



TRB Conference on Performance and Data in Transportation Decision-Making

Atlanta GA, September 2019

presented to

Transportation Research Board

presented by

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Think  Forward

September 16, 2019

Peer Exchange: Multimodal Decision-Making at the State, Metropolitan, and Regional Levels

TRB Statewide Multimodal Committee (ADA10)
TRB Transportation Programming and Planning Committee (ADA50)
AASHTO Standing Committee on Planning
Federal Highway Administration

Spokane, Washington
July 17, 2018

Peer Exchange Objective

- Share information on best and current practice as it relates to multimodal / cross-modal investment decision-making
- Emphasis on how multimodal goals, measures, evaluation methods are operationalized within prioritization and funding decisions
- Enable State DOTs, MPOs, and other practitioners to share experience and lessons learned
 - » Compare approaches
 - » Discuss common challenges
 - » **Identify future research needs**

Peer Exchange Agenda

- State of the practice
- Practitioner presentations
 - » Minnesota DOT
 - » Virginia DOT
 - » Atlanta Regional Commission
- Roundtable discussions
 - » Use of mode-neutral measures
 - » Collaboration across transportation partners
 - » Linking planning to prioritization to funding
 - » Building consensus and communicating results

Defining “Multimodal”



Multimodal Prioritization

- Agencies historically plan and prioritize/program within individual modes
 - » Reflects traditional budgeting process
 - » Federal funding silos
- Agencies are facing more pressure to develop multimodal plans to improve movement of people and goods and address multiple other economic and quality of life objectives
- Developing multimodal strategies requires understanding of tradeoffs and benefits of investments across modes to assess what best drives performance outcomes

Basic Decision-Making Models

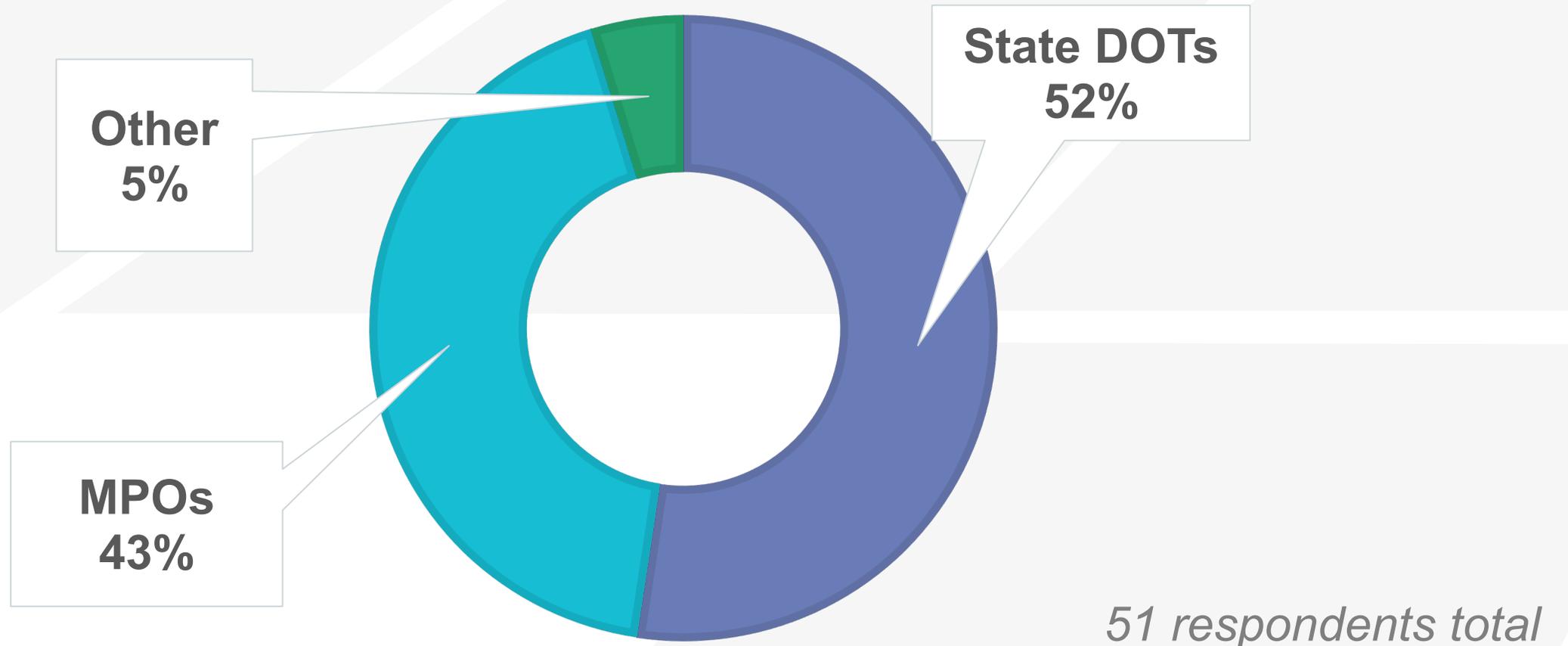
- Top down (traditional process)
 - » First fund modal “buckets” (e.g., bridge, rail...)
 - » Then prioritize projects within those programs
 - » Almost all agencies have traditionally used this model
- Bottoms up (mode neutral process)
 - » Prioritize all projects in one big bucket
 - » Established measures used to prioritize
 - » Requires funding flexibility or creativity to implement, which has slowed implementation

Mode-Neutral Process

- Optimizing funds across various investment types and funding sources
- Performance measured in context of broader, systemwide goals
- Project evaluation and prioritization requires careful application of mode-neutral criteria



Project Evaluation Across Modes



Project Evaluation Across Modes

Benefits	Challenges	Requires
<ul style="list-style-type: none">• Provides decision-makers the information to better optimize project selection and funding.	<ul style="list-style-type: none">• Different modes have different purposes and benefits – apples to oranges comparison• Stakeholder engagement to understand the process can be time consuming and costly	<ul style="list-style-type: none">• Engaged leadership• Common goals• Diversity of thought at the table• Communication across all levels within agency• Improved communication tools• Common and meaningful language
<ul style="list-style-type: none">• Allows decision-makers to evaluate the transportation network as a system, instead of by individual modes.	<ul style="list-style-type: none">• Political realities and funding availability and requirements may not align with results	<ul style="list-style-type: none">• Keep performance evaluation funding agnostic• Manage expectations around needed projects• Focus on outcomes• Agile funding strategies
<ul style="list-style-type: none">• Provides a data-driven mechanism to determine the greatest needs, irrespective of mode	<ul style="list-style-type: none">• Limited mode-neutral measures• Limited common data exists between and across modes• Lack of robust data management/governance processes	<ul style="list-style-type: none">• Creative evaluation processes• Elevating data management as a part of the process• Better predictive tools

Best Practice

- Tailor approach to local context
- Don't rely on one approach – such as BCA, exclusively - consider a 'mixed' approach that includes numerous criteria
- Consider a manageable number of quantitative and qualitative criteria
- Focus on outcomes, not outputs
- Engage stakeholders
- Start simple, test, and evolve process over time

Future Research Opportunities

➤ Performance Measures

- » Economic, quality of life impacts and revenue generation associated with multimodal solutions – help with making the case for integrated investment solutions
- » Environmental, land use and sustainability metrics – data and applications
- » Specific methods for normalizing / weighting within prioritization process to support fair comparison across project types

➤ Process

- » Prioritization frameworks
- » Before/after studies (planning – prioritization – funding – implementation)
- » Integrating federal requirements

➤ Data

- » Data visualization and communication tools
- » Predictive tools

Questions



**Multimodal / Mode-Neutral Prioritization:
An MPO Success Story**
Chattanooga-Hamilton County/North Georgia TPO

Chattanooga Region

- 443,000 people with 26% growth over plan horizon
- 216,000 jobs with 39% growth over plan horizon
- 19 jurisdictions (four counties and 15 municipalities)
- 2,110 lane-miles



Multimodal
Connections

Public
Transit

ADA
Compliance

Chattanooga
Bypass

Safety

Improved
Access

Congestion
Reduction

*During stakeholder outreach for 2040 RTP, we heard about many needs and frustrations. Defining tailored solutions that address the many, **often-competing needs** was the challenge.*

Intermodal
Investment

Complete
Streets

Tourism

High-
Speed
Rail

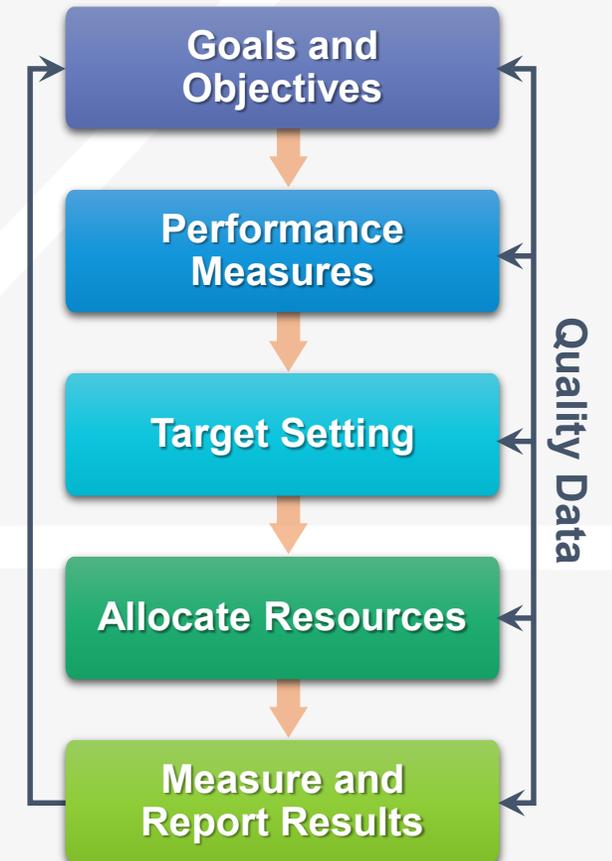
Protecting
Chattanooga's
Environmental
Resources

Community
Character

Health

Performance-Based 2040 RTP

- Supports transparent decision-making in competitive funding environment
- Provides context, helps organize steps of plan development
- Key metrics to track positive outcomes
- Ensures investment decisions align with long-term goals
- Helps agency manage expectations
- Preparation for new requirements under MAP-21



Traditional steps of performance-based plan process

“Community to Region” Performance Framework



Scale 1

Goals/Objectives

GOAL

**BUILD AND MAINTAIN
SAFE AND HEALTHY
COMMUNITIES**

Within Community



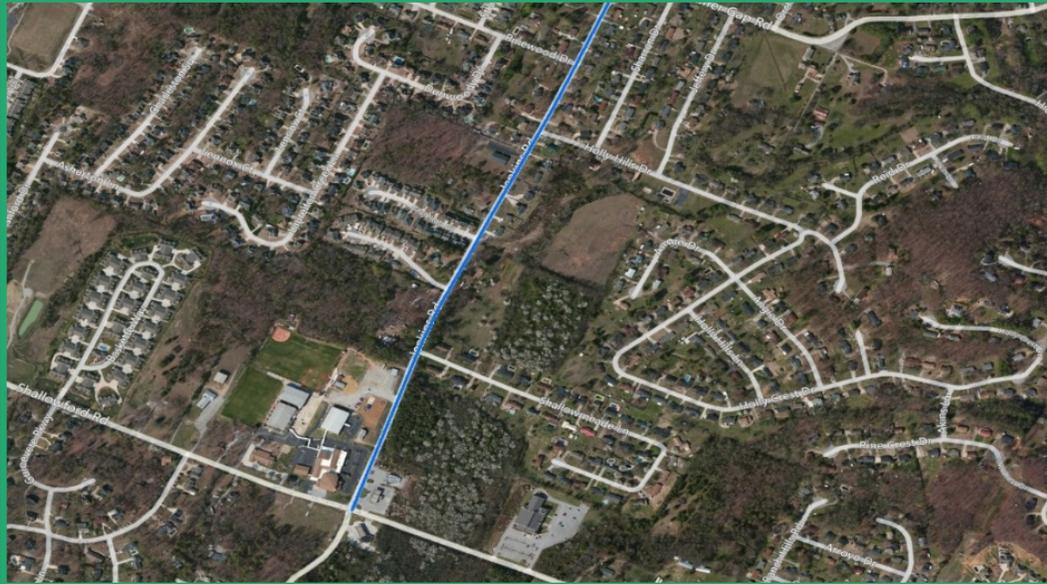
OBJECTIVES

- Support walkable and bicycle-friendly communities that promote safe connections to community resources
- Provide incentives for complete streets project design
- Encourage investments anchored in integrated transportation and land use planning that support desired community character
- Improve safety through improved system operations, preventative maintenance, and ADA compliance
- Prioritize investments in areas where local land use and development regulations support healthy, safe communities
- Prioritize investment that improves multimodal access to existing or planned transit hubs or that fills gaps in existing multimodal system
- Encourage connected street network

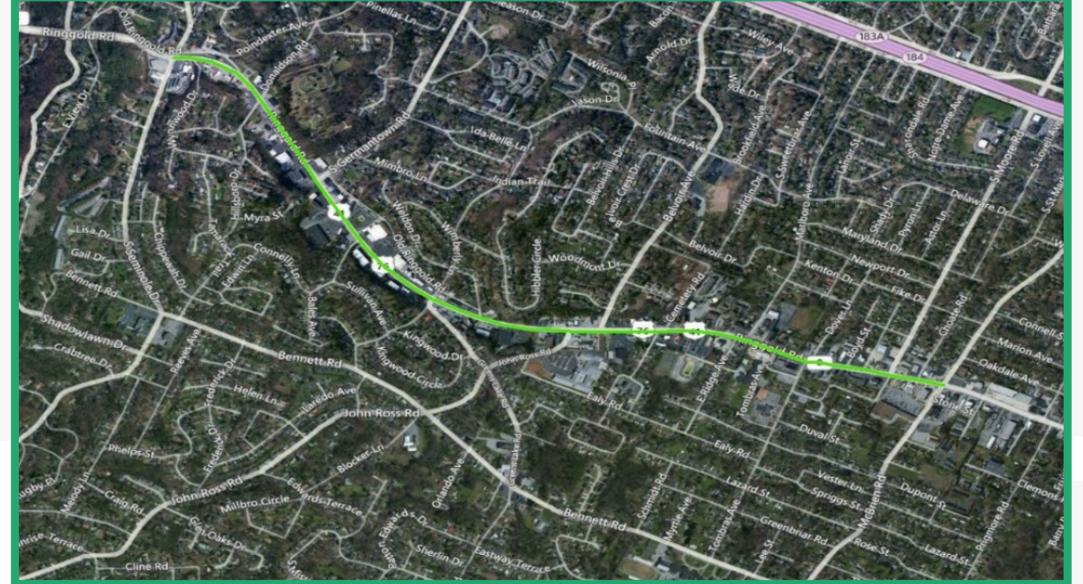
Scale 1

Example Projects

Jenkins Road Widening



Ringold Road Bike Lanes



Within Community



Scale 2

Goals/Objectives

GOAL

**CONNECT COMMUNITIES
IN THE REGION BY
PROVIDING MULTIMODAL
TRAVEL OPTIONS TO
ACTIVITY AND
ECONOMIC CENTERS**

Community to Region

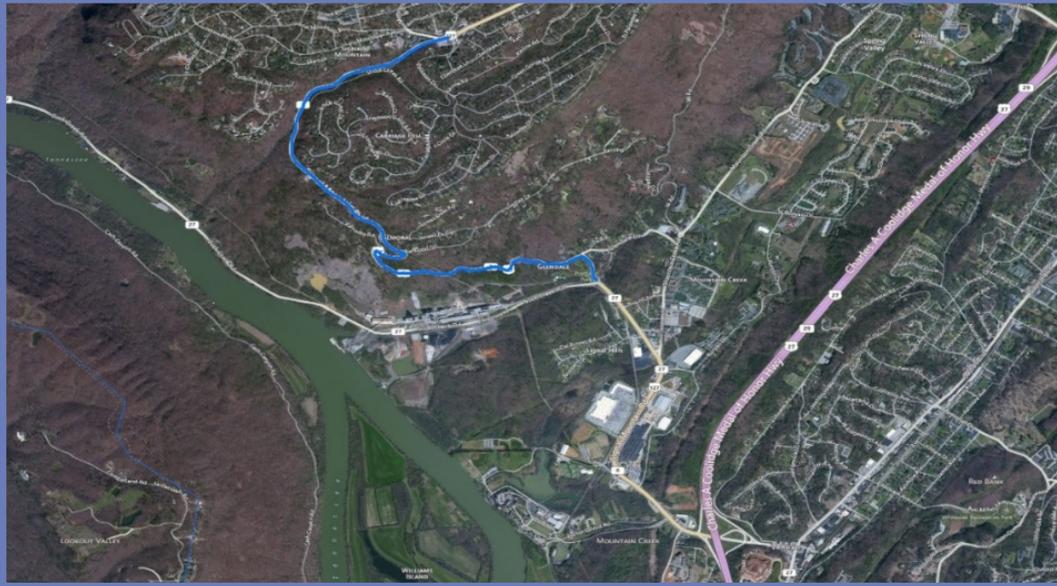


OBJECTIVES

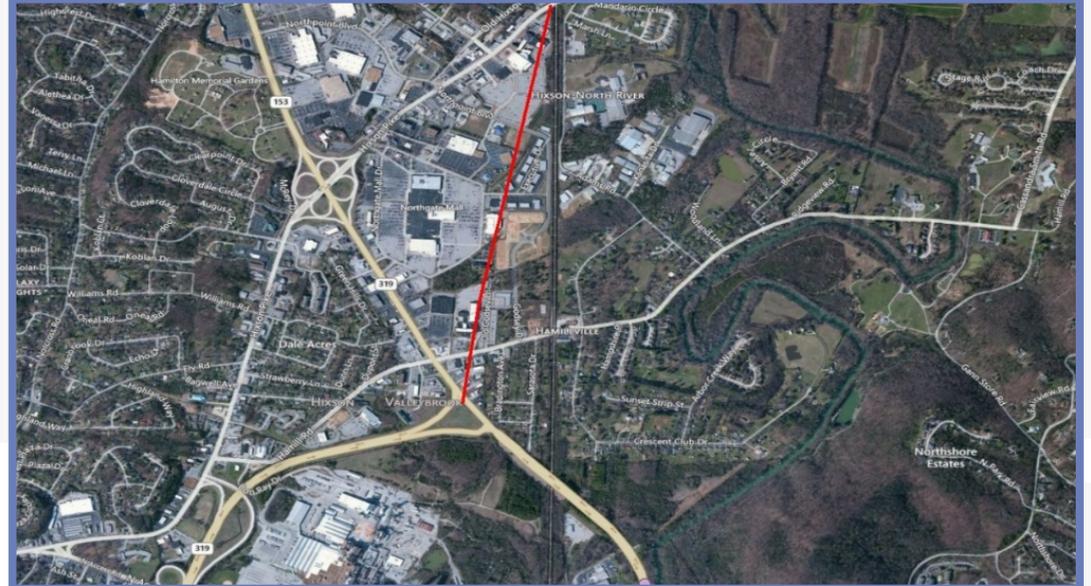
- Preserve, maintain, and improve existing infrastructure before adding new capacity
- Provide incentives for complete streets project design
- Encourage corridor improvements anchored in integrated transportation and land use planning that support desired community character
- Improve mobility and support economic development by providing expanded set of travel options, with emphasis on public transit
- Improve travel time reliability through improved system operations
- Incentive corridor protection plans

Scale 2 Example Projects

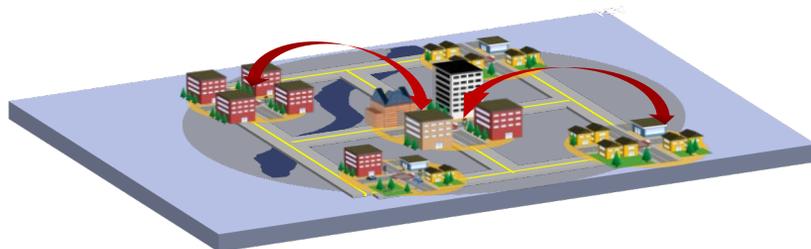
Signal Mountain Road



Dupont Parkway Extension



Community to Region



Scale 3

Goals/Objectives

GOAL

GROW ECONOMIC OPPORTUNITY THROUGH STRATEGIC INVESTMENT IN CRITICAL REGIONAL INFRASTRUCTURE

Within Region

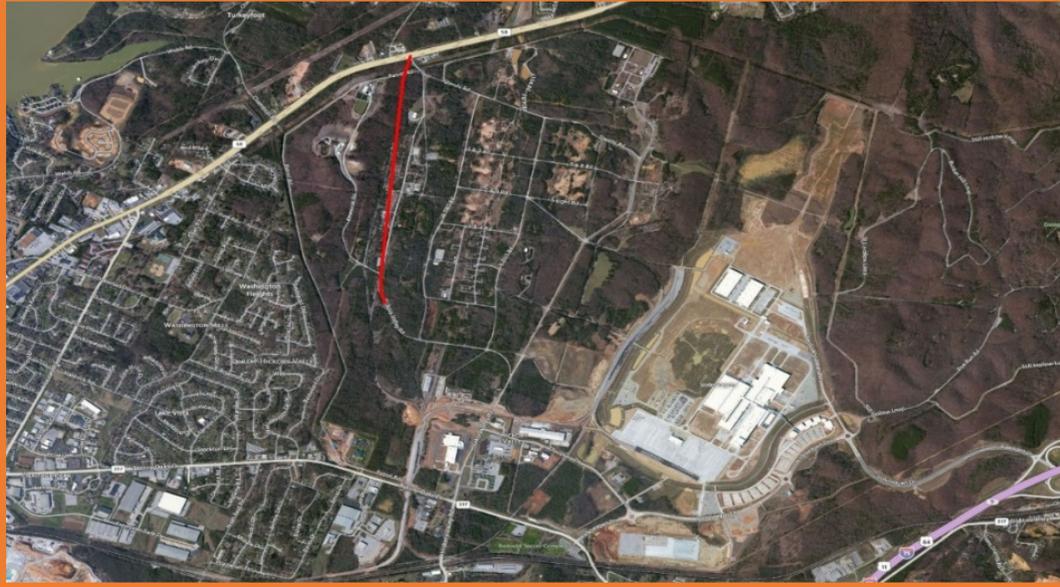


OBJECTIVES

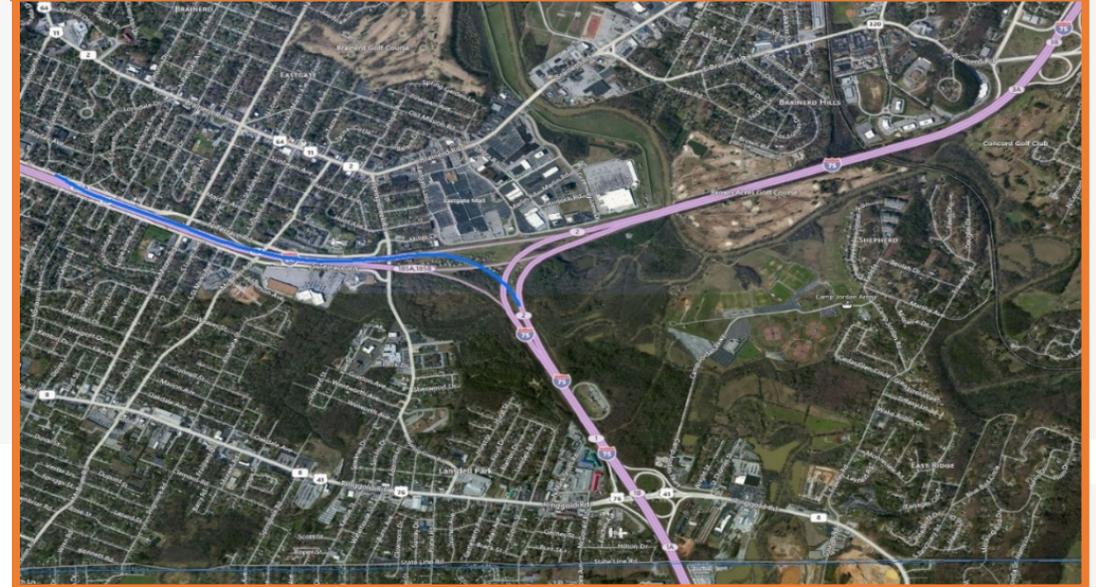
- Preserve, maintain, and improve existing infrastructure before adding new capacity
- Support continued economic growth of the region by improving intermodal connections that reduce delay for both people and goods
- Reduce delay on critical regional thoroughfares with minimal impact to community, historic, and environmental resources
- Improve the efficiency and reliability of freight, cargo, and goods movement by reducing delay on corridors critical to freight movement
- Improve travel-time reliability through improved system operations

Scale 3 Example Projects

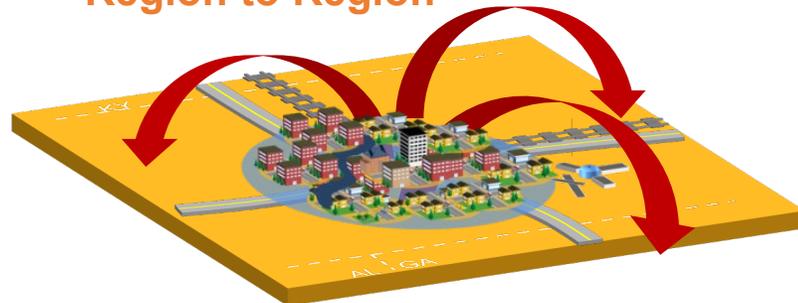
Enterprise Parkway Extension



I-75/I-24 Capacity



Region to Region



Breaking with Tradition...

The Chattanooga 2040 RTP varied goals and objectives by the need and purpose (“scale”) of investment breaking the traditional, linear approach



Performance Measures

PM Categories*	Project Level Measures
System Maintenance	1. Project addresses pavement, bridge deficiency
Congestion Reduction	2. Project reduces delay <ul style="list-style-type: none"> • Interstate • Corridor to/within key center
Safety and Security	3. Project reduces fatal or serious crashes 4. Addresses security or emergency response need, provides network redundancy
Economic Growth/ Freight Movement	5. Project reduces delay <ul style="list-style-type: none"> • Intermodal connection • Freight corridor/area
Environmental Sustainability	6. Project reduces VMT 7. Promotes safe, nonmotorized access; integrates complete streets 8. In keeping with community character
System Reliability	9. Adopted corridor protection plan 10. Project fills gap in existing system 11. Improves efficiency through ITS
Project Delivery	12. Supported by TDOT and local jurisdictions

- Vital few
- Based on existing data and tools
- Easily understandable
- Clearly measure progress towards goals

*Align with MAP-21/FAST Act National Goal Area

Weighting Performance Measures

	B. Congestion Reduction	C. Safety and Security	D. Economic Growth/Freight	E. Environmental Sustainability	F. System Reliability	G. Project Delivery
A. System Maintenance	A	A	A	A	A	A
B. Congestion Reduction	B	B	E	F	B	
C. Safety and Security		C	C	C	G	
D. Economic Growth/Freight			D	D	G	
E. Environmental Sustainability				E	E	
F. System Reliability					F	

1. Compare each item to each item
2. Write preference in space provided
3. Add values to get scores
4. Convert scores to weights

Totals: _____
 A B C D E F G

Performance Measure Weights by Scale

PM Categories	Project Level Measures	Within Community	Community to Region	Region to Region
System Maintenance	1. Project addresses pavement, bridge deficiency	15	15	15
Congestion Reduction	2. Project reduces delay <ul style="list-style-type: none"> • Interstate • Corridor to/within key center 	10	15	20
Safety and Security	3. Project reduces fatal or serious crashes 4. Addresses security or emergency response need, provides network redundancy	15	15	15
Economic Growth/ Freight Movement	5. Project reduces delay <ul style="list-style-type: none"> • Intermodal connection • Freight corridor/area 	5	10	20
Environmental Sustainability	6. Project reduces VMT 7. Promotes safe, nonmotorized access; integrates complete streets 8. In keeping with community character	30	20	10
System Reliability	9. Adopted corridor protection plan 10. Project fills gap in existing system 11. Improves efficiency through ITS	15	15	10
Project Delivery	12. Supported by TDOT and local jurisdictions	10	10	10

Project Evaluation

- Assign projects to scale
 - » Project's need and purpose
 - » Location and proximity to community or environmental assets
 - » Functional classification

TPO membership reviewed assigned scales prior to project scoring.

Project Evaluation (continued)

➤ Score projects

- » Within each scale, projects evaluated relative to one another for each of the 12 performance measures
- » Weights applied for each measure, given scale of project
- » Points summed across all measures to produce individual project scores
- » 100 point score across 12 performance measures

Project Ranking

- Process yielded three lists sort-ordered by project score; one for each scale
- Projects were combined into one list based on individual project scores
- Projects were grouped into four tiers (“Rank 1, Rank 2, etc.) based on groupings of scores

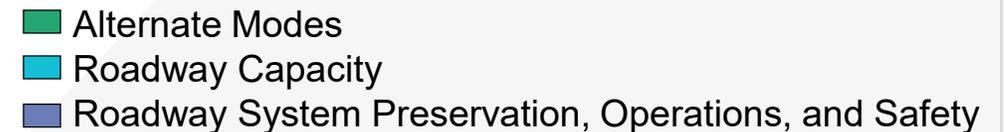
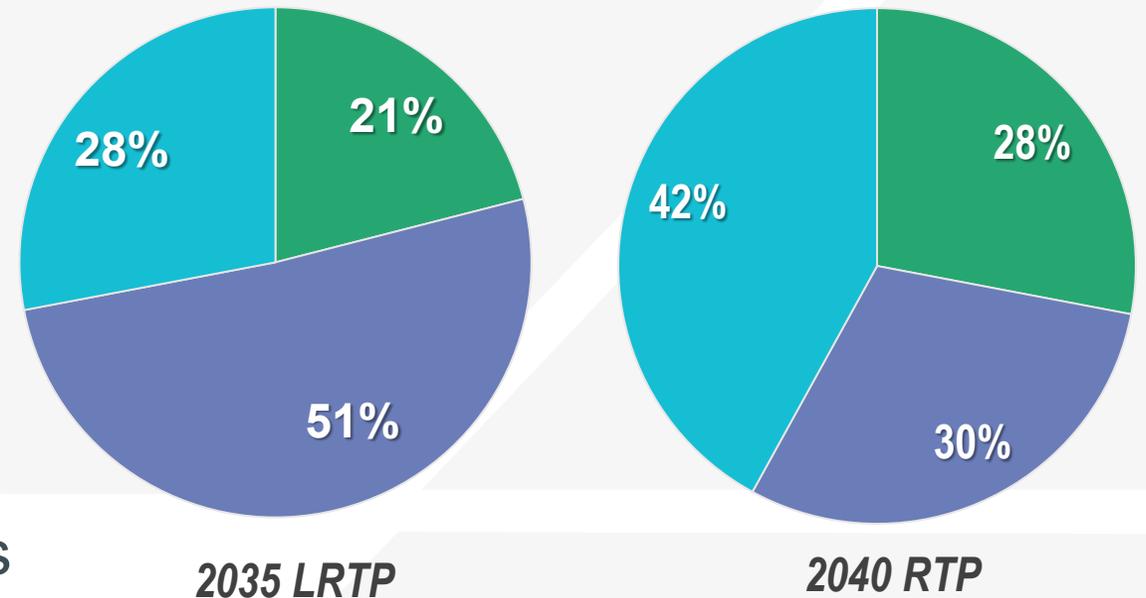


Project Evaluation Outcomes

- Blend of high-ranking projects (by project type and across geographic scales) for fiscally constrained 2040 RTP
- Objective support for variety of investments given the mode-neutral performance evaluation
- Focus on performance and priorities – Priorities established before funding source entered discussion
- All projects Rank 1 and 2 were funded in the 2040 RTP

Key 2040 RTP Outcomes

- Doubling of system preservation funding levels – **fully funded** long-term needs
- Doubling of funding for bicycle and pedestrian improvements
- Strategic roadway and transit capacity expansion improvements
- Identification of two, new major transit capital projects
- Identification of targeted safety and system operations funding set-asides



Takeaways

- Appropriate weighting is critical – “Watering down” this approach will not work
- Must have a manageable number of projects – It takes time to understand context
- Need tools in place to evaluate off-model projects
- Need to keep measures and mode-neutral
- Combination of qualitative and quantitative measures is OK; does not preclude an objective ranking



Subsequent Work

- Refined for 2045 RTP
 - » Updated several evaluation methods
 - » Augmented performance framework to add a performance monitoring component
 - Federal TPM requirements
 - CMP
- Other similar applications
 - » Multiple county transportation plans
 - » The ATL transit prioritization process

Questions

