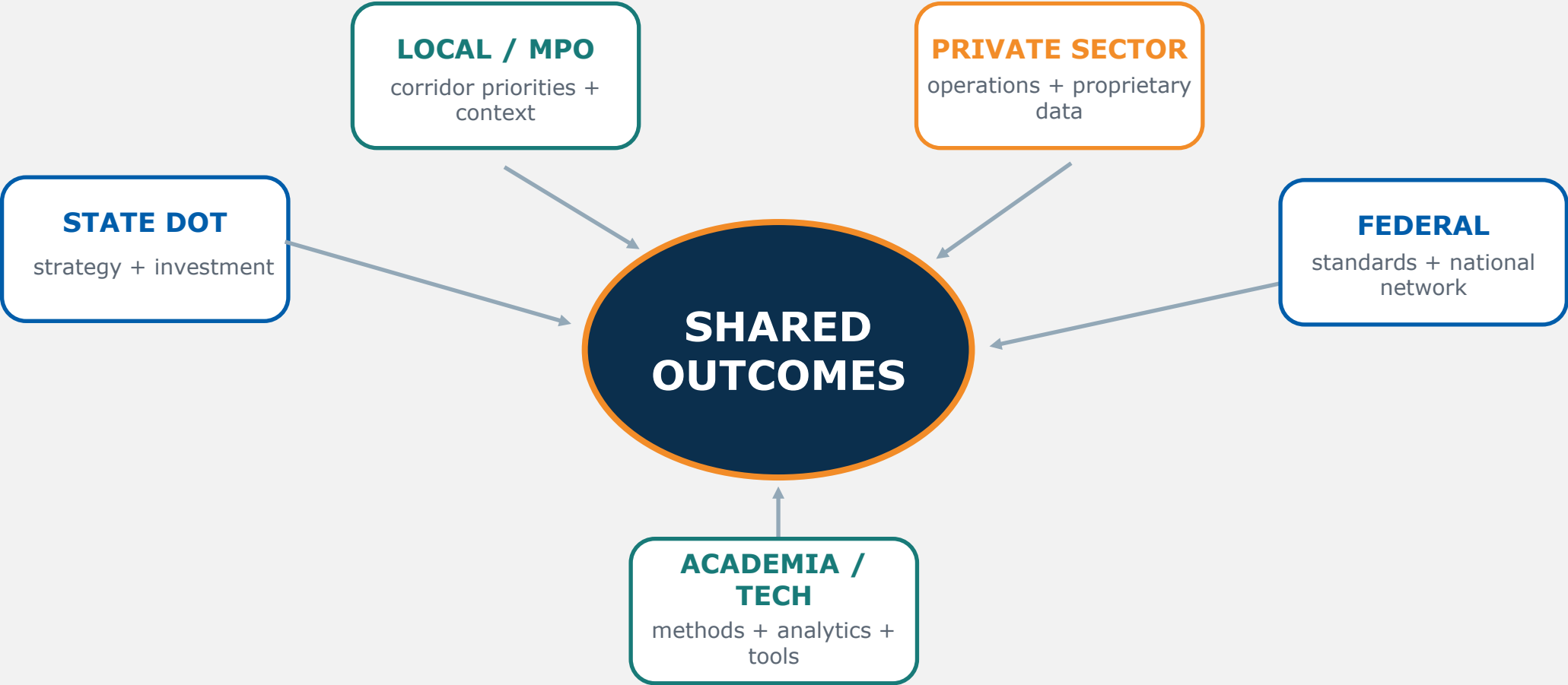
ECONOMIC GROWTH
COMPETITIVE INDUSTRY
STRONGER COMMUNITIES





Partnership is Part of the Freight Performance System in Texas

No single organization owns the full freight trip, so no single organization owns the full performance story.



Advisory committees, corridor engagement, and planning partnerships align needs before projects reach funding decisions.

CALL TO ACTION FOR MULTIMODAL FREIGHT PERFORMANCE

A National Freight Performance Agenda

ALIGN → PILOT → INTEGRATE

From data to decisions. A stronger, more connected freight system for Texas and the nation.



DIFFERENT MODES.
A STRONGER
TOMORROW.

1

ALIGN

Around a Shared Freight Vision



- Statewide multimodal vision
- Freight policies and network (Texas Freight Mobility Plan)
- Corridor and modal plans
- UTP + operations
- Measure and adjust



2

PILOT

On Priority Multimodal Corridors

- Target high-impact corridors and gateways
- Apply data and telematics tools
- Test and refine strategies
- Partner with industry, MPOs, and border regions
- Measure results and scale what works



3

INTEGRATE

Into Investments and Operations

- Use performance in program and project decisions
- Coordinate planning, operations, and emergency management
- Strengthen national and cross-border alignment
- Close data gaps and advance common metrics
- Deliver measurable outcomes for economic competitiveness



STRONGER SUPPLY CHAINS



SAFER COMMUNITIES



MORE RESILIENT INFRASTRUCTURE



A MORE COMPETITIVE TEXAS
AND A STRONGER NATION

MEASURE WHAT MATTERS. CONNECT THE MODES. INVEST FOR OUTCOMES.

CONNECTING YOU WITH TEXAS



Thank you!

Caroline A. Mays, AICP

Senior Director of Planning and Modal Programs
Texas Department of Transportation

Caroline.Mays@txdot.gov

(512) 658-2436



COLORADO
Department of Transportation
Office of Freight Mobility & Safety

Colorado Operations & Planning in Freight Management

Blending Operations & Planning for Freight: AASHTO CPBM October 2026

Craig Hurst - Colorado Department of Transportation
Asst Director, Div of Transportation Development, Freight Mobility & Safety



CDOT Freight Office Overview

Core Foundation

The Office of Freight Mobility & Safety (OFMS) was established in January 2022 to merge planning and operations.

Bridging long -term strategic vision with real-time operational execution to drive statewide freight efficiency and safety infrastructure.

CDOT Freight Funding Sources

- National Highway Freight Program (NHFP)
- State Freight Operations Funds
- Statewide Planning & Research (SPR)
- Fuels Impact Enterprise

Key Strategic Initiatives

Colorado Freight Plan

Comprehensive state plan with a focus on safety, mobility & resilience

OSOW Permitting Systems

Streamline oversize/overweight routing & regulatory operations

Freight Advisory Council

Prioritize engagement with members of all areas of moving goods and services statewide

Truck Parking Expansion

Critical corridor safety and capacity improvements.



Freight Office Critical Focus Areas

Operations

- Permitting
- Emergency Response
- Enforcement
- Truck Parking
- Route Planning
- Communications and Education

Planning

- Local and Regional Freight Planning
- Data and Analysis
- Strategic Goals
- Performance Measures

Partnerships

- Colorado State Patrol
- Colorado Freight Advisory Council
- Public-Private Partnerships
- Local and Regional Coordination
- Emergency Operations

Investments

- National Highway Freight Program Administration
- Freight Operations Funds
- Fuels Impact Enterprise





Interconnected Freight Initiatives

Strategic studies powering safe, resilient, and efficient CMV movement across Colorado

build

Completed

Chain Station Feasibility Study

Evaluated statewide network of **130 chain stations** across 21 freight corridors.

- Identifies infrastructure gaps & technological expansion (VMS, lighting pilots).
- Addresses safety & economic impacts of mountain pass closures.
- Begins the conversations around establishing baseline design and operational standards.

local_parking

In Progress

Statewide Truck Parking Study

Comprehensive assessment of public and private parking availability statewide.

- Updates capacity counts across major corridors (I-70, I-25).
- Supports **Emergency Truck Parking** study & partnerships (e.g., Broncos Stadium).
- Revamps the Truck Parking Playbook and other truck parking studies to date.

alt_route

In Progress

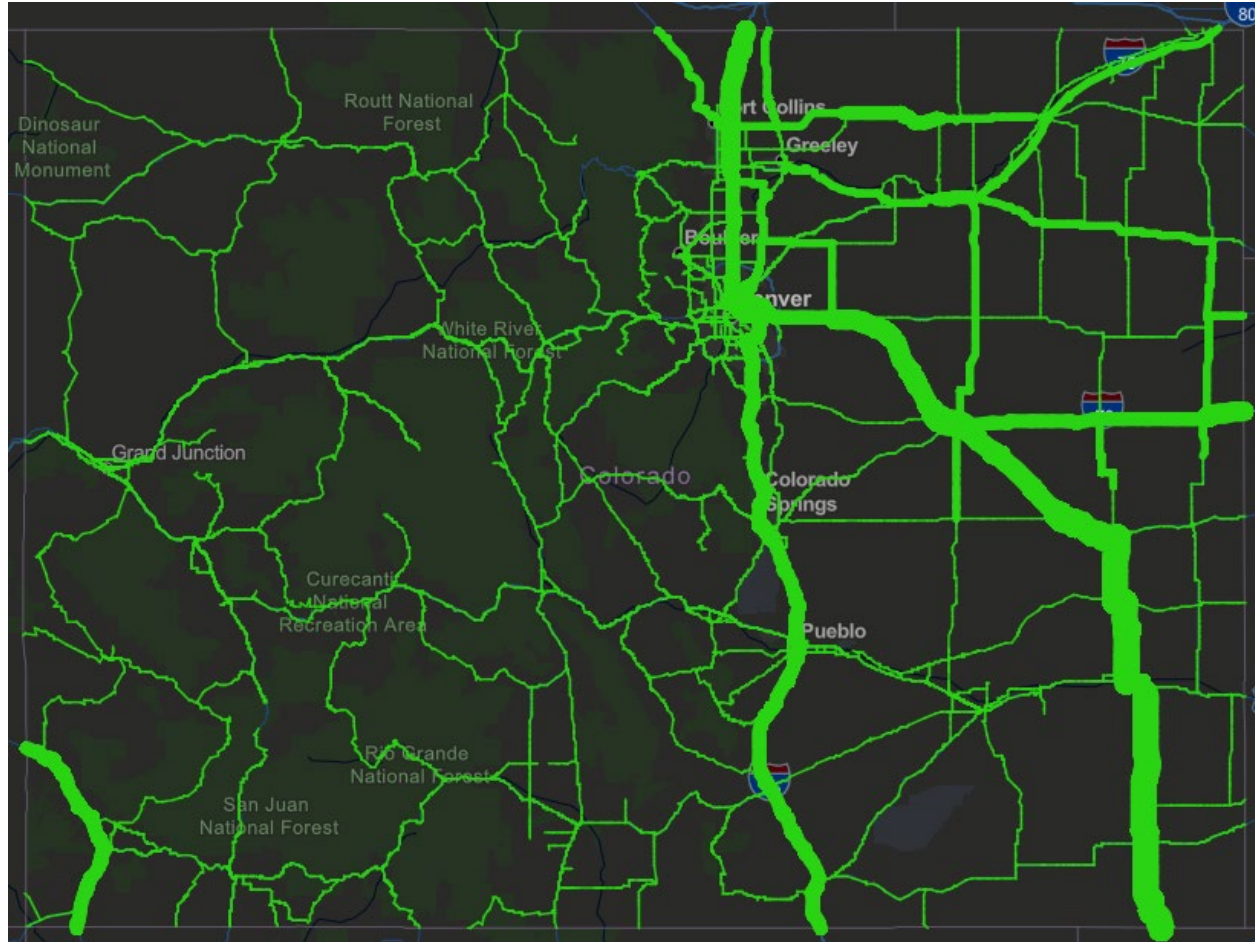
Freight Routing Resilience Study

Our teams first study evaluating network vulnerability during severe corridor disruptions.

- Analyzes major detour routes and bottleneck delay hotspots.
- Assesses infrastructure readiness on emergency detours and develop plans and projects to fill the gaps.
- Quantifies economic & operational impacts on industry while considering the regulations a driver must comply with.



GIS Storytelling



Annual Data Integration

GIS and Permitting Teams create comprehensive heat maps utilizing Oversize/Overweight (OSOW) data collected throughout the previous year.

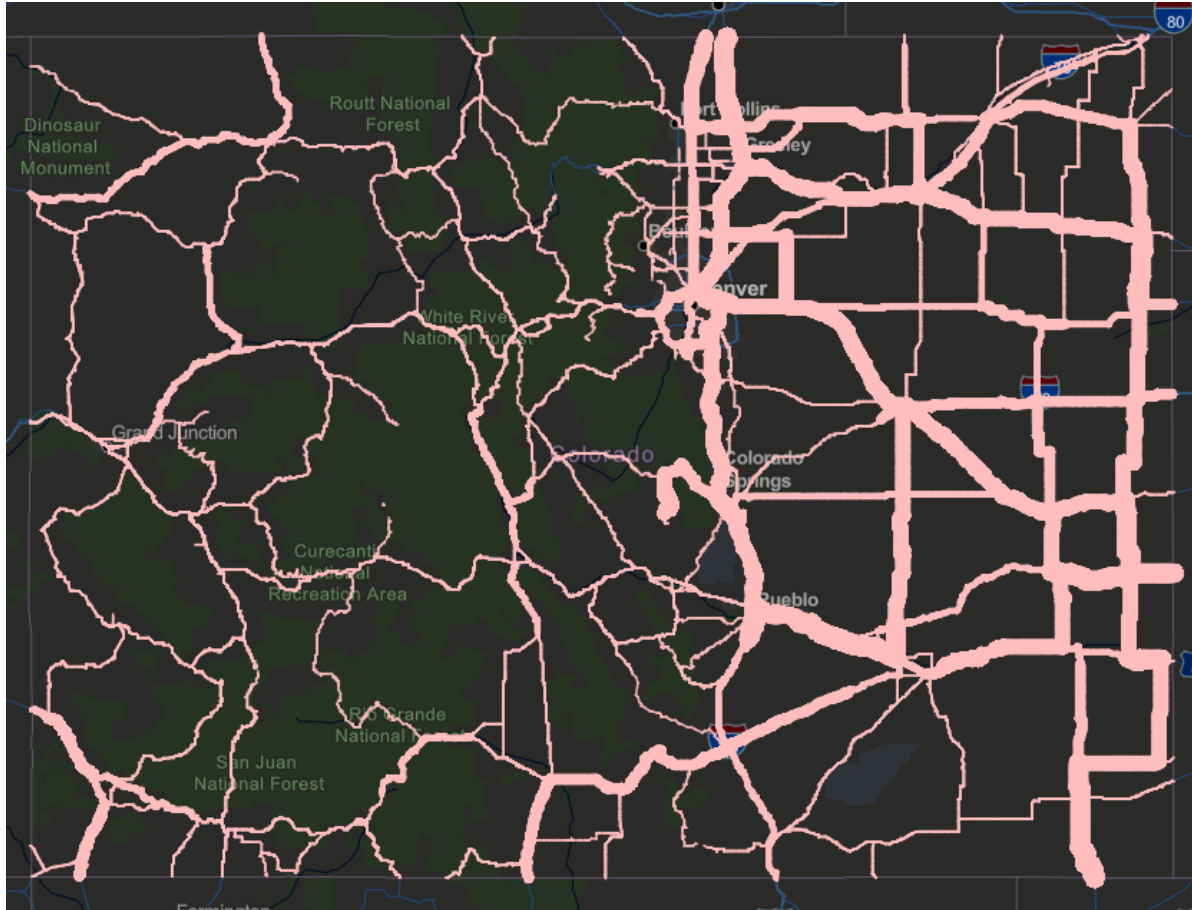
Corridor Maintenance Tracking

Visualizations map critical OSOW corridors and actively track high-volume routes to proactively identify potential maintenance needs.

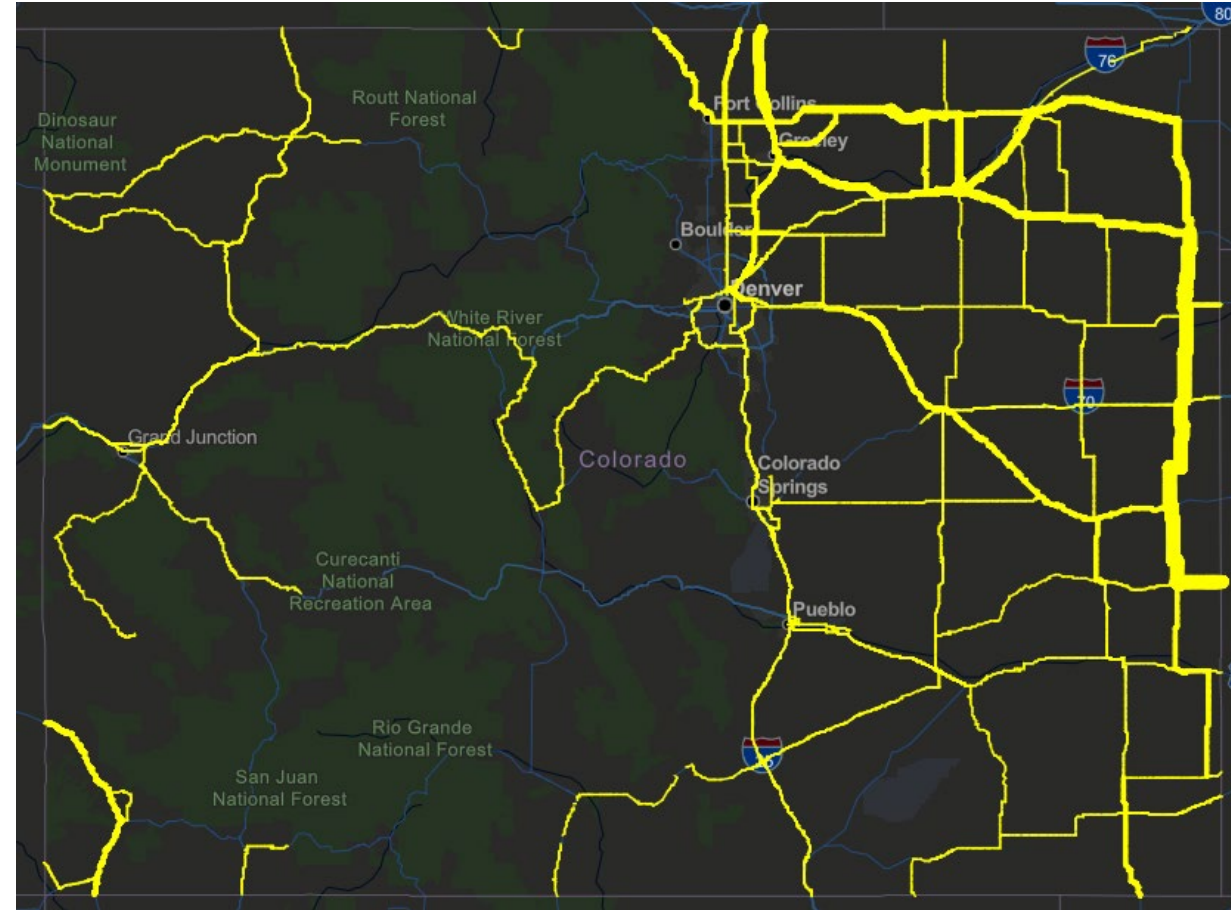
Targeted Investment Prioritization

Helps differentiate routine annual permits up to Superloads, highlighting essential needs on corridors that may not typically receive high investment priority.

GIS Storytelling



2016-2025 Chapter 6 Special Permit Routing



2016-2025 Superload Permit Routing

OSOW Restrictions

Statewide Restrictions Affecting Movement

76

Construction

Active width and length restrictions

1,600

Clearance

Vertical clearance restrictions

200

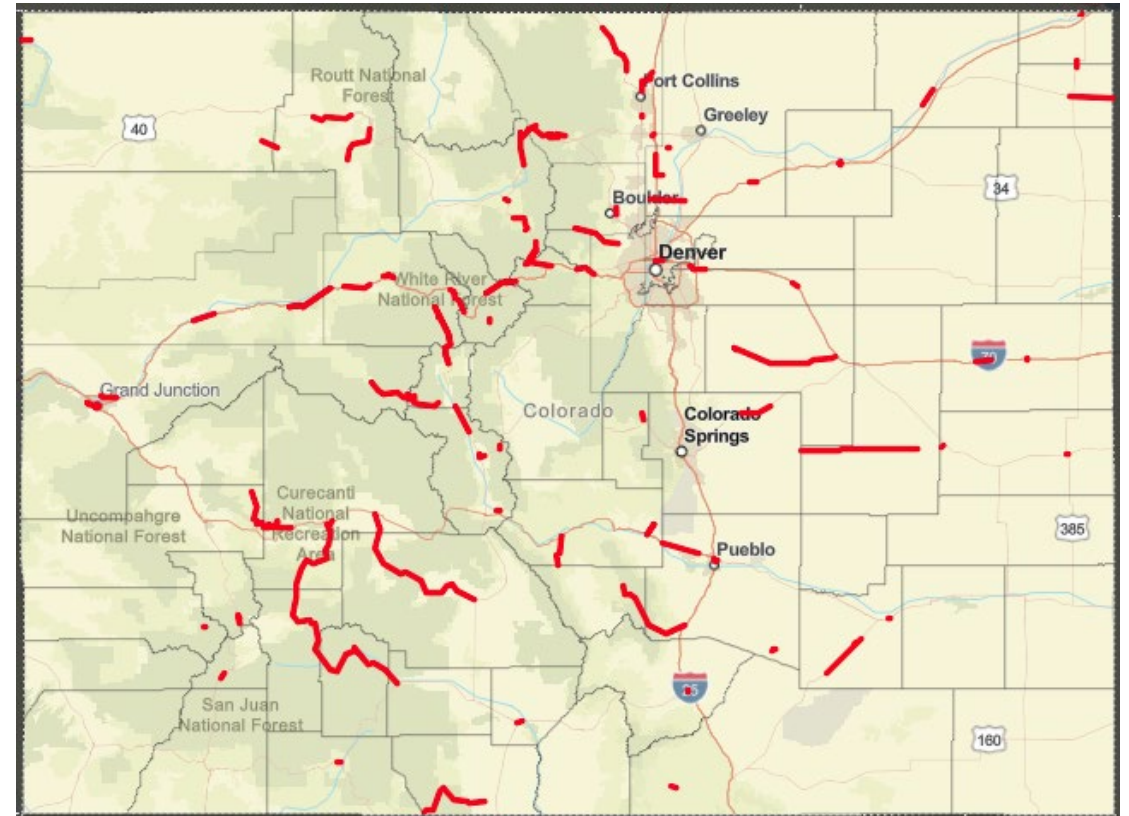
Bridge Weight

Bridge weight limitations

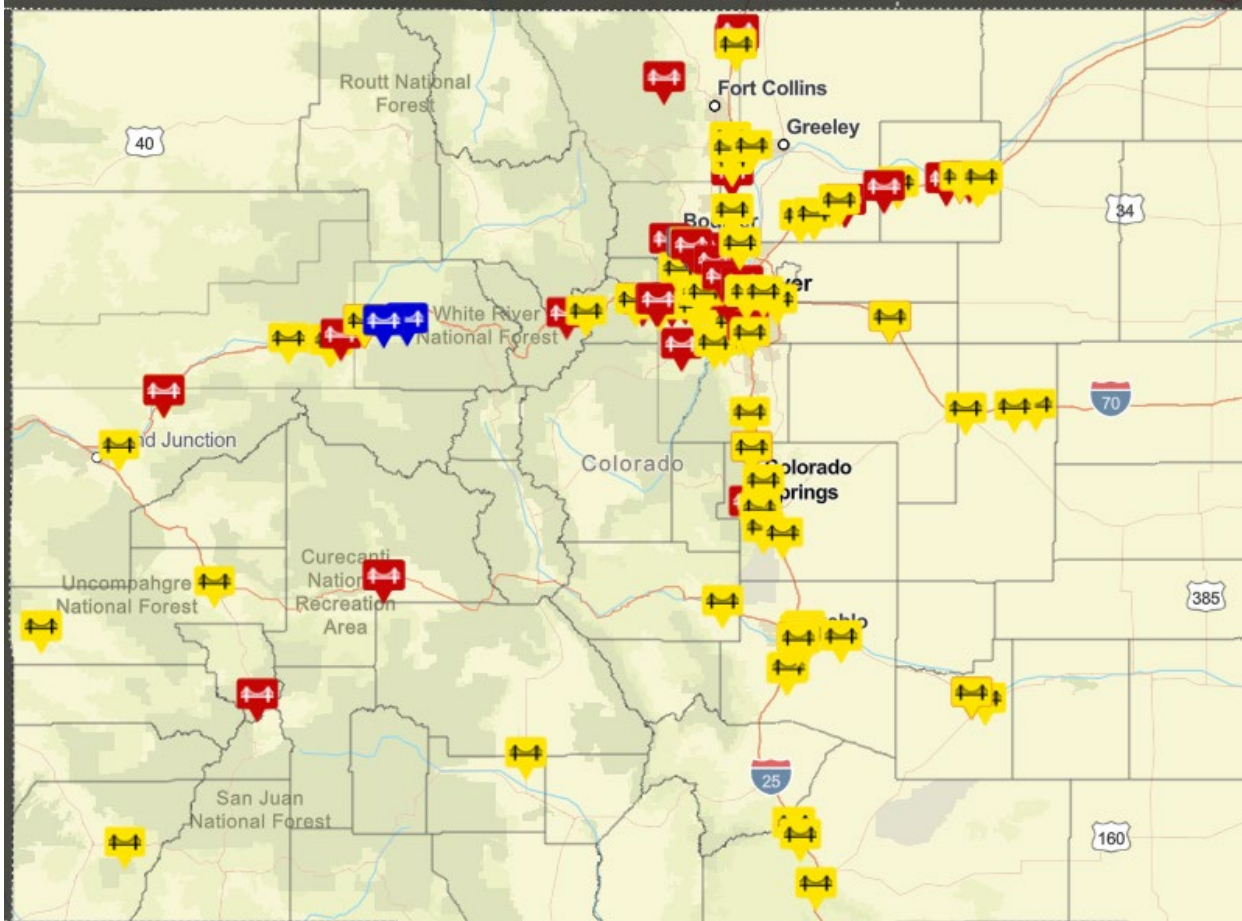
160

Length

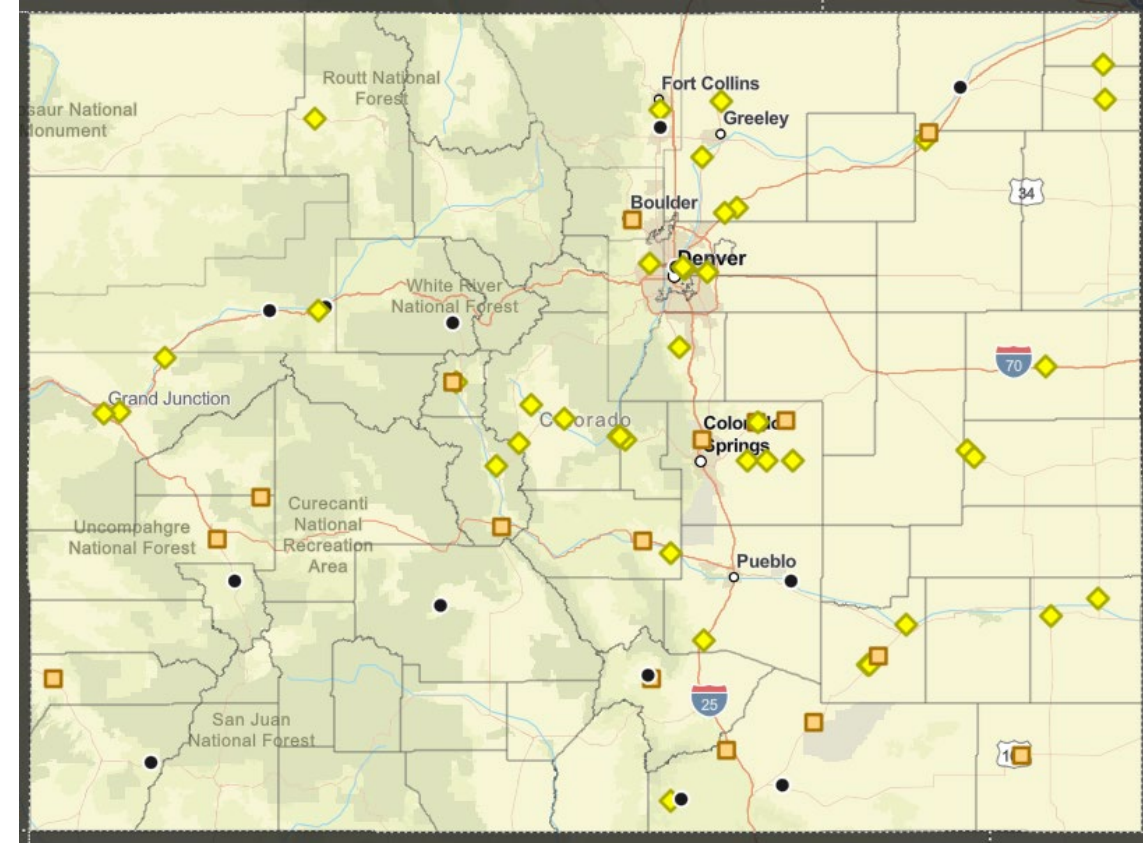
Specific length restrictions



OSOW Permit Restrictions



Vertical clearances under 16'



Bridge Weight Restrictions



Timber Structure Repair Program

Timber Structure Repair Program:

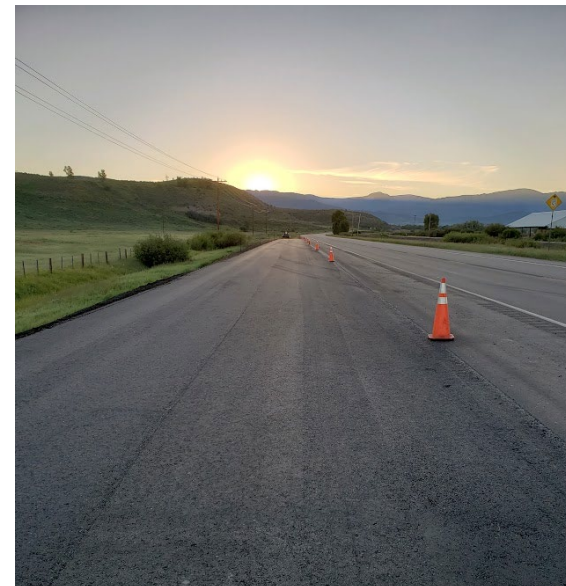
- 44 timber structures on freight routes statewide.
- Under \$10 million
- Significant reduction in CMV VMT
- Removes restrictions increasing efficiencies by cutting off major detours





Enforcement Pullouts

- Developed under partnership with the Colorado State Patrol
- Identified truck routes that had limited enforcement opportunities
- 11 new pullouts created with several new locations coming in 2027
- These locations can be used for additional uses, but more regulatory work will need to be completed in this area.





Data Resources

PERMITTING & ROUTING

COOPR System

Central portal for commercial vehicle routing, permitting, and statewide transport compliance.

INFRASTRUCTURE HEALTH

Bridge: Freight Prioritization Dashboard

The Freight team worked closely with CDOT's Bridge Asset Management group to develop a dashboard that highlight freight priority structures and the conditions on each.

DIVING DEEPER WITH DATA

Third Party Data

We continue to use third party data such as the Colorado Ports of Entry, Transearch, Geotab/Streetlight, INRIX, and other data sources to try to gain a clear understanding of how our roadways are utilized.



Freight Infrastructure Assets

Key Statewide Operational & Safety Network Components

130

Locations

Chain Stations

130 stations located across 21 freight routes, providing safe havens for required chain installation and removal.

12

RAMPS

Runaway Truck Ramps

12 ramps strategically placed statewide, primarily utilized as emergency deceleration zones when truck brakes fail.

11

PULLOUTS

Enforcement Pullouts

11 completed infrastructure sites designed to support mobile weigh station operations and facilitate safe truck staging.

10

POEs

Weigh-In-Motion (WIM)

Systems installed at 7 of 9 Ports of Entry to collect real-time vehicle weight data and enable automated bypass operations.



The Colorado Truck Parking Playbook Framework



01. Identify Capacity Challenges

Developed in 2022, the Playbook identifies key challenges in solving the truck parking capacity problem across critical freight corridors.

02. Partner & Educate

It highlights strategies to develop partnerships for solutions and educates local governments on their vital role in implementation.

03. Private Industry Pathway

The Playbook creates a clear, structured path for the private truck parking industry to propose innovative partnerships with the state.



Town of Bennett & Love's P3 Parking Expansion

Project Process Flow

- 1 2021 Initiative**
Town of Bennett approached CDOT to address acute I-70 truck parking capacity issues.
- 2 Infrastructure Barrier**
Love's sought location expansion, but the local I-70 overpass required structural expansion & repair.
- 3 P3-Like Agreement**
Coordinated public-private partnership aligning state funding, municipal access, & private parking.

Public-Private Partnership Contributions

CDOT (State Transportation)

Funded the engineering & structural design of a upgraded **5-lane I-70 overpass**, resolving the primary corridor bottleneck.

Town of Bennett

Executed critical **intersection enhancements** and local roadway improvements to facilitate safe heavy -truck circulation.

Love's Travel Stops

Expanded facility operations and directly constructed dedicated long - term freight parking infrastructure off I - 70.

+114
Truck Parking Spots

Rest Area Truck Parking

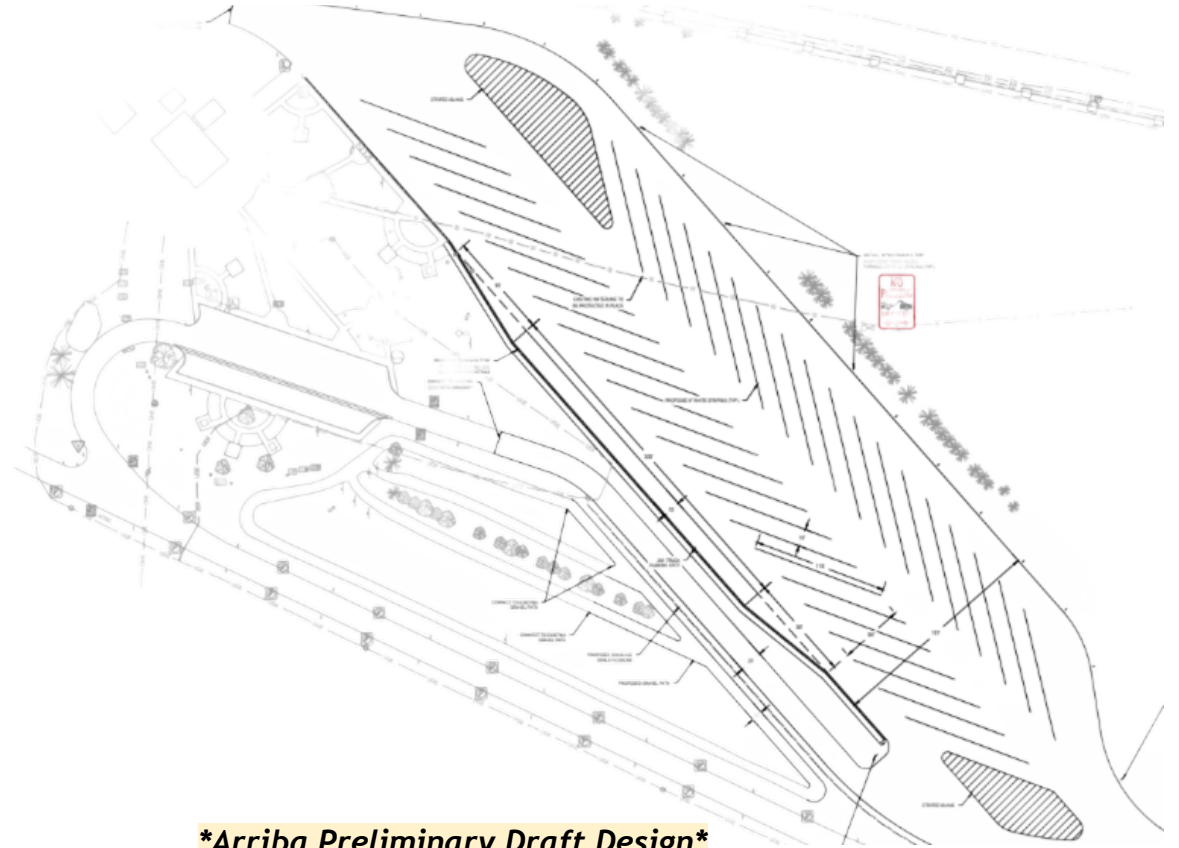
Funding by OFMS

- Arriba
- Shaw Creek
- Vail
- Virginia Dale

Total: \$9,347,965



Expanded truck parking at Vail Pass Rest Area



Arriba Preliminary Draft Design



Emergency Truck Parking Network Development



CDOT is developing an emergency truck parking network that will stand up during major snowstorms.

Partnerships

- Denver Broncos
- Copper Mountain
- Denver Coliseum

This effort focuses on making sure drivers have a safe alternative when all other truck parking is full. This also keeps trucks off the roadway while cleanup efforts are working to get roads back open.





COLORADO
Department of Transportation
Office of Freight Mobility & Safety



freight.cotrip.org

The logo for Cambridge Systematics, featuring a stylized graphic of three overlapping parallelograms in green, blue, and purple, positioned to the right of the company name.

CAMBRIDGE
SYSTEMATICS

Snapshot of Collaboration on Local Freight Delivery TPM Webinar

October 21, 2026

John Kaliski, Cambridge Systematics, Inc.
Rachel Vierstra, Cambridge Systematics, Inc.

Panel Members

- » **Bradley Sharlow**, Michigan DOT, Chair
- » **Elizabeth Alden**, formerly Hillsborough TPO
- » **Elise Barrella**, DfX Consulting
- » **Keith Killough**, formerly Arizona DOT
- » **Veronica Murphy**, New Jersey DOT
- » **Alison Stettner**, Florida DOT
- » **Kerri Woehler**, Washington State DOT
- » **Yongping Zhang**, California State Polytechnic, Pomona
- » **Cheng Yan**, FHWA Liaison
- » **Kyla Elzinga**, AASHTO Liaison
- » **Anthony Avery**, TRB
- » **Jennifer Weeks**, TRB



Agenda

- » Snapshot Context
- » Trends in Local Freight Delivery
- » Current Best Practices
- » Agency Examples
- » Resources
- » Future Research



Snapshot Context

Research Context, NCHRP 8-36(120)

10 snapshots produced
from 2013 to 2018

NCHRP in partnership with
AASHTO Committee on Planning

Intended to provide quick status on
state DOT activities on emerging topics

Potential for improvements in
content, communication, distribution



Research Objectives

Produce ***four new Snapshots*** to add to the series of initial Snapshots produced under prior work

Create ***visual and valuable research-based products*** that provide transportation agencies with a synopsis of who is doing what, why, how, and where on each Snapshot topic

Establish ***implementable strategies*** and methods to ensure that the Snapshot series remains a visible and valuable product that reaches broad audiences

Snapshot Topics

Complete Streets

Data Sharing for Performance Management

Collaboration on Local Freight Delivery

Economic Analysis to Support Decision-Making

Collaboration in Local Freight Delivery

Collaborations between state DOTs, MPOs, local governments, and the private sector freight providers to address the growing demands of goods movement on transportation networks





Current Trends in Local Freight

Over the next decade, trucks will move 2.4 billion more tons of freight than they do today

Collaboration can lead to greater certainty in truck arrival times, reduce delivery times, minimize disruptions during peak hours, and lower delivery costs



The number of roadway delivery vehicles in

MAJOR CITIES
is expected to
INCREASE BY
36%

(World Economic Forum, 2020)

Demand for
LAST-MILE DELIVERY
is expected to
INCREASE BY
78%
GLOBALLY
from 2019 to 2030.



A Framework for Agency Practices

SNAPSHOTS OF PLANNING PRACTICES: COLLABORATION ON LOCAL FREIGHT DELIVERY

BY THE NUMBERS:

Demand for
**LAST-MILE
DELIVERY**
is expected to
**INCREASE BY
78%
GLOBALLY**
from 2019 to 2030.

The number of
roadway delivery
vehicles in
MAJOR CITIES
is expected to
**INCREASE BY
36%**
(World Economic Forum, 2020)

In **LARGER METRO AREAS**,
warehouses are typically located
**FARTHER FROM THE CENTRAL
BUSINESS DISTRICT**, whereas in
SMALLER MARKETS
these facilities tend to be
**CLOSER TO THE CENTRAL
BUSINESS DISTRICT**
(100 largest metro areas, 2016)

Over the next decade, trucks will move
**2.4 BILLION
MORE TONS OF FREIGHT
THAN THEY DO TODAY**
(American Trucking Association, 2020)

In a 2020 survey of logistics industry experts,
**45%
BELIEVE
ROBOTS WILL BE DELIVERING
PARCEL-SAT SCALE** within five years
(and MAG Experts, 2020)

WHY COLLABORATE ON LOCAL FREIGHT DELIVERY?

Collaboration between agencies and the freight industry offers substantial benefits within local communities. By working together, they can achieve greater certainty in truck arrival times, reduce delivery times, minimize disruptions during peak hours, and lower delivery costs. Additionally, the use of targeted engineering and operations solutions to better accommodate freight can lead to more efficient and predictable operations while improving safety across all modes of transportation.

SHARE OF WAREHOUSING ESTABLISHMENTS WITHIN 10 MILES OF A CENTRAL BUSINESS DISTRICT 100 largest metro areas, 2016



Source: Brookings
analysis of Census
2010 Business Patterns
and Freight Labor
Market Data
Alec Taylor and
Joseph W. Kane

FOLLOW THESE LINKS TO LEARN MORE IF YOU ARE LOOKING FOR...

- Resources on beginning to collaborate among agencies on freight delivery →
- Key practices for beginning to collaborate among agencies on freight delivery →
- Resources for utilizing collaborations for innovation in urban freight delivery →
- Key practices for utilizing collaborations for innovation in urban freight delivery →
- Examples of what other DOTs are doing with urban freight delivery collaboration →
- Examples of what MPOs are doing with urban freight delivery collaboration →

SNAPSHOTS OF PLANNING PRACTICES:

AGENCY COLLABORATION | EXAMPLES

The transportation landscape of freight delivery in the United States is in a state of growth and evolution driven by the rise of e-commerce, characterized by shifting consumer behaviors and delivery demands. As demand changes, the freight industry requires a collaborative approach to navigate the complexities of the freight network and to prepare freight transportation for the future. This Snapshot identifies successful collaborations to address the growing demands of goods movement on transportation networks.

DESIGNING

Maricopa Association of Governments
MAG is the MPO for the greater Phoenix region. One of MAG's most pressing challenges related to local freight delivery involves truck parking availability. Within MAG's member regions, there are diverse community and truck parking needs within the urban region. MAG has undertaken a few efforts to address this topic, including a Truck Parking Study in which MAG assessed the supply and demand for commercial truck parking throughout greater Phoenix. MAG released the findings of this study in their 2021 Regional Truck Parking Recommendations and Implementation Plan.

MAG also completed Freight Subarea Project Assessments in 2019 and 2021. These pinpointed engineering solutions to better accommodate trucks and freight while improving safety for all modes of transportation. The assessments included public outreach and engagement with stakeholder groups, including MAG contacts, member agencies, and freight companies.

Additionally, work has recently begun on an Urban Truck Parking Study and Plan, with completion expected in 2025. Looking ahead, MAG sees opportunities to collaborate with private developers, regional agencies, trucking associations, and state advocacy groups (including multimodal groups) on truck parking concerns.



ENHANCING

The Mid-America Association of State
Transportation Officials (MAASTO)
Truck Parking Information Management
Systems (TPIMS) Project is a regional
partnership involving eight states: Indiana, Iowa, Kansas, Kentucky,
Michigan, Minnesota, Ohio, and Wisconsin, and multiple key stakeholders:
MAASTO, Mid-America Freight Coalition, American Transportation Research
Institute, Owner-Operator Independent Drivers Association, and Northeast
Association of State Transportation Officials. This multi-year initiative aimed
to enhance the efficiency, economic competitiveness, and safety of regional
freight networks through a multi-state Regional Truck Parking Information
System while conforming with state and local freight plans. Locally, this
partnership involves collaboration between rest stops (public and private),
law enforcement, maintaining agencies, and the freight carriers.

The project established a network of safe convenient parking areas while
sharing real-time parking availability to truck drivers through dynamic
signs, smartphone apps, and travel information websites. Since the project's
completion in 2016, the project is expected to generate \$403 million in
benefits by providing drivers with the opportunity to make smarter, more
efficient parking decisions. This project was funded through a 25 million
dollar federal TIGER grant and state matching funds.

The Tennessee Department of Transportation
(TDOT) has worked in collaboration with
the Tri-State Regional Partnership and other
interstate partners to develop the Freight
Movement Along Freight Alley report. This
report examines the future of freight flows and expansions in the 58-county
Tri-State Region (Tennessee, Georgia, and Alabama). The recommendations
include strategic collaboration among stakeholders such as local, regional,
and statewide businesses, public officials, and more to ensure program
success. The report also includes an inventory of public and private truck
parking in the region via Truck Parking Locator Maps. The study is unique
in that it captures freight patterns in both rural and urban areas, and its
regional approach was successfully replicated by the Memphis MPO in their
2023 Mid-South Freight Flows & Industry Analysis.



ADVANCING

The New York City Department of
Transportation's (NYC DOT) implemented a
1.5-year Off-Hours Delivery Program (OHD)
pilot in 2009, which included partnerships with
30 businesses that agreed to deliver during
off-hours and install trackers on delivery vehicles to monitor traffic
and delivery metrics. Since the initial pilot, NYC DOT expanded their
collaborative efforts and institutionalized this program. In 2019, they
reached the goal of engaging over 500 business locations and officially
launched the program citywide. Two challenges in implementing the
OHD program were noise concerns from the surrounding communities
and financial incentives for businesses. In response to this issue, NYC
DOT collaborated with the Department of Environmental Planning to
release a noise reduction toolkit. In 2024, they began using \$6 million
in CMAQ funding to help small businesses with limited resources and
infrastructure participate in the off-hour delivery program.

In 2023, the Urban Freight Lab, Open Mobility
Foundation, and the Seattle Department of
Transportation (SDOT) received a \$2 million
Strengthening Mobility and Revolutionizing Transportation (SMART)
grant for curbside management digitization. Using the grant funding, the
three groups launched Seattle Urban Freight Lab's Last Mile Freight Curb
Access Program, which seeks to digitize last mile urban delivery. More
specifically, the goal is to understand performance data-driven pricing
and curb literacy to investigate new designated commercial vehicle load
zones (CVLZ) and the commercial vehicle permit (CVP).

The program is designed to change commercial vehicle driver behavior
and promote responsible curb use by equipping drivers with real-time
information, encouraging them to park legally and expedite deliveries.
This partnership enables knowledge sharing and potential broader
adoption of successful strategies, and through this program, the
agencies hope to turn their digital curb inventory into the national Curb
Data Specification (CDS) standard. In this effort, the Urban Freight Lab
provides in-depth research to support project development, and the
organization serves as a third-party, neutral facilitator.



SNAPSHOTS OF PLANNING PRACTICES:

AGENCY COLLABORATION | KEY PRACTICES

Different organizations might optimize their approach towards freight delivery collaboration by focusing on one or more levers of change within their organization. These levers of change—Organization, Workforce, and Partnerships; Data and Performance Management; and Policy and Program Design—are the organizing framework of these key practices. This structure is intended to offer practices in each area so that organizations can choose where to focus their energy and resources. The practices are divided into three categories: 1) "Designing" describes practices, examples, and resources relevant to agencies who are new to the topic area or setting up a new program; 2) "Enhancing" describes practices and resources relevant to agencies that are expanding or growing their efforts in a area and taking on increasingly complex aspects of the topic; and 3) "Advancing" describes practices, examples, and resources relevant to agencies that are innovating or establishing new practices in a topic area.

DESIGNING

Exemplary practices for agencies who are
new to Agency Collaboration on Freight Delivery
in Local Communities.

ORGANIZATION, WORKFORCE, AND PARTNERSHIPS:

- Identifying champion within your organization for selected local delivery programs. These individuals or teams can lead outreach to transporters, small businesses, residents, and political representatives to explain and advocate for collaboration on local freight delivery (e.g., for an off-hours delivery program or expanded cargo bike program).
- Engaging academic institutions as relevant to determine opportunities for partnerships.
- Engaging early with the public and businesses to understand their perspective and existing interactions with freight delivery.

DATA AND PERFORMANCE MANAGEMENT:

- Inventorying available freight delivery data, identifying key data sharing limitations (e.g., non-disclosure or sole source requirements), collecting and consolidating available data, and identifying gaps.
- Analyzing available data to identify where freight activity conflicts with land uses and associated activities.

POLICY AND PROGRAM DESIGN:

- Establishing a policy framework for local freight delivery planning. This policy could include goals/objectives, discussion of existing data gaps, key messaging (both internally and with partners and the public), mechanisms and processes for public involvement/input on projects, and model design principles or standards.
- Exploring the feasibility of pilot projects to test out new and innovative approaches to local freight delivery or freight vehicle parking. Pursuing preliminary studies to assess freight conditions and/or collect data.

GAPS AND FUTURE RESEARCH

- How can agencies broaden data collection to better integrate e-commerce delivery, food service providers, and building service vehicles?
- How should agencies approach curb permitting for contractors without City business licenses?

ENHANCING

Exemplary practices for agencies who are expanding or
growing their work in Agency Collaboration on Freight
Delivery in Local Communities.

ORGANIZATION, WORKFORCE, AND PARTNERSHIPS:

- Institutionalizing relationships identified in the "Designing" phase (e.g., private sector freight carriers) by forming advisory committees or similar that meet regularly to discuss urban freight topics.
- Considering opportunities to fortify stakeholder relationships and encourage collaboration by incorporating freight planning into existing long-range planning processes (e.g., the LRTP).
- Expanding outreach to non-traditional partners (e.g., downtown districts, hospitality associations) to learn more about how freight delivery affects them.
- Establishing mechanisms for coordination with Complete Streets staff to ensure that loading zones and other freight infrastructure needs are considered in project design.

DATA AND PERFORMANCE MANAGEMENT:

- Formalizing a process for collecting, storing, sharing, and visualizing local freight delivery data (e.g., through use of online dashboards or mapping tools). In doing so, formally adopt data standards (e.g., the Open Mobility Foundation's Curb Data Standard) as relevant.
- Developing approach for solving for data gaps identified in "Designing" phase.
- Adjusting data collection processes as needed to enable compliance with adopted data standards.

POLICY AND PROGRAM DESIGN:

- Implementing and monitoring performance of pilot programs to test local freight delivery management and partnership strategies.
- Building on local freight delivery policy frameworks to implement key messaging (internally and with partners and members of the public) and integrate model design principles and standards into project development processes.

ADVANCING

Exemplary practices for agencies who innovating and
establishing new best practices in Agency Collaboration on
Freight Delivery in Local Communities.

ORGANIZATION, WORKFORCE, AND PARTNERSHIPS:

- Institutionalizing a holistic approach to local freight delivery management within the organization, including through creation of a dedicated team responsible for freight programs and partnerships.
- Institutionalizing partnerships with freight providers, universities, member agencies, and other stakeholders to collaboratively address local freight delivery management.
- Leveraging analytical capabilities of academic partners for research and outreach. Utilize these third party partners to engage freight carriers or other private operators that may be less likely to engage with a City, MPO, or DOT.

DATA AND PERFORMANCE MANAGEMENT:

- Publicizing local freight delivery data in a publicly accessible portal format and using this data to quantitatively measure system performance and program effectiveness.
- Outsourcing elements of data collection as needed (e.g., bringing on a contractor with specialized skills to collect the granular parking and traffic data needed for curb digitization).

POLICY AND PROGRAM DESIGN:

- Using educational resources and/or financial incentives to drive local freight delivery behavior changes.
- Pursuing funding to further advance local freight delivery management techniques when possible.
- Making programs available for replication and use by other agencies.

- How might agencies further expand their partnerships with non-traditional stakeholders to enhance freight planning?
- What are the economic implications of curbside and freight management practices on local businesses? How can these be mitigated or leveraged?

SNAPSHOTS OF PLANNING PRACTICES:

AGENCY COLLABORATION | RESOURCES

DESIGNING

USDOT's Promising Practices for Meaningful Public Engagement
offers examples of how to incorporate community voices into
transportation decision-making.

TRB's National Cooperative Freight Research Program (NCFRP)
Report 14: Guidebook for Understanding Urban Goods
Movement is designed to help facilitate decisions that accommodate
and expedite urban goods movement while minimizing the
environmental impact and community consequences of goods
movement.

In 2015, the Florida Department of Transportation (FDOT) District 7
published Freight Roadway Design Considerations in response to
a need for guidance in balancing the needs of safe and efficient truck
movement with community livability concerns in communities where
significant goods movement activity is needed.

ENHANCING

The University of Washington's Urban Freight Lab offers a Tools and
Resources page with toolkits and guidance on studying the parking
behavior of commercial vehicles, documenting commercial vehicle
occupancy within alleys, mapping locations and positions of private
loading docks, and more.

The Environmental Protection Agency's (EPA) Community-Port
Collaboration Toolkit is designed to help communities and ports
develop collaboration skills and to enhance understanding of
stakeholders' priorities and challenges associated with ports.

The California Department of Transportation (Caltrans) published a
Port Freight Infrastructure Program Public Engagement Guide
tailored to port and freight infrastructure. The guide identifies examples
of stakeholder groups and reviews public engagement best practices
related to freight.

ADVANCING

New York City DOT's Urban Freight Initiatives report provides
examples of the broad collaboration for the management of freight
mobility alongside municipal and multi-State agencies, community, and
industry partners, in planning, engineering, education, and enforcement,
and more.

The Urban Freight Lab's research page offers a range of timely urban
freight research on emerging topics. For example, recent publications
include "Walking and Parking Dynamics of Drivers: Analysis and Model
Development for Sustainable Urban Delivery" and "Last-Mile Freight
Curb Access: Digitizing the Last Mile of Urban Goods to Improve Curb
Access and Use."

The National Cooperative Highway Research Program (NCHRP) produces ready-to-implement solutions to the challenges facing transportation professionals. NCHRP is sponsored by the individual state departments of transportation of the American Association of State Highway and Transportation Officials (AASHTO), in cooperation with the Federal Highway Administration (FHWA). NCHRP is administered by the Transportation Research Board (TRB), part of the National Academies of Sciences, Engineering, and Medicine. Any opinions and conclusions expressed or implied in resulting research products are those of the individuals and organizations who performed the research and are not necessarily those of TRB, the National Academies of Sciences, Engineering, and Medicine, or NCHRP sponsors.

SNAPSHOT CONTENT Organization

Designing, Enhancing, Advancing

The “spectrum” is divided into three categories:

- “**Designing**” – for agencies who are new to the topic area
- “**Enhancing**” – for agencies that are expanding or growing their efforts
- “**Advancing**” – for agencies that are innovating or establishing best practices in a topic area

Categories of Practice

Key Practices identify what agencies in each spectrum area are doing, divided among three categories:

Organization, Workforce, and Partnerships

Data and Performance Management

Policy and Program Design

Key Practices



DESIGNING

Identifying a champion within the organization and establishing stakeholder relationships.

Inventorying available freight data and identifying gaps.

Establishing a policy framework for local freight delivery planning.

Exploring the feasibility of pilot projects.



ENHANCING

Institutionalizing relationships through advisory groups or committees.

Establishing mechanisms for coordination with Complete Streets staff.

Formalizing a process for collecting and visualizing local freight delivery data.

Monitoring the performance of pilot programs and building on policy frameworks.



ADVANCING

Institutionalizing a holistic approach to local freight delivery management, including dedicated staff and institutionalized partnerships.

Publicizing local freight delivery data and using the data for performance measures.

Outsourcing data collection as needed.

Using educational resources and/or funding to drive freight behavior changes.



Agency Examples

DESIGNING

Understanding Freight Conditions

Maricopa Association of Governments

- » MAG assessed commercial truck-parking supply and demand
- » Freight Subarea Project Assessments identified engineering solutions to improve truck accommodation and safety
- » Outreach included member agencies, freight companies, and other stakeholders

Performance-Management Lessons

Start with a defined problem, establish baseline conditions, and use data and stakeholder input to identify interventions

Ensure access to raw data to reinforce transparency

ENHANCING Improving Coordination

Tennessee DOT Freight Alley

- » Tennessee DOT collaborated with regional and interstate partners to study freight flows across a 58-county, three-state region
- » The study included an inventory of public and private truck parking through locator maps
- » The approach captured both rural and urban freight patterns and was later replicated by the Memphis MPO

Performance-Management Lesson

Regional collaboration can produce a more consistent freight-data picture and create analytical approaches that other regions can replicate

ADVANCING Measuring Results

NYC Off-Hours Delivery Program

- » New York City DOT partnered with businesses to test shifting deliveries to off-hours
- » Participating businesses installed vehicle trackers to monitor traffic and delivery metrics
- » The program expanded from a pilot to a citywide initiative
- » NYC DOT addressed implementation barriers through noise-reduction guidance and financial assistance

Performance-Management Lessons

Performance management started during the pilot project with vehicle, traffic, and delivery monitoring and helped make the case for institutionalizing the program

Sole-source agreements with private-sector transporters allowed access to data, however, data sharing remains difficult
Use pilot results to refine program design, address barriers, and support expansion while continuing to monitor effectiveness

Case Study Takeaways

Freight performance management can evolve from measuring conditions, to understanding the regional and local system, to measuring the results of specific interventions on the network

Collaboration is critical throughout as much of the information agencies need sits with other jurisdictions, businesses, carriers, and freight partners

The case studies highlight limitations in existing freight data and the **need for greater private-sector and local stakeholder involvement**

Resources

Resources



DESIGNING

USDOT's **Promising Practices for Meaningful Public Engagement**

TRB NCRFP
Report 14: Guidebook for Understanding Urban Goods Movement

FDOT District 7 **Freight Roadway Design Considerations**



ENHANCING

University of Washington's Urban Freight Lab's **Tools and Resources Page**

EPA's **Community-Port Collaboration Toolkit**

Caltrans' **Port Freight Infrastructure Program Public Engagement Guide**



ADVANCING

NYC DOT's **Urban Freight Initiative report**

Environmental Defense Fund's **Report on Urban Freight Partnerships**

UW Urban Freight Lab's **Research Page**

Future Research

Gaps and Future Research

How can agencies broaden data collection to better integrate e-commerce delivery, food service providers, and build service vehicles?

How should agencies approach curb permitting for contractors without City business licenses?

How might agencies further expand their partnerships with non-traditional stakeholders to enhance freight planning?

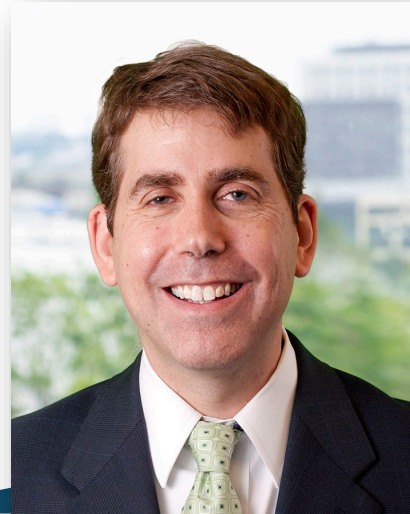
What are the economic implications of curbside and freight management practices on local businesses? How can these be mitigated or leveraged?

Thank You!

Please email us with any feedback.



Rachel Vierstra
rvierstra@camsys.com



John Kaliski
jkaliski@camsys.com

Scan the QR code to view
the final Snapshot Products

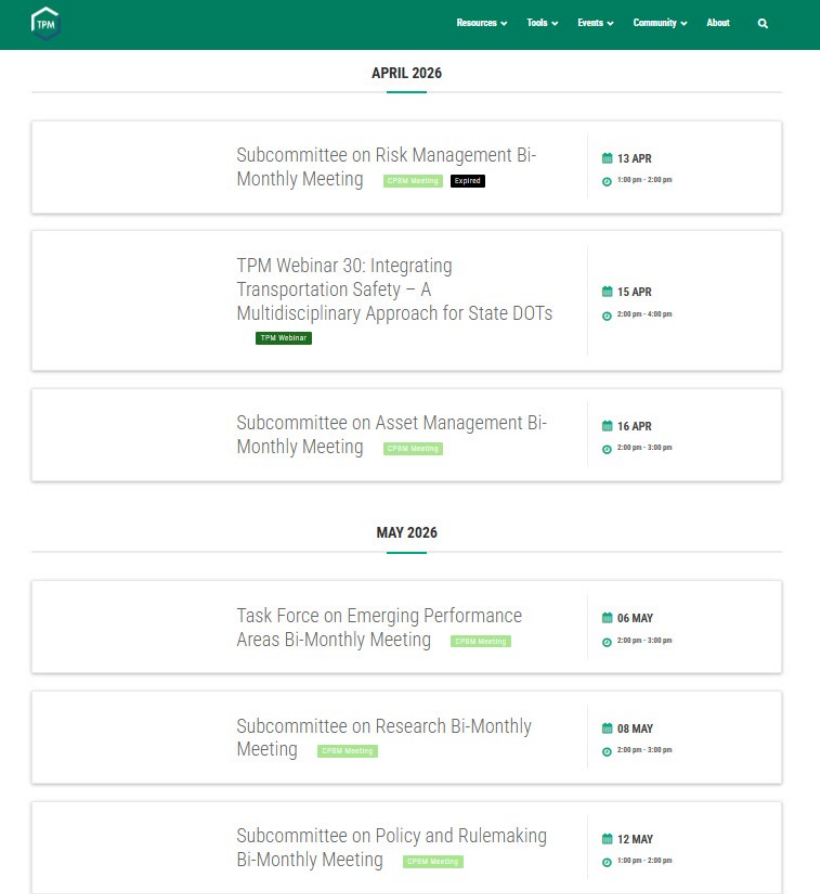


<https://doi.org/10.17226/29175>

Save the Date!

- To learn more about the Committee on Performance Based Management, access the series archive, and explore performance management resources, visit the [TPM Portal](#)
- Join us for an upcoming webinar!
 - **TAM Webinar 83: Recent Research Roundtable**
 - Wednesday, November 18, 2:00-3:30
 - **Q4 Joint CPBM/TPM TSP Meeting**
 - Thursday, December 3, 2026, 2:00-4:00
 - **TPM Webinar 34: Organizational Health & Performance**
 - Wednesday, December 16, 2:00-3:30

Thank you!!



The screenshot displays the TPM Portal's calendar interface. At the top, a green navigation bar contains the TPM logo and links for Resources, Tools, Events, Community, and About. Below this, the calendar is organized by month. The 'APRIL 2026' section lists three events: a Subcommittee on Risk Management Bi-Monthly Meeting on April 13 (1:00 pm - 2:00 pm), a TPM Webinar 30 on April 15 (2:00 pm - 4:00 pm), and a Subcommittee on Asset Management Bi-Monthly Meeting on April 16 (2:00 pm - 3:00 pm). The 'MAY 2026' section lists three events: a Task Force on Emerging Performance Areas Bi-Monthly Meeting on May 6 (2:00 pm - 3:00 pm), a Subcommittee on Research Bi-Monthly Meeting on May 8 (2:00 pm - 3:00 pm), and a Subcommittee on Policy and Rulemaking Bi-Monthly Meeting on May 12 (1:00 pm - 2:00 pm). Each event entry includes a title, a date, and a time slot, with a small green icon indicating the event type.

APRIL 2026	
Subcommittee on Risk Management Bi-Monthly Meeting	13 APR 1:00 pm - 2:00 pm
TPM Webinar 30: Integrating Transportation Safety – A Multidisciplinary Approach for State DOTs	15 APR 2:00 pm - 4:00 pm
Subcommittee on Asset Management Bi-Monthly Meeting	16 APR 2:00 pm - 3:00 pm
MAY 2026	
Task Force on Emerging Performance Areas Bi-Monthly Meeting	06 MAY 2:00 pm - 3:00 pm
Subcommittee on Research Bi-Monthly Meeting	08 MAY 2:00 pm - 3:00 pm
Subcommittee on Policy and Rulemaking Bi-Monthly Meeting	12 MAY 1:00 pm - 2:00 pm