INDIANA DEPARTMENT OF TRANSPORTATION

Driving Indiana's Economic Growth

Traffic Safety Asset Team

Business Rules

Prepared by the INDOT Office of Traffic Safety

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Contents

Change History

Revision	Revision Date	Notes	Approval
1	03-25-2010	Original Release Approved version	Safety Asset Team Minutes; Meeting No. 3 dated March 23, 2010
2	11-03-2010	Added Business Rules for Raised Pavement Markers	Safety Asset Team Minutes; Meeting No. 14; Wednesday, November 3, 2010
3	01-06-2011	Added new Scoring Procedure for Factor #4 Re-numbered Statewide Supplementary Factors to #7 and #8.	Safety Asset Team Minutes; Meeting No. 11-01 dated January 06, 2011
4	01-06-2011	Added Business Rules for Traffic Signal Modernization Proposal	Safety Asset Team Minutes; Meeting No. 11-01 dated January 06, 2011
5	06-20-2012	Added Business Rules for Scoring Rail-Highway Projects and Systemic Projects; removed obsolete text; Add new Traffic Signal Program Funding Table to Appendix A	Adopted Via Asset Team Vote July 02, 2012
6	10-14-2015	Deleted or modified text and Tables on old pages 4, 6, 7, 11, 13, 14, 21, 23, 24, and 28 for a variety of reasons	Adopted Via Asset Team Vote October 14, 2015
7	12-20-2016	Added the list of HSIP Eligible Systemic Projects to the Appendix and corrected TSAT to TSAM on page 4	Not Applicable
8	07-26-2018	Updated scoring procedure for all factors and redesigned scoring sheet.	Adopted via Safety Asset Team Vote 8/16/2018

9	05-13-2020	Updated scoring procedure for many factors.	Adopted Via Safety Asset Team Vote 6-8-2020
10	04-13-2021	Updated Factor 1 and Factor 3 for RoadHAT 4.1, language on pedestrian features, adjusted deadlines	Adopted Via Safety Asset Team Vote 5-6-2021
11	11-23-21	Update to include Significant Work Zone Impacts Worksheet	Not Applicable
12	09-04-24	Updated key dates for projects, updated scoring process information to reflect changes to scoring tool, updated traffic signal modernization funding per district table	Coordinated with each District and TSAM, Finalized September 2024
13	5/30/25	Updated Factor 6, Updated CRF list, Systemic Safety Overhaul, Minor Changes, Bug Fix. Signal Modernization Removed.	Coordinated with each District and TSAM, Finalized May 2025

Introduction

For all projects under the Traffic Safety asset class, safety should be considered first, every time, and at every stage of a project. Safety should be the first consideration in every investment decision. Safety projects consider the crash risk for all road users and transportation modes, especially for crashes which result in serious injuries and fatalities.

The Indiana Strategic Highway Safety Plan (SHSP) emphasizes the State of Indiana's commitment to public safety. The purpose is to identify, analyze, and address evident and potential threats to highway safety. It aims to prevent not only the frequency but also the severity of traffic crashes. Everyone developing and scoring projects should be familiar with the SHSP.

This document is a written description of the approved business rules to be used by the Traffic Safety Asset Management (TSAM) Team to develop, score, and submit proposed safety projects. This document covers both call projects and systemic projects. The processes described herein are applicable to all infrastructure projects that are under consideration for potential assignment to funding programs. The scoring methodology provides decision-makers with resources to prioritize safety projects.

All decisions regarding funding of safety projects should be a part of a process that is:

1. Based on data driven analysis
2. Uses proven countermeasures
3. Is easily defended

Call Project Development

Introduction

The District Offices will be responsible for the development of Engineering Assessment reports for projects that are submitted to the Traffic Safety call for projects. Office of Traffic Safety staff and the consultants of the Office of Traffic Safety may assist with the development of these projects and reports, but the ultimate responsibility for the project lies with District staff.

Engineering Assessment reports will be prepared in accordance with the INDOT Engineering Assessment Manual (linked here) in addition to the requirements listed herein.

Engineering assessment is a critical portion of the Department's asset management project prioritization process. For each District, the engineering assessment process is led by the respective Technical Services Division and sets the conditions for successful project development through project selection, funding, design and construction.

Network Screening and District Meeting

The Office of Traffic Safety Manager will initiate the Network Screening process. This process will produce a list of locations which appear to have elevated crash rates and crash severities. The Office of Traffic Safety will evaluate the findings of this process and will present them to the Districts. The Districts will determine which locations should be looked at further.

Both spot locations and segments will be evaluated. The segments will be presented to the District in the form of maps which visually show areas of elevated crash risk. The maps will be broken down by crash type. These maps will be useful to the District in their planning process for systemic safety projects.

The Districts may use these lists to select locations to perform Road Safety Audits. The Office of Traffic Safety will assist with conducting Road Safety Audits and in developing Engineering Assessment reports for some of the locations as there is staff availability.

The Districts do not have to rely solely on the network screening list in selecting locations for further study. Locations found through customer complaints, elected official's requests, by request of another INDOT department, or through other methods can also be studied. The Districts will be ultimately responsible for performing Road Safety Audits, for developing Engineering Assessment reports, and for submitting the final package.

Crash Data Analysis

All projects submitted to the Traffic Safety call shall have a crash data analysis performed. This analysis will consist of the following:

- The most recent three full calendar years of crash data, for the entire county where the location resides, will be pulled from ARIES or from the Traffic Safety Data Portal (preferred). This data will then be reduced to just the location of interest. Each crash record should be checked to ensure that it actually did occur at the location of interest.
- Crash pattern analysis is not required, but it is recommended that it be completed for the location. This would include looking at patterns pertaining to day vs night, wet pavement vs dry pavement, peak hour vs off peak, etc.
- A RoadHAT report using the most current version of the RoadHAT program will be prepared. This report should utilize an AADT for both routes if available. If an AADT is not available, one should be derived from the turning movement count if collected. The use of "one-AADT" SPFs should be avoided if possible.
- A crash diagram showing the manner of collision, severity and the location within the intersection or segment will be prepared. (Instead of a crash diagram, another analysis which analyzes the involved vehicles' direction of travel may be

used.) The Office of Traffic Safety has provided a template which may be used to develop this diagram.

Traffic Analysis and the Intersection Decision Guide

Traffic analysis (capacity analysis) is critical in determining how well a proposed alternative will operate throughout the life of a project. Without traffic analysis, a proposal cannot be adequately defended to the public.

For all projects submitted to the traffic safety call, AADT values will be required at a minimum. For projects where the intersection traffic control method is being changed, turning movement counts and traffic growth projections will also be required.

Traffic analysis through programs such as HCS, Synchro, or SIDRA are also required for any change in intersection traffic control. Such analysis will be completed for the build year and for the design year at a minimum.

For instances where the method of traffic control at an intersection is being changed, the INDOT Intersection Decision Guide should also be applied:

https://www.in.gov/indot/files/ROP_IntersectionDecisionGuide.pdf

Cost Estimation

The development of a complete and reasonable estimate is critical to a successful project scoping package and facilitates the project selection process. For non-complex engineering assessments, the cost estimate should be developed for the preferred alternative at a minimum. For complex engineering assessments, a cost estimate should be prepared for all alternatives. See the Engineering Assessment Manual for more information on determining if an assessment is complex or non-complex.

All projects submitted to the call for projects for safety funding must include a cost estimate. This cost estimate should be based on the amount of detail available at the scoping stage of project development. It should list the major cost items (the items that make up the bulk of the cost of the project) with a reasonable and researched unit price for each. The quantities used in the estimate should be based on the sketch completed for the project. The quantities do not need to be to the level of accuracy of a design estimate but should be defensible. This estimate should be presented with pay item numbers such that future estimates during design can be checked back against the scoping estimate.

A contingency should be included in the cost estimate. Using 20% of CN as a contingency is common at this stage. A lower or higher contingency may be used based on the level of confidence in the cost estimate that has been prepared. The cost estimate should be broken out into construction cost, project engineering cost, right of way cost, utility cost and railroad cost, but the total cost will be used for calculating the

benefit to cost ratio during scoring (see the Safety Infrastructure Project Scoring section)

Finished cost estimates should be rounded up to the nearest $10,000. Cost estimates should be completed for the current year only (without inflation). For assistance with cost estimation methodology, district scoping offices should be consulted.

Sketch of Proposal

A sketch of the proposed alternative will be required for all candidate spot improvement projects submitted to the safety call for projects. A sketch for other alternatives considered is also preferred but is not required. It is recommended that the sketch be completed in MicroStation over a to-scale aerial photograph, but the sketch may be done in any program or by drawn hand. The sketch does not have to show a significant amount of detail.

The sketch should show the new design superimposed on existing geometrics and should be useful for generating the estimate. The sketch will assist the designer in their future development of the project.

Engineering Assessment Report

An abbreviated or a full Engineering Assessment report as described in the INDOT Engineering Assessment Manual will be required for all projects submitted to the traffic safety call for projects. The Office of Traffic Safety has provided a template document to assist with the preparation of the report. The use of the template is not required but it is recommended.

The Engineering Assessment report may recommend the implementation of near-term and low-cost countermeasures that could be installed by either INDOT maintenance forces or on-call contractors. The engineer should not avoid completing these improvements simply because a more comprehensive project is going to be submitted to the Call for Projects. Even if the proposed project would remove these low-cost improvements if funded, the reduction in crash risk during the interval before the proposed project would be constructed might be worthwhile.

Note:

The previous “mini-scope” format will no longer be accepted as it does not contain all the required elements as described in the Engineering Assessment Manual.

Call Project Submittal

Key Dates

The following dates are the deadlines for the submittal to the traffic safety call for projects:

- September 15th, deadline to create project in PW4
- December 1st, deadline for submittal in PW4, complete with all supporting documents
- December 15th, deadline for review of submittals by Office of Traffic Safety
- January 15th, project updates complete in PW4, all documents are final

February, deliberations meeting
The following dates are the deadlines for Systemic Safety and RPM Projects:

Table 1. Scoping Lead Time for Systemic and RPM Safety Projects

Scoping Lead Time for Systemic and RPM Safety Projects			
Placeholder Due Date	**Scope Due Date**	**FY Year(s) Due**	**Lead Time (yrs)**
9/15/2022	1/15/2025	2027	1.5
9/15/2023	7/1/2025	2028	2
9/15/2024 & 9/15/2025	1/15/2026	2029 & 2030	2.5 & 3.5
9/15/2026	1/15/2027	2031	3.5
9/15/2027	1/15/2028	2032	3.5
9/15/2027	1/15/2029	2033	3.5
9/15/2029	1/15/2030	2034	3.5

Required Documents

At a minimum, the following documents will be required for all submittals to the Traffic Safety call for projects in PW4:

- Abbreviated or Full Engineering Assessment Report
- Table with cleaned crashes (Excel Format)
- RoadHAT output (PDF Format)
- Completed scoresheet (Excel Format)
- Proposal sketch (PDF Format)
- Traffic count and traffic analysis output PDF's, if applicable
- Cost estimate
- Scoping Level Red Flag Environmental Analysis
- Crash diagrams, or equivalent analysis (PDF Format)
- Project support letters, if applicable

- Intersection design guide documentation, if applicable
- Significant work zone impact determination worksheet

Technical Review

The Office of Traffic Safety will perform a technical review of all submitted projects prior to the deliberations meeting. This review will be performed to ensure that the projects comply with the business rules. Comments may be provided concerning project merit or whether the selected alternative might not be the best option, but this is not the intent of this review.

The technical review includes, but is not limited to the following items:

- Evaluate the Engineering Assessment Report to Ensure the Required Items are documented
- Evaluate the Crash Data Excel File to Ensure that the Crashes are for the Correct Location and Years
- Evaluate the RoadHAT PDF Output to Ensure that information was entered correctly
- Evaluate the Cost Estimate to ensure that it is itemized and that it is Reasonable
- Evaluate the Score Sheet to Ensure that it was Used Correctly
- Check that All Required Documents Have Been Submitted
- Check for consistency between all the documents (This is commonly where errors are made in scoping reports)

Deliberations

The deliberations meeting is held in February or March each year as scheduled by the Manager of the Office of Traffic Safety. For the meeting, each district must send at least one representative who is a voting member. The Office of Traffic Safety will chair the meeting and will also provide one voting member. The total number of voting members at the meeting will be seven.

At the meeting in descending score order, each project which has been submitted to the traffic safety call is briefly discussed. Districts will have the opportunity to summarize submitted projects and propose they be moved higher on the list if they believe it is warranted.

Once the deliberations are completed, the project list is reordered based on revised priority. This new list is sent to the PMG for funding determination.

Projects which are not funded in a given year may be resubmitted for subsequent years. When a project is resubmitted, it must be re-scored. Crash data and cost data must be updated whenever a project is re-scored and the most recent version of the business rules and scoresheet should be used.

The Project Bench (Provisional Projects)

Once it has been determined which projects from the call will be selected for funding, a certain number of additional projects may be selected for the “bench”. The bench is a subset of projects that will be programmed in provisional status and funded for the non-construction phases (design, utility/RR coordination and land acquisition) only. Then, if funding becomes available at a later date (typically during the programmed contract letting year), the projects are moved into active status and are allocated construction funds. Once a project is placed on the bench, there is no guarantee that a project will be given active funding within any specific timeframe, however the project will be granted active funding at some point.

Placeholder Projects

Introduction

A portion of the funding allocated to safety each year is dedicated to “Placeholder Projects”. There are two types of safety placeholder projects; Systemic Safety, and Raised Pavement Marker Refurbishments. Traffic Signal Modernization projects also utilize the placeholder system but are not a part of the safety program. Each district is given a yearly apportionment for each of these categories that they must then use to program HSIP eligible projects. The apportionment amount is determined at the deliberations meeting and is then approved by the PMG.

The Office of Traffic Safety will direct the district in the programming of safety placeholders each year. The Districts are then responsible to program the individual safety projects and to transfer the funds from their placeholder project. A district may forgo the placeholder process and directly fund safety projects instead if they so choose.

Placeholder projects are not scored but are instead given an automatic score of 100 points.

Systemic Safety

Fatal as well as serious injury crashes rarely occur in the exact same location year to year. Systemic safety attempts to address these sporadic severe crashes by using low-cost countermeasures deployed over a widespread area.

In programming systemic safety projects, the engineer should look at roadway risk characteristics with equal or more emphasis than site-specific crash histories. Locations should be prioritized using available roadway network data. The Office of Traffic Safety assists with this effort by providing crash type “heat maps” that can serve as a proxy for roadway “risk”. Projects should not be programmed based solely on the data contained

in the heat maps. Rather they should be based on all the available roadway characteristic data in aggregate.

It is up to the District to determine which Systemic Safety projects will be pursued each year. For each project, the District is responsible for preparing an Abbreviated Engineering Assessment Report and for programming the project. The Abbreviated Engineering Assessment Report does not need to be prepared until the project is submitted for funding.

As long as the District stays within the budget given to them for a given year, they may program one or multiple systemic safety projects under one or multiple systemic safety categories. Projects of different systemic categories may be grouped together into one project if it makes sense for an improved letting or construction outcome. For projects with multiple systemic improvement types, the predominant (largest percentage of cost) should be selected as the work type in SPMS. PW4 does not need to be utilized for systemic safety projects.

Systemic safety funds may only be used for eligible projects. The manager of the Office of Traffic Safety may determine that a proposed systemic project is not eligible and will notify the District that they must use those funds for another systemic type project. Information on project eligibility is included below.

Prior to the deliberations meeting, District representatives will be required to submit, via an Excel spreadsheet, a plan for the deliberations year on how they intend to spend the systemic safety funds. This plan is a prediction, and Districts will not be required to hold to the work types submitted. At the deliberations meeting, District representatives will be required to report on what systemic safety projects they have programmed in the past year.

HSIP ELIGIBLE SYSTEMIC IMPROVEMENTS

Eligible improvements for systemic safety funding are categorized into two tiers. Tier 1 improvements are automatically eligible for systemic safety funding without additional approval from the Office of Traffic Safety but must meet criteria related to cost and improvement type. Tier 2 includes any safety improvements that do not meet Tier 1 criteria. Tier 2 improvements must be submitted to the Office of Traffic Safety at INDOT for approval before systemic safety funding can be utilized. Tier criteria and approval information are described below.

For systemic safety projects on the local highway system:

The Office of Traffic Safety is required to determine eligibility for all local safety projects before HSIP funding can be utilized. The Office of Traffic Safety will utilize the following two-tier procedure to determine eligibility for local systemic safety projects. All funding requests for local safety projects must be sent to the Office of Traffic Safety for approval for both Tier 1 and Tier 2.

For systemic safety projects on the state highway system:

The Office of Traffic Safety delegates the authority to determine HSIP eligibility to the District Traffic Engineers for Tier 1 systemic safety projects via the rules outlined in this document. The Office of Traffic Safety will determine HSIP eligibility for all Tier 2 systemic safety projects.

Tier 1

For a systemic safety project to qualify as Tier 1, the improvement must be from the approved list of treatments and not exceed any of the following scoping level CN costs:

- $300,000 average per mile maximum, for projects exceeding one mile in length.
- $150,000 average per spot maximum, for projects with one or more locations. (continuous projects less than one mile in length will be counted as “one location”)

Automatically Eligible Treatments (organized by treatment category):

Unsignalized Intersections

- Improve visibility of unsignalized intersections by installing upgraded or new warning devices including pavement markings, signs, RPMs, and/or flashers.
- Convert intersection traffic control to an all-way stop.

Urban and Suburban Safety

- Install raised medians for access control on roadway segments and/or at intersections.
- Construct right-sizing (road diet) projects (a reduction in the number of through-lanes).
- Install speed feedback signs at speed transition zones and/or school zones.
- Install curb bump-outs (curb extensions) and/or daylighting for a crosswalk.
- Mark parking stalls where no pavement markings exist.
- Reduce lane widths in urban areas to 10’ or 11’ (with consideration for truck routes).
- Install other traffic calming elements to reduce vehicle speeds in urban areas where pedestrians are present such as lateral shifts, chicanes, realigned intersections, chockers, median islands, on-street parking, or other similar treatments.

Pedestrians

- Install new pedestrian crosswalk warning signs, beacons and/or pavement markings.
- Install pedestrian activated Countdown and Audible (APS) pedestrian signal heads and controllers at traffic signals.
- Install raised crosswalks and/or speed humps/bumps/tables.
- Install or upgrade pedestrian median refuge areas.

Segments

- Improve visibility of curves by adding or upgrading curve warning signs, markings and/or delineators.
- Install new centerline and/or edge line pavement markings on unmarked rural roadways.
- Add centerline and/or edge line rumble strips/stripes to rural roads.
- Install grooved durable markings with contrast on concrete pavements.
- Install median barrier systems on interstate highways such as Cable Barrier Systems.
- Remove or shield roadside safety obstructions in high-speed environments.
- Install RPMs on rural high-speed roadways.
- Upgrade guardrail end treatments to meet current standards.
- Mark passing/no-passing zones (requires completed passing zone study).

Traffic Signals

- Upgrade traffic signals to a minimum of one signal head per travel lane and install black back plates with reflective borders on all traffic signal heads.
- Adjust signal phasing, adjust signal configuration, provide/replace signal detection.
- Remove unwarranted signals. (Requires engineering study)
- Install UPS battery backup (emergency power) systems at critical traffic signal locations.

Other

- Improve left turn sight distance at intersections by installing positive offset left turn lanes (without adding additional pavement width).
- Conduct inventory of traffic signs and/or upgrade warning and regulatory signs to meet MUTCD retroreflectivity requirements.
- Complete a local road safety plan for the relevant jurisdiction.
- Install highway lighting at unlit interstate interchanges.
- Install/upgrade school speed limit flashing beacons.

Tier 2

For a systemic safety project to qualify as Tier 2, the improvement must:

- Be deliverable within the required fiscal year (typically a shorter development time).
- Have a safety B/C ratio that meets or exceeds a value of 6:1 (Projects which cannot meet this B/C ratio can instead be submitted to the regular safety call for projects).

To be approved for HSIP funding under Tier 2, the following information must be submitted via email to the Manager of the Office of Traffic Safety:

- Description of the improvement and the site.
- Estimated CN cost for the improvement.
- Crash Reduction Factor (CRF) of improvement. (For improvements without a quality CRF, coordinate with the Office of Traffic Safety for approval)
- Three years of crash data filtered to the site of improvement.
- Safety benefit to cost (B/C) ratio, as calculated on the Factor 3 tab in the TSAM Scoring Tool.

Any type of safety improvement may utilize Tier 2 funding. This includes the improvement types outlined in Tier 1, the following examples, or any other type of safety project which meets a safety B/C ratio of 6:1.

Example Project Types for Tier 2 Systemic Safety

- Install vehicle activated advanced warning devices including Stop Ahead and/or Conflict Warning Systems at rural, two-way stop unsignalized intersections.
- Improve sight distance at intersections by buying right of way and clearing sight lines.
- Add High Friction Surface Treatments (HFST) to curves, ramps, or selected intersection approaches.
- Install median barrier systems on non-interstate divided roads such as Cable Barrier Systems.
- Improve sight distance at curves by buying right of way and clearing sight lines.
- Provide/improve shoulder widths for curves. Provide improved clear-zone for curves.
- Install railroad pre-emption systems at signalized intersections that are within the influence area of at-grade highway-rail crossings.
- Install or upgrade passive or active warning devices and pavement markings at highway-rail crossings.
- Improve visibility of intersections or pedestrian crossings by providing overhead lighting.
- Install highway lighting at non-interstate locations.
- Add, extend, or slot left-turn lanes.
- Insall any other safety treatment not included on this list.

Traffic Signal Modernization:

Traffic Signal Modernization projects that replace outdated installations are no longer part of the Traffic Safety Program.

Raised Pavement Marker Refurbishment

The TSAM Team has been given the responsibility of managing the Raised Pavement Markings (RPM) Refurbishment program. The asset team deliberates a yearly budget for this work based on the proportion of lane miles of RPMs in each district. The budgets will be revised during the annual asset deliberations.

The RPM replacement cycle as defined by *Operations Memo #96-03* must be used for guidance and selection of locations for improvement projects.

Limitations:

Raised Pavement Markings (RPM) Refurbishment projects.

Prioritization:

RPM refurbishment projects are not scored but are given an automatic score of 100. The districts will be responsible for using available maintenance and age data to develop a schedule for yearly refurbishment.

Required Documents

Upon programming the systemic safety or RPM project, an Abbreviated Engineering Assessment Report will be required to be uploaded into SPMS. For more information on the Abbreviated Engineering Assessment Report and how it differs from the full Engineering Assessment Report, see the INDOT Engineering Assessment Manual. Documentation of the method of selecting locations for improvement should be included in the report. A crash history and all associated documents will not be required.

Funding and Programming Methodology

The Office of Traffic Safety is responsible for directing the District offices to program placeholders each year. This project will be assigned funding according to the deliberated amounts as discussed above. When the time comes for the District to program one of the three projects as discussed above, the District will be responsible for creating a new project and for deducting funding from the placeholder project.

Project Scoring

Introduction

Projects that are submitted to the call for projects for safety funding shall be scored using the methodology that is described herein. Projects that are not scored according to this document will not be accepted into the call for projects.

Scoring generates a numerical value that rates the merits or relative worth of a project and is a component of the overall Engineering Review process. The planning phase measures the qualities of a proposed candidate project with respect to its expected benefits in transportation performance in the functional areas of traffic safety, pavement, geometrics, mobility/congestion-relief and connectivity/accessibility, or bridges. An Engineering Review conventionally generates baseline documentation, including essential project intent (general scale and proposed improvement), outlining benefits in transportation performance produced by the investment and estimate of agency costs, among other requisite information. Integrating multiple sub-components (individual factors) into a single, common score permits a direct comparison of projects within its overall functional area. In this case improving traffic safety for purposes of prioritization and decision-making on project selections.

Aspects that are scored are not just the condition of the site relative to safety, but also the cost-effectiveness of the countermeasures as applied to the site.

Limitations

Currently, all infrastructure projects which fit into a TSAM Class are to be scored.

> **Note: The Section 130 Rail Safety Program has dedicated federal funding. This safety program is already managed by a scoring process and thus is not applicable to this document. For Section 130 Projects see the "Rail/Highway Crossing Safety Analysis and Project Selection Process for Section 130 Program" located in ProjectWise at** Section 130 Program Manual.
>
> **In addition, safety improvement projects known as systemic safety and RPM improvement projects, have been accepted by the Federal Highway Administration (FHWA) as safety enhancement projects that are eligible and qualify for HSIP funding. No scoring process is required as they all receive a score of 100 as shown in this document.**

Scoring Procedures

Currently the Safety Asset Team has three scoring procedures for three classes of proposed projects. These scoring procedures are described herein. The three classes of proposed projects are the following:

(1) Safety Infrastructure Improvements – Scored as described below
(2) Raised Pavement Marker (RPM) Refurbishments – Automatic score of 100
(3) HSIP Eligible Systemic Safety Improvements – Automatic score of 100

Scoring Process

Scoring is to be accomplished by the District asset owner who is proposing the project in accordance with the methodology described herein.

The results of project scoring by the Districts will be recorded in the engineering assessment report and submitted per current instructions for compilation as 'Master List' tabulation.
All proposed traffic safety asset owners are required to follow the same scoring process described herein in order to achieve a uniform and meaningful statewide score.
A spreadsheet has been prepared that encapsulates the scoring process. A complete copy of the scoring sheet must be submitted with each call submittal. The latest scoring spreadsheet can be found on the SharePoint website at the following location:

https://ingov.sharepoint.com/sites/INDOTOperations/SitePages/Traffic-Safety-Asset-Management-(TSAM).aspx

Safety Infrastructure Project Scoring

Essential List of Scoring Factors

The TSAM Scoring Tool utilizes seven factors to score safety projects. Factors 1 to 3 are Core factors; factors 1 & 2 serve as a measurement of the relative safety of the location in question and factor 3 compares overall cost to the expected improvement in safety. Factors 4 through 6 are supplemental; their purpose is to account for factors that may differentiate between two otherwise equal projects but do not fundamentally represent the relative safety of the location. Factor 7 is a bonus factor that accounts for externalities that reinforce the need for the project in the chosen year. Each factor and the points assigned to them are shown in Table 3 below.

Table 3. Scoring and Weighting Factors

Factor Number	Factor	Points Possible
1	*Crash Severity (ICC-based)*	40
2	*Crash Frequency (ICF-based)*	10
3	*Cost Effectiveness*	35
4	*Mobility Improvement*	3
5	*Public and Other Interests*	5
6	*Economic Factors*	7
Bonus Factor 7	*Earmarks and External Contributions*	25
		Maximum Total = 100

Supplemental Factor 7: Earmarks *& External Contributions* allows for a bonus score over the other factors. This is added for a project associated with special, outside financial assistance, offsetting what otherwise would require investment at INDOT's expense.

Final scores which are greater than 100 will be truncated at 100. One Hundred points is the maximum possible score.

Procedure for Using the TSAM Scoring Tool

The TSAM Scoring Tool is an excel-based tool that is used to score non-systemic safety projects. It contains one tab for each scoring factor, as well as a cover sheet that is used to quickly view project information and a breakdown of the project's score.

There are various inputs throughout the scoring tool. Highlighted cells are required to be filled out for the project to be eligible for the call for projects. If all required inputs are not completed, the reviewer will ask the scorer to complete the scoring tool before proceeding with the review.

Each tab in the scoring sheet is described below, along with the scoring methodology used for each factor.

Cover Sheet

The cover sheet of the scoring tool includes multiple user inputs for project information and displays scoring results as the tool is completed.

The top section asks scorers to input information about the project being scored, such as the project District, route, County, etc. Some of these fields are required for calculation in the scoring process, so this section should be filled out first.

The middle section displays points awarded for each factor. For the core safety factors, the values associated with the score are also displayed so projects can easily be compared by only looking at the cover sheet. Scorers can click on the name of each factor to automatically be taken to that factor's tab. Additionally; each factor tab has a link that can be selected to be taken back to the cover sheet.

The bottom section is available to the scorer for any notes they wish to record for each factor. These can be justifications for how a project was scored, a note to the reviewer of the project, things to remember about the project, etc.

Factor 1: Crash Severity

Factor 1 is based on the past safety performance of the site as indicated by actual crash events and their severity. Crash records are obtained from the Automated Reporting Information Exchange System (ARIES) or the INDOT Traffic Safety Portal (preferred source). The Traffic Safety Portal is Indiana's centralized data portal for crash data and documents. Quantitative scoring for Factor 1 will be based on the Index of Crash Cost (I_{CC}) as produced by the current version of Hazard Analysis Tool (RoadHAT) software. I_{CC} measures the difference between expected and estimated crash cost divided by the standard deviation of the difference.

The three (3) most recent calendar years of crash data must be used for evaluation purposes. These years are the three preceding the year before the project deliberations. For example, for the deliberations held in January 2026, only crash data from the years 2022, 2023 and 2024 will be used (2025 crash data will not be fully available). The number of incapacitating injury plus fatal crash events, non-incapacitating injury crash events, and property damage only crash events must be known to input into RoadHAT Form. In general, the RoadHAT current settings should be set to the "Indiana State Settings". However, engineers should contact the Office of Traffic Safety staff if there is a concern. In some rare cases, "Local Settings" are appropriate.

When turning movements have been collected, these counts should be used to validate the AADT values from TSDS. The use of "one-AADT" intersection types in RoadHAT should be avoided where possible. Turning movement counts can be used to generate an AADT where one is not available.

Some projects might have different ways of analyzing in RoadHAT. For example, determining whether a project is in a rural or urban area, or how to analyze interchange ramp terminal intersections. For guidance regarding RoadHAT analysis, please contact the Office of Traffic Safety.

Note:

Crash rates statewide can trend up or down depending on many external factors. In order to evaluate all projects using the same period of crash data, it is mandatory to submit projects using the specified three calendar years as discussed above. This means that if a project is to be resubmitted, the crash data must be collected and analyzed for the most recent three calendar years and the proposed project must be rescored.

Scoring:

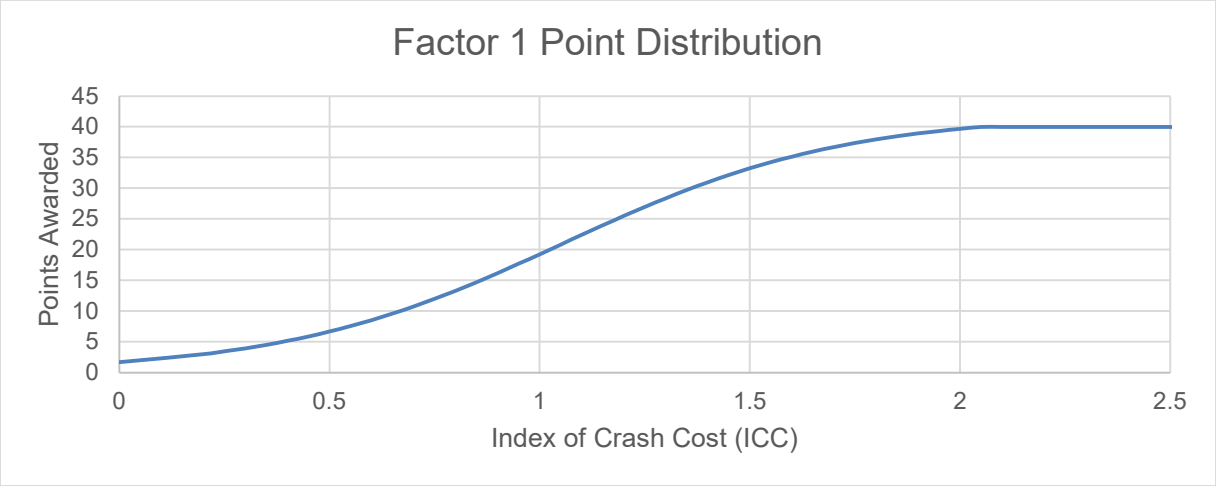
I_{CC} should be calculated using RoadHAT analysis. The I_{CC} value should be entered into the Factor 1 tab in the scoring tool to obtain a score. The tool uses Equation 1 and Figure 1 to award points. No points will be awarded for projects with an I_{CC} below 0.00. The maximum point total for Factor 1 is 40 points.

Equation 1. Points Awarded for Factor 1

$$\boldsymbol{Points\ Awarded\ for\ Factor\ 1} = \frac{\mathbf{42}}{\mathbf{1} + \boldsymbol{e}^{\mathbf{-3}*(\boldsymbol{Icc}-\mathbf{1.06})}}$$

This equation was calibrated based on I_{CC} values from projects in previous years' TSAM call for projects to adjust for changing average values and value distribution. This equation will be updated as necessary to account for changing indices over time.

Figure 1. Factor 1 Point Distribution



Note for Highway Corridors:

If a project contains multiple elements, such as intersections and segments, the project should be broken into individual parts, each with its own I_{CC} score. The I_{CC} of the elements that are to be improved should be averaged to form a composite I_{CC}, which is the input for Factor 1. For the purpose of RoadHAT, segments are measured as the impact area of an intersection with a road which is classified as a Collector or higher to the impact area of the next roadway which is also classified as a Collector or higher. The recommended minimum segment length for analysis is 500'.

When averaging the I_{CC} values for a project with multiple components, only values for "Target" components need to be averaged. "Target" components are those that constitute the reason for the proposed project in the first place. i.e. the components which contain the crash pattern that is being targeted by the selected countermeasure. A weighted average should be used to calculate the average Icc. The weighting factor used could be length, AADT, or VMT in most cases.

Factor 2: Crash Frequency

Factor 2 is based on the past safety performance of the site as indicated by actual crash events and their frequency. Crash records are obtained from the Automated Reporting Information Exchange System (ARIES) or the INDOT Traffic Safety Portal (Preferred Source). The Traffic Safety Portal is Indiana's centralized data portal for crash data and documents. Quantitative scoring for Factor 2 will be based on the Index of Crash Frequency (I_{CF}) as produced by the current version of Hazard Analysis Tool (RoadHAT) software. I_{CF} measures the difference between expected and estimated crash frequency divided by the standard deviation of the difference.

The three (3) most recent calendar years of crash data must be used for evaluation purposes. These years are the three preceding the year before the project deliberations. For example, for the deliberations held in January 2026, only crash data from the years 2022, 2023 and 2024 will be used (2025 crash data will not be fully available). The number of incapacitating injury plus fatal crash events, non-incapacitating injury crash events, and property damage only crash events must be known to input into RoadHAT. In general, the RoadHAT current settings should be set to the "Indiana State Settings". However, engineers should contact Office of Traffic Safety staff if there is a concern. In some rare cases, "Local Settings" are appropriate.

When turning movements have been collected, these counts should be used to validate the AADT values from TSDS. The use of "one-AADT" intersection types in RoadHAT should be avoided where possible. Turning movement counts can be used to generate an AADT where one is not available.

Note:

Crash rates statewide can trend up or down depending on many external factors. In order to evaluate all projects using the same period of crash data, it is mandatory to submit projects using the specified three calendar years as discussed above. This means that if a project is to be resubmitted, the crash data must be collected and analyzed for the most recent three calendar years and the proposed project must be rescored.

Scoring:

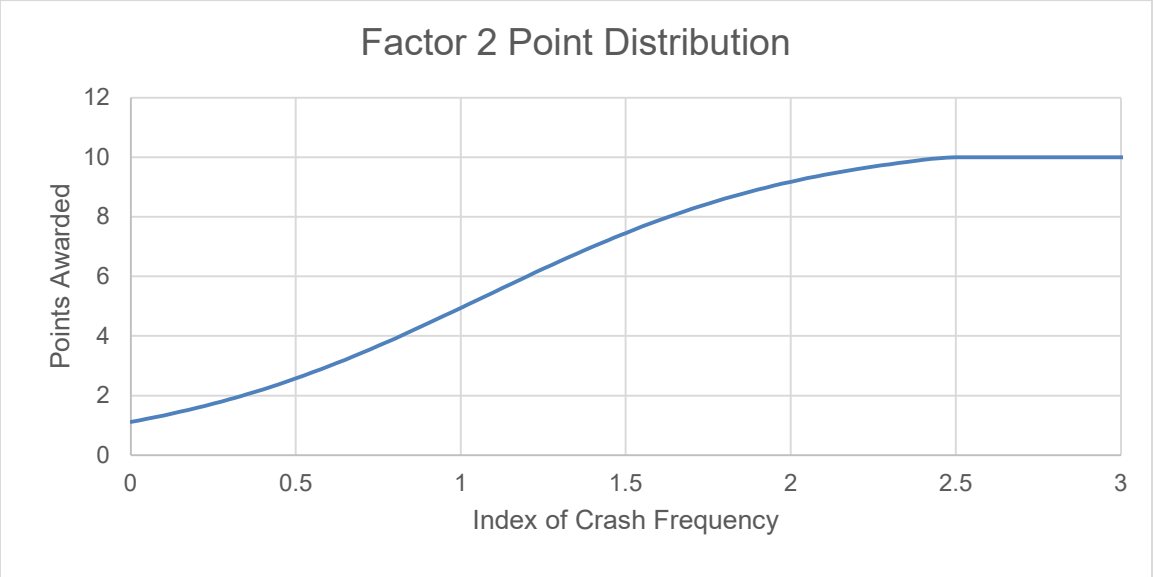
ICF should be calculated using RoadHAT analysis. The I_{CF} value should be entered into the Factor 2 tab in the scoring tool to obtain a score. The tool uses Equation 2 and Figure 2 to award points. No points will be awarded for projects with an I_{CF} below 0.00. The maximum point total for Factor 2 is 10 points.

Equation 2. Points Awarded for Factor 2

$$Points\ Awarded\ for\ Factor\ 2 = \frac{10.6}{1 + e^{-2*(\mathrm{Icf}-1.07)}}$$

This equation was calibrated based on I_{CF} values from projects in previous years' TSAM call for projects to adjust for changing average values and value distribution. This equation will be updated as necessary to account for changing indices over time.

Figure 2. Points Factor 2 Point Distribution



Note for Highway Corridors:

If a project contains multiple elements, such as intersections and segments, the project should be broken into individual parts, each with its own respective I_{CF} score. The I_{CF} of the elements that are to be improved should be averaged to form a composite I_{CF}, which is the input for Factor 2. This averaging should be done as described for Factor 1.

Factor 3: Benefit-Cost Ratio

Factor 3 measures the economic efficiency or overall value of the project proposal and provides a method of evaluation. The methodology is a form of engineering economic analysis that relies in part on assigning quantitative merit. The analysis presented here is a benefit/cost type where the benefits are expressed in terms of crash reduction. The crash rates with and without the improvements are considered in the analysis, and the difference is compared to the total project cost, including upkeep/maintenance cost for the life of the project.

The TSAM scoring tool will calculate the B/C ratio for the project being scored based on information provided by the scorer. A description of each input that the tool requires, as well as methodology that the tool uses are described in this section.

Note:

An approved list of Crash Reduction Factors has been provided by the Office of Traffic Safety and is available both on the TSAM SharePoint site and attached to the TSAM scoring tool. These approved CRFs should be used if applicable to the project. If desired, additional Crash Reduction Factors can be requested from the Office of Traffic Safety staff in Central Office. If a CRF is not available in the Crash Modification Factors Clearinghouse, other sources for a CMF or CRF may be used. Note that a CMF is defined as CMF = 1 - (CRF/100).

The score received is based on the calculated benefit divided by the project build year cost. The scoring sheet contains a calculator that performs all necessary calculations using the below inputs. Information regarding benefit/cost ratio's meaning is below.

- A value of less than one indicates that the costs outweigh the benefits
- A value of 1.0 indicates that the proposal is "Break Even" in nature (The benefits equal the costs).
- A value greater than one indicates that the benefits outweigh the costs.

Scoring:

There are multiple sections on the Factor 3 tab in the scoring tool that need to be completed to obtain a score for cost-effectiveness. Each of these sections, and the information required for each, are described below. Items with an asterisk (*) require a user input for a score to be calculated.

1. **Project Information**
    a. **Total Project Cost (Current Year Dollars):** The overall cost of the project, including all components (CN, R/W, Environmental, etc.). This information is automatically pulled from the cover page.
    b. **Cost Deduction from Other Disciplines***: This field allows the scorer to enter a cost to be deducted from the overall cost if the project is bundled with another from a separate discipline (pavement/bridge). For example, if a TSAM project has a cost of $1,000,000, but is being bundled with a pavement project that will reduce the cost of the safety project by $100,000, the scorer will input $100,000 into this field.

Additionally, deductions can be made to account for the cost of VRU accommodations, such as sidewalk, curb ramps, median refuges, etc. These costs may be deducted from the overall project cost to ensure projects are not being penalized for improving accommodations for VRUs. This deduction can only be made for the purposes of scoring in the scoring tool. The project cost in PW4 should be entered as the overall cost of the project, without VRU deductions.

c. **Cost Deduction Notes/Justification:** This field provides space for the scorer to explain the cost deductions for the project. If a cost deduction is used, proper justification is required in this section.
d. **Net Cost (Current Year Dollars)**: This field, which the tool automatically calculates, is the net cost of the project if it is being bundled with another or has any other deductions. This net cost will be used for the benefit/cost calculation. This incentivizes bundling safety projects with other disciplines by reducing the cost, increasing the B/C ratio, and awarding more points for Factor 3.
e. **Current Year**: This is the year that the scorer is scoring the project. The tool will automatically fill in this information. Ideally, the year the project is being scored is the year prior to the deliberations meeting that the project is being scored for. For example, for the deliberations meeting in 2026 (for FY 2031), projects will ideally be scored in 2025. It is not recommended to change this field, however, for special cases, the Current Year field can be manually changed.
f. **Project Build Year (FY being prepared for)**: This is the build year for the project, or the Fiscal Year that the project is being prepared for. The tool automatically fills in this information by adding six years to the current year (1 year until project is being deliberated on, 5 years for project development prior to letting if funded). For example, if a project is being scored in 2025, it will be deliberated in 2026 for FY 2031 funding. It is not recommended to change this field, however, for special cases, this field can be manually changed as well.
g. **Project Life***: This is the total life of the project in years. The tool sets the default project life to 20 years; however, this can be changed for special cases. This value is used to determine project lifetime cost, as well as lifetime crash cost savings. For guidance on project life, see Table 2.
h. **Traffic Growth (%) ***: This is the yearly compounding traffic growth used in the project analysis expressed as a percentage. This value should come from/be verified by INDOT's Technical Planning Division. The default is set to 0.70%, but scorers are encouraged to edit this to be more specific to the project being scored.

This value is used to proportionally predict future crashes at the project site to aid in the calculation of crash costs. The preferred way to calculate future crashes is through Safety Performance Functions (SPFs), however, INDOT does not have adequate SPFs for all improvement types. Therefore, the crash frequency is assumed to grow proportionally with traffic.

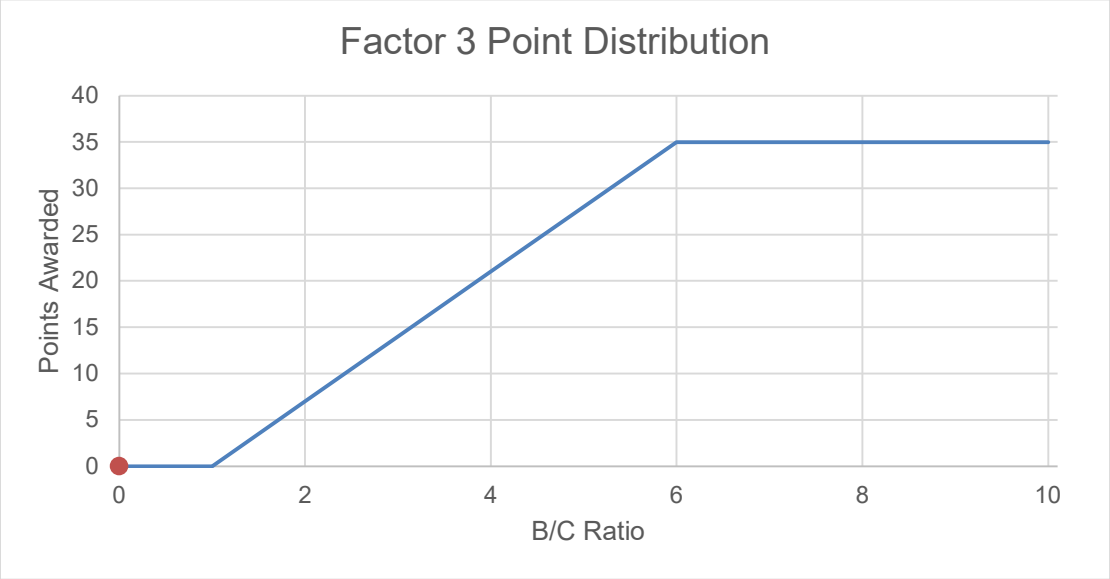
2. **Maintenance Information**
    a. **Total Yearly Upkeep Cost (Current Year Dollars)**: This value is the yearly maintenance cost associated with the project and is used in the lifetime cost calculation. The default for this field is set to $1,000 but will be automatically updated based on input in other fields in this section.
    b. **Added Pavement (syd):** This field is for the scorer to input the area in square yards of new pavement to be added as part of the project. This value is used to automatically update the yearly maintenance cost for the project. A cost of $0.30/syd of new pavement per year was assumed for the calculation.
    c. **Number of Signals Added:** This field is for the scorer to input the number of signals added as part of the project. This value is used to automatically update the yearly maintenance cost for the project. A cost of $2,000/new signal per year was assumed for the calculation.
3. **Crash Data (3 Years only)**
    a. Fatal or Incapacitating Injury Crashes*: This field is for the scorer to enter the number of fatal or incapacitating injury crashes at the project location in the last three full years.
    b. Non-Incapacitating Injury Crashes*: This field is for the scorer to enter the number of non-incapacitating injury crashes at the project location in the last three full years.
    c. Property Damage Only Crashes*: This field is for the scorer to enter the number of property damage only crashes at the project location in the last three full years.
4. **Facility Information (RoadHAT Inputs)**
    a. Route or Road Type*: This field should be the same as the facility type chosen in the RoadHAT analysis. If none of the available facility types apply to the project, the scorer should select “Other” and provide an explanation in the notes box that appears. When “Other” is chosen, the raw number of inputted crashes will be used for crash cost analysis (i.e. the tool will not use an SPF and Empirical Bayes to adjust crashes, see detailed explanation of B/C ratio calculation below).

b. **Other facility type inputs*:** Once a Route or Road type is chosen, the applicable fields will become editable to the scorer. The information entered into these fields should match what was used in the RoadHAT analysis. This information is used in the SPF equation with Empirical Bayes to calculate expected crashes at the project location.

5. **Crash Reduction Factors (%, by Severity)**
   a. **Using Custom CRF?*:** This field is for scorers to indicate whether a custom CRF is used for the project. Custom CRFs should only be used where existing CRFs in the CRF Data tab do not apply to the project. If a custom CRF is used, proper justification, including source and reason for using a custom CRF, must be provided in the notes box.
   b. **Using CRFS for*:** This field is for scorers to indicate which type of CRF they are using. Scorers have the option between using CRFs for KABC crashes, or for all crash severities.
   c. **Combined CRF:** This field will display the overall CRF used for the crash reductions calculation. This field will be populated automatically and cannot be edited by the scorer.
   d. **Countermeasure CRF Inputs:** There are three inputs for CRFs for the project. These CRFs will be combined and shown as the Combined CRF. For each CRF entered by the scorer, there is a box below for the scorer to input the description and source of the CRF.

Figure 3 below shows the point distribution for different benefit-cost ratios. This distribution was calibrated by testing past safety projects to ensure a spread of point values are utilized. Points are awarded for values greater than 1.0. The maximum possible point value is 35.

Figure 3. Factor 3 Point Distribution



The curve is based on Equation 3 (where X is the Benefit Cost Ratio):

Equation 3. Points Awarded for Factor 3

$$Points\ Awarded\ for\ Factor\ 3 = 7X - 7$$

The steps below walk through the methodology used by the scoring tool to calculate the benefit/cost ratio for the project being scored.

Step 1: Determine Total Lifetime Cost of the Project

The TSAM scoring tool uses multiple pieces of information to determine the overall lifetime cost of the project being scored. This cost will account for the total project cost (entered on cover sheet), deductions taken from the overall project cost, and the maintenance cost associated with the project over its lifespan.

Subtracting deductions from the total project cost will give the net cost of the project. This cost is then projected out to the build-year using an assumed inflation rate of 2.00%.

To calculate the lifetime maintenance cost of the project, the scorer will input the number of square yards of added pavement that is needed for the project, as well as the number of signals added for the project. Costs of $0.30/year/syd of new pavement and

$2,000/year/new signal are assumed for the calculation. If these inputs are not provided by the scorer, a default value of $1,000/year is used for the calculation.

This lifetime maintenance cost is then calculated by determining the yearly maintenance cost in build-year dollars by using the same 2.00% inflation rate. This cost is then multiplied by the project life in years. Table 4 below shows the service life for common safety project types.

Table 4. Service Life for Common Safety Project Types

Intersection Improvement Treatment	**Service Life (Years)**
Left Turn or Right Turn Lanes	20
Alternative Intersections	20
Traffic Signalization	20
Sight Distance Improvement	20
Other Intersection Improvement	20
Cross-Section Treatment	**Service Life (Years)**
Pavement Widening, No Lanes Added	20
Added Travel Lanes without New Median	20
Highway Divided, New Median Added	20
Shoulder Widening or Improvement	20
Flattening or Clearing Side Slopes	20
Other Cross-Section Treatment	20
Structure Treatment	**Service Life (Years)**
Widening Bridge or Major Structure	20
Replacing Bridge or Major Structure	30
New Bridge or Major Structure	30
Pedestrian Over/Under Crossing	30
Minor Structure	20
Other Structure	20
Alignment Treatment	**Service Life (Years)**
Horizontal Alignment Change	20
Vertical Alignment Change	20
Railroad Crossing Treatment	**Service Life (Years)**
Eliminate with New or Reconstructed Grade Separation	30
Elimination by Relocation of Highway or RR	30
Other RR Treatment	20
Other Treatment	**Service Life (Years)**
Other Treatment not Listed	20

The sum of the net project cost and lifetime maintenance cost, in build-year dollars, is the total project cost used by the tool for the benefit/cost calculation.

Step 2: Determine the Expected Annual Crashes

The scoring tool uses the Empirical Bayes (EB) method to calculate the expected number of crashes at the project site. This method uses a combination of experienced crashes and predicted crashes (calculated using a safety performance function (SPF)) to calculate the number of expected crashes at that specific location. An over-dispersion parameter is also used to account for the accuracy of the SPF being used. The purpose of using the EB method is to account for regression to the mean effects that are seen year-to-year with crash analysis.

The scorer will input the number of experienced crashes of each severity within the three-year study period into the tool. To calculate the predicted number of crashes, the tool uses the same SPF's that are used by RoadHAT 4D to calculate I_{CC} and I_{CF}. These SPFs require information about the facility, such as the facility type and AADT. Scorers will provide this information, which should be identical to the inputs used for the RoadHAT analysis. From this SPF, the annual number of predicted crashes for each severity is calculated.

The tool will then weigh the experienced and predicted crashes according to the over-dispersion parameter using the EB method. The result is the expected number of annual crashes at the project site for each severity.

Step 3: Determine the Annual Crash Costs

The expected annual number of crashes for each severity is then multiplied by the cost associated with that type of crash. Table 5 below shows crash costs assumed for each severity in 2024 dollars, taken from FHWA's Crash Costs for Highway Safety Analysis. Costs for incapacitating and fatal crashes is assumed to be the same, since fatal crashes are random and using fatal crash costs would yield unrealistic crash cost savings.

Table 5. Crash Costs by Severity, 2024 Dollars

Crash Costs by Severity - 2024 Dollars		
PDO	$	15,587.29
Non-INC	$	212,261.27
INC	$	857,956.11

The result is the annual crash costs for the project location. To be consistent with the other calculations, this cost is projected to build-year dollars using the same inflation rate of 2.00%

Step 4: Calculate Annual and Lifetime Crash Cost Savings

Once the annual crash costs are calculated, the crash cost savings depending on the countermeasure(s) can be determined using the user-entered CRFs. Entered CRFs will be for either KABC crashes only, or for all crash severities. The entered CRFs will be combined to determine the percentage of crashes that will be prevented due to the chosen countermeasure(s). The crashes prevented can then be assigned a dollar value using the same crash costs in Step 3.

To account for growing traffic, and therefore growing frequency of crashes, a proportional relationship is used to determine the frequency of crashes in future years. The compound annual traffic growth rate is entered by the scorer, which is then used to determine the number of crashes throughout the project's life cycle. While the relationship between traffic growth and crash frequency is not perfectly proportional, this method is used instead of using SPFs for build cases, since INDOT does not have SPFs for all alternatives that may be proposed.

The total crash cost savings throughout the project's life, in build year dollars, is taken to be the benefit for the project being scored.

Step 5: Calculate the Benefit-Cost Ratio

After calculating the total lifetime cost of the project and the lifetime crash cost savings, the benefit-cost ratio can be calculated by dividing them as shown in Equation 4 below:

Equation 4. Benefit/Cost Ratio

$$Benefit/Cost\ Ratio = \frac{Total\ Lifetime\ Project\ Cost}{Total\ Lifetime\ Crash\ Cost\ Savings}$$

Factor 4: Mobility Improvement

While a mobility improvement does not necessarily indicate a safety improvement, it does provide a tangible benefit to INDOT. The state spends funds on mobility projects each

year to reduce congestion. Safety projects which happen to also improve the overall mobility of their intersection or segment are able to earn up to 3 points for Factor 4.

An improvement in mobility can increase the overall safety of the location. In some cases, an increase in congestion can lead to certain types of crashes, particularly rear end crashes.

In order to receive these points, a capacity analysis must be performed using software such as HCS, Synchro, or SIDRA. The before and after outputs of these programs must be included in the call documents along with a summary table. If the safety countermeasure, which must be selected in order to address an existing crash pattern, also improves mobility, points may be awarded.

The mobility analysis must be completed for the existing and design year. Design year is typically 20 years from the build year. A compounded traffic growth rate will be used to inflate the volumes to design year without justification. This growth rate should be provided by INDOT's Technical Planning Division.

Scoring:

Up to 3 points are available for this factor and they are awarded according to Table 6 below.

Table 6. Points Awarded for Factor 4

Scoring Key	
Input	Points Awarded
Negative Effect on Mobility	0
Neutral Effect on Mobility	1
LOS Improvement from D to C or Better, or reduction in delay of ≥ 15 seconds	2
LOS improvement from F to C or better, or reduction in delay of ≥ 35 seconds	3

The improvement in LOS or the reduction in delay must be for the entire intersection or project area. The District may choose to use LOS improvement or the reduction in delay. In general, whichever results in the higher score should be used.

Factor 5: Public and Other Interest

Factor 5 accounts for outside interest communicated to INDOT, endorsing or opposing the candidate project (and its assigned *Project Intent*, countermeasures and scale of work proposed). This may be represented by favorable and non-favorable overall public input, government officials' stances, appeals by transportation officials outside the agency, and

by other external parties, including business/commerce interests. Scoring is based on a zero to five-point scale. If no tangible interest has been recorded one way or the other, one point should be assigned.

If more than one point is awarded for Factor 5, documentation supporting the selection must be included in the submitted call documents. If the public or a government official has shown concern with the location, a news article or a PDF of emails may serve as documentation. If a government official supports the chosen countermeasure, a PDF of a letter or email from the official may serve as the documentation. If the scorer has met with or spoken with the government official but no written record exists, the scorer must prepare a note to document the conversation and certify that the official supports the chosen countermeasure.

For the purposes of Factor 5 scoring, some examples of a government official include police chief, fire chief, city engineer, county commissioner, Mayor, school principal, and others. The Office of Traffic Safety may be contacted to determine if the individual being communicated with may be considered a government official for scoring purposes.

Scoring:

Up to 5 points are available for this factor and they are awarded according to Table 7 below.

Table 7. Points Awarded for Factor 5

Scoring Key	
Input	Points Awarded
Opposition to the proposed project from a public official	0
No documented public concern, and no support of project	1
Documented public concern with location	2
Documented concern with location from public official	3
Documented support of chosen countermeasure from public official	4
Documented support of chosen countermeasure from multiple public officials	5

Factor 6: Economic Factors

Factor 6 aims to award points to projects that will positively impact communities that have a lower median income. Data from the 2020 census will be used to determine median income. Data was exported from the census and used in the TSAM scoring tool to award points based on the median income of the community surrounding the project location. The project county will be entered by the scorer on the cover sheet of the scoring tool. Next, the census tract that the project lies in will be entered using the 2020 census tract map (Linked Here), which is also provided in the scoring tool on the Factor 6 tab. Scorers will zoom to find the project location, click to see the census tract number, and will enter it into the “Census Tract” field on the Factor 6 tab. If a project lies

in more than one census tract, the scorer may choose which tract to use in the scoring tool.

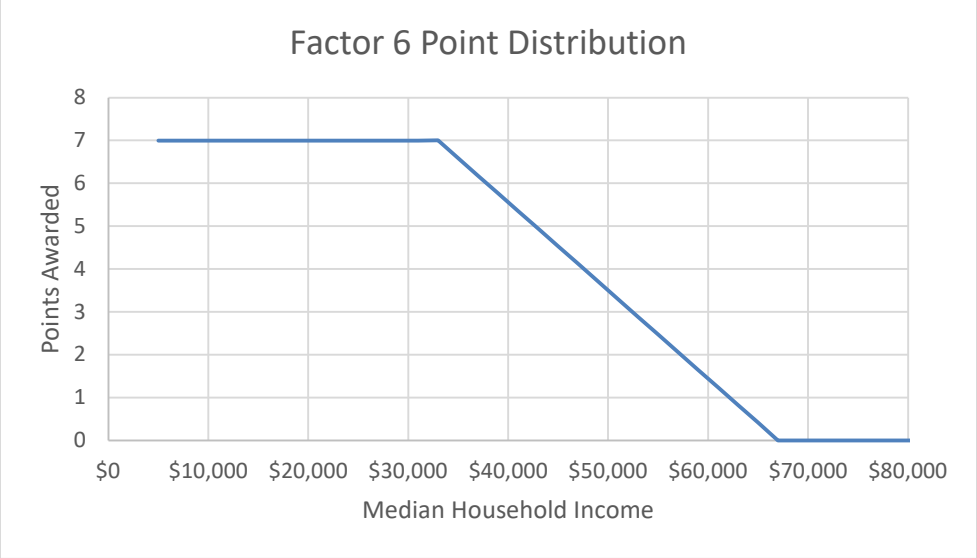
The tool will then find this census tract within the data that was exported from the census, provide a median income, and award points based on this value. For scoring purposes, a project will need to have a median income lower than $67,000 for points to be awarded. For median incomes lower than $ 33,000, full points will be awarded.

There is a field on the Factor 6 tab that requires the scorer to indicate whether the project will require the complete purchase of a developed parcel. If it does, no points will be awarded for Factor 6. The purpose of this factor is to geographically award points to projects in low-income communities, so any project that negatively impacts one of these communities should not be awarded any points for Factor 6. The tool assumes that the complete purchase of a developed parcel will have a negative impact on that community, however, the real impact of this can be very different on a case-by case basis based on the type, size, location, etc. of the parcel. Recognizing that there may be cases where the tool's assumption is incorrect, the impacts on the community can be discussed during project deliberations if the scorer desires.

Scoring:

Figure 4 below shows the point distribution for Factor 6.

Figure 4. Factor 6 Point Distribution



Factor 7 (Bonus): Earmarks & Other Financial Contributions by External Means

Factor 7 bonus points are awarded for a project associated with special, outside financial assistance, offsetting what otherwise would require like investment at INDOT's expense.

Factor 7 captures the benefit to INDOT of having additional financial assistance outside the agency, beyond the traditional funding sources. A maximum of 25 additional points may be attributed to Factor 7. However, when the scoring of a project assigned an earmark or non-INDOT funding by other means results in a total score greater than 100, that score will be rounded down to 100.

- It should be noted that points are rarely awarded for Factor 7 and significant documentation of a commitment from an outside source is required as part of the submittal.

- The selected countermeasure should be something that INDOT would be interested in installing with or without the help of the third party.

- This factor should not be used to award projects without a significant crash history or projects where the countermeasure does not address the crash history. For this reason, the benefit-cost ratio must still be calculated using the total project cost including the portion being supplied by a third party.

Scoring:

Bonus points are awarded for Factor 7 relative to the share (percentage) of external funding to offset project cost. Point distribution is displayed in Table 8 below:

Table 8. Points Awarded for Factor 7

Scoring Key	
Input	Bonus Points Awarded
No Earmarks of External Contributions	0
≤20% of Funding Contributed by External Source	5
≤40% of Funding Contributed by External Source	10
≤60% of Funding Contributed by External Source	15
≤80% of Funding Contributed by External Source	20
>80% of Funding Contributed by External Source	25