16-30-1 Basic Principles November 2022

1.1 Overview

The Operations Certification Process (OCP) is a performance-based, data-driven process for determining whether to consider the inclusion of operational-driven intersection or mainline improvements as part of a project already prioritized for program approval for non-operational reasons. The process includes quantifying alternatives, monetizing the resulting operational benefits, completing benefit-cost comparisons of the alternatives, and documenting decisions and judgements made throughout the process.

The OCP is for use on locations where a less than desirable level of operation *may* exist and has the potential for improvement through geometric modifications or a change in traffic control. These locations, known as Operational Sites of Promise (OSOP), can be generated through local knowledge, or can be identified through the WisDOT network screening tools.

The OCP applies asset management and traffic operational benefit-cost metrics to determine if the proposed improvements provide sufficient benefit to the State Trunk Network (STN) to validate consideration for prioritization and to justify partial or total State Highway Rehabilitation (SHR) improvement funding.

The regional analyst does not need to complete the OCP for every location identified as an OSOP. However, unless other asset management certification processes (pavement treatment, safety, bike/pedestrian needs, structures, etc.) can justify the improvement, regional staff must complete the OCP to warrant inclusion of any operational-driven improvement as part of a perpetuation or rehabilitation project.

WisDOT's Bureau of Traffic Operations - Traffic Analysis and Safety Unit (BTO-TASU) is the lead for the OCP. Direct any questions regarding the OCP to DOTTrafficAnalysisModeling@dot.wi.gov.

1.2 Purpose

The primary purpose of the OCP is to assess the asset management validity of intersection or mainline improvements solely intended to fix an operational issue on the STN. The improvements must address the operational issue without degrading the overall safety.

1.3 When to Apply

1.3.1 Typical Applications

Identification of an operational site of promise alone does not trigger the need to complete the OCP. The OCP becomes required when there is a desire to include operational-driven improvements as part of a perpetuation or rehabilitation project. These improvements could include geometric modifications or a change in traffic control.

If completed, the OCP is a certification element necessary for the Final Scope Certification (FSC) approval as it helps to define an improvement project's purpose and need. Mainline facilities, intersection, or interchange improvements can have significant impacts on scope, schedule, and budget. WisDOT regional staff *should* apply the OCP as early as possible during the Financial Integrated Improvement Program System (FIIPS) Life Cycle 10 (LC10), the Project Definition phase of scoping, to maximize the time that the Programmatic Scoping and FSC processes have for identifying all the resultant scoping impacts from any OCP justified improvement. If any improvements trigger an Intersection Control Evaluation analysis, complete the OCP in conjunction with that effort. For additional information on the Intersection Control Evaluation process, see FDM 11-25-3.

1.3.2 When Not Applicable

If the proposed improvements do not extend outside the limits of the existing roadway footprint (i.e., does not require additional pavement or grading), then the WisDOT regional staff can likely include the improvement in the project without going through the OCP. For example, retiming an existing signal or restriping an existing 16-foot painted median to a 4-foot painted median and a 12-foot left turn lane would not trigger the need to complete the OCP unless additional pavement or grading is also necessary.

Improvements that include additional pavement or grading, such as modifying an existing raised-median to add or extend a left turn lane or adding pavement to the shoulder to provide a right turn lane, would trigger the need to complete the OCP for funding consideration. Improvements that *may* have a negative safety impact (e.g., narrowing lane widths), even those without the need for additional pavement, would also need to go through the OCP to justify inclusion in a perpetuation or rehabilitation project.

The OCP is not applicable for modernization projects; however, the WisDOT regional analyst can use the OCP benefit-cost tools to evaluate the potential benefit of operational improvement alternatives under consideration.

1.3.3 Local Considerations

Local agencies can follow a process similar to the OCP to evaluate operational improvements along their local roadway network; however, since the focus of the OCP is on the STN, use of the OCP tools *may* require modification to address local needs. WisDOT's BTO-TASU is available to provide guidance to the local agency on the OCP and associated tools; however, completion, review, and approval of any documentation on the analysis methodology and results is the responsibility of the local agency.

1.4 Acronyms

Table 1.1 provides common acronyms used throughout the Operations Certification Process.

Table 1.1 Acronyms

Acronym	Definition
B/C	Benefit-Cost Ratio
BPD	Bureau of Project Development
BSHP	Bureau of State Highway Programs
BTO	Bureau of Traffic Operations
FDM	Facilities Development Manual
FSC	Final Scope Certification
HCS	Highway Capacity Software
HCM	Highway Capacity Manual
IBCT	Intersection Benefit-Cost Tool
MFBCT	Mainline Facility Benefit-Cost Tool
NPMRDS	National Performance Management Research Data Set
OAPM	Office of Asset and Performance Management
OCP	Operations Certification Process
OSOP	Operational Sites of Promise
SCP	Safety Certification Process
SHR	State Highway Rehabilitation
SOBCR	State Trunk Network-Only Benefit-Cost Ratio
SOCD	Safety and Operations Certification Document
STN	State Trunk Network
TASU	Traffic Analysis and Safety Unit

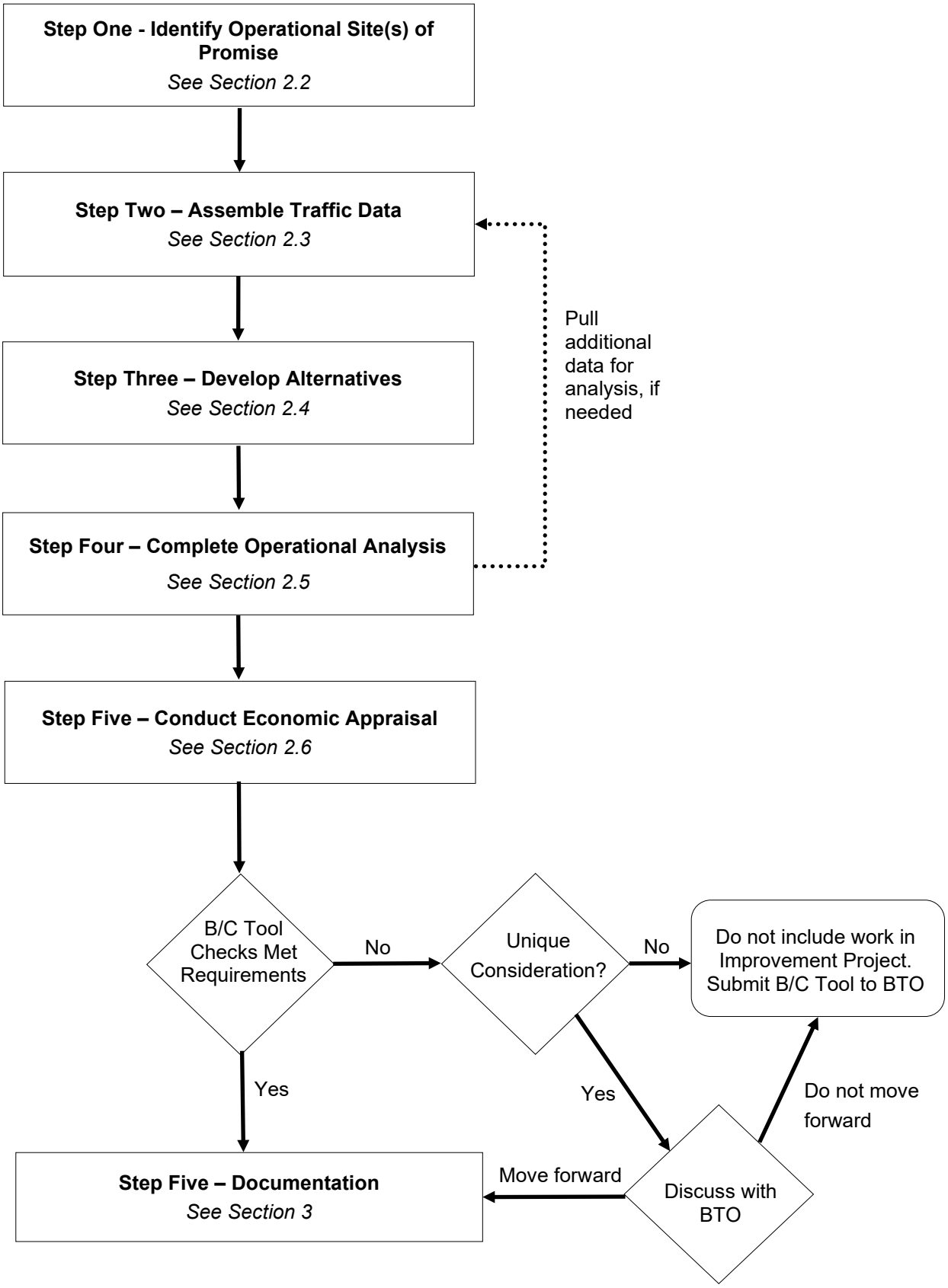
16-30-2 Policy **November 2022**

2.1 General

The purpose of this section is to introduce the methodology and expectations for evaluating the benefits of operational-driven improvements to the STN under performance-based practical design through the implementation of WisDOT's OCP. If applicable, the OCP is a certification element necessary for FSC approval.

Figure 2-1 and the following sections illustrate and define each step within the OCP, respectively.

Figure 2-1 Operations Certification Process Flow Chart



2.2 Identify Operational Site(s) of Promise

2.2.1 OSOP Definition

An Operational Site of Promise (OSOP) is an intersection or mainline location where a less than desirable level of operation *may* exist and has the potential for improvement through geometric modifications or a change in traffic control. Performance metrics that *may* describe locations with less than desirable levels of operation include, but are not limited to, locations with:

- Excessive user delay (e.g., > 50 seconds of delay/vehicle)
- Recurring poor operations (e.g., level of service E or worse)
- Long queues (e.g., queues block adjacent intersections or back onto the freeway, etc.)
- Other factors (e.g., inadequate gaps, poor merge/weave performance).

Refer to FDM 11-5-3.2 for additional performance metrics that could help define a potential OSOP.

2.2.2 Locate and Assess OSOP

The goal of this step is to identify OSOPs that exist within the limits of an improvement project. Identification of an OSOP does not automatically trigger the need to complete the OCP. However, identification of an OSOP *should* encourage additional evaluation to assess the potential benefits of completing the OCP.

WisDOT regional staff can identify an OSOP through network screening or through local knowledge (see below for more details).

2.2.2.1 Identification Through Network Screening

Operational network screening allows for a high-level planning assessment of all intersections and segments on the STN to flag locations that *may* have a less than desirable level of operation and warrant additional evaluation. The purpose of network screening is to identify potential system-wide OSOPs and to support the OCP as part of performance-based practical design. Operational network screening is not a requirement, but rather a highly recommended step within the planning phase of an improvement project.

There currently are two tools available for conducting operational network screening:

- Intersection operations screening tool
- Mainline operations screening tool

Regional analysts can review the results of the network screening tools to identify OSOPs within the limits of an improvement project relatively quickly. They can then make the determination as to whether to conduct an evaluation of the OSOP to verify the level of operations and to assess if completion of the OCP would be beneficial.

Additional details on the intersection and mainline operations screening tools follow.

2.2.2.1.1 Intersection Operations Screening Tool

The *intersection operations screening tool* consists of five Excel-based files (one for each region) that evaluate every intersection on the STN (over 26,000 intersections statewide). The tool applies planning-level methodologies to determine an operational score for each intersection and flags those that *may* be operating at a deteriorated level of service.

The high-level analysis tool utilizes available information and incorporates several assumptions for missing information related to lane configurations, volumes, turning movement percentages, and signal timings to name a few. As such, the regional analyst *should* update the assumptions in the tool with site-specific data where possible and confirm the results of the initial screening. This will allow for a more accurate estimate of the intersection's operational performance and provide a better gauge as to whether further evaluation through the OCP *may* be beneficial.

The *intersection operations screening tool* evaluates and flags intersections following the steps outlined below:

Step 1: Basic data processing (all control types) - The primary objective of this step is to determine peak hour traffic volume per lane for each approach. This step includes assumptions when there is no data available.

Step 2: Estimate volume and capacity (by control type) - The primary objective of this step is to calculate the critical lane volume and capacity per lane, per approach, or both depending upon the control type.

Step 3: Estimate delay and level of service (by control type) - This step follows the guidelines of the Highway Capacity Manual, 7th Edition (HCM7) and the National Cooperative Highway Research Program

(NCHRP) 825 to calculate control delay per approach and per intersection. Level of service is then determined based on the control delay.

Step 4: Flag intersections – Through sensitivity analysis, using the assumptions from above, this step flags those intersections anticipated to operate at a deteriorated level of service.

Additional details on the analysis methodology for the *intersection operations screening tool* is available on the BTO Traffic Analysis, Modeling and Data Management Program area webpage. For support or guidance on the use of the tool, contact BTO-TASU (DOTTrafficAnalysisModeling@dot.wi.gov).

2.2.2.1.2 Mainline Operations Screening Tool

Historically, Meta-Manager Mobility has been the primary source for identifying mainline locations that *may* be operating at a less than desirable level of service. (See FDM 11-5.3.5 for additional discussion on level of service analysis within Meta-Manager). Although this will continue to be the primary source for obtaining a planning-level assessment of operations for multilane highways, rural two-lane highways, and urban arterial roadways, an additional tool, the *mainline operations screening tool*, is available to provide a more detailed assessment for mainline freeway segments.

The *mainline operations screening tool*, developed by the Bureau of State Highway Programs (BSHP), uses Meta-Manager Mobility data, combined with speed data from the National Performance Management Research Data Set (NPMRDS), and crash frequency data for rear-end and same-side, side-swipe crashes to determine an operational score for all basic freeway segments (i.e., no auxiliary lanes) on the STN. Using the operational score, the tool currently flags those locations that *may* benefit from extended acceleration or deceleration lanes or the addition of an auxiliary lane. The results of the *mainline operations screening tool* are available via a map and spreadsheet format.

Future enhancements of the tool *may* allow for its use on other facilities, but until such time, WisDOT regional analysts *should* continue to use Meta-Manager Mobility to identify potential operational issues on non-freeways or freeways with an existing auxiliary lane. The results from Meta-Manager Mobility are an acceptable starting point to flag a segment as an OSOP; however, the WisDOT regional analyst *should* use available data on crashes, delay, and other relevant performance metrics to assess whether additional exploration through the OCP *may* be beneficial.

For support or guidance on the use of the *mainline operations screening tool*, contact BSHP – Program Development and Analysis Section.

2.2.2.2 Identification Through Local Knowledge

The goal of the screening tools is to aid the regions by identifying locations that *may* benefit from operational improvements, but the results are not all inclusive. Outside of the screening tools, regions *may* use local knowledge of areas with operational concerns to identify an OSOP. This could be in the form of comments from the traveling public, local officials, transportation management center observations, or WisDOT personnel knowledge from monitoring and traveling the network.

2.3 Assemble Traffic Data

2.3.1 Site Data

After identifying the OSOP, the regional analyst *should* assemble additional site-specific traffic data for each OSOP within the project limits. Required site-specific data includes:

- Roadway/intersection geometry, such as turn lane storage lengths for intersections and the merge/diverge section lengths for mainline facilities
- Existing and proposed intersection traffic control, including warrant analysis and signal timings
- Posted speeds

Additional site-specific data that could help define the existing user and travel characteristics and support the need for potential operational improvement(s) include, but are not limited to:

- Sight distance data
- Freight routing data
- Traffic generating events
- Existing access
- Multimodal accommodations

2.3.2 Traffic Counts and Forecasts

Consult with BTO-TASU for questions on the appropriate use of existing counts, necessity of getting new counts, and the acceptable forecasting methods for the specific site. In most cases, planning-level forecasts *should* be sufficient for completion of the OCP. Additional guidance on the assembly of traffic data is available in TEOpS 16-05.

The OCP requires the use of two forecasted years – the first year and the last year of the operational analysis period. They are described as follows:

- The first year of the operational analysis period is the first year the roadway is open to traffic after construction (i.e., the analysis period begins the year after completing construction of the improvement)[1].
- The last year of the operational analysis period is determined by adding the fixed service life of the project's improvement concept to the first year of the operational analysis period. For consistency, the OCP **shall** use the following prescribed service life durations:
    - Resurface - 10 years
    - Pavement Replacement using new asphalt - 15 years
    - Pavement Replacement using new concrete - 20 years

2.3.3 Safety Data

Safety data collection and analysis *should* follow the Safety Certification Process (SCP). See FDM 11-38 for details on the data needed and steps to complete the SCP. Direct questions regarding the SCP to DOTBTOSafetyEngineering@dot.wi.gov.

2.4 Develop Alternatives

When developing operational-driven alternatives, WisDOT regional staff *should* focus on improving the operational needs along the STN without degrading safety. In most cases, an alternative with a safety disbenefit will result in denial of the improvement alternative regardless of the funding agency or source. Improvements *should* incorporate performance-based practical design principles.

Often times there are multiple alternatives for addressing the operational needs at an OSOP, where each alternative could consist of one or more improvements to the state highway, the local roadway, or both. Carrying each alternative through the OCP and completing the economic appraisal for each alternative will help to determine which alternative(s) to investigate further based on the benefit-cost metrics.

Improvements to the local roadway will require additional documentation to illustrate how the improvement(s) will provide a direct benefit to the STN. For alternatives that include multiple improvements, the documentation needs to show how each individual improvement will help address an identified operational need while also working together to improve overall operations at the OSOP.

2.5 Complete Operational Analysis

2.5.1 Analysis Periods and Scenarios

Complete the intersection and/or mainline operational analysis for the following scenarios:

- No-build Operational Analysis Start Year (Construction Year + 1)
- No-build Operational Analysis End Year (End of Service Life)
- Build Operational Analysis Start Year (Construction Year + 1)
- Build Operational Analysis End Year (End of Service Life)

Conduct analysis for the time period(s) when there is known or estimated congestion or other operational concerns. This typically is one-hour during the morning and one-hour during the typical weekday afternoon when traffic demand is the highest (i.e., the AM and PM peak hour), but can vary by location.

2.5.2 Analysis Methodology and Tools

In most cases, the traffic analysis for the OCP will utilize HCM-based traffic analysis tools (e.g., Synchro, HCS, SIDRA). Use of microsimulation tools (e.g., SimTraffic, Vissim) are only necessary under certain conditions to get a more accurate assessment of queuing impacts, or when the analysis exceeds the limitations of the HCM-methodology and construction costs are high enough to justify the additional expenditure of resources. Refer to TEOpS 16-10 for additional guidance on the supported analysis software tools for use within the OCP.

[1] For proposed advanceable projects, base the first year of the analysis period on the original letting (LET) date, not the advanceable LET date.

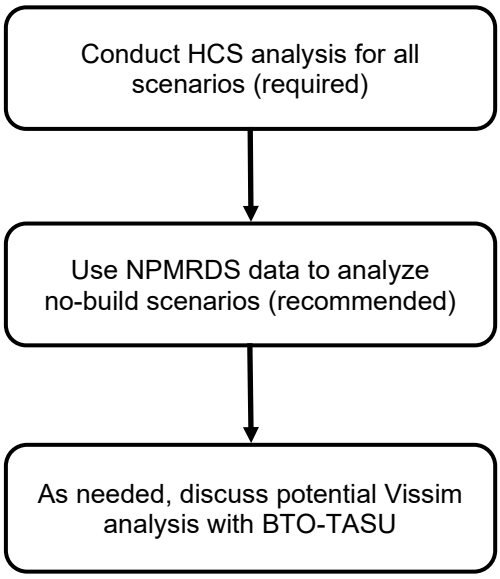
2.5.2.1 Intersection Analysis

The intersection operational performance metrics necessary for completion of the OCP economic appraisal are delay (in vehicles per hour) and 95th percentile queue lengths (in feet). Synchro is the recommended analysis software because the benefit-cost tools used to complete the economic appraisal allow for the automatic input of performance metrics from Synchro. However, the benefit-cost tools allow for the manual entry of this information to accommodate the use of other supported traffic analysis tools.

2.5.2.2 Mainline Analysis

The primary mainline operational performance metric necessary for completion of the OCP economic appraisal is travel speed (in miles per hour). The economic appraisal tool will utilize the travel speed, volume, and segment length to calculate travel time and user delay. The mainline analysis includes a multi-step operational analysis from up to three different sources as presented in Figure 2-2. Refer to TEOpS 16-10 for additional guidance on the supported analysis software tools for use within the OCP.

Figure 2-2 Mainline Operational Analysis Flow Chart



2.5.2.2.1 HCS Analysis

HCS is the recommended software tool to evaluate mainline operations for the OCP. The benefit-cost tools developed to complete the economic appraisal allow for the automatic input of outputs from the HCS freeway facilities module. Users can manually input data into the benefit-cost tool from other HCS mainline analysis modules, such as the HCS two-lane highway or HCS multilane highway modules, or other WisDOT supported traffic analysis tools.

2.5.2.2.2 NPMRDS Analysis

Ideally, the evaluation of the no-build conditions will use a combination of both HCS results and NPMRDS data. Use of NPMRDS data allows the analysts to ground the HCS model results to field data, thus providing a realistic assessment of observed speeds. After completing the HCS analysis and reviewing the results for reasonableness, the analyst *should* pull the raw NPMRDS speed data for the OSOP(s). The benefit-cost tools use volume data from HCS and location code, time stamp, and speed data from NPMRDS to assess the no-build conditions. The benefit-cost tool contains detailed information on the NPMRDS data collection. If NPMRDS data is not available, the analyst can use HCS to calculate the speeds for use in the economic appraisal.

2.5.2.2.3 Vissim Analysis

It is important to determine the appropriateness of using Vissim as the models can be time consuming and expensive to complete. Conduct an initial economic appraisal following HCM-methodologies prior to considering a Vissim analysis. If initial economic appraisal results following HCM-methodologies are well below the thresholds, it is unlikely that a Vissim model will produce results that would meet the thresholds, thus decreasing the potential benefit of the extra level of effort. As such, limit the use of Vissim analysis to only those locations:

- with poor existing operations not accurately captured with higher-level analyses
- that do not fit within the confines of the HCM-methodology
- with improvement costs greater than $2.5 million, and/or
- that have economic appraisal results which border the thresholds

Contact BTO-TASU to discuss the potential use of Vissim before starting the analysis. If justified, use the Vissim models to obtain both the no-build and build results.

2.6 Conduct Economic Appraisal

The OCP uses benefit-cost metrics to determine program prioritization validity of proposed operational improvements. The benefit is determined by comparing the user-delay cost over the typical life expectancy of the perpetuation or rehabilitation improvement concept with and without the proposed operational improvements through calculating the net-present value.

BTO developed two Excel-based tools to calculate the benefit-cost metrics used in the economic appraisal, the *Intersection Benefit-Cost Tool* (IBCT) and the *Mainline Facility Benefit-Cost Tool* (MFBCT), both of which are able to analyze multiple alternatives at one or more OSOPs. The analyst enters information on the operational analysis results, the Safety Certification Process results, and the construction costs into the appropriate tool. The benefit-cost tools use the input to perform the associated safety and operational checks as outlined below (see section 2.6.2).

2.6.1 Construction Cost Estimate

The construction cost is the cost of the proposed operational improvement(s) being evaluated through the OCP, not the total project cost. These costs must include the construction costs and subsequent costs, including noise walls and associated real estate costs for the improvement. The economic appraisal *should* exclude any design or oversight costs and maintenance or operating costs.

If analyzing multiple improvements or locations, the economic appraisal *should* include the construction cost for all proposed improvements. However, the analyst must document and justify each individual improvement within the Operations Certification Summary.

2.6.2 Safety and Operational Checks

Proposed intersection and mainline improvements must pass a set of safety and operational checks in order to be considered for inclusion in a SHR-funded project.

The safety checks provide an assessment on whether the proposed operational improvement generates any safety disbenefits as defined under the Safety Certification Process (SCP), see FDM 11-38. In most cases, a safety disbenefit will result in denial of the improvement alternative regardless of the funding agency or source. BTO recommends conducting the safety check before running the operational analysis as a negative impact to safety for a proposed solution *may* deter further investigation.

The operational checks look at benefit-cost ratios to determine if the project has sufficient operational benefit to justify prioritization for inclusion in an approved SHR-improvement program project. If the proposed improvement does not meet the operational checks, it does not mean the project will not provide any operational benefits. It just means the benefits are not sufficient to justify shifting funding from prioritized projects and accepting a resultant decrease in system health.

There *may* be instances where an improvement does not meet the safety and operational checks but *should* have unique considerations for use of SHR funds. Coordinate with BTO-TASU, Bureau of Project Development (BPD), and Division of Transportation Investment Management (DTIM) – Office of Asset and Performance Management (OAPM) for additional review of these improvements. Unique considerations could include the conversion of an all-way stop-controlled intersection to a signalized intersection or an off-ramp with queues that exceed the ramp length and back out onto the freeway.

2.6.2.1 Safety and Operational Checks

There are three safety and operational checks for applicable for both intersections and mainlines:

1) Safety benefit-cost ratio must be 0 or greater
2) No increase in fatal and injury (KABC) crashes
3) Safety and operations benefit-cost ratio must be 3.0 or greater

Intersections have an additional operational check to assess the benefit to the STN. For intersections to qualify for 100% SHR funding, the STN-only benefit-cost ratio (SOBCR) must be 1.0 or greater. The SOBCR considers

operational benefits only and does not take into consideration any potential safety benefits to the STN. A SOBCR less than 1.0 *may* allow for less than 100% SHR improvement funding if all the following conditions are met:

1) All the other safety and operational checks received passing values,
2) A local or other approved non-SHR improvement funding source has been identified to cover the remaining project costs,
3) There is a signed State Municipal Financial Agreement within the FSC that documents the local share for the scope of the operational improvements.

The operational-driven improvements must pass all the above safety and operational checks to be considered for 100% SHR funding. If not all the checks are met, then there *may* still be an opportunity for partial funding. The OCP identifies improvements for funding consideration and does not guarantee funding.

2.6.2.2 Changes to Benefit-Cost Thresholds

DTIM-OAPM is responsible for maintaining the department's asset management metrics which identify system needs for prioritization of approved funding. Depending on level of needs and available funding, program prioritization thresholds can change over time. As DTIM-OAPM regularly performs necessary updates to the system asset management metrics, it will also determine if any adjustments to the benefit-cost thresholds occur.

16-30-3 Documentation **November 2023**

3.1 Operations Certification Summary

The purpose of the Operations Certification Summary is to articulate the purpose and need of the proposed improvements. A successful purpose and need clearly defines the system's needs, identifies the negative impacts to the system from those needs, and describes how each proposed improvement works individually and in harmony with any other individually proposed project improvements to cost effectively resolve the need.

The Operations Certification Summary must clearly explain and robustly justify the inter-dependent necessity of each improvement. The Operations Certification Summary **shall** identify the specific existing operational problem(s) at the OSOP, define the proposed improvements, and clearly illustrate how the improvements directly reduce or eliminate the operational problem(s) without degrading the overall safety of the OSOP.

The reason for requiring this type of documentation is illustrated in the following ways:

- It is very possible that one improvement element out of the several proposed for a site could be singularly generating more than the required benefit-cost ratio. Satisfying all the required checks within the OCP, *should not* arbitrarily allow the inclusion of other proposed improvements.
- The Operations Certification Summary must explain how and why all the individual improvement elements are necessary for the totality of the project as proposed.
- Failure to clearly identify and explain those engineering and operational linkages within the Operations Certification Summary could result in the rejection of some or all the proposed improvement elements.
- State Statutes 20.395(3)(cq) and 20.395(3)(cx) prohibit WisDOT from spending SHR-improvement funds on the local system without having documented justification on the direct STN benefits that expenditure provides. If the proposed project includes improvements to the local system, the Operations Certification Summary must clearly articulate the inter-dependent necessity of those improvements to the total project and how they provide direct operational or safety benefit to the STN to justify any expenditure of SHR improvement funds on them.

An Operations Certification Summary template along with the Operations Certification Summary Guidance document are available to guide the user on the content and format for the Operations Certification Summary itself. Submit the Operations Certification Summary as an attachment to the Safety and Operations Certification Document and submit to BTO-TASU for review. See FDM 11-38-15.1 for additional details on the Safety and Operations Certification Document.

3.2 Operations Certification Amendment

An amendment must be submitted if WisDOT regional staff want to consider other alternatives or additional operational improvements after the Safety and Operations Certification Document has been signed and the Operations Certification Summary has been approved. The new alternatives or additional operational improvements will need to follow the OCP. Document the results in the Operations Certification Summary amendment and attach to the Safety and Operations Certification Document amendment. See FDM 11-38-15.2 for additional details on the Safety and Operations Certification Document Amendment. If the project is still within

the scoping phase, the WisDOT regional analyst **shal**l include the amended Safety and Operations Certification Document within the FSC. The amended Safety and Operations Certification Document will supersede the original. If the amendment occurs after the scoping phase, the WisDOT regional analyst **shall** document the amended Safety and Operations Certification Document within the Design Study Report and environmental document, as appropriate.

An Operations Certification Summary Amendment template and Operations Certification Summary Amendment Guidance document are available to guide the user on the content and format of the amendment itself. Submit the Operations Certification Summary Amendment as an attachment to the Safety and Operations Certification Document Amendment and submit to BTO-TASU for review. See FDM 11-38-15 for additional details on the Safety and Operations Certification Document.

3.3 Project Approval and Funding

The OCP serves as an aid, not an absolute determinant, in the WisDOT SHR Scoping process. The OCP identifies when it is a valid asset management consideration to add the proposed operational improvements to a perpetuation or rehabilitation project. Passing the safety and operational checks during the economic appraisal validates consideration for adding the proposed improvement(s), but it does not automatically guarantee funding for the evaluated improvement(s).

Different variables can impact the SHR Improvement Program in either positive or negative ways with little or no advance notice. World events can trigger sudden economic downturns or upturns that *may* result in funding changes or rapid construction cost inflation which lead to re-calibration of asset management metrics and existing programming priorities. Recent or current OCP approvals *may* require reassessment under re-calibrated benefit-cost ratio values.

Similarly, certain highway segments within the SHR Improvement Program *may* experience unanticipated accelerated deterioration resulting from physical attributes or historically harsh weather conditions. This can require re-prioritization of needs and treatments within the SHR Improvement Program that could negatively impact previous program assumptions within a regional or statewide program.

Inclusion of operational improvements in the project's scope requires BTO-TASU approval of the OCP analysis methodology, Operations Certification Summary, and Safety and Operations Certification Document. BTO approval; however, does not guarantee funding. The regional programing unit (3R Program) or the BSHP (Backbone Program) has the final approval for including operational improvements into the FSC. WisDOT regional staff *should* work with the respective programming sections early in the process to discuss the system health impacts of adding additional operational improvement project costs to the program.