

**Baltimore Metropolitan Council
Project 22T04
Transportation Impact Study (TIS)
Guidelines Phase II**

- Tech Memo No. 1 Takeaways
- Development of Evaluation Templates
- Sample Evaluation Template
- Suggested Implementation Process
 - ▣ Case Study Scenarios
 - ▣ Selection of Parameters/Topics
 - ▣ Revision of TIS Guidelines
- Next Steps/Schedule

Tech Memo No. 1 Takeaways – Assessment of Parameters/Topics

Parameter/Topic		Additional Information	Can this generally be accommodated within existing TIS frameworks?	
#	Description		Yes	No
1	Making safety analysis a key consideration...	...of all TISs and coordination with state and local Strategic Highway Safety Plans	X	
2	Controlling speeds...	...for safer mobility for all users of the roadway network	X	
3	De-prioritizing vehicular throughput...	...for safer mobility for all users of the roadway network	X	
4	Use of multi-modal performance metrics and multi-modal analyses	Use of metrics such as travel time reliability to assess impacts of development	X	
5	Addressing impacts of multiple proposed developments...	...especially in a dense urban area, on the highway network beyond the immediate vicinity of each development	X	
6	Balancing the needs of more housing and business with less traffic...	...while maintaining safety and mobility		X
7	Need for post-development audit...	...thresholds, mitigation measures, factors not considered at the time of TIS development that may have an impact on the study area		X
8	Need for different TIS requirements...	...based on area type, level of existing development, transit and multi-modal availability, etc.		X

Tech Memo No. 1 Takeaways – Steering Committee Guidance



- Review Meeting on 4/19/22
 - All eight parameters/topics should continue to be considered during this project
 - No preference identified for qualitative or quantitative measurement
- For the Draft Report, all parameters/topics and qualitative/quantitative measurement were considered

Development of Evaluation Templates



- Separate template developed for each parameter/topic (formatted the same as the previous assessment tables)
- Goal: Provide a framework to work through the “pluses and minuses” of adding a given parameter/topic

Sample Evaluation Template – Safety Analyses



Assessment of Parameter/Topic: Safety Analyses

Analyst:	Date:	Project:
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	Quantitative Measurement	Jurisdiction Staff Assessment: Should this line item be incorporated into TISs?	Qualitative Measurement	Jurisdiction Staff Assessment: Should this line item be incorporated into TISs?	Comments	Jurisdiction Staff Assessment of Comments Column
Performance Metric(s)	• Number of crashes (per year)	• (Yes/No)	• Compliance with Statewide Strategic Highway Safety Plan	• (Yes/No)	• For intersections, use rates per entering vehicle?	• (Yes/No/Not applicable/Text)
	• Crash severity	• (Yes/No)	• Compliance with BMC's Strategic Highway Safety Plan	• (Yes/No)		
	• Crash rate (per 100 million vehicle miles (MVM), or per entering vehicle)	• (Yes/No)	• Compliance with Jurisdiction's Strategic Highway Safety Plan	• (Yes/No)		
	• Number of fatalities	• (Yes/No)	• Extent to which the project implements the member jurisdiction's Complete Streets policies	• (Yes/No)		
	• Number of serious injuries	• (Yes/No)	• Extent to which the project implements the member jurisdiction's Vision Zero Statement	• (Yes/No)	• Other performance metrics could be considered	• (Yes/No/Not applicable/Text)
	• Fatality rate per 100 million vehicle miles traveled (VMT)	• (Yes/No)	• Presence of project within known High Crash Location	• (Yes/No)		
	• Serious injury rate per 100 million VMT	• (Yes/No)				
	• Number of non-motorized fatalities and serious injuries	• (Yes/No)	• Compliance with design standards	• (Yes/No)		
	• Number of crashes involving pedestrians and/or bicyclists	• (Yes/No)				
Means of Assessment	• Before/after studies	• (Yes/No)	• Written Statement of Compatibility with performance metric(s) described above	• (Yes/No)	• Document how the proposed improvements within the study area will address identified safety issues?	• (Yes/No/Not applicable/Text)
	• Highway Safety Manual procedures	• (Yes/No)			• Other means of assessment could be considered	• (Yes/No/Not applicable/Text)
	• Road safety audits	• (Yes/No)				
Threshold of Acceptability	• Decrease, or at least no increase, in performance metrics	• (Yes/No)	• Full compatibility	• (Yes/No)	• Other thresholds could be considered	• (Yes/No/Not applicable/Text)
Data Availability / Expense	• Historic crash data available from MDOT SHA for counties; available from Baltimore City DOT for City	• (Yes/No)	• Not applicable	• (Not applicable)	• Time required for obtaining data may be a concern	• (Yes/No/Not applicable/Text)
					• Level of detail of data may be a concern	• (Yes/No/Not applicable/Text)
					• Legality of providing data to developers may be a concern	• (Yes/No/Not applicable/Text)

Sample Evaluation Template – Safety Analyses (cont.)



Assessment of Parameter/Topic: Safety Analyses (Continued)

	Quantitative Measurement	Jurisdiction Staff Assessment: Should this line item be incorporated into TISs?	Qualitative Measurement	Jurisdiction Staff Assessment: Should this line item be incorporated into TISs?	Comments	Jurisdiction Staff Assessment of Comments Column
Ease / Standardization of Analysis	• Require use of Interactive Highway Safety Design Model (IHSDM)?	• (Yes/No)	• Straightforward	• (Agree/Disagree with Assessment)	• Other types of analysis could be considered	• (Yes/No/Not applicable/Text)
	• Require use of HCS Module?	• (Yes/No)				
Availability of Reasonable Mitigation Strategies	• Geometric improvements	• (Yes/No)	• Geometric improvements	• (Yes/No)	• Physical/operational improvements may not always be possible, or cost effective	• (Yes/No/Not applicable/Text)
	• Operational improvements (including signing/pavement markings and lighting)	• (Yes/No)	• Operational improvements (including signing/pavement markings and lighting)	• (Yes/No)	• Some mitigation strategies (such as changes to signing/pavements markings and automated enforcement), may be suggested in the TIS, but can only be implemented by the jurisdiction	• (Yes/No/Not applicable/Text)
Alternatives if No Reasonable Mitigation Strategies	• Impact fees	• (Yes/No)	• Impact fees	• (Yes/No)	• Can improvements for other parameters/topics be used for an offset?	• (Yes/No/Not applicable/Text)
Ease of Review by Jurisdiction (Easy, Moderate, Difficult)	• Moderate	• (Agree/Disagree with Assessment)	• Easy	• (Agree/Disagree with Assessment)	• Quantitative analyses could be challenging to review, particularly at outset of program	• (Yes/No/Not applicable/Text)
Likely Challenges	• Accurate assessment of performance metrics	• (Insert any other specific challenges)	• Difficult to assess meaningfully	• (Insert any other specific challenges)	• Past experiences by member agencies could be instructive	• (Yes/No/Not applicable/Text)
					• Including safety as part of the TIS process would potentially require jurisdictions to change their Adequate Public Facilities Ordinance	• (Yes/No/Not applicable/Text)

From a technical analysis perspective, can this parameter generally be accommodated within existing TIS frameworks?

Yes: X No:

Jurisdiction Staff Recommendation for Including This Parameter/Topic:

Yes:	
No:	

Jurisdiction Staff Discussion of Recommendation:

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Jurisdiction Staff Recommendation for Measurement Type:

Qualitative Measurement:	
Quantitative Measurement:	
Both:	
Not Applicable:	

Suggested Implementation Process

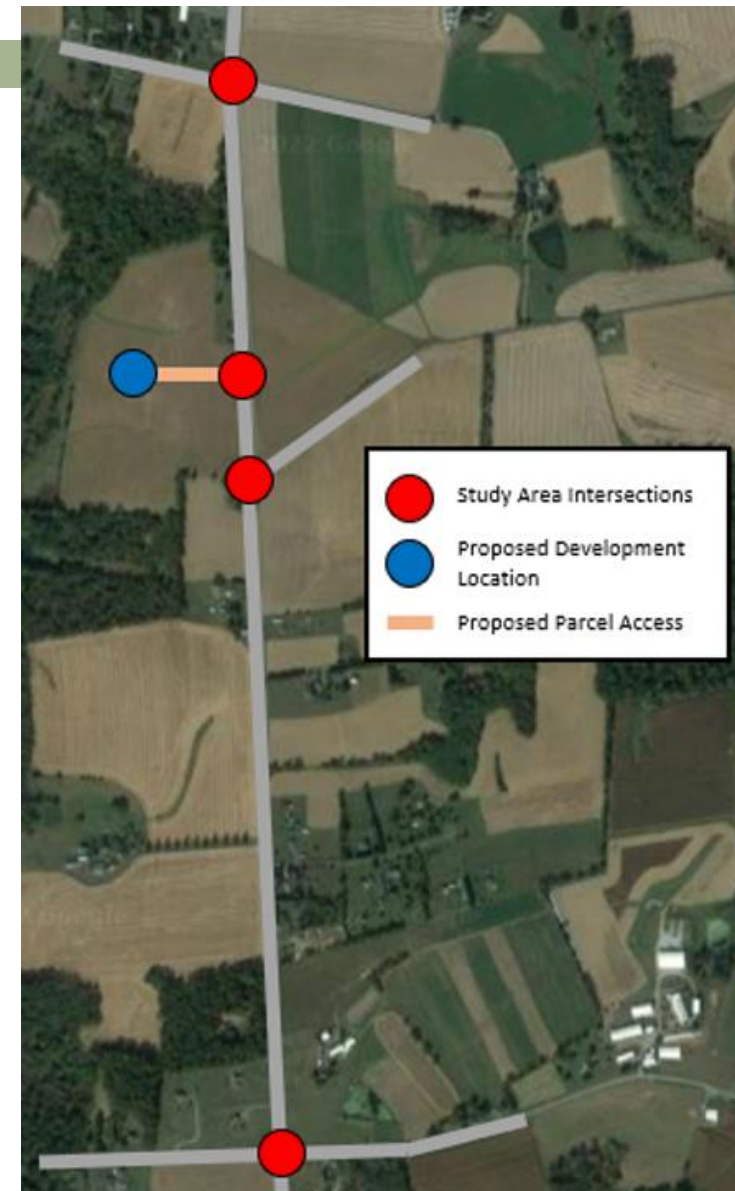


- Initial completion of all evaluation templates
- Application of evaluation templates to relevant case study scenarios
- Potential revision of evaluation templates
- Selection of parameters/topics
- Revision of TIS Guidelines

- Six case study scenarios developed
 - Two case studies each representing rural, suburban, and urban settings
- Allows application of agency recommendations for each of the parameters/topics after working through the evaluation templates
 - Agency could develop additional case study scenarios or apply the evaluation templates to a current TIS under review

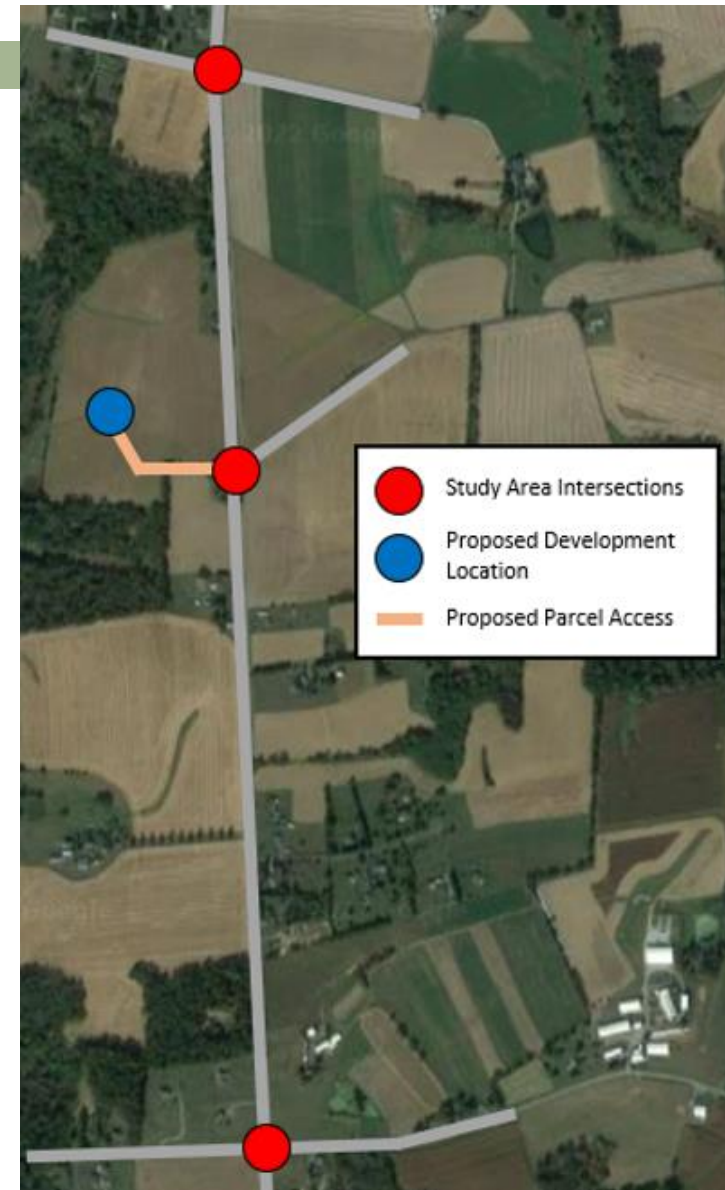
Case Study Scenarios (cont.) – Case Study #1 (Rural)

- Development Setting
 - ▣ Proposed development of 75 Single Family Detached Dwelling Units
- Study Area Context
 - ▣ Study area and access point as shown



Case Study Scenarios (cont.) – Case Study #2 (Rural)

- Development Setting
 - ▣ Proposed development of 75 Single Family Detached Dwelling Units
- Study Area Context
 - ▣ Study area and access point as shown



Case Study Scenarios (cont.) – Case Study #3 (Suburban)



- Development Setting
 - Mixed-use (high-density residential, hotel, and retail)
- Study Area Context
 - Study area and background developments as shown
 - Located within a suburban Mixed-Use Town Center Zone



Case Study Scenarios (cont.) – Case Study #4 (Suburban)

- Development Setting
 - ▣ High-density residential (200 condominium units) with retail and work spaces
- Study Area Context
 - ▣ Study area as shown
 - ▣ Located within a suburban Residential Zone



Case Study Scenarios (cont.) – Case Study #5 (Urban)

- Development Setting
 - ▣ Proposed development to combine three existing rowhomes into a small apartment complex
- Study Area Context
 - ▣ Study area and existing traffic patterns as shown
 - ▣ Existing on-street parking
 - ▣ Existing bus service on adjacent streets



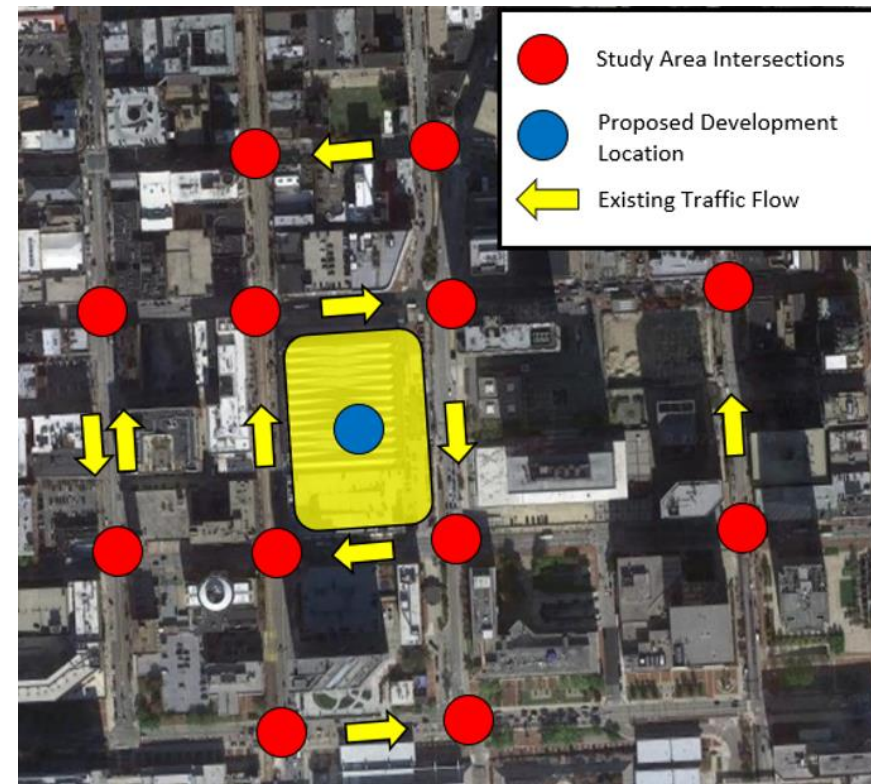
Case Study Scenarios (cont.) – Case Study #6 (Urban)

□ Development Setting

- Proposed redevelopment of large existing commercial development into new multi-purpose arena

□ Study Area Context

- Study area and existing traffic patterns as shown
- Existing parking garages
- Existing light rail and bus service



Case Study Scenarios (cont.) – Case Study #1 (Rural) Safety Analyses Template



Assessment of Parameter/Topic: Safety Analyses

Analyst: AECOM

Date: 8/18/22

Project: Case Study 1 - Rural

	Quantitative Measurement	Jurisdiction Staff Assessment: Should this line item be incorporated into TISs?	Qualitative Measurement	Jurisdiction Staff Assessment: Should this line item be incorporated into TISs?	Comments	Jurisdiction Staff Assessment of Comments Column
Performance Metric(s)	• Number of crashes (per year)	• <i>Yes</i>	• Compliance with Statewide Strategic Highway Safety Plan	• <i>Yes</i>	• For intersections, use rates per entering vehicle?	• <i>No</i>
	• Crash severity	• <i>No</i>	• Compliance with BMC's Strategic Highway Safety Plan	• <i>No</i>	• Other performance metrics could be considered	• <i>Not applicable</i>
	• Crash rate (per 100 million vehicle miles (MVM), or per entering vehicle)	• <i>No</i>	• Compliance with Jurisdiction's Strategic Highway Safety Plan	• <i>Yes</i>		
	• Number of fatalities	• <i>Yes</i>	• Extent to which the project implements the member jurisdiction's Complete Streets policies	• <i>No</i>		
	• Number of serious injuries	• <i>Yes</i>	• Extent to which the project implements the member jurisdiction's Vision Zero Statement	• <i>No</i>		
	• Fatality rate per 100 million vehicle miles traveled (VMT)	• <i>No</i>	• Presence of project within known High Crash Location	• <i>Yes</i>		
	• Serious injury rate per 100 million VMT	• <i>No</i>	• Compliance with design standards	• <i>Yes</i>		
	• Number of non-motorized fatalities and serious injuries	• <i>No</i>				
	• Number of crashes involving pedestrians and/or bicyclists	• <i>Yes</i>				
Means of Assessment	• Before/after studies	• <i>No</i>	• Written Statement of Compatibility with performance metric(s) described above	• <i>Yes</i>	• Document how the proposed improvements within the study area will address identified safety issues?	• <i>Yes</i>
	• Highway Safety Manual procedures	• <i>Yes</i>			• Other means of assessment could be considered	• <i>Not applicable</i>
	• Road safety audits	• <i>Yes</i>				
Threshold of Acceptability	• Decrease, or at least no increase, in performance metrics	• <i>Yes</i>	• Full compatibility	• <i>Yes</i>	• Other thresholds could be considered	• <i>Not applicable</i>
Data Availability / Expense	• Historic crash data available from MDOT SHA for counties; available from Baltimore City DOT for City	• <i>Yes</i>	• Not applicable	• <i>Not applicable</i>	• Time required for obtaining data may be a concern	• <i>No concern</i>
					• Level of detail of data may be a concern	• <i>Agree that level of detail for data is a concern</i>
					• Legality of providing data to developers may be a concern	• <i>To be discussed with Legal</i>

Case Study Scenarios (cont.) – Case Study #1 (Rural) Safety Analyses Template



Assessment of Parameter/Topic: Safety Analyses (Continued)

	Quantitative Measurement	Jurisdiction Staff Assessment: Should this line item be incorporated into TISs?	Qualitative Measurement	Jurisdiction Staff Assessment: Should this line item be incorporated into TISs?	Comments	Jurisdiction Staff Assessment of Comments Column
Ease / Standardization of Analysis	• Require use of Interactive Highway Safety Design Model (IHSDM)?	• No	• Straightforward	• Agree	• Other types of analysis could be considered	• Not applicable
	• Require use of HCS Module?	• Yes				
Availability of Reasonable Mitigation Strategies	• Geometric improvements	• Yes	• Geometric improvements	• Yes	• Physical/operational improvements may not always be possible, or cost effective	• Not applicable
	• Operational improvements (including signing/pavement markings and lighting)	• Yes	• Operational improvements (including signing/pavement markings and lighting)	• Yes	• Some mitigation strategies (such as changes to signing/pavements markings and automated enforcement), may be suggested in the TIS, but can only be implemented by the jurisdiction	• To be determined
Alternatives if No Reasonable Mitigation Strategies	• Impact fees	• Yes	• Impact fees	• Yes	• Can improvements for other parameters/topics be used for an offset?	• To be determined
Ease of Review by Jurisdiction (Easy, Moderate, Difficult)	• Moderate	• Agree	• Easy	• Agree	• Quantitative analyses could be challenging to review, particularly at outset of program	• Agree
Likely Challenges	• Accurate assessment of performance metrics	• None	• Difficult to assess meaningfully	• None	• Past experiences by member agencies could be instructive	• Agree – to be discussed internally
					• Including safety as part of the TIS process would potentially require jurisdictions to change their Adequate Public Facilities Ordinance	• To be examined/discussed

From a technical analysis perspective, can this parameter generally be accommodated within existing TIS frameworks?

Yes: X No:

Jurisdiction Staff Recommendation for Including This Parameter/Topic:

Yes:	X
No:	

Jurisdiction Staff Discussion of Recommendation:

Include as qualitative for now. Migrate to quantitative in the future.

Jurisdiction Staff Recommendation for Measurement Type:

Qualitative Measurement:	X
Quantitative Measurement:	
Both:	
Not Applicable:	

Selection of Parameters/Topics

- Work through case studies to recommend including (or not including) each parameter/topic
- Identify quantitative versus qualitative assessment
- A summary table can show which parameters/topics are most appropriate for the range of scenarios

Parameter/Topic		Include This Parameter/Topic, Based on This Case Study? (Yes/No)						Overall Jurisdiction Recommendations
#	Description	Rural		Suburban		Urban		
		1	2	3	4	5	6	
1	Safety Analyses							
2	Controlling Speeds							
3	De-Prioritizing Vehicular Throughput							
4	Multi-Modal Analyses							
5	Multiple Proposed Developments							
6	Balancing Housing/Business/Traffic							
7	Post-Development Audit							
8	Variable TIS Requirements							

Revision of TIS Guidelines

- Process will vary by jurisdiction

Next Steps/Schedule

- Final Report (Task 1D) submitted by 9/16/22
- Final Report Presentation(s)
- Contract end date: 9/30/22

