2015 AMPO Annual Conference

Performance-Based Planning

Weighting Performance Measures as a Method to Refine Project Evaluation

October 21, 2015

2040 RTP REGIONAL TRANSPORTATION PLAN

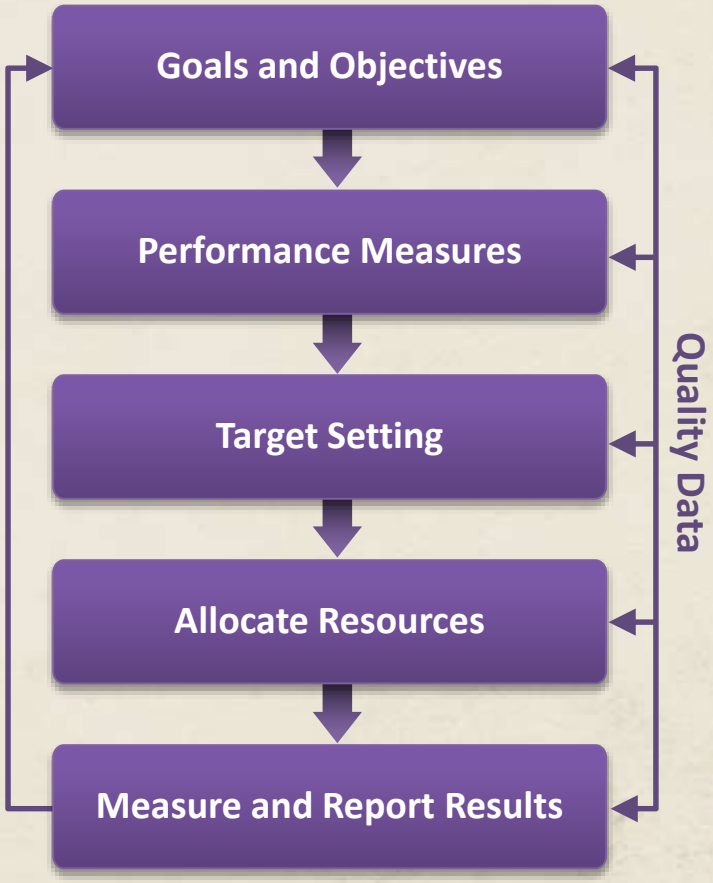
Chattanooga-Hamilton County/N. GA Transportation Planning Organization

Outline

- Performance Framework Refresher
- Project Scoring Approach
- Weighting Performance Measures – Understanding and Applying Investment Tradeoffs within a Project Evaluation Process
- Outcomes
- Application

Performance-Based Plan

- Performance-based plan process
  - Supports transparent decision-making in competitive funding environment
  - Provides context for plan development and helps balance analysis across competing needs
  - Applies key metrics to track positive outcomes
  - Ensures investment decisions align with long-term goals
  - Allows MPO to manage expectations



Goals and Objectives

Within Community

Investment Needs That Support

- Local, multimodal connections and access to community resources
- Advance livability and quality of life principles

Community to Region

Investment Needs That Support

- Strategic, multimodal connections between communities and regional activity/economic centers to support economic development

Region to Region

Investment Needs That Support

- Mobility and intermodal improvements to ensure region is well connected within the State and the nation
- Support economic competitiveness and advance overall economic development potential

Performance Measures

- Measure progress towards goals
- Applied at project level to support project selection decisions
- Measure effectiveness (how well a project is performing), as opposed to cost-effectiveness (how expensive the performance impacts will be)

PM Categories	Project Level Measures
System Maintenance	1. Project addresses pavement, bridge deficiency
Congestion Reduction	2. Project reduces delay • 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 • 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

Project Evaluation

- Projects first scored relative to one another for each of the 12 measures
- Performance impacts for each measure normalized to 0-100 point scale
  - For quantitative measures
    - Project with the largest impact receives 100 points
    - Project with the least impact receives 0 points
    - All other projects awarded points based on relative level of impact between min/max
  - For qualitative (yes/no) measures
    - All or nothing – yes = 100 points, no = 0 points
- Percentage weights applied for each measure
- Points summed across all measures to produce individual project scores on a 0-100 point scale

Project Evaluation

Project Listing	Measure 1 Project Addresses Pavement, Bridge Deficiency			Measure 2 Project Reduces Delay			Measure 3 Project Reduces VMT			Total Project Score (rounded)
	Performance Impact	Point Value	Weighted Point Value (Weight 20%)	Performance Impact	Point Value (Normalized, %Rank)	Weighted Point Value (Weight 70%)	Performance Impact	Point Value (Normalized, %Rank)	Weighted Point Value (Weight 10%)	
Project 1	Yes	100	20	100 VHD	0.07/7%	4.9	1000 VMT	0.4/40%	4	**29**
Project 2	No	0	0	1500 VHD	1.00/100%	70.0	1200 VMT	0.48/48%	4.8	**75**
Project 3	No	0	0	25 VHD	0.02/2%	1.4	2500 VMT	1.00/100%	10	**11**
Project 4	No	0	0	750 VHD	0.50/50%	35.0	0 VMT	0/0%	0	**35**
Project 5	Yes	100	20	1200 VHD	0.80/80%	56	50 VMT	0.02/2%	0.2	**76**

Weighting Performance Measures

- Weighting system for three different scales

Within Community	Community to Region	Region to Region

- Weights vary by level of significance of each measure for each scale
- Different weighting system will allow projects to be scored and ranked according to unique needs of each scale
- Break the traditional “one-size-fits-all” evaluation approach

Weighting Performance Measures

- Weights defined collaboratively in workshop session
  - TPO Technical Coordinating Committee
  - RTP Technical and Community Advisory Committees
- Results guided decision for specific weights to be applied in process
- Allowed stakeholders and TPO members to understand and trust the process
- Provided very helpful insight for plan development regarding relative tradeoffs for different investment types

Weighting Performance Measures

PM Categories	Project Level Measures	Within Community	Community to Region	Region to Region
System Maintenance	1. Project addresses pavement, bridge deficiency			
Congestion Reduction	2. Project reduces delay • 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 • 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			

Weighting Performance Measures

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

	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

Totals:

A	B	C	D	E	F	G
6	3	3	2	3	2	2

Weighting Performance Measures

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Within Community

Ringold Road Bike Lanes

Jenkins Road Widening

Weighting Performance Measures

Within Community

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

Totals:

A	B	C	D	E	F	G

Weighting Performance Measures

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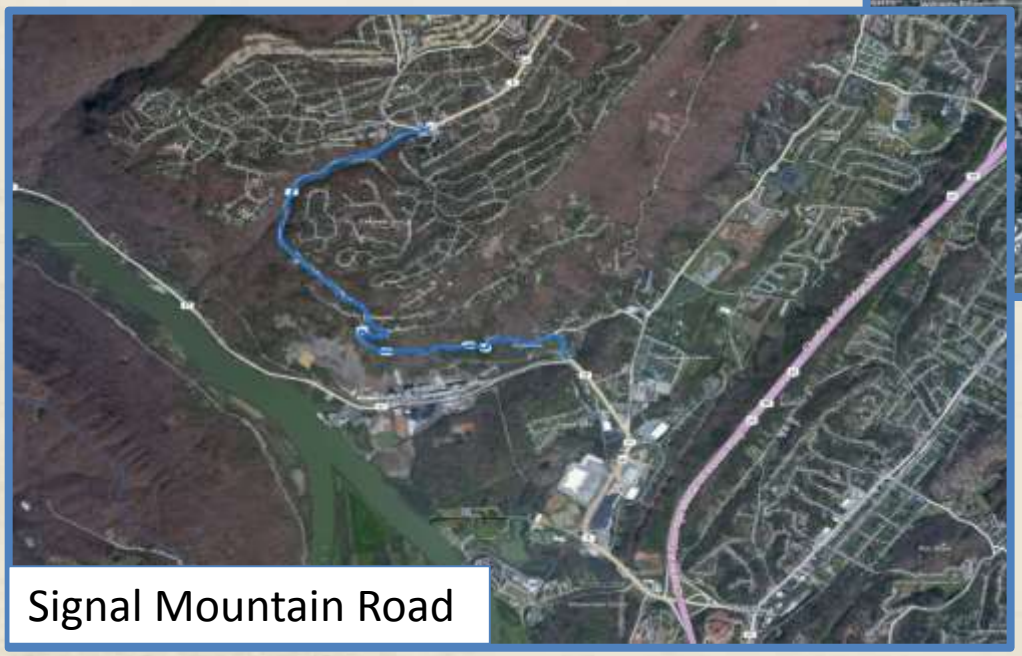
Community to Region

Dupont Parkway Extension



Signal Mountain Road

Weighting Performance Measures

Community to Region

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

Totals:

A	B	C	D	E	F	G

Weighting Performance Measures

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Region to Region

I-75/I-24 Capacity

Enterprise Parkway Extension

Weighting Performance Measures

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Region to Region

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

Totals:

A	B	C	D	E	F	G

Weighting Performance Measures

PM Categories	Project Level Measures	Within Community	Community to Region	Region to Region
System Maintenance	1. Project addresses pavement, bridge deficiency	18%	15%	13%
Congestion Reduction	2. Project reduces delay • Interstate • Corridor to/within key center	13%	14%	16%
Safety and Security	3. Project reduces fatal or serious crashes 4. Addresses security or emergency response need, provides network redundancy	21%	20%	21%
Economic Growth/ Freight Movement	5. Project reduces delay • Intermodal connection • Freight corridor/area	8%	11%	16%
Environmental Sustainability	6. Project reduces VMT 7. Promotes safe, nonmotorized access; integrates complete streets 8. In keeping with community character	17%	17%	12%
System Reliability	9. Adopted corridor protection plan 10. Project fills gap in existing system 11. Improves efficiency through ITS	14%	14%	12%
Project Delivery	12. Supported by TDOT and local jurisdictions	8%	10%	9%

Outcomes

- Enable balanced consideration of investment needs across three geographic scales
- Infuse context into the project evaluation process to better match solutions to needs
- Provide flexible approach to project evaluation to support livability considerations at community level without impeding mobility and economic considerations at regional level

Application

- Approximately $75K (consultant dollars)
  - Develop and vet performance framework and project evaluation approach ($20K)
  - Build off-model benefits calculator ($25K)
  - Build excel-based scoring workbook ($10K)
  - Conduct project evaluation ($20K)
- Approximately 150 projects evaluated
  - 30-45 minutes to evaluate each project and input results (excludes time to run travel model or apply off-model benefits calculator)
  - 60 man-hours across two consultant staff; i.e., total of 120 hours

Contact

Melissa Taylor

mdtaylor@chattanooga.gov or visit the project web site at www.chcrpa.org/2040RTP.htm

Tracy Selin

Cambridge Systematics, Inc., tselin@camsys.com