Welcome

Mute your microphone unless speaking during a Q&A session

Use the "Raise Your Hand" or chat box feature to ask questions

Announce your name whenever you speak

If you get disconnected, please reference the log-in instructions to reconnect audio or visual

If you are dialing-in or had the meeting dial-out to you, do not answer any calls and put this call "on-hold" (this will disrupt our meeting)

Please pay attention: A lot of important information will be shared!

Meeting Series

STEERING COMMITTEE MEETING DATES	STEERING COMMITTEE MEETING TOPIC	LUNCH & LEARN WEBINAR TOPICS
✓ June 4	Introduction to Freight Planning	N/A
✓ July 16	Best Practices & Network Assessment	Smart Cities & Railroad Technology
✓ August 13	Land Use Analysis	Truck Parking & Automation
✓ September 10	Goals, Objectives, & Performance Measures	Freight Data Analysis
✓ October 8	Economic Impact Analysis	N/A
November 12	Draft Recommendations: Policies and Programs	SC Ports Virtual Tour
December 10	POSTPONED	
January – Final Plan		

AGENDA

1 Needs Identification

2 Policy and Program Recommendations

3 Program Example: Smart Corridor

4 Preview: Project Recommendations

Freight Needs Identification

Freight Needs Identification

Freight Needs Identification Methodology

- LRTP and MPO TIP review
- Freight Infrastructure Analysis
- Freight Land Use Analysis
- Best Practices and Peer Reviews
- Public/Stakeholder Outreach
- Gap Analysis

Freight Needs Methodology

Evaluated performance metrics for each roadway in the freight network in three categories

- Safety
  - Truck fatal and severe crashes
  - At-grade crossing hotspots
  - Truck parking availability
- Performance
  - Reliability
  - Bottleneck score
  - LOS for 2015 and 2040
- Infrastructure condition
  - Percent of roadways with poor pavement quality
  - Number of poor condition bridges

Tier 1 Freight Network Roadways

- Safety Needs
  - 0 out of 5 Tier 1 roadways have safety needs

- Congestion Needs
  - 2 out of 5 Tier 1 roadways have congestion needs

- Infrastructure Needs
  - 5 out of 5 Tier 1 roadways have infrastructure condition needs

- Examples of Tier 1 roadway hot spots to examine in greater detail:
  - I-85 Business from N Blackstock Rd to Sun N Sand Rd
  - I-85 from Gossett Rd to E Cherokee St, Pelham Rd Interchange to I-385, S Batesville Rd to E Main St, Georgia State Line to Clemson Hwy Interchange, and US 29 to Hwy 153

Tier 2 Freight Network Roadways

- Safety Needs
  - 4 out of 35 Tier 2 roadways have safety needs

- Congestion Needs
  - 16 out of 35 Tier 2 roadways have congestion needs

- Infrastructure Needs
  - 29 out of 35 Tier 2 roadways have infrastructure condition needs

- Examples of Tier 2 roadway hot spots to examine in greater detail:
  - US 123 from Pendleton Rd to US 76, Brushy Creek Rd to SC 153, and US 25 to I-385
  - US 276 from US 25 to E Parkins Mill Rd
  - SC 24 from S Prevost St to US 29

Tier 3 Freight Network Roadways

- Safety Needs
  - 40 out of 109 Tier 3 roadways have safety needs

- Congestion Needs
  - 21 out of 109 Tier 3 roadways have congestion needs

- Infrastructure Needs
  - 56 out of 109 Tier 3 roadways have infrastructure needs

- Examples of Tier 3 roadway hot spots to examine in greater detail:
  - Mauldin Rd from I-85 to Conestee Rd
  - Martin Luther King Jr Blvd from N Pointe Dr to US 76
  - SC 291 from US 276 to Betty Spencer Dr

Types of Freight Recommendations

- **Policies** – recommendations that provide guidance in the maintenance and investment of the freight infrastructure and movement of goods

- **Programs** – recommendations for short term interventions to improve the regional freight mobility system

- **Projects** – proposed freight infrastructure improvements that meet identified freight needs and deficiencies

Draft Recommendations: Programs and Policies

Program – Regional Traffic Operations

A Regional Traffic Operations Program is used to gather real-time information via traffic detectors, CCTV cameras, ramp meters, and other ITS elements to better manage traffic reliability and incidents. Utilizes ITS to monitor roadway conditions 24/7, which can include installing:

- Traffic Operations Center (TOC)
- Closed-Circuit Television Cameras (CCTV)
- Dynamic Message Signs (DMS)
- Public-Facing Performance Dashboard

Source: Seattle ITS

GOALS	Goal #1 Mobility System Reliability	Goal #2 Safety and Security	Goal #3 Infrastructure Condition	Goal #4 Economic and Community Vitality	Goal #5 Environmental	Goal #6 Equity

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Program – Incident Management

Planned and coordinated multi-disciplinary process to detect, respond to, and clear traffic incidents so that traffic flow may be restored as safely and quickly as possible

Involves multiple partners:

- Law enforcement, fire and rescue, emergency medical services, transportation, public safety communications, emergency management, towing and recovery, and traffic information media

Source: FHWA

GOALS	Goal #1 Mobility System Reliability	Goal #2 Safety and Security	Goal #3 Infrastructure Condition	Goal #4 Economic and Community Vitality	Goal #5 Environmental	Goal #6 Equity

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Program – Ramp Metering Feasibility

- Traffic signals installed on interstate on-ramps to control the frequency of vehicles entering the flow of traffic

- Allows entering vehicles to merge smoothly onto the interstate and reduces the need for vehicles on the mainline to reduce speed

- Helps manage entrance demand at a level that is near the capacity of the freeway, which prevents traffic flow breakdowns

Source: John Meore/The Journal News

GOALS	Goal #1 Mobility System Reliability	**Goal #2 Safety and Security**	Goal #3 Infrastructure Condition	**Goal #4 Economic and Community Vitality**	Goal #5 Environmental	Goal #6 Equity

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Program – Urban Delivery

Urban Delivery Program is the planning, programming, and other strategies to improve freight mobility in urban areas or to minimize its impacts on others. Strategies may include:

- **_Operations strategies_** – Loading zones, parking, truck routing, and other elements of traffic control and lane management
- **_Logistics strategies_** – Individual supply chains to consider adjustments such as off-peak delivery hours, freight consolidation, or mode shifts
- **_Technology strategies_** – Intelligent transportation systems (ITS), alternative fuels, and other technological advancements with the potential to improve urban freight movements

Source: TTNews

GOALS	Goal #1 Mobility System Reliability	Goal #2 Safety and Security	Goal #3 Infrastructure Condition	Goal #4 Economic and Community Vitality	Goal #5 Environmental	Goal #6 Equity

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Policy – Freight Design Criteria

- Freight design criteria are guidelines that are made to ensure the movement of freight across urban, suburban and rural areas

- Typically involves construction improvements to accommodate freight in multi-modal corridors

- Adopt standards for lane width, speed limits, marked facilities for bikes & pedestrians, ITS facilities, etc.

"Accommodate"   "Design For"
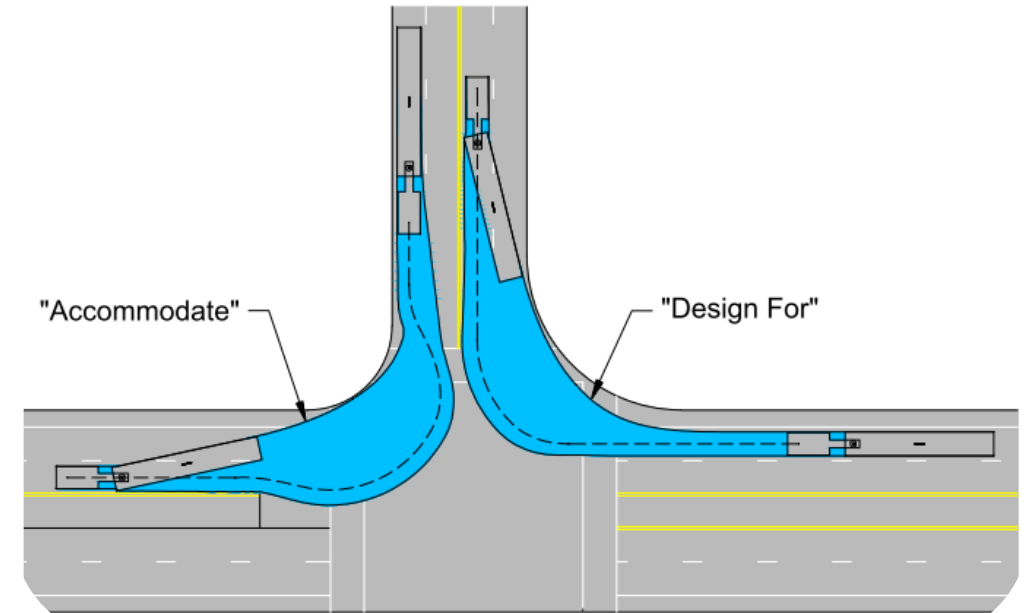
Source: City of Seattle

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GOALS	Goal #1 Mobility System Reliability	Goal #2 Safety and Security	Goal #3 Infrastructure Condition	Goal #4 Economic and Community Vitality	Goal #5 Environmental	Goal #6 Equity

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Policy – Truck Parking Requirements

Local land use policies to increase parking supply within the Appalachian Region. Some examples include:

- Establish truck parking minimums for rest areas, truck travel centers, shopping centers, and industrial land uses such as warehouses and distribution centers
- Ensure future industrial developments are clustered within targeted areas to reduce conflicts between truck freight and other modes
- Work with local governments and property owners/managers to identify vacant or underutilized properties to develop sites into temporary or permanent truck parking

Source: Apex

SCDOT

GOALS	Goal #1 Mobility System Reliability	Goal #2 Safety and Security	Goal #3 Infrastructure Condition	Goal #4 Economic and Community Vitality	Goal #5 Environmental	Goal #6 Equity

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Rail Strategies for Communities

Quiet Zones

- **What:** A segment of rail where the locomotive horn is not routinely sounded at public at-grade crossings

- **Who:** Only a governmental entity responsible for traffic control/law enforcement, is permitted to create a quiet zone

- **Benefits:** Promotes quality of life without compromising safety

- **When:**
  - Show the lack of horn does not pose a significant safety risk
  - Implement safety measures to reduce excess risk associate with no horn

Source: https://www.nwitimes.com/news/local/lake/schererville/quiet-zones-coming-to-schererville-railroad-crossings/article_99259506-f923-58ff-abd2-285b78c345d3.html

Crossing Consolidation

- **What:** Closing at-grade crossings to vehicles or trains

- **Who:** Railroad entities, state/local governments, FRA, & community stakeholders

- **Benefits:** Increase public safety and promote economic development by reducing traffic congestion, noise, and other effects of railroad crossings

- **When:**
  - Nearby adjacent crossing that can support vehicle through movements
  - Close neighborhood crossings and that funnel traffic to major roadways

Source: https://www.google.com/url?sa=i&url=https%3A%2F%2Fwww.townofcary.org%2Fprojects-initiatives%2Fproject-updates%2Fstreet-projects%2Fwestern-cary-railroad-crossings&psig=AOvVaw0VGpd2Hg_WDTQvmvhIGvwn&ust=1604437914560000&source=images&cd=vfe&ved=0CAMQjB1qFwoTCICi1ozj5OwCFQAAAAAdAAAAABAD

Noise and Vibration Impacts

- **What:** Noise and vibration impacts from passing trains

- **Who:** Communities where a rail line exists or could be built in the future

- **Solutions:**

  - Closely monitor and maintain local rail infrastructure

  - Upgraded rail cars, locomotives, and track

  - Installation of sound/noise barriers

  - Quiet zones

  - Crossing consolidation

  - Noise abatement programs

  - Context sensitive solutions incorporated into local planning guidelines

Source: https://www.guardrailbarrier.net/guardrails/railway-sound-barrier.html

Program Example: Smart Corridor

ITS and TSMO Strategies

- **Transportation systems management & operations (TSMO) –** Integrated set of strategies to optimize performance of existing infrastructure. TSMO strategies are multimodal and intermodal designed to preserve capacity and improve security, safety, and reliability

- **Emerging Technologies (ET) –** In the transportation context, ET refers to the integration of advanced communications enabling technologies (e.g., wireless, DSRC, 5G, etc); foundational technologies (e.g., data analytics, IT modernization, etc); and application technologies (e.g., connected/automated vehicles, freight delivery, etc) with vehicle and transportation infrastructure to improve system efficiency and better inform system users and operators.

- **Intelligent transportation system (ITS)** – A subset of ET, ITS is a traffic application system that provides innovative services relating to different modes of transport and traffic management and enable users to be better informed and make safer, more coordinated, and 'smarter' use of transport networks. Unlike ET, ITS does not connect Vehicle to Infrastructure.

Smart Corridor

- What is a Smart Corridor?

- Components of a Smart Corridor

- ITS and TSMO Solutions
  - TSMO strategies and benefits
  - Emerging Technologies solutions and benefits
  - ITS solutions and benefits

- Key Steps to Implementation

- ACOG Perspective
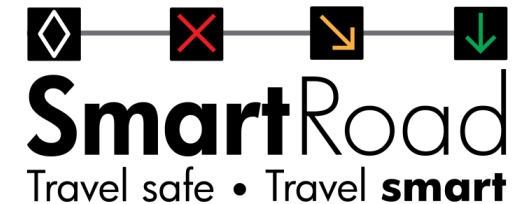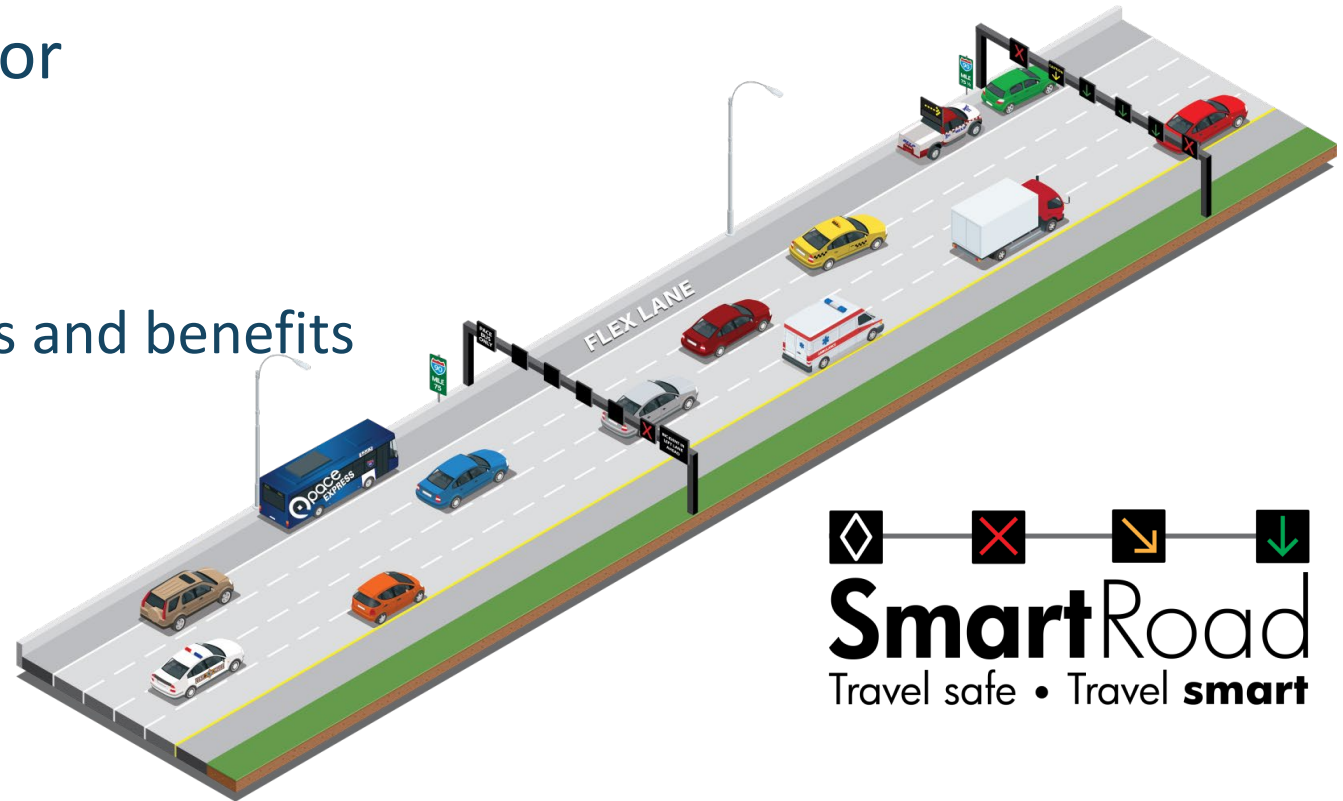
Graphic: Illinois Tollway

What is a Smart Corridor?

A comprehensive approach to integrating existing transportation infrastructure with physical, operational, and technological improvements to provide users accurate, real-time information and to actively manage traffic.
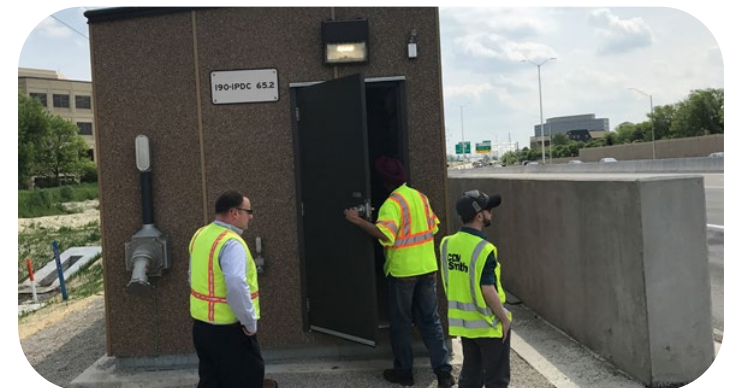
Photos: Illinois Tollway

Smart Corridor Components

- Physical improvements
  - Extend ramp lengths, add emergency pull-offs, install ramp meters, maintain roadsides, pavement markings, signage

- Operational improvements
  - Managed or dedicated lanes, congestion pricing, traffic signal coordination, transit signal priority, safety patrols

- Technology improvements
  - Dynamic messaging signs, closed-circuit television, roadside sensing equipment, real-time data sharing, data storage

TSMO Strategies

Improved Bicycle and Pedestrian Crossings

Connected and Automated Vehicle Deployment

Access Management

Integrated Corridor Management

Transit Management

Congestion Pricing

Traffic Incident Management

Work Zone Management

Freight Management

Ramp Management

Traveler Information

Road Weather Management

Special Event Management

Traffic Signal Coordination

Active Transportation and Demand Management

TSMO Benefits
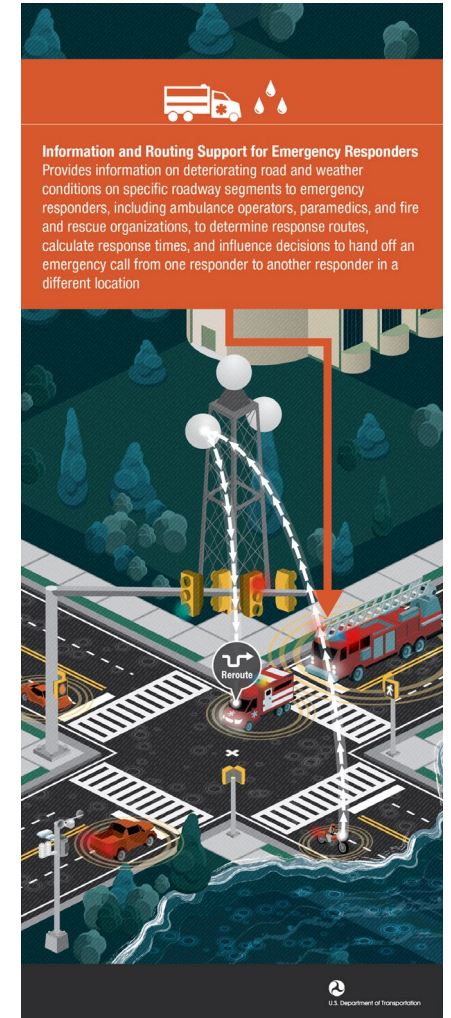

- Smoother and more reliable traffic flow
- Improved safety
- Reduced congestion
- Less wasted fuel
- Cleaner air
- Increased economic vitality
- More efficient use of resources (facilities, funding)
- Improved quality of life

TSMO Benefits

- Maintenance and fleet management (ET)

- Real time road conditions management (Combination ET and ITS)

- Emergency responders routing support (ET)

Information for Maintenance and Fleet Management Systems
Connected maintenance and specialty vehicles provide real-time information, such as their status, location, and materials onboard, to assist agencies with scheduling, maintenance, and inventory

Graphics: USDOT

Weather-Responsive Traffic Management
Connected vehicles provide road weather information to assist in adjusting signal timing intervals at signalized intersections and posted speed limits, including near work zones, when severe weather affects road conditions

Information and Routing Support for Emergency Responders
Provides information on deteriorating road and weather conditions on specific roadway segments to emergency responders, including ambulance operators, paramedics, and fire and rescue organizations, to determine response routes, calculate response times, and influence decisions to hand off an emergency call from one responder to another responder in a different location

Emerging Technologies & ITS Strategies

- Connected and automated vehicles (ET)

- Collision warning systems (ET)

- Traffic signal prioritization (transit, freight) (ITS)

Connected Vehicle Safety for Rail
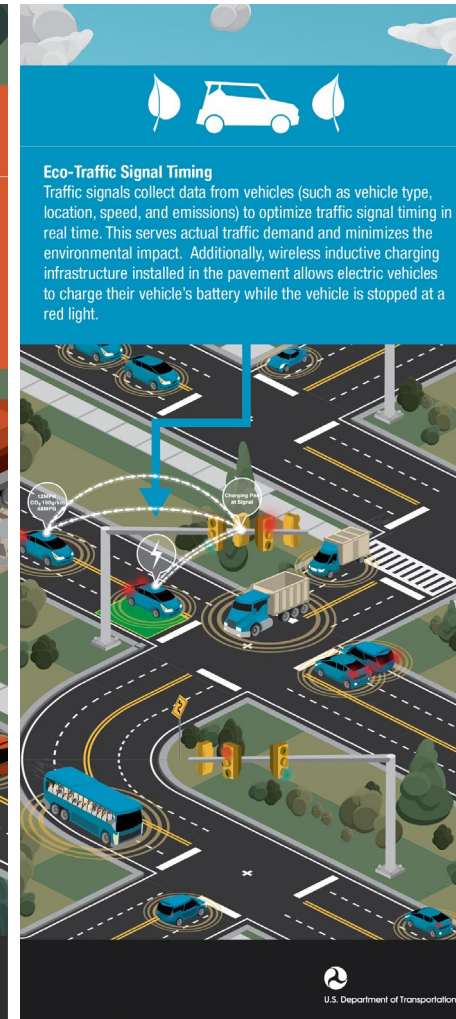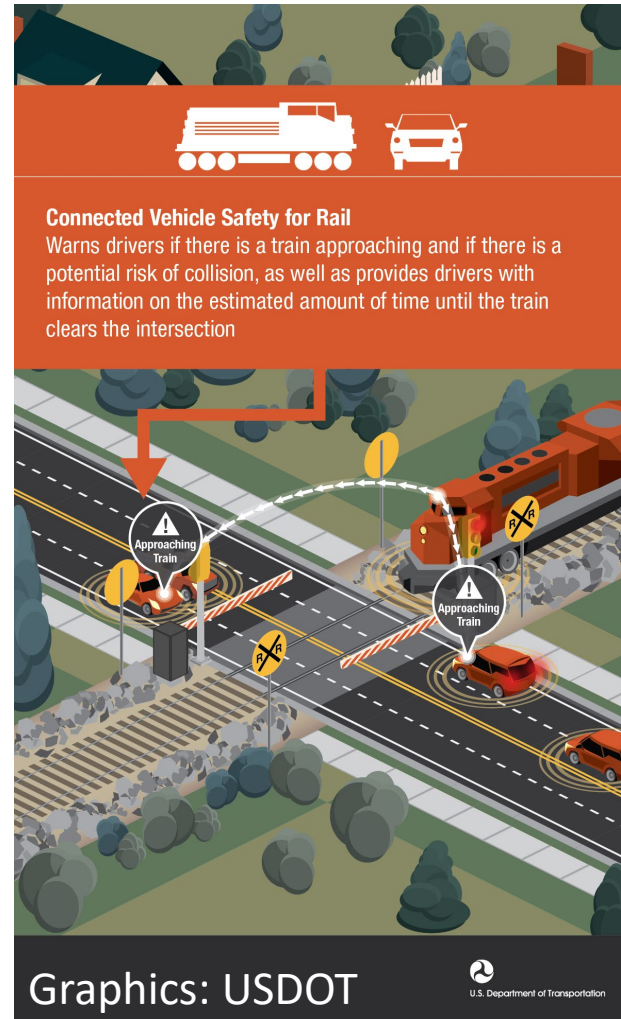Warns drivers if there is a train approaching and if there is a potential risk of collision, as well as provides drivers with information on the estimated amount of time until the train clears the intersection

Graphics: USDOT

U.S. Department of Transportation

Eco-Traffic Signal Timing
Traffic signals collect data from vehicles (such as vehicle type, location, speed, and emissions) to optimize traffic signal timing in real time. This serves actual traffic demand and minimizes the environmental impact. Additionally, wireless inductive charging infrastructure installed in the pavement allows electric vehicles to charge their vehicle's battery while the vehicle is stopped at a red light.

U.S. Department of Transportation

Truck Forward Collision Warning
Warns truck drivers if a vehicle ahead is stopped or traveling slower and there is a potential risk of collision

U.S. Department of Transportation

Freight Specific Solutions

Truck Platooning and Freight Signal Priority

Legend:
- DSRC
- Web Services/Cloud
- CB/Manual

Columbus Connected Transportation Network
Connected Vehicle Environment | Freight Signal Priority/Platoon Signal Priority

Truck Platooning System/Network Operations Center

Loaded Trucks

City Streets

Interstate Highway

City Streets

Empty Trucks

Trucks (On-Board Equipment)
- Speed
- Heading
- Fuel efficiency/fuel use
- Location
- Time

Freight Terminal, Consolidation Center, Warehouse, or Manufacturer

3PL Operations Staff
- Load Plans
- Dispatch orders

Truck Drivers
- Initiate platoon requests
- Coordinate platoons

Customer Warehouse, Distribution Center, or Manufacturing Facility

Roadside Equipment
- DSRC radio

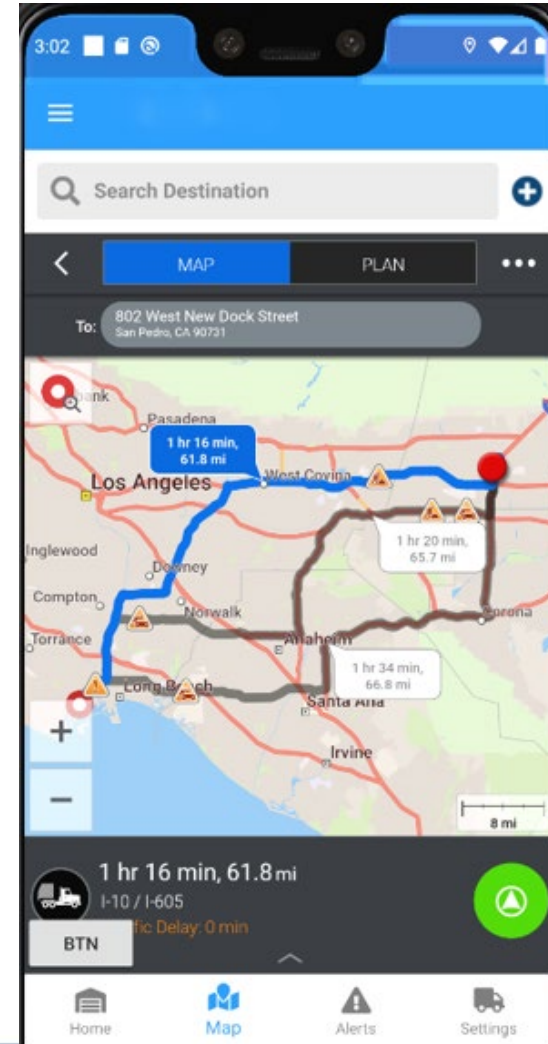# Freight Specific Solutions

Truck Routing

- Events and notifications
  - Slow-down ahead
  - Fuel-efficient routes
  - Incidents
- Can be integrated with regional ITS

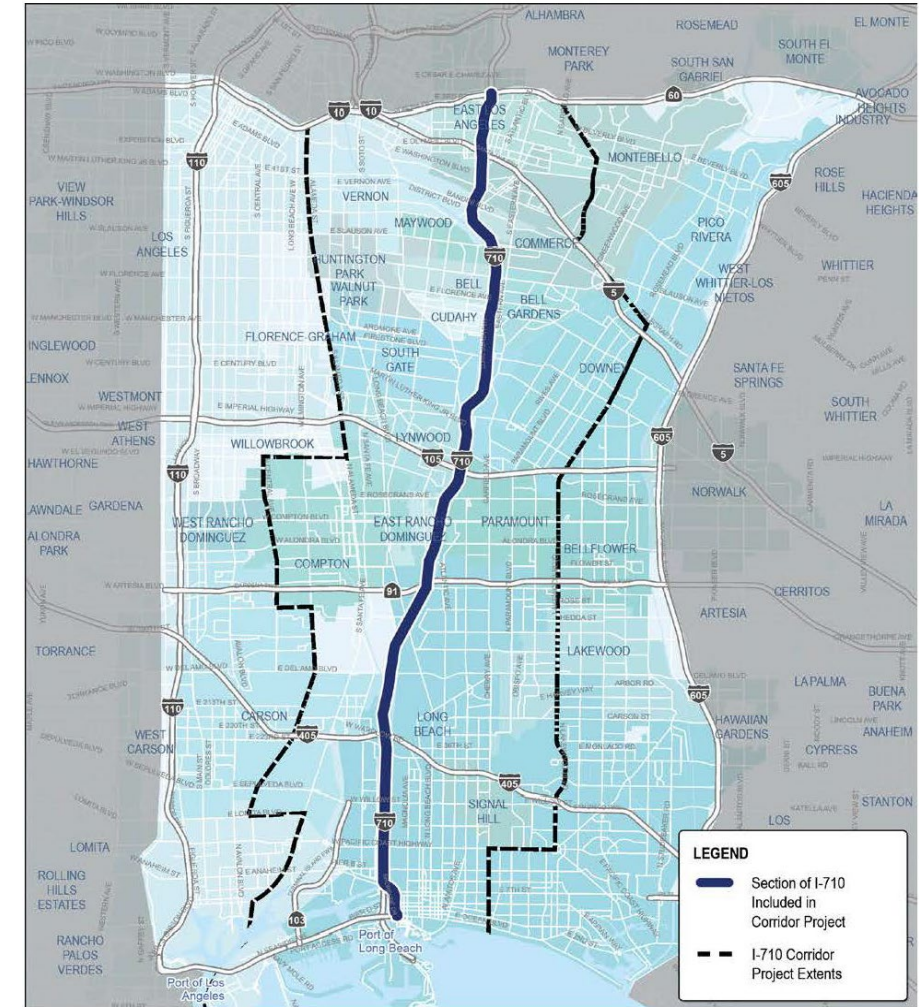# Freight Specific Solutions

Drayage Freight and Logistics Exchange (DrayFLEX)

- Improve coordination between motor carriers and private terminals

- Improve terminal efficiency

- Reduce delays and truck queueing

- Reduce fuel consumption and emissions

LEGEND

— Section of I-710 Included in Corridor Project

--- I-710 Corridor Project Extents

Key Steps to Implementation

- Step 1: Establish a Smart Corridor Coalition

- Step 2: Create a Roadmap

- Step 3: Assess current infrastructure

- Step 4: Identify gaps/needs

- Step 5: Assess readiness

- Step 6: Identify and pilot solutions

- Step 7: Secure funding

Appalachian Region Opportunities

Create a Smart Corridor Coalition with the purpose of:

- Facilitating regional public/private/institutional partnerships and collaboration
- Creating a roadmap for advancing strategies across the region
- Communicating the vision, goals and objectives to stakeholders and the public
- Identify gaps and industry user needs
- Assessing the current infrastructure and readiness of the system
- Identifying candidate corridors throughout the region
- Building a coalition for the pursuit of public-private partnership funding opportunities
- Clearing the path for implementation

Preview: Project Recommendations

Potential New Freight Beneficial Projects

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REGIONAL FREIGHT MOBILITY PLAN

Potential New Freight Beneficial Projects

Gap Analysis Methodology

- Existing + Committed projects
- Freight Infrastructure Analysis
  - Bridge/pavement conditions
  - Truck crash data
  - Truck delay and bottlenecks
- Freight Land Use Analysis
  - Freight generators
  - Freight corridors and clusters

Purpose of Gap Analysis

Identify projects that were missing from the initial list of potential investments

Next Steps

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Thank You

Stay Connected!

SCACOG.org/acog-freight-plan
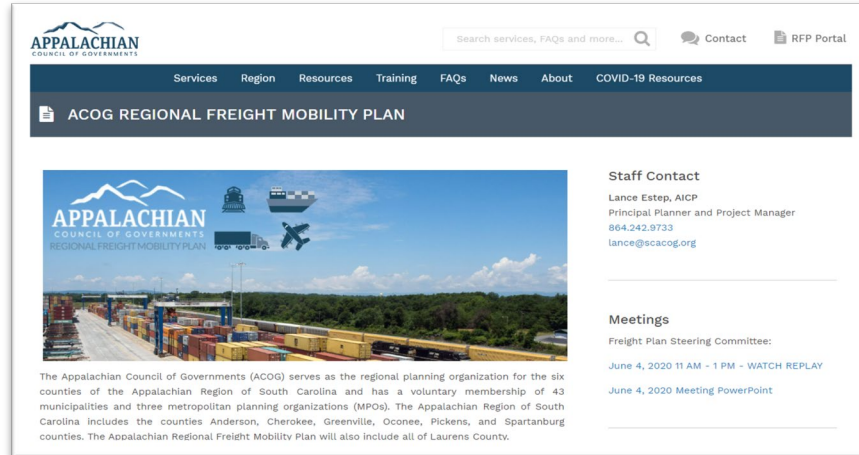
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