



Minnesota Weight Enforcement Investment Plan

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Acronyms/Definitions

Acronym	Definition
AADT	Annual Average Daily Traffic
ALPR	Automated License Plate Reader
CAV	Connected and Autonomous Vehicles
CHIP	Capital Highway Investment Plan
CMV	Commercial Motor Vehicle
CSAH	County State-Aid Highway
CVI	Commercial Vehicle Inspector
CVIC	Commercial Vehicle Interagency Committee
CVIEW	Commercial Vehicle Information Exchange Window
CVISN	Commercial Vehicle Information Systems and Networks
CVSA	Commercial Vehicle Safety Alliance
CVSP	Commercial Vehicle Safety Plan
CY17	Calendar Year 2017
DOT	Department of Transportation
DMS	Dynamic Message Sign
DPS	Department of Public Safety
FAF4	Freight Analysis Framework, Version 4
FAST	Fixing America's Surface Transportation
FFY	Federal Fiscal Year
FHWA	Federal Highway Administration
FMCSA	Federal Motor Carrier Safety Administration
FTE	Full Time Equivalent
GIS	Geographic Information System
HCAADT	Heavy Commercial Annual Average Daily Traffic
ITD	Innovative Technology Deployment
MCSAP	Motor Carrier Safety Assistance Program
MnDOT	Minnesota Department of Transportation
MOE	Maintenance of Effort
MOU	Memorandum of Understanding
MSP	Minnesota State Patrol
NHPP	National Highway Preservation Program
OFCVO	Office of Freight and Commercial Vehicle Operations
OOS	Out-of-Service
OSOW	Over-Size/Over-Weight
OTSM	Office of Transportation System Management
PBBT	Performance-Based Brake Testers
PCMS	Portable Changeable Message Sign
PA Other	Principal Arterials-Other
SEP	State Enforcement Plan
SFY	State Fiscal Year
STIP	State Transportation Improvement Program
TAMP	Transportation Asset Management Plan
TAMS	Transportation Asset Management System
VMT	Vehicle Miles Traveled
VWS	Virtual Weigh Station
WEIP	Weight Enforcement Investment Plan
WIM	Weigh-in-Motion



Minnesota Weight Enforcement Investment Plan

Acknowledgement

In partnership, the Minnesota Department of Transportation and Minnesota State Patrol directed Lakeside Engineers, LLC to develop the Minnesota Weight Enforcement Investment Plan. MnDOT provided the overall project management of the plan. A project team was created as a partnership between both agencies to attend the individual district meetings and help guide plan development.



In addition to the project team, a broader steering committee was formed with additional representatives from MnDOT and State Patrol, along with Federal Highway Administration (FHWA) and Federal Motor Carrier Safety Administration (FMCSA) personnel. The steering committee met six times throughout plan development to provide feedback on the project.

The Steering Committee roster is shown in the table below:

Plan Steering Committee

Name	Representing
Lt. Jean Cemensky	Minnesota State Patrol
Cpt. Jon Olsen	Minnesota State Patrol
Major Matt Sokol	Minnesota State Patrol
Terrence Beltz	Federal Highways Administration
Matthew Marrin	Federal Motor Carrier Safety Administration
Lynne Bly	MnDOT - Metro District
Chris Moates	MNDOT - Office of Maintenance - Building Services
Theodore Coulianos	MnDOT - Office of Freight and Commercial Vehicle Operations
Laura Roads	MnDOT - Office of Freight and Commercial Vehicle Operations
Brad Utecht	MNDOT - Office of Transportation System Management
Shaker Rabban	MNDOT - Office of Transportation System Management
Gene Hicks	MnDOT - Office of Transportation System Management
Benjamin Timerson	MnDOT - Office of Transportation System Management
Patrick Osborn	MnDOT - Weight and Safety Project Manager
Julie Whitcher	MnDOT - Weight and Safety Program Manager
Chris Quesnell	Lakeside Engineering
Amy Worzella	Lakeside Engineering
Brian Rahm	Lakeside Engineering



Executive Summary

The Minnesota Department of Transportation and Minnesota State Patrol are jointly responsible for the statewide commercial vehicle size, weight and safety enforcement program to protect public investment in highway infrastructure and ensure public safety related to commercial vehicle operations. To meet these goals, the agencies worked collaboratively to develop a 10-year **Weight Enforcement Investment Plan (WEIP)** for weigh station improvements and maintenance to ensure future compliance with federal requirements.

Several tasks were previously completed prior to development of the WEIP, including a planning-level workshop with various stakeholders, creation of a weight enforcement facility classification plan and a statewide needs assessment study for weight and safety enforcement operations. A key component to the needs assessment was outreach to field personnel in each MnDOT and State Patrol District and to freight industry stakeholders, including a survey and webinar, to gain valuable public input on the plan.

Minnesota's Commercial Vehicle Enforcement Program will require coordination with other MnDOT and State Patrol statewide initiatives and with different agencies at various levels. The WEIP will serve as a supporting document for MnDOT's Statewide Freight System and Investment Plan. For successful implementation, the strategic direction in the WEIP will need to be implemented in other commercial vehicle initiatives, such as the annual Commercial Vehicle Safety Plan (CVSP) and State Enforcement Plan (SEP).

During development of the WEIP, existing funding and program expenses were identified for related programs in MnDOT and the State Patrol. As outlined in the plan, due to the alignment of responsibilities, a majority of MnDOT expenses are facility-related, while a majority of State Patrol expenses are related to staffing. Both agencies currently use a blended funding source that includes both state and federal funds to meet their Commercial Vehicle Enforcement Program expenditure needs.

Future investments in weight enforcement facilities, along with enhancements to operations and maintenance, are organized into eight investment categories in the WEIP. The plan articulates specific needs that are anticipated in the next 10 years and other potential strategies for enhancing future commercial vehicle enforcement operations. These needs are organized into a Baseline funding scenario and three additional funding scenarios. The eight categories of needs identified in the WEIP include:

Investment in Existing Facilities – Specific investments at four facilities, including platform scale replacement, pavement rehabilitation and new technology.

Inspection Buildings – Inspection buildings at up to three existing facilities.

Coordination of Enforcement Pull-Off Areas – Strategies to coordinate future pull-off sites with the districts.

Improved Weigh-in-Motion Use – Locations to integrate cameras at existing WIM sites along with potential locations for mainline WIM in advance of existing weigh stations.

Portable Scale Replacement Plan – A procurement plan and budget to ensure State Patrol continues to have this critical patrol equipment in the future.

Increased Minnesota State Patrol Staffing – The number of additional State Patrol staff required to meet a future program goal for inspections, including potential wages, fringe benefits, and enforcement equipment investments.

Education and Outreach – The need for a strategic communications and outreach plan to be jointly developed between MnDOT and State Patrol.



Minnesota Weight Enforcement Investment Plan

Additional Weight Enforcement Facilities – Specific corridors for future enforcement facilities to provide an enforcement presence throughout the state.

Table ES 1 provides a summary of future capital and design investment needs, as well as the existing program funding levels, **which demonstrates a \$48.5 million funding gap over the next 10 years.**

Table ES 2 provides a summary of annual operations and maintenance costs within the existing program and future needs. This table demonstrates an annual funding gap of \$4.7 million, mostly related to costs targeted toward addressing the statewide need for additional enforcement staff. **Overall, an approximately \$96 million funding gap was identified,** which includes capital investments, design costs, annual operations and maintenance costs, and costs related to additional staffing needs.

Table ES 1: 10-Year Capital and Design Investment Summary

Investment Category	Future Needs Capital Costs	Future Needs Design Costs	Future Needs Total Costs	Existing Program Funding Level	Anticipated Funding Gap
Existing Facilities	\$3,650,000	\$550,000	\$4,200,000		
Inspection Buildings	\$6,000,000	\$900,000	\$6,900,000		
WIM Camera Integration	\$300,000	\$50,000	\$350,000		
Mainline WIM Installation	\$450,000	\$75,000	\$525,000		
New Facilities	\$50,750,000	\$7,600,000	\$58,350,000		
MnDOT Subtotal	\$61,150,000	\$9,175,000	\$70,325,000	\$25,000,000	\$45,325,000
Portable Scales	\$530,000	--	\$530,000		
Staff Wages and Fringe	--	--	--		
New Staff Equipment	\$2,675,000	--	\$2,675,000		
State Patrol Subtotal	\$3,205,000	--	\$3,205,000	\$0	\$3,205,000
Program Total =	\$64,355,000	\$9,175,000	\$73,530,000	\$25,000,000	\$48,530,000

Table ES 2: Annual Operations & Maintenance Investment Summary

Investment Category	Future Needs Operations & Maintenance Annual Costs	Existing Program Funding Level	Anticipated Annual Funding Gap
Existing Facilities	--		
Inspection Buildings	\$65,000		
WIM Camera Integration	--		
Mainline WIM Installation	\$10,000		
New Facilities	\$325,000		
MnDOT Subtotal	\$400,000	\$0	\$400,000
Portable Scales	--		
Staff Wages and Fringe	\$4,325,000		
New Staff Equipment	--		
State Patrol Subtotal	\$4,325,000	\$0	\$4,325,000
Annual Program Total =	\$4,725,000	\$0	\$4,725,000
10-Year Program Total =	\$47,250,000	\$0	\$47,250,000



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To meet this \$96 million funding gap over the 10-year investment target, several implementation steps are identified in the WEIP to assist the MnDOT and State Patrol with moving forward.

Key steps include:

- I. Identifying and coordinating potential future funding opportunities
- II. Developing a detailed concept of operations for specific weigh station locations
- III. Investigating technology enhancements
- IV. Enhancing performance measure reporting
- V. Implementing identified action items
- VI. Formalizing an MOU process to maintain the positive working relationship between MnDOT and State Patrol

The investments identified in this plan are intended to help guide the planning and decision-making within the program in the future. For that reason it is important to note that needs identified in the plan as well as the Needs Assessment Report in Appendix A are not currently programmed projects.

MnDOT and the State Patrol have endorsed **Investment Scenario A** as the preferred alternative to plan and program future projects for based on the findings of the Needs Assessment Report. In the absence of additional funding, MnDOT will use the Baseline Funding Scenario. Each of these alternatives are detailed in the Investment and Operations Plan section. Scenario C prioritizes maintaining the existing enforcement infrastructure at an increased level of maintenance and targeted expansion investment. The State Patrol will continue to operate with a goal of increasing the number and efficiency of inspections through staffing and technology increases. Together, MnDOT and State Patrol will seek opportunities for targeted programmatic expansion with additional funding based on the large range of needs and on the numerous benefits to the state for increasing safety through the commercial weight and safety enforcement program.

A majority of the current weigh station facilities were constructed 20 – 30 years ago, and truck traffic is projected to increase over the next 10 years due to increasing demand nationwide for on-demand delivery of freight and consumer goods. It is projected that the state will need to expend additional resources to proportionally serve this increased trucking demand to ensure the future efficiency and safety of the roadway system.

1 Introduction

The Minnesota Department of Transportation (MnDOT) and Minnesota Department of Public Safety (DPS), through the Minnesota State Patrol’s (MSP) Commercial Vehicle Enforcement Division, are jointly responsible for the statewide commercial motor vehicle size, weight and safety enforcement program. The two-fold purpose of the program is to ensure compliance with state commercial vehicle laws, rules and regulations to:

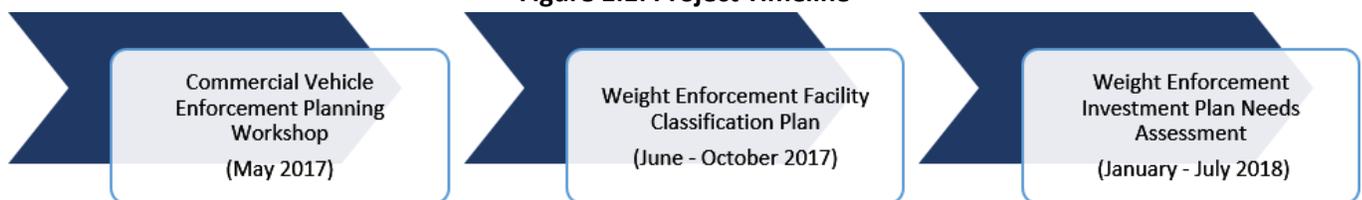
- **Protect public investment in Minnesota’s highway infrastructure** such as roadway pavements, bridges, railroad crossings, tunnels by enforcing size and weight laws
- **Ensure public safety** by enforcing equipment standards (brakes, tires, lights, load securement), carrier performance standards (operating authority, vehicle registration, and corporate safety record), driver fitness standards (licensure, physical/medical fitness, and hours of service) and driving regulations.

This enforcement program is both federally-required and a federally-approved program. This is an important distinction because federal funding can be withheld if the state does not carry out the program. Planning for the future direction of the program is necessary to efficiently and effectively allocate the resources of the state to meet current and future challenges. To that end, MnDOT and the State Patrol have partnered in a review of the statewide commercial vehicle size, weight and safety program. This effort has had two primary goals:

- To identify capital, operational and maintenance needs statewide for commercial vehicle size, weight and safety enforcement through collaboration with each MnDOT and State Patrol District as well as external partners
- To develop a 10-Year Weight Enforcement Investment Plan for weigh station improvements and maintenance

Several phases to this multi-stage project were previously completed. Each of these phases is summarized further in Figure 1.1 below. However, each of these project deliverables were used as a technical resource to the Weight Enforcement Investment Plan, which articulates a proposed 10-year investment plan for state-owned weigh stations, equipment and related facilities.

Figure 1.1: Project Timeline



1.1 Existing Facilities

As shown in Figure 1.2, across Minnesota there are six state-owned fixed-site roadside commercial vehicle enforcement scale facilities, including:

- St Croix (I-94 WB, Washington County)
- Saginaw (US 2 and MN 33, Saint Louis County)
- Worthington (I-90 EB, Nobles County)
- Erskine (US 2 and US 59, Polk County)
- Red River (I-94 EB, Clay County)
- Dayton Port (US 10, Anoka County)

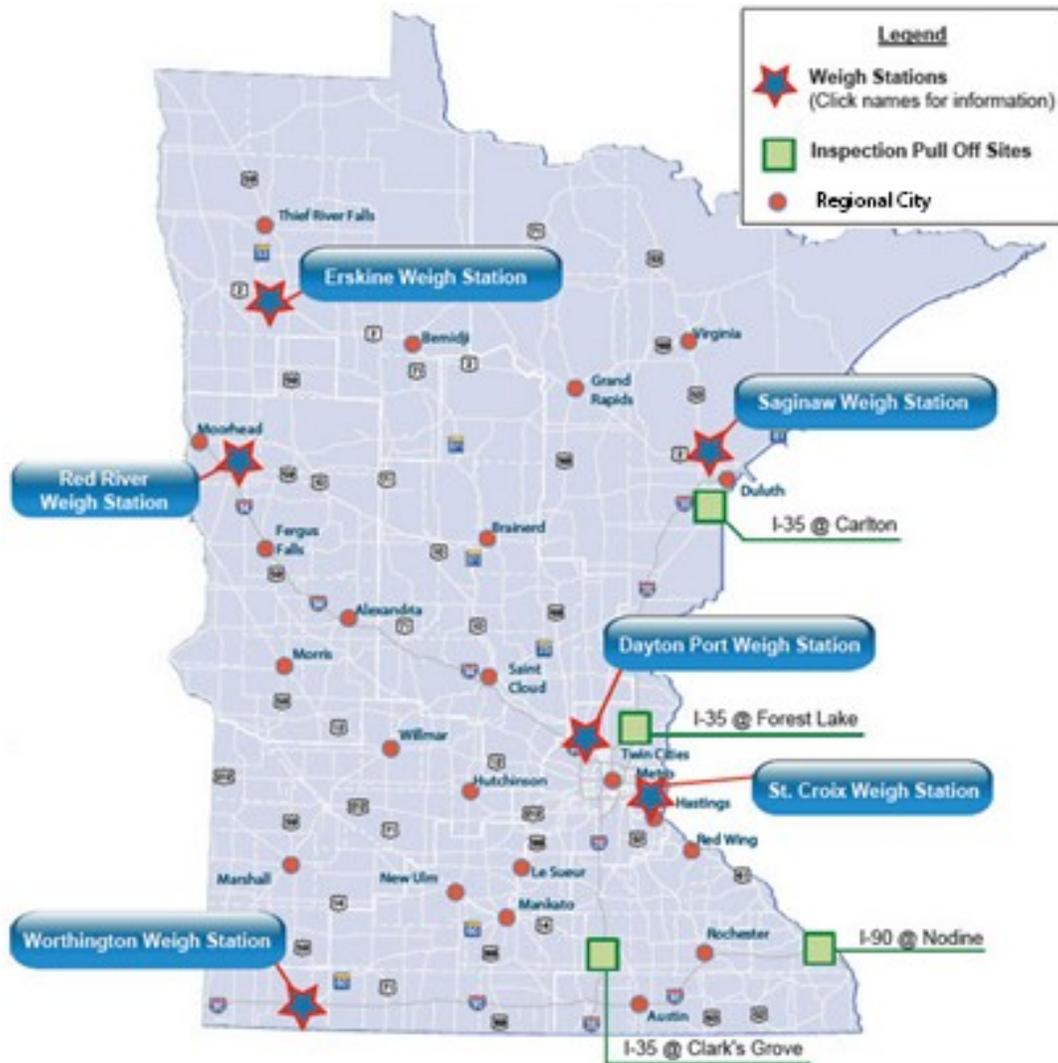
These fixed-site scales, including their buildings, roads, grounds, and related technological components and equipment, are owned and maintained by MnDOT, while operations at the facilities are staffed by Minnesota State Patrol personnel.

In addition, State Patrol personnel use four pairs of MnDOT-owned pull-off sites for commercial vehicle enforcement inspection activities, which often include the use of portable wheel-weigh scales or portable weigh-in-motion sensors. These pull-off sites are all located on interstate highways and include the following:

- Carlton (I-35 NB/SB, Carlton County)
- Clark’s Grove (I-35 NB/SB, Fremont County)
- Forest Lake (I-35 NB/SB, Washington County)
- Nodine (I-90 EB/WB, Winona County)

MnDOT also operates 16 weigh-in-motion installations around the state, which feature WIM sensors and vehicle detection embedded in the mainline pavement and integrated with a camera to provide a vehicle snapshot.

Figure 1.2: Minnesota State-Owned Commercial Vehicle Weigh Stations and Pull-Off Sites¹



¹ Minnesota Weigh Stations (<http://www.dot.state.mn.us/cvo/weighstations.html>)



1.2 Commercial Vehicle Enforcement Planning Workshop (Spring 2017)

On May 8, 2017, MnDOT hosted a workshop in St. Paul to discuss the current state of Minnesota’s commercial vehicle size, weight and safety enforcement program and to identify consensus on ways to improve the program moving forward. Workshop participants included a diverse array of subject matter experts from the four government agencies that comprise Minnesota’s Commercial Vehicle Interagency Committee (CVIC): MnDOT, the State Patrol, the Minnesota division offices of the Federal Motor Carrier Safety Administration (FMCSA) and the Federal Highway Administration (FHWA).

The workshop had three primary objectives:

- To update participants on relevant recent legislative actions and implementation of the Innovative Technology Deployment (ITD) program and potential impacts on the program’s vision
- To reach a shared vision among the participating agencies on steps necessary to continue and improve Minnesota’s commercial vehicle size, weight and safety program over the next 10 years
- To identify next steps and CVIC member involvement in:
 - Development of a 10-year weight and safety enforcement investment and operations plan
 - Agreement on the process and to clarify CVIC’s role in the development of the plan

Workshop participants engaged in a Strengths/Weaknesses/Opportunities/Threats (SWOT) exercise that focused on the current statewide size, weight and safety enforcement program. Workshop participants were also tasked with identifying strategies that need to be in place in the 2020-2030 timeframe to deliver a more effective statewide commercial vehicle weight and safety program. The results of this exercise are summarized in Table 1.1 below.

Table 1.1: Enforcement Planning Workshop Vision Card Exercise Results (5/8/2017)

Category	Strategy
Bring MSP/CVE to the Table to Plan	<ul style="list-style-type: none"> • Collaboration on construction projects • Involve patrol in MNDOT scoping process • Bring traffic planning and enforcement together • Maintain interagency coordination
Asset Management Plan	<ul style="list-style-type: none"> • Develop a data driven investment plan • Analyze existing system and strategies • Develop current system map • Proactive not reactive • A comprehensive asset management plan
Modernize Enforcement	<ul style="list-style-type: none"> • More portable WIMs for enforcement specific use • Small intermittent use sites • Construct modern facilities improvements • Scale evasion and avoidance technology • Evaluate and implement new technologies (cross-division/agency) • Weight component to pre-clearance
Establish a Fiscal Plan	<ul style="list-style-type: none"> • Dedicated and sustainable funding sources • A funding mechanism in place • Coordinated budget planning between MnDOT and State Patrol



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Category	Strategy
Cooperation Between Border States	<ul style="list-style-type: none"> • Cooperation between the border states • Inter-state coordination
Operations Management Plan	<ul style="list-style-type: none"> • Develop and implement operations plan • Set and monitor performance measures • Establish maintenance and operations plan to preserve program • Establish recruitment and succession plan for State Patrol staff
Outreach/Advocacy	<ul style="list-style-type: none"> • Legislative champion for enforcement • Develop education program (for legislators and legal system) • Redefine authority of commercial vehicle inspectors • Marketing and communications plan to show needs • Explore education of legal bodies (judges, attorneys, etc.)
Other/Uncategorized	<ul style="list-style-type: none"> • Develop and implement truck size and weight strategic plan • Decision process for enforcement locations • Establish autonomous vehicle rules

Note: Table Categories and Strategies identified at the Workshop are not arranged in priority order

Workshop participants agreed that a long term capital investment and operations plan was needed to provide direction for the commercial vehicle size, weight, and safety enforcement program. It was proposed that a 10 year plan should be developed, similar to MnDOT’s 10-year Capital Highway Investment Plan (CHIP). It was further agreed that the Commercial Vehicle Interagency Committee should be responsible for getting work started on plan development, but that it should not lead the study or provide detailed guidance. Instead, a plan steering committee would be appointed that would include the subject matter expertise and would be responsible for time-sensitive decision-making. It was also acknowledged CVIC would provide final plan approval and further coordinate with the MnDOT Transportation Program Investment Committee.

1.3 Weight Enforcement Facility Classification

In June 2017, a consulting firm was engaged by MnDOT to assist with the first phase in the development of a 10-year capital investment and operations plan for their array of the agency’s commercial vehicle enforcement facilities. The requested work product was a proposed classification system and concept of operations for each type of facility. The work product was delivered in October 2017 and accepted by the CVIC. The full report is available in Appendix D. It articulated a series of classifications that accounted for existing commercial vehicle enforcement sites and potential future sites. Five commercial vehicle size and weight enforcement facility classifications for MnDOT and State Patrol to apply when considering future investment in existing or new facilities were identified. They varied by location, purpose, infrastructure, technology, and concepts of operation, as shown in Table 1.2 below.



Minnesota Weight Enforcement Investment Plan

Table 1.2: Classification System for Weight Enforcement Facilities

Classification Type	
Class A – Major Site	
Current Examples	Existing St. Croix and Red River scales
Description	Full weigh station (scale and building) with WIM on ramps and internal bypass system.
Concept of Operations	Enhanced, full scale weigh designed to allow legal size/weight vehicles to bypass within or near the site. Able to process large number of trucks per hour of operation. Generally located on Interstate system. May serve as Point of Entry, but can be at internal location if truck volume is high enough. Sufficiently staffed to be open at least 80 hours/week. Features permanent building and usually enhanced with additional technology (weigh-in-motion, over-height detection, vehicle detection). Scales are multiple platforms to allow most trucks to be weighed in one stage. Operations and signing allow operation by a civilian Commercial Vehicle Inspector (CVI) without a sworn officer on site.
Class B – Intermediate Site	
Current Examples	Existing Worthington, Erskine, Saginaw and Dayton Port scales
Description	Smaller weigh station (scale and building) with no internal bypassing.
Concept of Operations	Weigh station with at least one platform scale and a permanent building for operations. Generally located on Interstate system, other freeway/expressway and other principal arterials. Sufficiently staffed to be open at least 40 hours/week. May be enhanced with additional technology (WIM, overheight detection, vehicle detection). Ideally, scales are multiple platforms to allow most trucks to be weighed in one stage. Operations and signing allow operation by a civilian CVI without a sworn officer on site.
Class C – Minor Site	
Current Examples	Proposed upgraded Forest Lake SB and Clark’s Grove NB pull-off sites
Description	Pull-off site with additional equipment and technology; may or may not include a building.
Concept of Operations	Pull-off site to allow enforcement personnel to weigh trucks and perform inspections. Geometry adequate for truck maneuvering and safety of enforcement personnel, and includes permanently-installed equipment and technology (platform scale or WIM). May feature temporary shelter to enhance weight and inspection operations. Mainline vehicle sorting may be used. Generally located on freeway/expressway or other principal arterial. Sufficiently staffed to be open 16 hours/week. May be used for saturation patrols. Adequate signing to allow operation by CVI without a sworn officer on site.
Class D – Pull-Off Site	
Current Examples	Existing Carlton NB/SB, Nodine EB/WB, and Clark’s Grove SB pull-off sites
Description	Pull-off site with enhancements for additional equipment and technology; may or may not include a building.
Concept of Operations	Pull-off site to allow enforcement personnel to weigh trucks and perform inspections. Geometry adequate for truck maneuvering and officer safety, but no permanently-installed equipment or technology and no building. Generally located on freeway/expressway, other principal arterial or minor arterial. Staffed only intermittently. May be used for saturation patrols. Sworn personnel must be present for operations.
Class E – Virtual/Technology Site	
Current Examples	Existing WIM sites with cameras and proposed installation on USH 52 at Butler Ave



Classification Type	
Description	MnDOT Planning-purpose WIM site or a Virtual Weigh Station (VWS) site with integrated cameras and identified location(s) downstream to safely pull commercial vehicles over (such as widened paved shoulder or public agency property).
Concept of Operations	Focused on technology installation and operation. Limited non-mainline pavement infrastructure required. Technology systems allow sworn personnel to screen trucks via standard practice patrol operations. Generally located on lower volume roadways, including collector and local function roads, or to monitor scale bypass routes or supplement other commercial vehicle enforcement efforts. Features adequate accommodation for officer staging in/near the mainline and safe, easily-accessible inspection location, such as over-wide paved shoulder or existing off-mainline public agency property. No minimum staffing expectation, but site is available for use by individual sworn officers or for saturation patrols.

Functional Classification and truck traffic volume estimates – Heavy Commercial Annual Average Daily Traffic (HCAADT) are the two primary roadway characteristics that should be utilized when evaluating an existing or proposed location to determine the most appropriate weight enforcement facility type, as illustrated in the following Table 1.3.

Table 1.3: Matrix for Determining Weight Enforcement Facility Classification

	Interstate Highway	Other Freeways & Expressways	Other Principal Arterial	Minor Arterial	Collector/ Local Road
> 2,200 HCAADT	Class A Major	Class A Major			
800 – 2,200 HCAADT	Class B Intermediate	Class B Intermediate	Class B Intermediate		
400 – 800 HCAADT	Class C Minor	Class C Minor	Class C Minor		
< 400 HCAADT	Class D Pull-Off	Class D Pull-Off	Class D Pull-Off	Class D Pull-Off	
N/A	Class E Virtual	Class E Virtual	Class E Virtual	Class E Virtual	Class E Virtual

Functional Classification and HCAADT are not the sole determinants of a commercial vehicle enforcement facility type. A number of other relevant criteria should be considered during the evaluation, one or more of which may be decisive in implementing a lower tiered facility than what would result from simple application of the table shown above. Initial evaluation criteria were proposed for use in development of the 10-year capital investment and operations plan as factors with which to evaluate existing and proposed enforcement sites. The proposed evaluation criteria consisted of five main categories: Enforcement/Safety, Infrastructure, Freight, Geographic, and Roadway Characteristics. Within each category were two data-centric measures that will serve as the basis for a statewide, corridor-specific evaluation effort. This evaluation criteria was further refined throughout the Needs Assessment process (see Section 1.4).



1.4 Needs Assessment Overview

The second phase of the development of the 10-Year WEIP included a comprehensive needs assessment report. The needs identified from district and statewide stakeholders were used to develop the 10-year investment plan. Staff in each MnDOT and State Patrol district, and central office personnel, had an opportunity to attend a meeting held on-site to discuss existing and future needs for the weight enforcement program. These district and central office meetings elicited valuable, well-informed input from participants. Many different types of existing and potential future needs were identified. Project staff assessed all of the input and prioritized the results using a data-based model.

The Needs Assessment identified existing needs and new needs. In general, the majority of new needs identified are representative of the gap in current funding. An evaluation of these needs was conducted as part of the effort to understand the priority of each needs site and type. A ranking of the needs was conducted and needs identified in High, Medium, Low priority order. In addition, to ensure future geographic coverage of any additional funding available needs were also identified by each district so that future project coordination could focus on the top needs in each area. (Additional details are available in the Needs Assessment Report located in Appendix A.)

The needs and recommended steps to address them fell into eight distinct issue areas, as follows:

- **Investment in Existing Facilities** – Investments should continue in the six existing weigh stations to implement a specific list of future needs.
- **Inspection Buildings** – Class A sites should be targeted for future inspection buildings improvements.
- **Coordination of Enforcement Pull-Off Areas** – Focusing on specific sites identified in the district meetings, combined with improved coordination and communication between MnDOT and State Patrol, will result in enhanced planning and implementation of future pull-off sites.
- **Improved Weigh-in-Motion Utilization** – Strategies were identified for better use of WIM technology, including additional maintenance, integrated cameras, mainline WIM and portable WIM.
- **Portable Scale Replacement Plan** – Planning for replacement of portable scales will ensure State Patrol has the tools required to perform effective patrol operations.
- **Increased Minnesota State Patrol Staffing** – Based on an analysis of comparable states, Minnesota should strive to increase the number of inspections performed, which will require an increase in staff.
- **Education and Outreach** – Identifying a commercial vehicle enforcement champion and developing a marketing and communications plan will enhance existing education and outreach efforts.
- **Additional Weight Enforcement Facilities** – Over 70 locations meriting consideration for construction of new weight enforcement facilities or installation of WIM technology were identified. A multi-factor evaluation process was used to sort these candidate locations into high/medium/low priority under Constrained and Unconstrained scenarios. Locations with a HIGH ranking in each scenario were identified and are shown in Table 1.4 below. The top-rated locations in each district for both scenarios are shown in Table 1.5.

Within the needs assessment analysis, each of these needs categories represented an equally important area of improvement for which additional investment would provide better safety and enforcement outcomes. For example, additional investment in new facilities would provide greater coverage of enforcement across the state but would require additional staffing to operate, which would optimize that investment.



Minnesota Weight Enforcement Investment Plan

For that reason, future funding of projects was prioritized through a program evaluation by MnDOT and the State Patrol. This linked process was used to develop a series of investment scenarios identified later in this plan. Future efforts will be pursued to connect the endorsed scenario into MnDOT's Capital Highway Investment Plan as projects are formally selected for preliminary scoping.

Table 1.4: High Priority Results

D.#	Hwy	Location	County	Constrained Analysis	Un-Constrained Analysis
1.1	I-535	Blatnik Bridge / WIM #38	Saint Louis	✓	✓
3.2	I-94	Between MN 101 and MN 24	Wright		✓
4.1	I-94	Red River Weigh Station (EB)	Clay	✓	✓
M.1	I-494	Between US 12 and MN 55	Hennepin	✓	✓
M.2	I-35W	Between I-494 and MN 13	Dakota/Hennepin	✓	✓
M.3	I-94	St. Croix Weigh Station (WB)	Washington	✓	✓
M.4	I-94	Between MN 610 and MN 101	Hennepin	✓	✓
M.5	US 12	Near Metro District west border	Hennepin		✓
M.11	US 52	Butler Ave Pull-Off Site/#40 WIM	Dakota	✓	✓
6.2	I-90	Between Rochester and Fremont	Olmsted/Winona	✓	✓
6.3	US 52	WIM #32	Olmsted	✓	✓
6.12	I-90	Nodine Pull-Off Sites (EB&WB)	Winona	✓	
8.8	MN 23	West of Willmar	Kandiyohi	✓	
8.10	US 71	North of Willmar	Kandiyohi	✓	✓
8.15	MN 212	WIM #33 (East of Olivia)	Renville	✓	

Table 1.5: Top District Needs

D.#	Hwy	Location	County	Constrained Analysis	Un-Constrained Analysis
1.1	I-535	Blatnik Bridge / WIM #38	Saint Louis	✓	✓
2.1	MN 11	Between Warroad and Baudette	Lake of the Woods/ Roseau	✓	
2.6	US 2 / US 59	Erskine Weigh Station (NB&SB)	Polk	✓	
2.3	CSAH 87	Between US 71 and MN 64	Hubbard		✓
3.3	MN 28	Sauk Centre to Little Falls	Morrison/ Todd	✓	
3.2	I-94	Between MN 101 and MN 24	Wright		✓
4.1	I-94	Red River Weigh Station (EB)	Clay	✓	✓
M.3	I-94	St. Croix Weigh Station (WB)	Washington	✓	
M.1	I-494	Between US 12 and MN 55	Hennepin		✓
M.4	I-94	Between MN 610 and MN 101	Hennepin		✓
6.3	US 52	WIM #32	Olmsted	✓	
6.2	I-90	Between Rochester and Fremont	Olmsted/Winona		✓
7.1	US 169	North of St. Peter	Nicollet	✓	✓
8.10	US 71	North of Willmar	Kandiyohi	✓	✓



1.5 Public Engagement and Stakeholder Outreach

During the development of a statewide plan, gathering input from the public and other interested stakeholder is an important step in the plan development process. MnDOT and State Patrol staff developed a strategic plan of public engagement and outreach for the Weight Enforcement Investment Plan. This process began prior to starting the Needs Assessment Report and was a vital step in gaining input from a wide range of stakeholders. The overall public engagement and outreach included the district meetings with internal and external stakeholders throughout the state in February to May 2018, and additional efforts that are detailed in this section. These meetings were designed to elicit input on:

- Safety and weight enforcement patrol experience
- Facility needs at existing weigh station and WIM sites
- Vulnerable pavement and bridge infrastructure in need of protection from overweight vehicles
- Future safety and weight enforcement needs (enforcement sites, facilities, operations, rest area usage), including identification of specific locations or corridors meriting enhanced enforcement
- Opportunities to coordinate new enforcement facilities with planned highway construction projects

This was also an opportunity for district representatives to provide insight and suggestions on the plan development process. In every district meeting, internal stakeholders from MnDOT and State Patrol participated in an interactive exercise to solicit detailed site and corridor-specific input on locations that merited further consideration for new, upgraded or enhanced commercial vehicle enforcement facilities or resources. The results of the district meeting mapping exercises were summarized in the Needs Assessment Report.

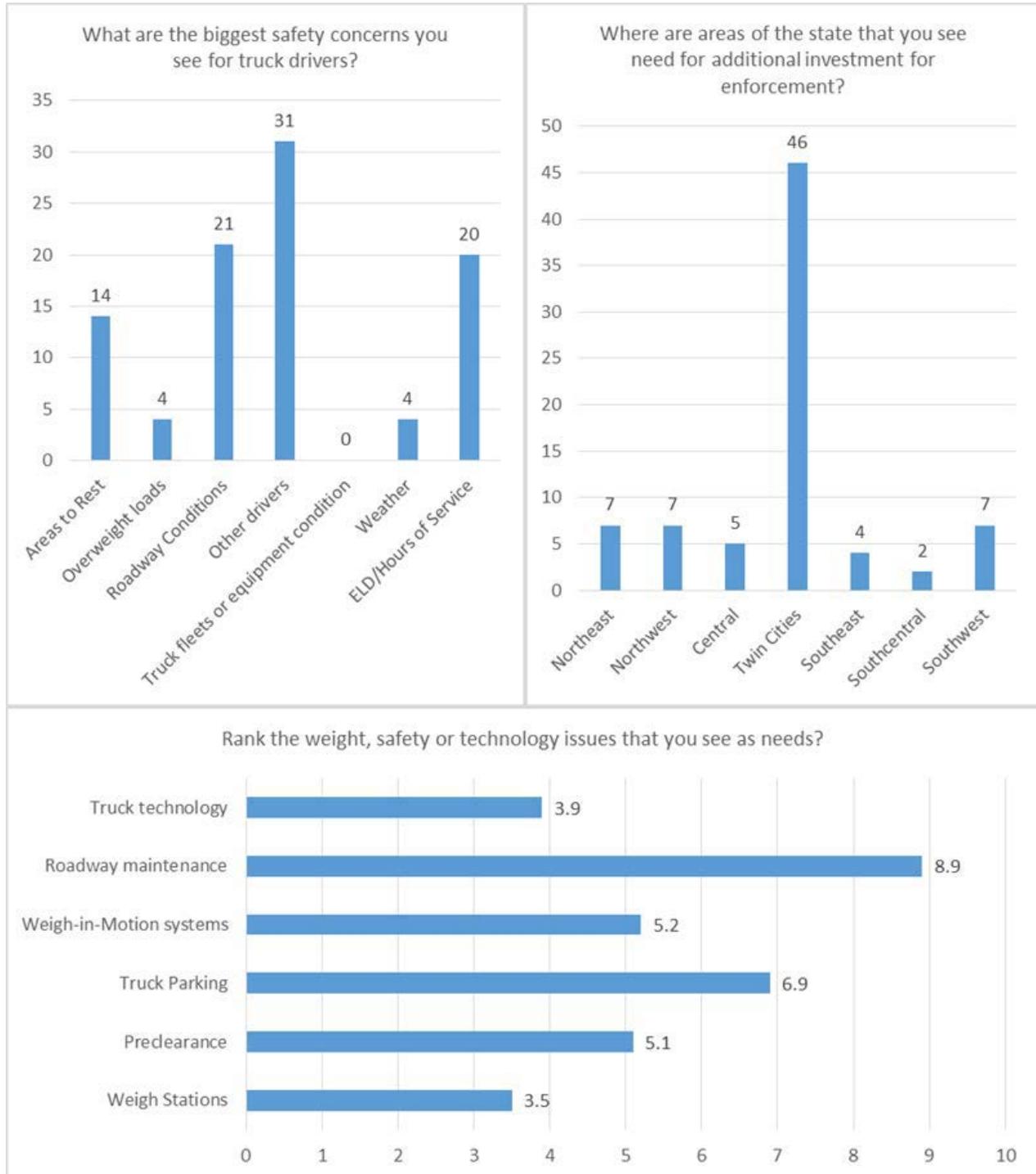
The plan project team, consisting of staff from MnDOT and the State Patrol, also made presentations to the Commercial Vehicle Interagency Committee, the Metropolitan District Capital Investment Committee and the Minnesota Freight Advisory Committee to gain additional input from a wide range of internal and external stakeholders. Staff from MnDOT and the State Patrol also met separately with representatives of the Minnesota Trucking Association to gain input and to provide an overview of the development of the plan.

In addition, a public webinar was held on June 12, 2018 to gain additional input on the final draft version of the Needs Assessment Report from members of the public, trucking company representatives, and local government partners who were unable to attend the regional district meetings. The webinar introduced the plan's purpose, the need for weight and safety enforcement, future steps for plan development and an online interactive survey. The online survey was completed by webinar attendees and other stakeholders who were invited to participate. These invitations were sent to approximately 3,000 contacts throughout the state known to have an interest in the trucking industry. The results of the survey indicated respondents were most concerned about safety related to other drivers. They saw the Twin Cities as the area needing more enforcement, and they were most concerned with roadway maintenance and truck parking issues. The results of the survey are summarized in Figure 1.3 below.



Minnesota Weight Enforcement Investment Plan

Figure 1.3: Public Survey Results (June 2018)



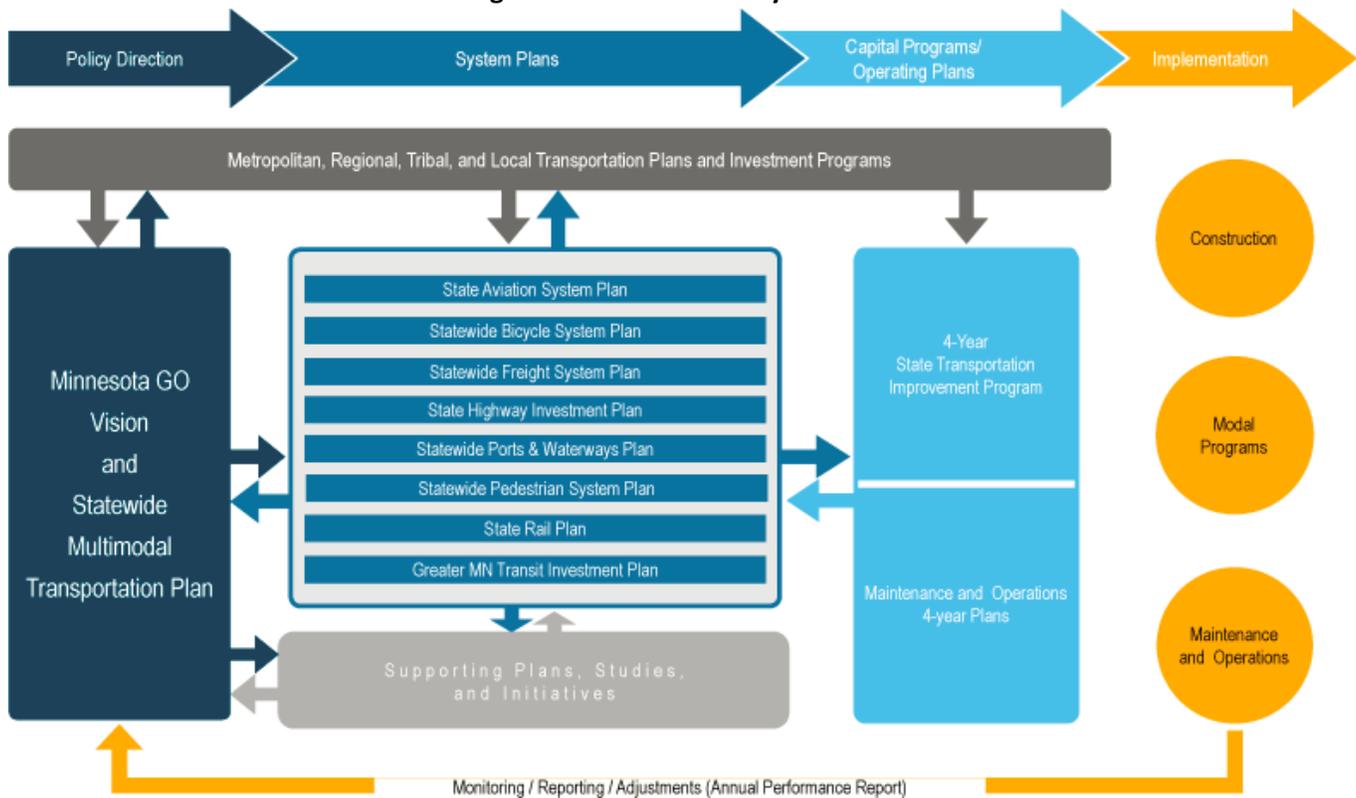
2 Relationship to Plans and Programs

There are many other plans and programs within MnDOT and State Patrol that support the commercial vehicle weight and safety enforcement program. Some of these plans provide direct guidance to the program, such as enforcement-specific plans, while others have indirect impact on future planning for weight enforcement facilities. In addition, there are laws, other agencies and border states/provinces that directly affect certain elements of the commercial vehicle enforcement program. It is important to understand the relationships of these various plans and programs to coordinate the future of commercial vehicle weight and safety enforcement in Minnesota.

2.1 Minnesota State Plans and Programs

MnDOT manages many different plans throughout the state and uses a methodology to ensure these plans align with one another. The Minnesota GO Vision and the Statewide Multimodal Transportation Plan are plans outlining overall policy direction and are the umbrella for the family of individual system plans. Figure 2.1 below illustrates the relationship of the plans to one another. The Weight Enforcement Investment Plan (WEIP) would be a supporting plan (*gray box in the bottom center of Figure 2.1*) with the goal of integrating into the Statewide Freight System and Investment Plan.

Figure 2.1: MnDOT Family of Plans²



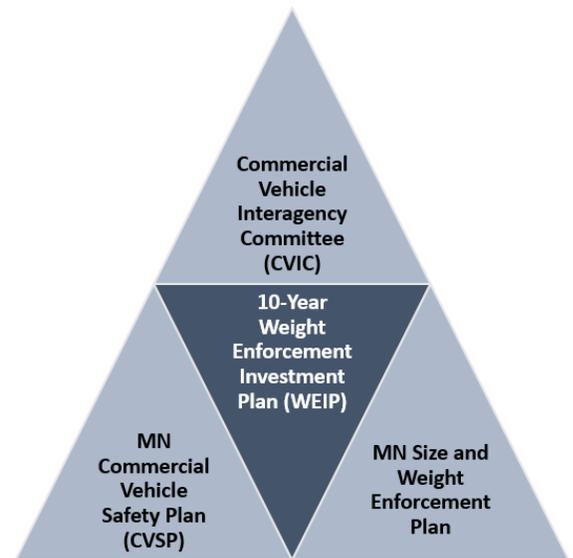
² MnDOT Family of Plans (<https://www.dot.state.mn.us/minnesotago/index50yearvision.html>)

Statewide Freight System and Investment Plan

The Minnesota Statewide Freight System and Investment Plan outlines several goals in alignment with the national Fixing America’s Surface Transportation Act of 2015 or FAST Act. These include preserving key freight infrastructure, safeguarding Minnesotans, and targeted improvements to freight mobility. These three goals are also critical goals of the state’s commercial vehicle enforcement program. With these aligned goals, the WEIP is a logical supporting document for the Statewide Freight System and Investment Plan in the future. One purpose of integrating the WEIP into the Statewide Freight Plan is to coordinate future funding opportunities and management of future strategy implementation.

Commercial Vehicle Enforcement Program

The organization of the Commercial Vehicle Enforcement Program requires collaboration and coordination between MnDOT and the State Patrol to operate a successful program. These two state agencies have different functions, with MnDOT being responsible for weigh station infrastructure and maintenance and State Patrol is responsible for weigh station and patrol operations. Due to this organization, the Commercial Vehicle Interagency Committee is the diverse, multi- agency executive committee responsible for leadership of the commercial vehicle enforcement program. The annual Commercial Vehicle Safety Plan is implemented by State Patrol with a focus on improving safety and is required for Minnesota to obtain federal MCSAP grant funding. The annual State Enforcement Plan is implemented by MnDOT with a focus on infrastructure preservation and is required for Minnesota to demonstrate to FHWA that the state is operating a size and weight enforcement program. Both of these annual plans will coordinate with the long range WEIP to implement the strategic goals identified in the WEIP. In addition, the SEP and CVSP will utilize the planned investments in the WEIP to improve safety and infrastructure preservation in the future.



State Transportation Improvement Program / Capital Highway Investment Plan

MnDOT programs their planned improvements in a four-Year State Transportation Improvement Program known as the STIP, which is required by federal law and identifies planned projects in a 10-Year Capital Highway Investment Plan, known as the CHIP. The WEIP will be an essential tool to communicate and justify needed commercial vehicle enforcement investments statewide. Future projects would then be incorporated as projects in the STIP and CHIP. The STIP contains the projects that MnDOT has committed to and the CHIP contains projects that are in the planning stage. In addition, the CHIP is an opportunity for MnDOT to coordinate with State Patrol the construction of potential pull-off locations or the widening of paved shoulders. Future weight enforcement capital investments will need to be coordinated with the STIP and CHIP to effectively use state and federal road construction funding.

Transportation Asset Management Plan

Asset management is an important strategy to effectively manage the Commercial Vehicle Enforcement Program’s infrastructure, such as weigh stations. Proper asset management impacts these assets throughout their entire life cycle, from planning through operations and maintenance.



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MnDOT is in the process of deploying a Transportation Asset Management System (TAMS) that is initially focusing on signals, lighting, signs, and maintenance. MnDOT plans to eventually integrate the weigh station program into the TAMS. Benefits of integrating with the TAMS will include tracking of inventory, condition of assets, maintenance cost tracking, and reporting features.

To prepare for initial integration with TAMS, MnDOT’s existing weigh station sites were previously inventoried, with estimated values determined for each site. This inventory includes buildings, equipment, electronic signs and various scale components. The information is tracked in a Weigh Scale Asset Inventory that MnDOT maintains. Table 2.1 below provides a summary of the estimated value for each weigh station site, with a total estimated value of approximately

\$19.5 million for all weigh station infrastructure statewide. This estimate does include recent pavement improvements at St. Croix and Worthington, but it does not include pavement infrastructure for the remaining sites. Also, land value and real estate interests for each site are not included in the final inventory cost.

Table 2.1: Weigh Scale Asset Tracking as of 2017

	Building	Equipment & Technology	Pavement Improvement ¹	Total
Carlton	\$286,567	--	--	\$286,567
Clark’s Grove	\$100,000	\$920,000	\$1,700,000	\$2,720,000
Dayton Port	\$271,000	\$323,782	--	\$594,782
Erskine	\$867,541	\$547,098	--	\$1,414,639
Forest Lake	\$100,000	\$670,000	\$1,700,000	\$2,470,000
Red River	\$1,522,457	\$671,682	--	\$2,194,139
Saginaw	\$635,038	\$1,306,214	--	\$1,941,252
St Croix	\$1,768,962	\$1,469,262	\$1,196,725	\$4,434,949
Worthington	\$1,293,558	\$648,656	\$1,493,773	\$3,435,987
Total Inventory Value	\$6,845,123	\$6,556,694	\$6,090,498	\$19,492,315

Note: Pavement estimates are uninflated replacement costs

20-Year Strategic Building Plan

In parallel with the WEIP, MnDOT is also undertaking a study to develop a 20-Year Strategic Building Plan. The scope of this plan is to review existing buildings under MnDOT jurisdiction (totaling approximately 1,000 statewide) and to identify future building needs both from a capital investment and preservation perspective. Building-specific information identified in the WEIP will be shared with the MnDOT Building Services Section to be incorporated into their strategic plan. This 20-Year Strategic Building Plan is expected to be completed after completion of the WEIP.

The Strategic Building Plan is also relevant to the Commercial Vehicle Enforcement Program since the Building Services Section currently supports the weigh station facilities in several ways. First, from a funding perspective, buildings statewide currently have an \$18 million annual budget for maintenance and improvements. Funding is allocated to each district for maintenance needs based on a cost per square foot basis. This is how funding for weigh station building maintenance is currently determined.

Every two years, additional funding requests are made for bonding by MnDOT. For example, the most recent 2018 legislative bonding request is for \$40 million over two years. Secondly, the Building Services Section are a partner that support weigh station facilities through the planning and design phases of building improvements.



2.2 Laws Impacting Weight Enforcement Strategies

In Minnesota, any state or local sworn law enforcement officer has legal authority to take enforcement action upon observing traffic law violations committed by commercial motor vehicle (CMV) operators, as well as when detecting violations of driver licensing, vehicle registration, and vehicle equipment and size/configuration laws.

There are several Minnesota State Statutes that guide the truck enforcement capabilities of the Minnesota State Patrol. Under *Minnesota Statute Section 169.85 (2017) Weighing; Penalty* the driver of a vehicle that has been lawfully stopped by an officer may be required to submit the vehicle and load to a weighing by means of stationary or portable scales. The officer can require the vehicle be driven to the nearest available scale under two conditions:

- The distance to the scales is no more than 5 miles or the distance from the place of stopping to the vehicle's destination is not increased by more than 10 miles as a consequence of proceeding to the nearest available scales, and
- If the vehicle is a CMV, there can be no more than two other CMV's waiting to be inspected at the scale

Official, authorized traffic control devices can be used to direct the driver to the nearest scale. In addition, whenever a truck weight enforcement operation is conducted using stationary or portable scales, informational signs giving notice of the operation must be posted adjacent to the roadway within two miles of the operation. Drivers of trucks or combination vehicles registered for or with a gross vehicle weight over 10,000-lbs must proceed to the scale site and submit the vehicle to weighing and inspection. Drivers who fail to comply are guilty of a misdemeanor. Furthermore, a peace officer can arrest a driver if they have probable cause to believe the driver has operated their vehicle in violation of the duty to stop and submit to weighing and inspection within the previous four hours.

When used in Minn. Stats. §169.85 the term "officer" includes:

- Minnesota State Patrol trooper
- A peace officer (or a person under the officer's direction and control) employed by a local unit of government who is trained in weight enforcement by the Minnesota DPS
- A civilian employee of the State Patrol trained to enforce motor vehicle equipment, size and weight laws and the North American uniform out-of-service criteria and other duties, as described in *Minnesota Statute 299D.06 (2017) Patrol Employees Who Are Not Troopers*. This statute is important in understanding the restrictions and requirements for operating facilities with non-sworn civilian CVI's only.

Another weight enforcement strategy for State Patrol is issuing civil weight penalties. Under *Minnesota Statutes Section 169.872 Receipt of Certain Overweight Loads*, businesses that weigh goods before or after unloading must keep a written record of the origin, weight and composition of each shipment, the date of loading or receipt, name and address of the shipper, number of axles on the vehicle, and registration number of the powerunit (or some other means of identification) by which the shipment was transported. These records must be retained for at least 14 days and are open to inspection and copying by a state law enforcement officer or motor transport representative upon demand. No search warrant is required to inspect or copy the record.



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Some exemptions exist for farm products. Using the record of shipment as relevant evidence, the officer or representative may assess a civil penalty for excessive weight under Minnesota Statutes Section 169.871 Excess Weight; Civil Penalty if they inspected and copied the record within 14 days of the date the shipment was received and assessed the penalty within 90 days of the date of inspection/copying.

Criminal violations may be prosecuted against individuals who violate state and federal commercial vehicle weight or size regulations. In Minnesota, commercial vehicle inspectors or CVIs provide enforcement duties at key weigh station sites. They are enforcement personnel that specialize in commercial vehicle enforcement but have a limited range of abilities due to the fact that they are not sworn/licensed law enforcement officers. CVIs generally report to a State Patrol sworn staff sergeant.

For truck operators there are driver regulations, vehicle regulations, vehicle registration and licensing. Many trucking companies are subject to commercial company regulations as well. A majority of these are identified in the Minnesota Commercial Truck and Passenger Regulations which is updated on a regular basis. These are available at: www.dot.state.mn.us/cvo.

In Minnesota, all paved routes are regulated as 10-ton routes unless posted with a sign indicating a lesser axle weight limit. On these routes any vehicle combination with five or more properly spaced axles must have a maximum limit of 80,000 pounds. Any single axle must not be loaded to above 20,000 pounds. All unpaved routes are regulated at 9-ton routes unless posted with a sign indicating a lesser axle weight. Any single axle must not be loaded to above 18,000 pounds. Bridges can be loaded rated and regulated at less than these limits based on the local road authorities posting. There are also seasonal load restrictions on dates identified by the Commissioner of Transportation based on engineering analysis. Vehicles must also adhere to dimensional limits as identified by Minnesota Statutes Section 169.80 and 169.81. These place limitations for safety on the size and dimensions of vehicles that may be operated on Minnesota's highways.

If a vehicle does not meet these regulations truck carriers and operators may apply for a special permit for oversize, overweight vehicles. This permitting process is reviewed by MnDOT to ensure the safety of the traveling public.

Many states use advanced technology, such as cameras to read license plates and US DOT numbers, to identify trucks as they approach roadside safety and weight enforcement facilities. Those vehicles that are unlikely to have safety or credential violations are allowed to legally bypass the scale when open for operations and to continue on their way without having to stop. This screening process is different than traditional preclearance programs that only screen vehicles subscribed to that service. However, restrictions in Minnesota law regulating the use of automated license plate readers by law enforcement [see Minnesota Statutes Section 13.824 and 626.8472 Automated License Plate Reader Policy] preclude the practical application of this technology by State Patrol personnel at roadside scales. This Weight Enforcement Investment Plan does not discuss use of ALPRs due to interpretation of existing Minnesota State Statutes.

2.3 County/Local Law Enforcement Role

County and municipal law enforcement agencies are authorized to enforce county/municipal traffic ordinances that are in conformity with state statutes, including those dealing with commercial vehicle safety, weight and dimension. There are approximately 12 local agencies in Minnesota with a total of only 13 officers who are certified to perform truck inspections.

The State Patrol also provides training to these local law enforcement officers. These officers perform limited inspections within the MnDOT fixed scale facilities and generally perform their inspections as part of their local patrol operations.

Local law enforcement participating in commercial vehicle inspections are not funded through the MCSAP grant. As MnDOT, the State Patrol and local law enforcement stakeholders work together in the future the legal environment identified in this section will help to provide guidance as to how to coordinate moving forward.

2.4 Coordination with Other States and Canadian Provinces

Minnesota shares land borders with four states (Wisconsin, Iowa, South Dakota and North Dakota) and two Canadian provinces (Ontario and Manitoba). Each state has different laws related to size and weight, depending on the roadway classification. Minnesota also has border reciprocity agreements in place with all four neighboring states and one Canadian province regarding vehicle registration and fuel tax. In the United States, commercial motor vehicles are allowed to cross state lines freely in both directions, without interruption until they encounter an open state-operated size, weight and safety inspection facility. Figure 2.2 illustrates the fixed-site commercial vehicle safety and weight enforcement facilities operated by neighboring jurisdictions on highways leading into and out of Minnesota.

Figure 2.2: Regional Weigh Station Map





Minnesota Weight Enforcement Investment Plan

Peer comparisons to the commercial vehicle enforcement programs with Iowa and Wisconsin were completed as part of this project and are included as Appendix C. These comparisons include narrative text related to program staffing, recent investments, program funding, and a summary of recent program enhancements.

These comparisons are included to demonstrate how Minnesota’s most similar Border States are operating their commercial vehicle enforcement program.

At all seven of Minnesota’s international border crossings with Canada, all inbound vehicles from Canada must stop for inspection by the US Customs and Border Protection Likewise, all outbound vehicles leaving Minnesota to enter Ontario or Manitoba must stop for inspection by the Canada Border Service Agency. In 2017, according to CBP entry data, over 57,000 commercial trucks (with nearly 32,000 empty containers), more than 1,500 buses, and over one million passenger vehicles entered Minnesota from Canada. However, inbound traffic volume totals varied greatly among the seven Minnesota ports of entry, as shown in Table 2.2 below.

All inbound trucks from Canada must stop for the CBP Primary Inspection process, which is a paperwork review (i.e. driver identification/credentials, vehicle credentials, and customs documents for the cargo). Some trucks (typically more than 20 percent) are selected for a Secondary Inspection by CBP. The nature and degree of scrutiny of these inspections vary depending on the reason for selection (e.g. paperwork problems, suspicious driver condition, vehicle/container integrity). However, the primary focus of all CBP truck inspections is on maintaining border security (e.g. preventing entry by illegal/ineligible persons, detecting contraband), not on ensuring a vehicle’s compliance with state or provincial size/weight laws.

Table 2.2: Vehicle Entries from Canada to Minnesota in 2017³

Port Name	MN Highway	Trucks	Truck Containers Full	Truck Containers Empty	Buses	Personal Vehicles
Baudette	International Dr	7,066	420	7,948	87	167,629
Grand Portage	MN 61	15,452	11,884	6,202	767	227,047
Intl Falls-Ranier	US 71	19,038	15,761	6,441	235	413,376
Lancaster	US 59	4,268	760	4,157	14	25,321
Pinecreek	MN 89	574	6	665	-	3,786
Roseau	MN 310	5,047	3,658	2,217	11	42,340
Warroad	MN 313	6,027	2,692	4,321	432	129,230
Total		57,472	35,181	31,951	1,546	1,008,729

Minnesota is one of 15 states eligible for using funds for border enforcement activities through the Basic and Incentive Grant since it shares an international border with Canada. The FMCSA provides funding for border activities through the Basic and Incentive Grant to assist with the truck enforcement of international border crossings. State Patrol personnel track their time while on patrol near specific border crossings or while inspecting a truck at a fixed- weighted facility with an origin or destination in Canada. The FAST Act modified FMCSA’s nine grants programs into four grants. Motor Carrier Safety Assistance Program (MCSAP) grants programs consolidated starting with FY2017 into one single formula-driven program. Prior to the FAST Act funding existed as a separate standalone border enforcement grant program.

³ [USDOT Bureau of Statistics Border Crossing Entry Data](https://data.transportation.gov/Research-and-Statistics/Border-Crossing-Entry-Data/keg4-3bc2/data) (https://data.transportation.gov/Research-and-Statistics/Border-Crossing-Entry-Data/keg4-3bc2/data), note that some trucks operate with twin trailers and the total for trucks is less than the sum of empty and full containers.



3 Capital, Operations, and Maintenance Costs

The first step to develop this investment plan was to understand past capital investments, as well as costs associated with operations and maintenance of existing weigh station facilities. The past capital investments demonstrate not only what specific improvements were made, but also the past investment strategy of the program. The existing operations and maintenance costs help establish the on-going funding levels needed for operations, maintenance, and staffing for existing facilities and proposed new facilities.

3.1 Historical Capital Investments

MnDOT’s capital investments in weight enforcement facilities over the last five years have focused on improving the existing six weigh stations and are summarized in Table 3.1. These facilities were in need of building repairs, pavement repairs, platform scale rehabilitation, technology upgrades, and permanent signing improvements. These investments have generally been funded by OFCVO operations funding for projects less than \$75,000 and by National Highway Preservation Program (NHPP) funding for higher cost projects.

Table 3.1: Capital Investments in MnDOT Weigh Stations Since 2012

Site	Description	Description
St. Croix	<ul style="list-style-type: none"> Rehabilitation, including pavement, pit/platform, replaced WIM, static scale electronics, new over-height detection, new public address system 	<ul style="list-style-type: none"> Lighting replaced (combined with Dayton Port) Camera system replaced – Within facility Camera replaced – Mainline
Red River	<ul style="list-style-type: none"> Rehabilitation including new WIM, static scale electronics, overheight detection, pavement, pit rehabilitation/pavement removal, and fully automated screening 	<ul style="list-style-type: none"> Camera system replaced – Within facility Lighting replacement (combined with Erskine and Saginaw)
Worthington	<ul style="list-style-type: none"> Pavement and lighting replaced Building rehabilitation Platform scale pit rehabilitation 	<ul style="list-style-type: none"> Replaced scale electronics, open signs, overheight detection and VMS Camera system replaced
Saginaw	<ul style="list-style-type: none"> Replaced VMS, scoreboard, public address system, and overheight detection Camera system replaced Replaced scale electronics 	<ul style="list-style-type: none"> Pit rehabilitation, platform replacement, new load cells Replaced open signs Lighting replacement (combined with Erskine and Red River)
Erskine	<ul style="list-style-type: none"> Replaced platforms, electronics, and load cells Replaced scale electronics and overheight detection Replaced scoreboard, VMS, and public address system 	<ul style="list-style-type: none"> Replaced open signs Lighting replacement (combined with Red River and Saginaw) Camera system replacement – Within facility Camera replacement – Mainline
Dayton Port	<ul style="list-style-type: none"> Replaced scale electronics and overheight detection Camera system replaced 	<ul style="list-style-type: none"> Replaced open signs Lighting replaced (combined with St. Croix
Clark’s Grove	<ul style="list-style-type: none"> District completed overlay on the southbound ramps as part of a highway project but not the parking lot 	



Minnesota Weight Enforcement Investment Plan

In addition to these recently completed projects, several projects are planned for implementation in 2018, as shown in Table 3.2 below. These projects are programmed projects. Program status means that they are committed financially, but were not implemented prior to development of this 10-year Weight Enforcement Investment Plan. Most of these projects are being funded through OFCVO operations funding and NHPP funding, while the Clark’s Grove improvements are utilizing federal FAST Act freight funding from the Minnesota Highway Freight Program.

Table 3.2: Planned Capital Investments in MnDOT Weigh Stations for 2018

Site	Description
Red River	<ul style="list-style-type: none"> • Lighting replacement (combined with Erskine and Saginaw) • Camera replacement • Replace open signs
Saginaw	<ul style="list-style-type: none"> • Lighting replacement (combined with Erskine and Red River)
Erskine	<ul style="list-style-type: none"> • Pavement rehabilitation • Lighting replacement (combined with Saginaw and Red River) • Camera replacement (on-site and at intersections)
Clark’s Grove NB	<ul style="list-style-type: none"> • Equipment and technology enhancements including a platform scale, temporary shelter, mainline WIM, ramp WIM, VMS, and lighting • Camera installation
Forest Lake SB	<ul style="list-style-type: none"> • Equipment and technology enhancements including a platform scale, temporary shelter, ramp WIM, VMS, and lighting • Camera installation

3.2 MnDOT Program Expenses

Operations and maintenance of the commercial vehicle enforcement program requires dedicated staffing from both MnDOT and the State Patrol. MnDOT is responsible for facility maintenance as well as program management for the weigh station facilities. This maintenance is completed by a variety of District staff, but no personnel are formally assigned to a facility from a maintenance perspective. The number of hours and costs associated with these maintenance activities are included in the building maintenance summary shown below in Table 3.4. In addition, MnDOT is responsible for overall program management of all six weigh station facilities. These tasks include serving as the point of contact for maintenance needs, coordinating facility improvements, and asset management planning statewide of weigh station facilities. Through the OFCVO, MnDOT has dedicated one FTE position titled Weigh Scale Program Specialist. Having a dedicated FTE to the statewide weigh station program is important to ensure effective operation of these facilities. This position is supported by a Supervisor, who is responsible for the weigh station program as well as several other office functions. The weigh station program portion of this supervisory role is estimated to be 0.33 FTE. These two positions (totaling 1.33 FTE) are supported by an Assistant Office Director, Office Director, and other staff through varying levels of effort that are not separately quantified.

Table 3.3 below shows the financial commitment from MnDOT related to their 1.0 FTE Program Specialist and 0.33 FTE supervisor. This table uses SFY17 payroll data provided by Minnesota Management and Budget and assumes a fringe benefit rate of 36.3%. This fringe rate was based on the federal FFY17 CVSP and includes FICA, retirement and insurance benefits.



Minnesota Weight Enforcement Investment Plan

Table 3.3: MnDOT Financial Staff Commitment (SFY17)

Position	Payroll	Fringe	Total Financial Commitment
100% Program Specialist, plus 33% Supervisor	\$99,471	\$36,108	\$135,579

The MnDOT Districts are responsible for providing general maintenance of each weigh station facility. These tasks include both building and site maintenance. Building maintenance includes activities such as cleaning, supplies, building system components, and other general building needs. Site maintenance includes activities such as mowing, plowing and infrastructure repairs. Related facility maintenance information tracked by District staff includes staff time, travel expenses, equipment usage, supplies, utility services, and other purchased services.

This information is tracked by building identification number and is categorized based on the function. Table 3.4 provides a summary of facility maintenance (building and site maintenance) costs for the six MnDOT weigh stations during the five most recent state fiscal years (SFY13-SFY17), as recorded in the Statewide Integrated Financial Tools (SWIFT) system. Information shown in the table was compiled by facility class to determine the average annual cost by facility class. Class A facilities required approximately \$80,000/year for District maintenance, and Class B facilities required approximately \$50,000/year.

Table 3.3: Maintenance Costs for MnDOT Weigh Stations (SFY13-SFY17)

Code	Category	Class A 5-Year Total Cost St. Croix, Red River	Class B 5-Year Total Cost Erskine, Saginaw, Worthington, Dayton Port
152	Support Services	\$379	\$0
3405	Facilities Management	\$8,796	\$11,920
3410	Building Exterior	\$68,317	\$33,158
3411	Building Interior	\$60,071	\$35,528
3412	Building HVAC	\$30,926	\$11,274
3413	Building Plumbing	\$33,518	\$27,016
3414	Building Electrical	\$35,332	\$44,938
3415	Building Equipment Repairs	\$5,899	\$9,622
3416	Building Roofing	\$1,551	\$736
3417	Building Automation Systems	\$23,126	\$36,411
3418	Building Preventative Maintenance	\$144	\$4,754
3420	Building Construction	\$6,973	\$130,729
3432	Building Parking Lots/Driveway/Sidewalk	\$990	\$19,050
3436	Building Wastewater Systems	\$4,637	\$73,440
3437	Building Water Systems	\$1,078	\$411
3450	Building Cleaning/Janitorial	\$206,690	\$82,682
3452	Furniture/Misc Moves	\$626	\$30,056
3453	Building Lawn Mowing & Trimming	\$208	\$0
3454	Building Grounds Maintenance	\$6,849	\$33,411
3460	Building Operations	\$233,873	\$110,830



Minnesota Weight Enforcement Investment Plan

Code	Category	Class A 5-Year Total Cost St. Croix, Red River	Class B 5-Year Total Cost Erskine, Saginaw, Worthington, Dayton Port
3474	Building Construction Document	\$0	\$917
Average Annual Cost Per Facility		\$782,229/ 5 years / 2 sites = \$78,223/site	\$1,004,754/ 5 years/ 4 sites = \$50,238/site

In addition to District maintenance funding, the OFCVO has used operations funding to support the weigh station program. This funding has ranged between \$300,000 and \$500,000 per year. This funding has been used for lower cost improvement projects, repairs on existing systems, supplies, technology, software, and design consultants. Expenditures from this funding source varies each year as needs are identified for all eligible purposes within the breadth of OFCVO responsibility. Table 3.5 below provides a summary of estimated annual MnDOT expenses related to the commercial vehicle enforcement program.

Table 3.4: MnDOT Estimated Annual Program Expenses

Category	Estimated Annual Program Expense	Percent of Total
OFCVO Staffing	\$135,600	5%
District and Building Services Facility Maintenance	\$357,400	12%
OFCVO Operations Expenses	\$400,000	14%
OFCVO Capital Improvements	\$2,000,000	69%
Total	\$2,893,000	100%

From a MnDOT perspective, annual program expenses are approximately \$2.9 million to operate and maintain the weigh station facilities. 95% of these program expenses are related to facility maintenance, operations, and capital improvements, with only the remaining 5% associated with dedicated staffing expenses from OFCVO.

3.3 State Patrol Program Expenses

Minnesota State Patrol District 4700 manages overall expenses for the various program components. These expenses include all program costs, such as employee salaries and fringe benefits, leasing, equipment, IT/communications, and supply costs. Table 3.6 shows the state-funded and federally-funded expenses, separated into eight main program categories in SFY 17.

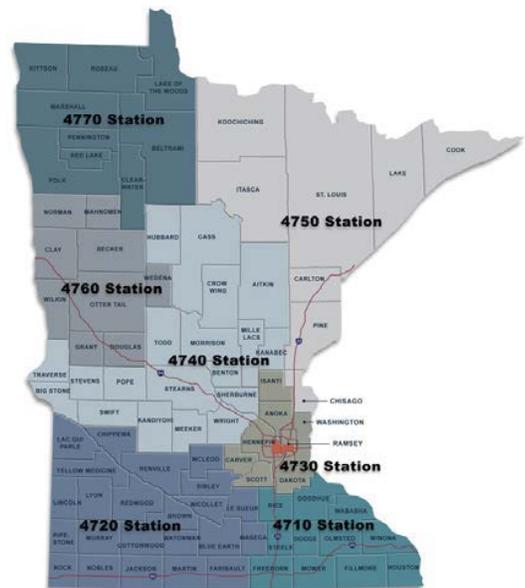
Table 3.5: State Patrol District 4700 SFY17 Expenses

Category	State Funding Expense	State Funding Grant Match Expense	Federal Funding Expense	SFY17 Total Expenses	Percent of Total
Weigh Scale	4,609,197	--	--	4,609,197	36%
Mandatory Inspection Program (MIP)	253,533	--	--	253,533	2%
School Bus	1,533,347	--	--	1,533,347	12%
State IT	297,271	--	--	297,271	2%
MCSAP Grant	--	1,570,495	4,110,012	5,680,508	44%
High Priority Grant	--	73,675	77,989	151,664	1%
Border Enforcement Grant	--	--	212,006	212,006	1.5%
Red Dyed Fuel	--	--	212,656	212,656	1.5%
Total	\$6,693,350	\$1,644,170	\$4,612,665	\$12,950,186	100%

The most significant expense in State Patrol’s budget is related to employee expenses. Further review of these annual expenses indicates that 75% of the overall program expenses are related to employee salaries, overtime, and other employee costs. As part of these expenses, State Patrol District 4700 has statewide responsibility for commercial vehicle enforcement including operation of weigh stations, patrol/mobile operations, school bus inspections, training and outreach, and many other ancillary tasks. District 4700 is organized in seven multi-county stations.⁴

District 4700 is led by a Captain, with additional leadership involvement from a Major and Colonel within the State Patrol. Reporting to the Captain are Lieutenants, each of whom is in charge of a Station or the School Pupil Transportation program and administrative functions. These Lieutenants provide leadership to a variety of different personnel including:

- Commercial Vehicle Inspectors (CVIs) Sergeants
- CVIs
- Office staff
- Troopers
- School Bus CVIs



⁴ Minnesota State Patrol District 4700 (<https://dps.mn.gov/divisions/msp/commercial-vehicles/Pages/contact.aspx>)



4 Funding

The commercial vehicle enforcement program has historically utilized various funding sources for improving, operating and maintaining the weigh station facilities. For many years, this funding has been derived from both federal and state funds. This section describes the various programs which have provided funding for the commercial vehicle enforcement program in the past.

4.1 Federal Motor Carrier Safety Administration Grants

The Federal Motor Carrier Safety Administration is the federal agency with primary responsibility for administering various grants nationwide related to state-operated commercial vehicle enforcement programs. The most significant FMCSA grant program is the Motor Carrier Safety Assistance Program (MCSAP), which provides a significant amount of funding to State Patrol and MnDOT to support the statewide commercial vehicle enforcement program. State Patrol is the primary grantee and is responsible for submitting an annual CVSP as Minnesota's request for federal funds. State Patrol estimates the non-school bus assigned personnel spend approximately 65% of their time conducting MCSAP related activities. This includes staff costs (wages and fringe), equipment, vehicle, and supplies. State Patrol also estimates that school bus assigned personnel spend approximately 28% of their time conducting MCSAP related activities. As part of this statewide program, MnDOT is a sub-grantee of State Patrol for costs associated with administering the statewide New Entrant program, public outreach and education, CVSA inspections, and compliance reviews. Table 4.1 below shows the annual awards Minnesota has received in MCSAP Basic grants over the most recent five federal fiscal years, as well as funding received from the High Priority Grant, Border Enforcement Grant, and New Entrant Grant.

The High Priority grant program is an FMCSA funding source designed to provide financial assistance to enhance MCSAP-related activities identified in the state's annual CVSP. The primary goal of this grant program is to improve commercial vehicle safety throughout the state through specifically-defined enhanced motor carrier enforcement efforts. In the recent past, State Patrol has used High Priority grant funding for targeting priority corridors or cities, motor coach inspections, and speed measurement equipment.

Minnesota is one of 15 states eligible for border activities funding through the Basic and Incentive Grant since it shares an international border with Canada. This funding provides for staff time dedicated to truck enforcement activities, such as commercial vehicle inspections, associated with screening commercial traffic near the northern border. State Patrol performs mobile operations on routes near the Canada border and tracks their time devoted to these functions.

FMCSA also promotes and supports the New Entrant Safety Assurance Program through funding grants. The program goal is to reduce CMV involved crashes through safety audits conducted on interstate motor carriers. This program is managed by MnDOT personnel where the grant funding is used for salaries and related expenses to administer the program. The New Entrant grant was combined with the MCSAP grant in FFY17.

Minnesota's eligibility for these grant programs is contingent on compliance with the FMCSA's requirements for commercial vehicle safety enforcement. The Secretary may withhold up to 5 percent of funds during the fiscal year that the Secretary notifies the State of its noncompliance; up to 10 percent of funds for the first full fiscal year of noncompliance; up to 25 percent of funds for the second full fiscal year of noncompliance; and not more than 50 percent of funds for the third and any subsequent full fiscal year of noncompliance.

The FHWA has the ability to withhold 10% of all federal-aid highway funds including the surface transportation block grant programs if the state does not conduct acceptable enforcement or fails to submit a Strategic Plan.



Table 4.6: FMCSA Grant Award History

Fiscal Year	MCSAP Grant Award	High Priority Grant Award	Border Enforcement Grant Award	New Entrant Grant Award	Total Federal Grant Award
FFY2017	\$6,113,737	\$379,037	--	--	\$6,492,774
FFY2016	\$3,840,990	\$294,700	\$285,000	\$572,254	\$4,992,944
FFY2015	\$4,029,177	\$262,635	\$300,000	\$761,355	\$5,353,167
FFY2014	\$3,990,248	\$0	\$270,000	\$717,459	\$4,977,707
FFY2013	\$3,708,637	\$0	\$0	\$462,777	\$4,171,414
				5-Year Average =	\$5,197,601

4.2 State Patrol Operations Funding

As shown through the State Patrol District 4700 program expenses in Section 3.4 above, staffing and operations funding is supported by federal grants or through a state budget allocation. The federal grant funding is further detailed in Section 4.1 above. The state funding for District 4700 in SFY17 was approximately \$8.3 million, or 64% of the total program funding. The state funding is a key component to the commercial vehicle enforcement program since it is required as a match for MCSAP funding (15%) and as a Planned Maintenance of Effort (MOE) for the grant. The MOE is the funding level the state must maintain in order to demonstrate their commitment to a state-funded commercial vehicle enforcement program and remain eligible for federal MCSAP funds. In FFY17, Minnesota demonstrated a Planned MOE level at approximately \$1.2 million.

4.3 MnDOT Operations and Maintenance Funding

Operations and maintenance funding for MnDOT is divided between staffing commitments, OFCVO program funding, District maintenance efforts, and Building Services allocations. From a staffing perspective, the 1.33 dedicated FTE detailed in Section 3.2 is state-funded through a separate state budget appropriation for the purposes of commercial vehicle operations. In addition to staffing, the OFCVO receives an annual state budget allocation for all Office functions. This funding is then distributed to the different sections of the Office based on the needs of each group. The funding level allocated by OFCVO to their weigh station program has varied from year to year. For example, this amount was approximately \$550,000 in SFY17 but only \$305,000 in SFY18. This funding source has been used for low cost (under

\$75,000) improvements to facilities, technology acquisition, and supplies. For planning purposes, this funding level is estimated to be approximately \$400,000 per year on average in the future.

A significant portion of the routine maintenance for the existing weigh stations is funded through each MnDOT District’s maintenance budget. This program is funded through state operations funding. The maintenance staff is responsible for building, site and pavement maintenance. Using the cost data described in Section 3.2 above, the average annual costs to maintain all six existing weigh station facilities is about \$360,000 per year. The planning of any new facilities should be coordinated with District maintenance staff to estimate the maintenance funding and level of effort required as well as increase the maintenance funding levels necessary for the new facility. A portion of on-going weigh station maintenance costs is funded as part of the budget allocation from the Building Services Section. The allotment of money allocated to each individual weigh station building from Building Services is detailed in Table 4.2 below. The rates provided in the table indicate a new facility could have a portion of its building maintenance funding allocated.



Table 4.7: Building Maintenance Budget Allocation

Site Names	Building Type	Building Number	Gross Area (Sq.Ft.)	Building Complexity Factory (BCF)	Adjusted Area (Sq.Ft.)	Facility Maintenance Program (FMP) (\$0.624/Sq.Ft.)
SAGINAW	WEIGH SCALE	92125	1,824	5.0	9,120	\$5,691
ERSKINE	WEIGH SCALE	92042	1,442	5.0	7,210	\$4,499
RED RIVER	WEIGH SCALE	92054	2,852	5.0	14,260	\$8,898
WORTHINGTON	WEIGH SCALE	92119	2,220	5.0	11,100	\$6,926
ST CROIX	WEIGH SCALE	92129	3,212	5.0	16,060	\$10,021
DAYTON PORT	WEIGH SCALE	92139	669	5.0	3,345	\$2,087
					Total =	\$38,123

4.4 MnDOT Highway Improvement Program

The MnDOT highway improvement program – the National Highway Preservation Program (NHPP) and the Surface Transportation Block Grant Program (STBGP) – have historically provided a significant amount of funding for improvements to MnDOT weigh station facilities. The NHPP has provided a majority of the funding for the investments described in Section 3.1 above. In SFY16-17, \$1.1 million was allocated per year for weigh station improvements. This amount has been increased to \$2 million per year for SFY18-19. For purposes of future 10-year investment planning, it is assumed this \$2 million in funding per year will continue.

In some instances, the OFCVO has coordinated their NHPP allocation for commercial vehicle enforcement projects with MnDOT highway projects for a more effective use of those resources. This strategy is currently planned for the construction project on US 52 NB near Butler Avenue in St. Paul in 2021, where a widened shoulder will be installed for use by State Patrol for commercial vehicle inspection purposes. Another example is the planned improvement to operations on I-35 SB at the Forest Lake Pull-Off site, where enforcement technology enhancements will be combined with addressing pavement needs as part of this construction project in 2019-2020. Routine coordination between MnDOT District staff and State Patrol, and including State Patrol Commercial Vehicle Enforcement Unit in the project scoping process, will assist in more proactively identifying similar future opportunities. This practice will help leverage economies of scale for capital costs by coordinating future projects with MnDOT district projects where possible.

4.5 Fixing America’s Surface Transportation (FAST) Act Freight Funding

As part of the FAST Act signed into law in December, 2015, Minnesota was awarded approximately \$98 million of freight-related funding to be allocated to various projects statewide in keeping with the Act’s intention of improving the condition and performance of the National Highway Freight Network. Minnesota used the FAST Act funding which was distributed as the National Highway Freight Program (NHFP) and developed its own Minnesota Highway Freight Program (MHFP). For the planned improvements to Clark’s Grove NB, MnDOT used \$1,600,000 in FAST Act freight funding as part of the MHFP to be constructed in 2018.

FAST Act freight funding may continue to be a potential source of weigh station improvement funding in the future, especially if the NHFP program is continued in future federal budgets. MnDOT currently has programmed and allocated all of the available FAST Act dollars through FFY2022 in the MHFP and any remaining balances would be used for existing projects in the MHFP program.



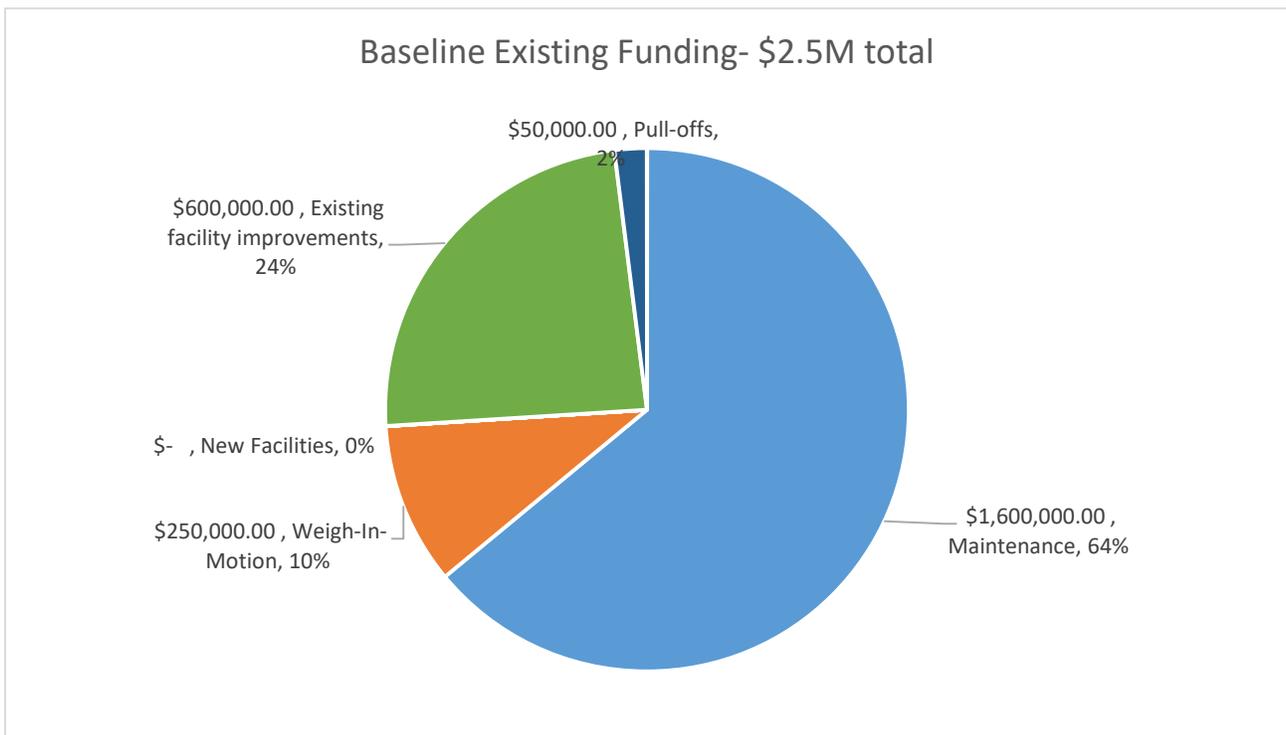
5 10-Year Investment and Operations Plan

Future investments in weight enforcement facilities, along with enhancements to operations and maintenance, were organized into eight investment categories described in the Needs Assessment Report (Appendix A). As demonstrated throughout the Needs Assessment Report, understanding operations and maintenance implications is critical when planning future investments for the commercial vehicle enforcement program. For example, investing in a new weigh station would incur not only construction costs, but could also require an increase in staffing by State Patrol, as well as an increased maintenance commitment from the MnDOT District and the Building Services Section. The subsections below articulate which needs are anticipated to be deployed in the next 10 years, as well as other potential strategies for enhancing future enforcement operations.

5.1 Investment Direction

Currently MnDOT uses a maintenance-heavy preservation investment approach that focuses on keeping existing structures, pavements, and technology at each of the existing weigh station facilities in good, serviceable condition. A majority of the existing weigh station enforcement sites were built 20-30 years ago and have a limited remaining operational service life. In recent years, related MnDOT expenditures have averaged \$2.5 million per year for capital or construction investment. This figure does not include the cost of routine maintenance activities, such as mowing, snow removal and janitorial services. As shown in Figure 5.1 below, this current funding level leaves only a small amount available for operational improvements that would increase the efficiency of facility operations or expand the capacity of the State Patrol to perform weight and safety enforcement.

Figure 5.1: Current Capital Expenditures by Investment Category 2017

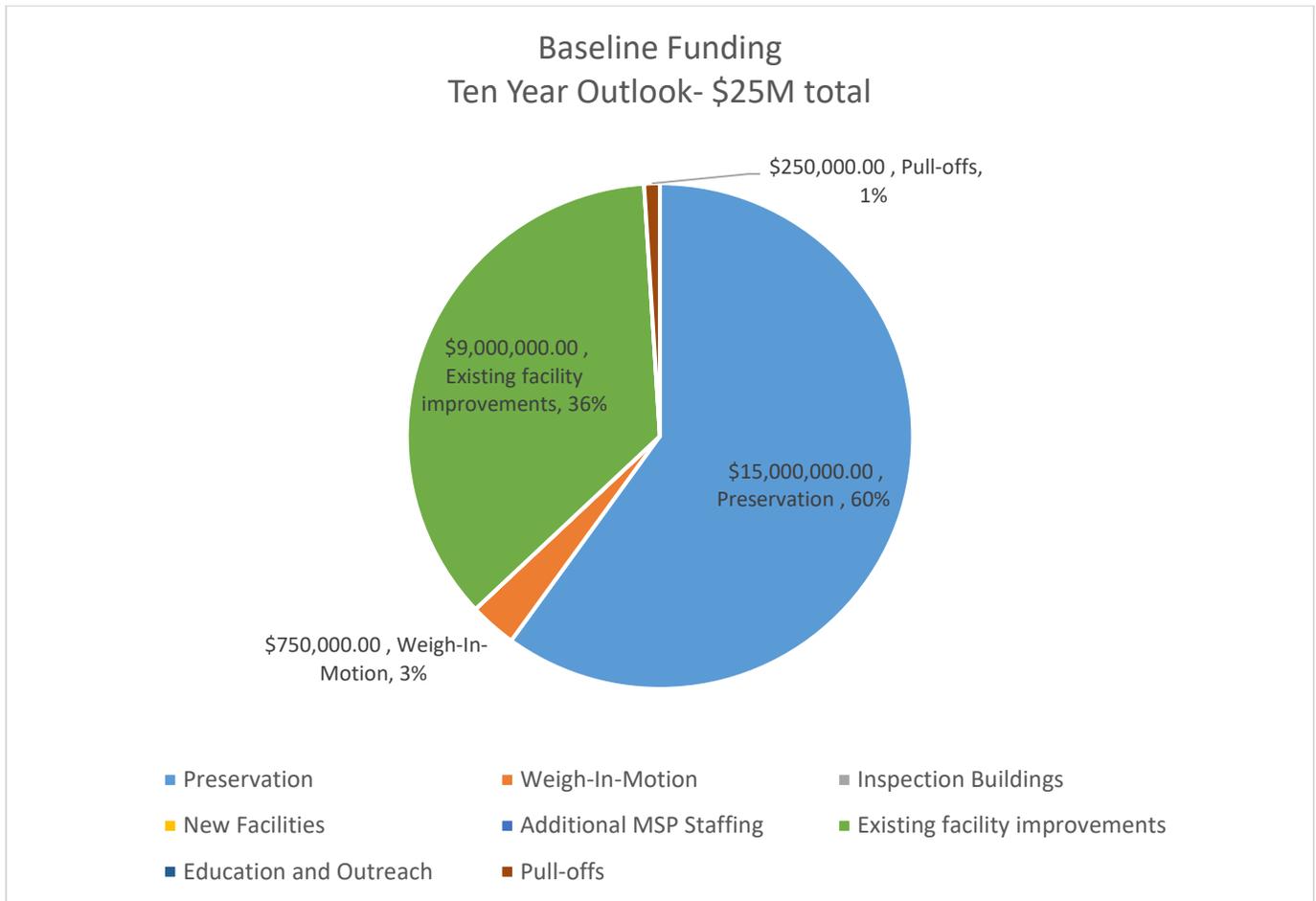




Minnesota Weight Enforcement Investment Plan

All existing weight enforcement sites will continue to require periodic, on-going rehabilitation investments, in addition to routine maintenance. Several facility improvement projects were identified as the highest priority needs in the Needs Assessment Report (Appendix A, Page 99-101), and given the current baseline level of investment, only a few targeted improvements to existing facilities will be made over the next 10 years if additional funding is not secured. A 10-year outlook of proposed investment under a continuation of the baseline investment scenario is described in Figure 5.2 below. Preservation of current operational capacity would continue to be the focus, with a small shift of funding for improvements to targeted locations such as the St. Croix Weigh Station, weigh-in-motion sites, and future pull-off sites.

Figure 5.2: Ten Year Baseline Investment Scenario

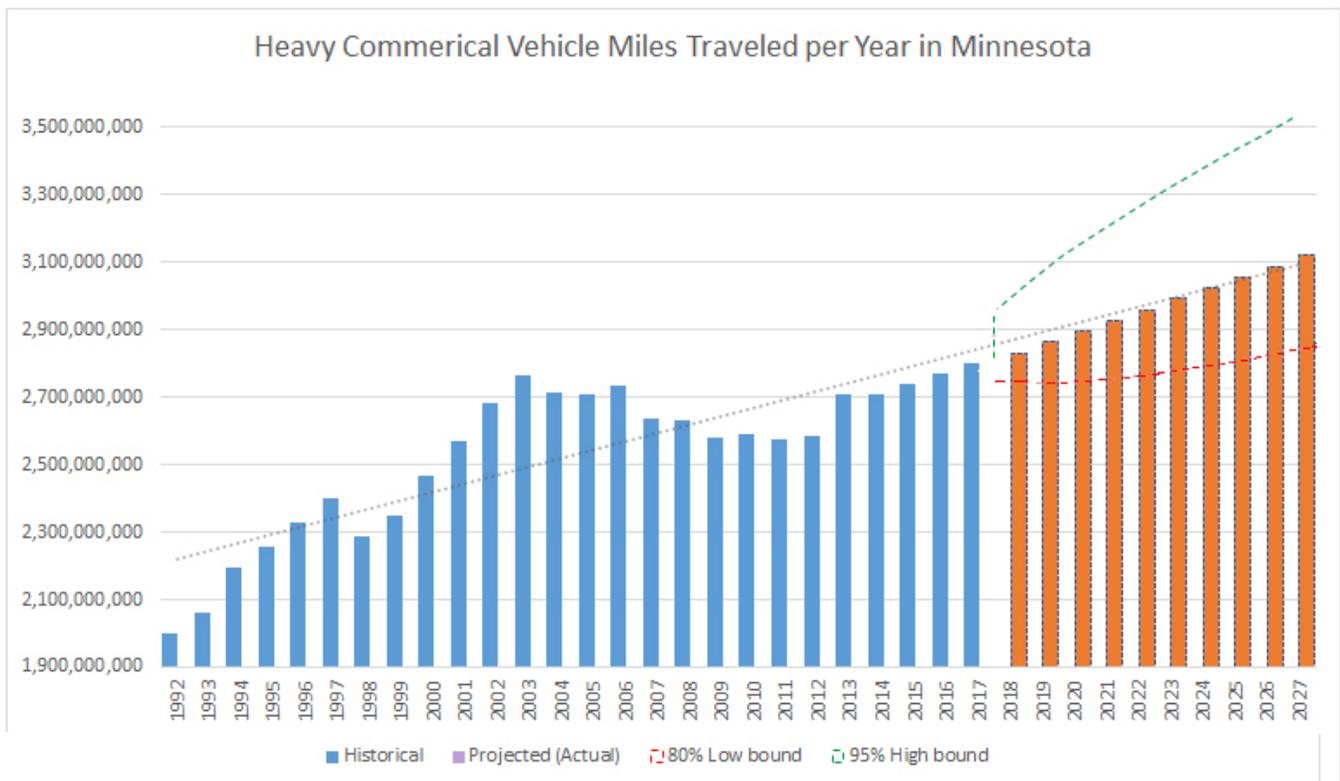




5.2 Program Trends and Reasoning for Additional Investments

While the baseline investment scenario provides the basic frame of reference to understanding the cost to maintain the status quo, a number of trends have recently emerged in the trucking and freight industry that prompt the need to consider additional investment. For example, the rise of e-commerce and the shift of consumer spending away from traditional brick-and-mortar retailers has increased the amount of truck traffic delivering products to distribution/fulfillment centers or directly to residential and commercial consumers. This trend is expected to continue into the future, especially as many national retailers increase their on-line presence to supplement their brick-and-mortar sales and to compete more directly with online-only giant retailers.

Figure 5.3: Heavy Commercial Vehicle Miles Traveled per Year in Minnesota



MnDOT and the State Patrol developed the last long term strategic plan to develop better coordination of the Weigh Station Program in 2005. It was estimated at that time that \$30 million dollars of damage to pavements on the state highway system alone is caused per year by overweight vehicles. Along with this trend, MnDOT now projects an increase in commercial vehicle truck traffic on the state’s major freight corridors of approximately 10 - 11 percent over the next 10 years.⁵ In addition, over the past year weigh-in-motion monitoring sites have observed a 2 percent increase in the number of overweight vehicles.⁶

⁵ According to projections identified by the Office of Transportation System Management, Transportation Data and Analysis unit

⁶ Minnesota Department of Transportation Weigh-In-Motion Data for 2016-2017

These changes in traffic trends will require increased investment to fully address commercial vehicle weight and safety enforcement needs. Discussions about the adoption of automation technology within the trucking industry, such as virtually self-driving trucks, have increased. So, too, have concerns about the on-going nationwide shortage of truck drivers. These trends have created significant pressure on the trucking industry in the United States. As new technology is adopted by the trucking industry, additional enforcement staff will be required to ensure compliance with existing, and possibly updated, regulations.

The investment direction moving forward will continue to use the baseline expenditure scenario as a foundation. The following Sections 5.3 through 5.10 describe, in some detail, specific recommended improvements identified by the Needs Assessment Report, categorized by investment category. These recommendations should be evaluated further by MnDOT and State Patrol as opportunities arise and as funding availability changes. MnDOT and the State Patrol should work closely to manage specific investments on a program level through regular coordination and through discussions related to the CVSP and SEP.

5.3 Investment in Existing Facilities

Fixed weigh stations are a best practice strategy that most states employ in their commercial vehicle safety and weight enforcement program. They allow for the screening and inspection of trucks on a much larger volume than do patrol operations. The number of weigh stations in Minnesota's border states (WI, IA, SD, ND) ranges from four to 13 facilities per state compared to only six fixed sites in Minnesota. Because of the small number of existing sites, the good geographic spacing of those sites, and the state's recent investments in them, it is recommended that Minnesota continue to operate and improve each of these sites. During the district meetings held in early 2018 and discussions with project team personnel, there were additional specific needs identified for the six existing sites over the next 10 years. These needs are discussed below and summarized in Table 5.1.

St. Croix

The St. Croix weigh station platform scales will need replacement sometime in the next 10 years. This facility currently has two multi- platform scales, one on each side of the building. Staff will rotate each side they utilize to equalize the use of the scales. With the volume of truck traffic experience at this scale, it will be beneficial to replace one platform scale while the other platform remains in operation. The current four-platform set up also allows trucks to weigh in a single stage. With the volume of traffic at this facility, this multi- platform configuration should be maintained.



Dayton Port

At the Dayton Port weigh station, the platform scale will need replacement within the next 10 years. A condition assessment is planned to be completed in 2018 to evaluate the current condition. The results of that assessment will assist with identifying the appropriate timeframe for this investment.

The existing platform scale is a single platform, which requires the truck to be weighed in multiple stages. It may be advantageous to continue with the current single platform set up, for several reasons:

- Lower cost to remove and replace the existing platform scale
- Easily allows the same operations from both directions
- No reports of recurring hazardous queue back-ups on the ramps from the mainline have been documented

The Dayton Port weigh station does not have existing electronic signs or “scoreboards” to notify drivers of an action or the axle weight. These are tools that are utilized at the other five weigh stations and would be beneficial at Dayton Port to improve both operational consistency and driver information. With the bi-directional operations at this location, scoreboards and dynamic message signs would be required in each direction.



The parking lot pavement and ramp pavement is in need of rehabilitation. This scope of work has been determined with the project currently in the design phase for future construction.

Saginaw

The Saginaw weigh station screens trucks on both U.S. Highway 2 and Minnesota 33. The facility is located on Highway 2 adjacent to the diamond interchange with Highway 33. However, Highway 33 crosses over Highway 2, which makes it difficult for State Patrol staff operating the weigh station to monitor Highway 33 to observe trucks that do not stop to weigh despite the station being open for operations. Strategically locating surveillance cameras on Highway 33 would allow staff to more effectively monitor commercial vehicle operations. These cameras could be integrated with the existing camera systems and monitors at the site.

Carlton Pull-Off

The Carlton Pull-Off sites were rated LOW for both the Constrained and Unconstrained analyses in the Needs Assessment evaluation process. However, in 2017 the State Patrol utilized these sites during temporary closures of the Saginaw weigh station. During those operations, they found the sites to be effective at detecting non-weight related violations by commercial vehicles. Based on that successful experience, these sites should continue to be available for patrol operations and enhanced for safety and usability.

Table 5.1: Existing Weigh Station Capital Investment

Weigh Station	Investment Description	Capital Costs	Design Costs (15%)
St. Croix	Platform Scale Replacement (both scales)	\$1,500,000	\$225,000
Dayton Port	Platform Scale Replacement	\$100,000	\$15,000
Dayton Port	Pavement Rehabilitation	\$400,000	\$60,000
Dayton Port	Electronic Scoreboard	\$75,000	\$11,250
Saginaw	MN 33 Mainline Cameras	\$75,000	\$11,250
Carlton NB/SB	Various Site Enhancements	\$1,500,000	\$225,000
Total Cost =		\$3,650,000	\$547,500

Routine maintenance is critically important in the preservation of operations of existing weight enforcement facilities and in planning for new sites. Maintenance costs are shared between the MnDOT district, Building Services and OFCVO. Future needs of each individual building at the weigh stations sites are available through the Condition Assessment Reports, which were completed in spring 2018 by the Building Services Section.



These reports identify the current condition of various building elements and the estimated remaining life to the point of replacement or rehabilitation. Only routine maintenance items are expected to be needed over the next 10 years at each facility.

There are maintenance costs associated with each facility that are funded by the MnDOT district or other sources. Maintenance costs for the six facilities and the category of these types of maintenance activities are outlined in Table 3.4 above. These are on-going maintenance costs that will need to be planned for throughout the life of these facilities. In addition, the existing building at Carlton and the proposed temporary shelters at Clark's Grove and Forest Lake will need to be considered with future maintenance needs. Those documented maintenance costs will serve as a guide for quantifying the maintenance needs of any new weight enforcement facilities constructed across the state.

5.3 Inspection Buildings

One challenge for enforcement personnel conducting inspections is that trucks are becoming increasingly more difficult to physically access the undercarriage due to low clearance and new equipment mounted on the underside of trucks. Not only do inspection buildings provide a climate-controlled environment to perform inspections, but incorporation of a pit allows an inspector easier access to the undercarriage of a commercial vehicle. Potential benefits of an inspection building would include:

- Better quality and more efficient inspections completed within a controlled environment
- More MCSAP Level I inspections can be performed during inclement weather conditions
- It is a safer location for officers to conduct vehicle inspections
- It provides easier access under low profile vehicles, such as low boy flatbed trailers and trailers fitted with aerodynamic under-mounted skirts
- It provides opportunities to apply additional technology and tools to vehicle inspections, such as Performance- Based Brake Testers

An analysis of State Patrol inspections by inspection level shows that an increased number of Level I type inspections may be performed each year at the St. Croix, Red River and Worthington weigh stations if inspection buildings were constructed. These are also the three sites that perform the highest number of Level I inspections, both actual and projected. These facilities could significantly increase their number of Level I inspections and do so without an increase in staff. Conclusions from this analysis include:

- Inspection buildings at St. Croix and Red River should be considered. These are Class A sites, and the data analysis shows positive impacts with the addition of inspection buildings.
- An inspection building at Worthington may merit consideration. Even though this is a Class B site, the building, scale and pavement are newer, so an inspection building could be beneficial over the remaining useful life of the facility.

Through a review of inspection buildings from other states it has been determined that costs vary based on the various features of the buildings. Features to consider include:

- The number of bays within the building (one vs. more than one)
- The length of the building to accommodate longer trucks
- Inspection pits within each bay
- Other site development costs



Through a peer review with the Wisconsin State Patrol, information regarding their inspection bays was collected. Their experience indicates that a two-bay building is preferred. One bay can restrict operations depending on the amount of staff on site. However, two bays can allow for more trucks and staff to perform inspections within the facility. The inspection buildings also allow the integration of other safety inspection equipment, such as performance-based brake testers. Wisconsin’s experience has led them to install a PBBT in only one of the two inspection bays per building. The success of inspection buildings in Wisconsin has led them to install them at all new safety and weight enforcement facilities throughout the state.

Depending on the features included in the building, the lower cost inspection buildings had a 2018 per square foot cost range between \$115 per square foot to \$200 per square foot. Buildings with more amenities and features ranged between \$265 per square foot to \$335 per square foot. Assuming a two-bay facility with an approximate 125-foot x 55-foot layout (6,875 SF), the price range for each inspection building is:

- Low Range: \$800,000 - \$1,400,000
- High Range: \$1,800,000 - \$2,300,000

Table 5.2 shows the estimated capital and annual maintenance costs for adding two-bay inspection buildings to the St. Croix, Red River and Worthington weight enforcement facilities.

Table 5.2: Inspection Building Capital and Maintenance Investment

Weigh Station	Investment Description	Capital Costs	Design Costs (15%)	Facility Maintenance Program (FMP) (\$0.624/Sq. Ft.)
St. Croix	Inspection Building	\$2,000,000	\$300,000	\$21,450
Red River	Inspection Building	\$2,000,000	\$300,000	\$21,450
Worthington	Inspection Building	\$2,000,000	\$300,000	\$21,450
Total Cost =		\$6,000,000	\$900,000	\$64,350

5.4 Coordination of Enforcement Pull-Off Areas

A peer state comparison of inspections (documented in the Needs Assessment Report) identified a target level for the Minnesota State Patrol to increase its annual number of inspections statewide by about 50 percent. About half of this increase would be accomplished through additional patrol operations away from fixed weigh stations. Addressing the needs identified by State Patrol personnel for additional pull-off locations would allow them to also improve patrol operations and perform more inspections in safe locations throughout the state.

The HIGH-rated locations from the Needs Assessment Report are described further in Section 5.8 below. However, there are many other Medium-rated locations that would be reasonable candidates for consideration of constructing a pull-off site in the future. This list can serve as potential future pull-off locations meriting further analysis by MnDOT district and State Patrol personnel. The goal of these additional pull-off locations would be to improve safety for officers and drivers, while also providing a flat, level surface suitable for using portable scale units to weigh a truck.

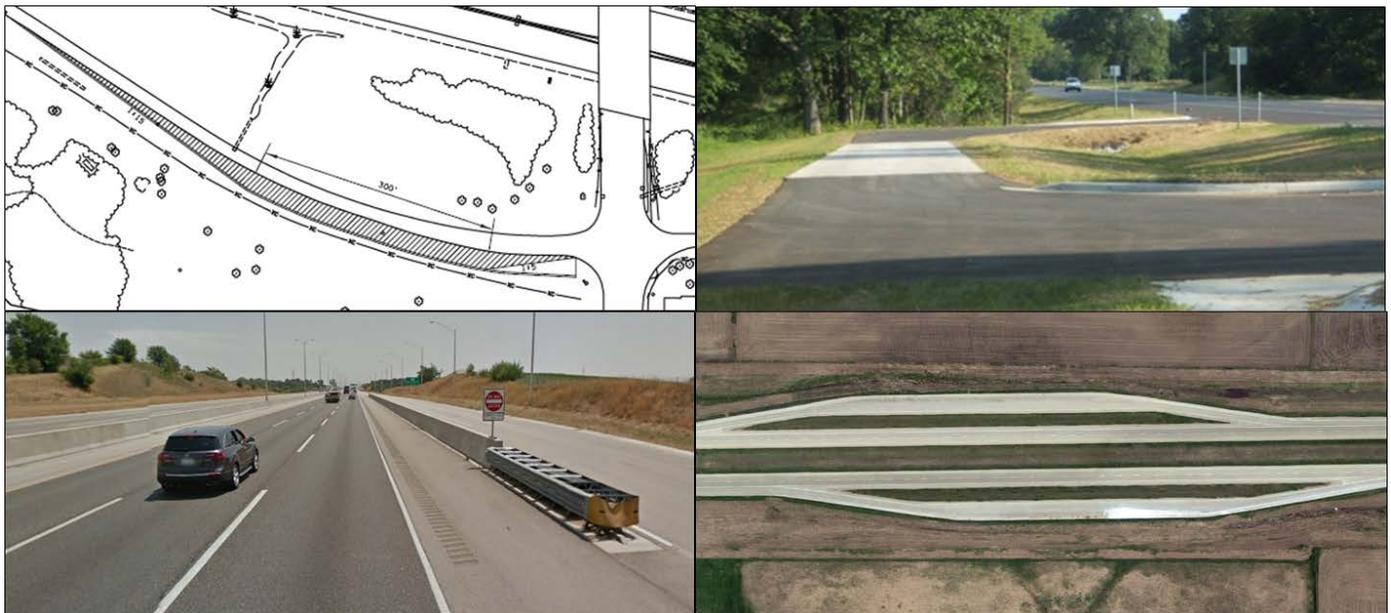
A review of the MnDOT 4-year State Transportation Improvement Program (STIP) and 10-year Capital Highway Investment Plan (CHIP) documents will help MnDOT and State Patrol personnel understand where future opportunities may be available with respect to the identified needs list.

For example, a site on Highway 28 in Morrison/Todd Counties was identified as needing a pull-off site to enforce trucks hauling aggregate along the corridor (Site 3.3, Need Analysis Report - Appendix A). This site was rated Medium and was the highest rated site in District 3 for the Constrained Analysis.

Reviewing the 2018-2027 District CHIP, project #76, a mill and overlay project scoped for SFY2025 from Sauk Center to MN 27 could be a candidate project with which to plan, design, and construct an adequate pull-off site along the corridor. This project is currently scheduled for a mill and overlay in 2025. This is just one example of potential coordination opportunities. The earlier this coordination occurs in the project development process, the more likely an enhanced enforcement solution can be successfully designed and implemented.

To aid the expansion of pull-off sites statewide, the development of an enforcement pull-off standard detail drawing for MnDOT to use should be developed. There may be different types of pull-off sites, ranging from a widened shoulder to a site constructed off the roadway. Figure 5.4 shows four different examples of pull-off sites on different types of roadways. Clockwise from the top left are a widened shoulder shown in cross hatching (Minnesota), a two-lane arterial pull-off (Michigan), an expressway pull-off (Iowa), and a freeway pull-off (Illinois). These pull-off sites will generally be much smaller than a typical Class D site, such as Nodine. With these various styles, having a typical design layout will ensure State Patrol has a facility constructed that meets their operational needs.

Figure 5.4: Pull-Off Type Examples



Several rest areas were identified as locations currently use for patrol saturation efforts or pull-off sites. There are other states that commonly use rest areas for enforcement pull-off sites including Iowa, Illinois, Michigan, and New York. Some of these states have constructed specific areas for inspection purposes. Continued coordination with the MnDOT Rest Area program will allow these needs to be discussed during the decision making process to close, maintain or enhance different rest area locations.



Coordination with future district projects and the rest area program may provide opportunities for these enhancements to be included as part of the funding for those projects. The costs for pull-off sites are dependent on the type of roadway, the size of the pull-off site, the potential right-of-way purchase required, and other factors to be investigated during the design phase.

5.5 Improved Weigh-in-Motion (WIM) Utilization

State Patrol currently use some WIM sites in collaboration with MnDOT Office of Transportation System Management (OTSM). State Patrol also uses WIM technology for ramp sorting at the Red River and St. Croix facilities and has two portable, low speed WIM units available for use statewide. WIM is a technology that allows State Patrol to screen a larger volume of trucks throughout the state than would be possible with conventional fixed-site scales and portable wheel-weigh scales. Accurate information is critical to WIM or any electronic measurement devices being effectively used. Enforcement personnel will not utilize the technology to its fullest extent if the data is perceived to be inaccurate. Therefore, maintenance of equipment at WIM sites is important. Below are several strategies for future maintenance considerations, each of which has potential cost implications:

- Continue to work closely with OTSM personnel to provide a feedback loop for State Patrol and OFCVO for additional maintenance and calibration to existing WIM sites with cameras that are dual purpose sites for planning data and enforcement
- Ensure that maintenance contracts are available to address any OFCVO WIM sites to quickly resolve WIM data calibration issues
- Use product warranties and maintenance plans for new sites as contracts allow

State Patrol has found integrated cameras to be a critical tool for maximizing the utility of WIM sites for enforcement purposes. Currently there are 16 WIM sites located throughout the state that have integrated cameras. The district meetings identified a need for additional cameras at sites #27 (Highway 60), #30 (Highway 61), #34 (MHighway23), and #43 (Highway 10). The estimated costs for additional cameras at these sites are summarized in Table 5.3. However, rather than simply relying on these evaluation results, further location-specific analysis is recommended, such as a review of truck volume at the location, analysis of historical WIM data to estimate the number of potential overweight trucks, and identification of a downstream pull-off area, before deciding to deploy the camera technology. Specifically, these four sites offer the following opportunities:

- WIM site #27 on Highway 60 in Watonwan County is a key truck corridor in District 7 linking I-90 to the west with the Twin Cities through Mankato.
- WIM site #30 on Highway 61 north of Duluth in St. Louis County could provide advantages for both border enforcement and Blatnik Bridge screening. The StreetLight analysis indicates that 30 percent of the trucks on Highway 61 will cross over the Blatnik Bridge. However, this only accounts for 5 percent of the trucks actually crossing the Blatnik Bridge. In addition, approximately 60 percent of the trucks at the Grand Portage border crossing would be screened at this WIM site.
- WIM site #34 on Highway 23 would screen approximately 40 percent of the trucks on Highway 23, just southwest of Willmar (site 8.8, which rated high in the Needs Assessment evaluation.)
- WIM site #43 on Highway 10 in Clay County can provide bypass route screening for the Red River weigh station. As a longer term solution, WIM screening on Highway 10 may be better suited to be positioned west of Highway 336 to screen additional bypass vehicles.



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Table 5.3: WIM Camera Integration Investment

WIM Site	Investment Description	Capital Costs
#27/MN 60	Camera Integration (Both Directions)	\$75,000
#30/MN 61	Camera Integration (Both Directions)	\$75,000
#34/MN 23	Camera Integration (Both Directions)	\$75,000
#43/US 10	Camera Integration (Both Directions)	\$75,000
Total Cost =		\$300,000

Mainline WIM in advance of a weigh station could allow the data to be incorporated into the preclearance program. This strategy was documented during the Spring 2017 Planning Workshop. Currently, subscribed trucks with good corporate safety experience are allowed to legally bypass an open weigh station with no weight information being provided for them. Analysis of Minnesota preclearance data from 2017 indicates the average number of bypasses per month varies greatly among the six existing fixed-site locations.

Adding mainline WIM to the St. Croix, Red River, and Worthington sites is recommended for integration with preclearance programs. These three sites have the highest number of preclearance bypasses and also currently screen only one direction of traffic. Adding mainline WIM detection would also allow MnDOT and State Patrol to analyze patterns in weight data for trucks that pass when the weigh station is not open.

However, the location of the St. Croix weigh station may provide challenges with mainline screening related to the ramps approaching the facility, the bridge over the St. Croix River, and potential coordination required with Wisconsin. WIM #49 on I-90 near Worthington was installed for use with a potential preclearance program. Future exploration of this site for this purpose should be pursued. Dayton Port is a potential candidate for mainline WIM, but this would require mainline WIM in both directions on Highway 10, so it would be a lower priority than installing WIM at the other facilities. Mainline WIM at Erskine and Saginaw is not recommended since these facilities screen trucks in four directions and the current number of preclearance bypasses is very low.

Table 5.4: Mainline WIM Investment

Weigh Station	Investment Description	Capital Costs	Design Costs (15%)	Annual Maintenance Costs
St. Croix	Mainline WIM	\$200,000	\$30,000	\$5,000
Red River	Mainline WIM	\$200,000	\$30,000	\$5,000
Worthington	Mainline WIM	\$50,000	\$7,500	\$0
Total Cost =		\$450,000	\$67,500	\$10,000

Identified bypass routes near fixed weigh stations are other locations to potentially install new mainline WIM sites. Installing WIM on a bypass route around a fixed facility would allow State Patrol to remotely monitor truck operations on the route. This data would show how travel patterns change when the weigh station is open, what type of vehicle weights are experienced on the corridor and when are the optimum days or times for State Patrol to provide active patrol enforcement on the bypass route. Medium-rated bypass route locations for consideration include:

- Highway 10, Clay County (Red River)
- Highway 2, Saint Louis County (Saginaw)
- Highway 53, Saint Louis County (Saginaw)
- Highway 210, Wilkin/Otter Tail Counties (Red River)



5.6 Portable Scale Replacement Plan

The State Patrol currently has 322 Haenni Portable Wheel Load Scales (WL101) that are used in their portable scale operations. These scales are assigned to CVIs or troopers, with sets of six wheel load scales in their vehicles. These scales are an essential tool for effective commercial vehicle enforcement operations. Portable scales provide flexibility for officers to move throughout the counties, districts and state to more effectively concentrate on infrastructure preservation and seasonal weight challenges. These portable scales are maintained and certified by State Patrol staff. Discussions in the district meetings indicated that many of these portable scales have been in service for 15 years or longer. Standard practice is that these scales continue to be used until they are broken or can no longer be certified for weight enforcement.

The State Patrol has had success using Haenni Model WL101, but other newer models include digital readouts and wireless connections to help aggregate data from multiple scales. However, recent discussions with the Wisconsin State Patrol indicated there can be concerns with the digital displays working effectively in severely cold conditions, which obviously could negatively impact operations in Minnesota. With the success Minnesota has experienced with the Model WL101, as well as comparably good experience with them in other states, replacement of existing scales should consider this past performance when selecting the appropriate model type.

Having a replacement cycle to replace portable scales will ensure State Patrol continues to have the tools they need for patrol operations. Discussions with the scale manufacturer indicated there are some clients with scales that have been in service for over 30 years. It is difficult to know when a portable scale will need to be replaced. In addition, there are options to rebuild these scales at lower costs, if desired. Therefore, for future investment purposes, it is estimated that approximately one-third of the portable scales will need to be replaced in the next 10 years. Table 5.5 outlines those costs, assuming they are spread out over 10 one-year cycles. The Minnesota State Patrol should budget for this level of replacement, with the actual funding level determined before each procurement.

Table 5.5: Portable Scale Investment

Investment Description	Capital Costs
Portable Scale (\$5,300/EACH) – Replace 10 in Year 1	\$53,000
Portable Scale (\$5,300/EACH) – Replace 10 in Year 2	\$53,000
Portable Scale (\$5,300/EACH) – Replace 10 in Year 3	\$53,000
Portable Scale (\$5,300/EACH) – Replace 10 in Year 4	\$53,000
Portable Scale (\$5,300/EACH) – Replace 10 in Year 5	\$53,000
Portable Scale (\$5,300/EACH) – Replace 10 in Year 6	\$53,000
Portable Scale (\$5,300/EACH) – Replace 10 in Year 7	\$53,000
Portable Scale (\$5,300/EACH) – Replace 10 in Year 8	\$53,000
Portable Scale (\$5,300/EACH) – Replace 10 in Year 9	\$53,000
Portable Scale (\$5,300/EACH) – Replace 10 in Year 10	\$53,000
Total Cost =	\$530,000

In discussion with State Patrol regarding existing operations, 322 portable scales are believed to be an adequate supply for their current staffing. This allows approximately 50 vehicles to be outfitted with six scale units each where not every employee is assigned a vehicle. If additional staff is added in the future for patrol operations, investment in additional portable scales would be necessary.



5.7 Increased Minnesota State Patrol Staffing

A four-part peer state comparative analysis (documented in detail in the Needs Assessment report) suggests that Minnesota State Patrol should be striving to perform approximately 55,000 MCSAP inspections per year. This would represent about a 50 percent increase in the number of inspections per year from current levels. Achieving such a significant increase in the number of inspections would require additional State Patrol personnel. Achieving this target level may require additional weigh station facilities and additional patrol operations statewide. An analysis and projection of the Minnesota program was completed in Table 5.6 to outline one scenario that would enable Minnesota to achieve this 55,000 inspections per year target.

Through a comparison of Iowa’s program (50,758 inspections in 2017) and Minnesota’s program (37,125 inspections in 2017), it was determined that both states completed 40 percent of their inspections at fixed weigh stations and 60 percent of their inspections on patrol. This has been a stated goal for Iowa for many years and, based on the results in Minnesota, is a realistic distribution for Minnesota’s program in the future. Therefore, 40 percent of the 55,000 inspections per year target would require State Patrol to complete 22,000 inspections at fixed facilities. One scenario by which to increase staffing to achieve 55,000 inspections is the addition of three new fixed weigh stations. With a new weigh station on I- 94 near St. Cloud (similar operations to St. Croix), one on I-35 south of Minneapolis (similar operations to Red River), and one on I-90 near Rochester (similar operations to Worthington), the State Patrol statewide enforcement program would perform 40 percent of their 55,000 inspections at a fixed weigh station.

Table 5.6: Inspection Target Projections

Location	Level 1 Inspections	Level 2 Inspections	Level 3 Inspections	Level 4 Inspections	Total	Notes
St. Croix	1,636	2,087	947	25	4,695	Projected inspections with an inspection building
Red River	1,071	1,367	620	13	3,071	Projected inspections with an inspection building
Dayton Port	174	300	576	4	1,054	CY2017 inspections
Erskine	198	596	310	27	1,131	CY2017 inspections
Saginaw	181	605	237		1,023	CY2017 inspections
Worthington	304	1,436	352	16	2,108	CY2017 inspections
Subtotal	3,564	6,391	3,042	85	13,082	(Existing fixed sites)
Proposed I-94 Weigh Station	1,636	2,087	947	25	4,695	Based on traffic volumes, used St. Croix as a guide (8 positions required)
Proposed I-35 Weigh Station	1,071	1,367	620	13	3,071	Based on traffic volumes, used Red River as a guide (6 positions required)
Proposed I-90 Weigh Station	304	1,436	352	16	2,108	Based on traffic volumes, used Worthington as a guide (4 positions required)
Subtotal	3,011	4,890	1,919	54	9,874	(Three new fixed sites)
Subtotal (Increased Patrol Operations)	5,447	12,177	13,138	1,282	32,044	Distribution by level is based on the existing patrol distribution of 17% 38% 41% 4%
Total	12,022	23,458	18,099	1,421	55,000	



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The number of inspections and distribution by level are detailed in Table 5.6 to demonstrate how State Patrol could achieve 22,000 fixed facility inspections. Based on existing staffing, and using the staffing graphs documented in the Classification Plan, these three additional weigh stations would require 18 additional positions. Under this scenario, the remaining 32,044 inspections would be completed under patrol operations. Table 5.6 also demonstrates the number of patrol inspections based on existing patrol inspection level distributions.

This would be an increase of approximately 10,000 patrol inspections per year. Based on 2017 inspections completed during patrol operations, each State Patrol sworn officer averaged approximately 450 inspections per year. Therefore, an additional 22 troopers would be required to meet the target inspections for patrol operations.

One programmatic benefit to this shift in program scope, in terms of the number of staff, number of weigh stations, and addition of inspection buildings, would be the change in inspection distribution by level. FMCSA strongly encourages States to conduct at least 25 percent Level 1 inspections and 33 percent Level 3 inspections of the total inspections conducted. Minnesota is unable to meet the 25 percent level I inspection minimums. Minnesota experiences at least 4-5 months of harsh winter, with no indoor facilities to effectively and safely conduct Level I inspections. This low number of inspections in Minnesota is due to no fixed facilities sites within Minnesota. The lack of inspection buildings at those sites, and inclement weather in Minnesota are some of the causes of not meeting higher inspection numbers. Implementing indoor fixed facilities and reaching the required inspections would show results that align more closely to FMCSA’s goals.

By increasing the number of Level I, II and III inspections to a target of 55,000 inspections would show results that align more closely with FMCSA’s goals, where Minnesota could potentially complete 22 percent Level 1 inspections per year as shown in Table 5.7. A description of the inspection by level is provided below:

- Level 4: Special inspections to examine a particular item, trend, or completed under a special study
- Level 3: Driver credentials only (license, medical certificate, record of duty status, vehicle inspection reports)
- Level 2: All Level III elements, plus walk-around visual inspection of the vehicle (e.g., lights, tires, coupling devices, load securement, brake system warning devices, test of air loss rate, steering wheel lash)
- Level 1: All Level II elements, plus physical inspection of steering axle and under-carriage inspection of all other axles, and check of brake adjustment

Table 5.7: Actual and Target Inspection Distributions

	Level 1 Inspections	Level 2 Inspections	Level 3 Inspections	Level 4 Inspections	Notes
Fixed	14%	39%	46%	1%	
Patrol	17%	38%	41%	4%	
CY2017 Total	16%	38%	43%	2%	Distribution by level in CY 2017
Fixed	29%	49%	22%	1%	
Patrol	17%	38%	41%	4%	
Projection Total	22%	43%	33%	3%	Distribution by level based on Table 5.6



Minnesota Weight Enforcement Investment Plan

A target of 55,000 Level I, II and III inspections would correlate to an approximately 50 percent increase in the number of Level I-III Inspections performed. Increased staffing will be needed to achieve this target. Considerations should be made for additional supervisory leadership with this increase in staff, such as adding as many as four lieutenants and one CVI sergeant to align existing staff to supervisor ratio. Cost estimates are shown in Table 5.8.

Table 5.8: State Patrol Additional Staff Investment Needs

Investment Description	Personnel	Fringe (40%)	Total Cost
Fixed Weigh Station Staffing Increase (18 positions @ \$26/hr)	\$973,440	\$389,376	\$1,362,816
Fixed Weigh Station CVI Sergeant Increase (1 position @ \$30/hr)	\$62,400	\$24,960	\$87,360
Patrol Operations Staffing Increase (22 positions @ \$37/hr)	\$1,693,120	\$677,248	\$2,370,368
Additional Leadership Staffing Increase (4 positions @ \$43/hr)	\$357,760	\$143,104	\$500,864
Total Combined Annual Costs	\$3,086,720	\$1,234,688	\$4,321,408

With new additional positions, there would be other associated costs in addition to the salary and fringe costs. For example, additional portable scales and patrol vehicles would need to be procured. Table 5.9 shows the estimated higher costs for equipment associated with additional field staff.

Table 5.9: State Patrol Staff Equipment Investment Needs

Investment Description	Units	Rate Cost	Total Cost
Portable Scales for 22 Patrol Staff	132	\$5,300	\$699,600
SUV Vehicles for 22 Patrol Staff	22	\$41,332	\$909,304
SUV Vehicles for 4 Leadership Staff	4	\$41,332	\$165,328
Miscellaneous Expenses (computers, radios, uniforms)	45	\$20,000	\$900,000
		Total Cost =	\$2,674,232

Hiring and training 45 additional staff would be a significant financial and time investment for the Minnesota State Patrol. This would require securing funding for the positions and recruitment for personnel for training purposes. These increases would also depend on the construction and occupancy of new weigh station facilities, which may take several years to design and construct. Therefore, this increase in the program level may take the entire 10 years of this document’s planning horizon to achieve.

5.8 Education and Outreach

Education and outreach is as important goal for State Patrol as articulated in the current 2017-2018 CVSP. It is also a focus area for FMCSA by which to improve truck safety and compliance. State Patrol currently provides resources statewide for presentations and training on truck size and weight enforcement. In 2017, State Patrol conducted 327 presentations to the motor carrier industry. In addition, MnDOT publishes a comprehensive handbook titled “*Minnesota Truck and Commercial Passenger Regulations*”, and for a number of years the Minnesota Local Technical Assistance Program has provided their Minnesota Truck-Weight Education Training program to audiences around the state. A future education and outreach plan should account for all of these ongoing efforts.

MnDOT and State Patrol should work collaboratively to develop a strategic communications and marketing plan. This plan should include providing validation for operating a commercial vehicle enforcement program, justification for future funding for the enforcement program, and education for commercial vehicle laws and regulations.



The success of improving efforts in the area of education and outreach will be dependent on identifying a champion for the commercial vehicle enforcement program and providing qualified staff sufficient to deliver the outreach necessary. Key components of a communications and marketing plan may include:

- Stakeholders targeted, such as legislators, court officials, local law enforcement, trucking industry, and the general public
- Methods to provide outreach such as webinars, in-person presentations, mailings, and/or guidebooks
- Opportunities for partnerships with other public agencies, education institutions, and private industries
- Determination of the scope and content of the educational materials
- A schedule and timeline for both recurring actions and stand-alone outreach efforts
- Identification of the communications and outreach lead agency as well as staff responsible for implementation

No specific cost estimates are identified for education and outreach initiatives. A strategic communications and outreach plan could be developed with in-house staff or with consultant support. These options have cost implications on staff time and contracts for a marketing firm. The staff required to perform the plan development and implementation should be considered when identifying appropriate staffing levels, organizational structure, and positions. If additional full-time staff is required, funding for this position will need to be identified.

5.9 Additional Weight Enforcement Facilities

The list of High rated results for both the Constrained Analysis (13 sites) and Unconstrained Analysis (12 sites) are locations recommended to be prioritized for enhancing commercial vehicle enforcement operations. Ten of the sites were rated High in both analyses. Below is a summary of the 15 unique locations identified in the High rating lists, followed by a summary of capital and maintenance cost estimates. Note that although the concept is to screen trucks on each identified segment, it is possible that a facility could be constructed on an adjacent segment for various reasons. Each of the following entries has the matching need identification number (e.g. 3.2 and M4) from the Needs Assessment Report in Appendix A in parenthesis at the end of the title for each site.

I-94 in Wright/Hennepin County between Minneapolis and St Cloud (3.2 and M.4)

This Interstate location qualifies for a Class A facility. This is the type of facility that was used in the staffing projections in Section 5.6. One alternative to evaluate this site is using StreetLight analysis which is a software application to perform origin-destination data modeling of commercial vehicle traffic. StreetLight analysis on I-94 EB indicated that approximately 33 percent of the trucks at the Red River weigh station would also be screened on I-94 near Sauk Centre. Conversely, the StreetLight analysis on I-94 WB showed that only 5 percent of trucks at St. Croix would be screened on I-94 west of Minneapolis. Therefore, it is recommended that a Class A facility on I-94 WB be considered on this corridor.

I-35 in Dakota County, south of Minneapolis (M.2)

This interstate location qualifies for a Class A facility. This is the type of facility that was used in the staffing projections in Section 5.6. The segment identified was on I-35W, but it may be beneficial to screen trucks south of the I-35W and I-35E split. StreetLight analysis on I-35 NB indicated that approximately 40 to-50 percent of the trucks are the same between Clark's Grove and I-35W. With the deployment of the Class C facility at Clark's Grove in 2018, this sight could be used until a Class A facility can be planned and constructed in the future. It is recommended that a Class A facility on I-35 northbound be considered on this corridor. I-35 southbound is currently screened by Iowa at their Worth weigh station south of the Minnesota-Iowa state line.



I-90 in Olmsted/Winona County between MN/WI border and Rochester (6.2 and 6.12)

This interstate location qualifies for a Class B facility. This is the type of facility that was used in the staffing projections in Section 5.6. This corridor could potentially take advantage of the existing infrastructure and/or land at the existing Nodine pull-off sites. A site located on I-90 westbound would also provide screening benefits to trucks that use US 52 northbound toward St. Paul. Approximately 20% to 30 percent of the trucks on these corridors are using I-90 westbound and US 52 northbound. It is recommended that a Class B facility on I-90 westbound be considered on this corridor. I-90 eastbound is currently screened by Wisconsin at their new Sparta weigh station east of the Minnesota-Wisconsin state line.

US 52 in Olmsted/Dakota County between St Paul and Rochester (M.11 and 6.3)

US 52 was rated High in two different locations between St. Paul and Rochester. This corridor qualifies for a Class B facility, but this type of facility was not included in the staffing projections in Section 5.6. There are several factors to consider when evaluating this corridor for the appropriate facility type. For example, if a Class B facility is constructed on I-90 westbound and the WIM improvements to US 52 northbound at Butler Avenue are implemented, then there may be limited value to additional northbound screening on this corridor. Therefore, Class C to Class E alternatives for screening US 52 southbound are recommended for this corridor. In addition, existing plans for US 52 northbound at Butler Avenue should continue to be implemented.

I-494 in Hennepin County between US 12 and MN 55 (M.1)

Even though this corridor qualifies for a Class A site, this may not be a realistic option given the existing dense development in the corridor. A lower-class facility option should be considered to provide an enforcement presence on the corridor. The recommendation of a weigh station on I-94 between Minneapolis and St. Cloud may impact the need for enforcement at this new location since approximately 25 percent of the trucks are the same on both corridors. A Class C to Class E site on I-494 SB may merit future considerations to provide an enforcement presence.

US 71/MN 23 in Kandiyohi County near Willmar (8.8 and 8.10)

The concurrent section of US 71/MN 23 north of Willmar prior to the MN 23 and US 71 split was rated as High in both the Constrained and Unconstrained evaluation. This segment was identified as needing an increased enforcement presence due to the transport of sugar beet commodities and due to other truck travel patterns. Locating a Class C site on the concurrent section would allow for screening in the Willmar area. In addition, MN 23 south of Willmar was identified for enhancements. However, with potential enhancements to camera integration at WIM site #34 (see Section 5.4 above) and the addition of a Class C site on the concurrent section, no additional weight enforcement would be needed on MN 23.

I-535 in St Louis County for the Blatnik Bridge (1.1)

This structure is a critically important transportation linkage between Duluth and Superior. It is currently weight-posted, and there are future reconstruction plans for the bridge. This location has value in enforcing truck weights for the existing bridge, as well as any future bridge investment. Minnesota State Patrol has attempted to provide an enforcement presence for commercial vehicles using this bridge, but it is a challenging area to screen and pull-over vehicles. A more comprehensive plan will need to be developed in order to provide effective truck enforcement operations. This may include communication with the Wisconsin State Patrol to provide a coordinated effort of screening on one side of the bridge and inspecting on the other side. Another option could be to screen multiple highways leading into or out of I-535.



StreetLight data was analyzed on I-35, MN 23, US 2, US 53 and MN 61 approaching the Blatnik Bridge. The data indicated that screening these corridors outside Duluth would capture between 50 to 60 percent of the trucks on the bridge. However, this methodology would not capture the remaining 40 to 50 percent, which may be originating in the Duluth metro area.

US 12 in Hennepin County near the Metro District and District 3 border (M.5)

This corridor was identified in meetings in both District 3 and the Metro District. Strategically locating a weight enforcement site near the District border may allow personnel from both Districts to use the technology and infrastructure. A Class D to Class E site is recommended on this corridor.

MN 212 in Renville County near WIM site #33, East of Olivia (8.15)

This highway segment in District 8 was rated HIGH in the Constrained Analysis. There is an existing WIM site on MN 212 with a camera. It is proposed that this WIM site be reviewed to potentially enhance the operations. Possible enhancements include ensuring the WIM sensors are calibrated, that an officer has a safe place to stage their vehicles and that a safe pull-off location is available downstream for inspections. Therefore, enhancing the existing Class E operations is recommended.

I-94 in Washington County at the St. Croix Weigh Station (M.3)

The existing facility improvements are addressed in Section 5.1, and the recommendation for inspection buildings is addressed in Section 5.2 above.

I-94 in Clay County at the Red River Weigh Station (4.1)

The existing facility improvements are addressed in Section 5.1, and the recommendation for inspection buildings is addressed in Section 5.2 above.

Regardless of the evaluation results, there is value in geographically spacing investments to provide an adequate enforcement presence statewide. Table 1.5 provided a summary of the top-rated need in each district. Many of these needs were rated High. However, several locations were not rated High, but should be considered for a lower investment facility, such as a Class E.

District 2 Top Rated Sites (2.1, 2.3, and 2.6)

District 2 did not have any sites rated as High but did have three different sites as the highest rated in the district. Site 2.1 is on MN 11 near the Warroad border crossing. This location should be considered for a Class E type facility and could be used as part of border enforcement operations. Site 2.3 on CSAH 87 in Hubbard County was identified due to potato hauling in the area. This is an additional location that could be considered for a Class E site. The Erskine weigh station (site 2.6) was also one of the top-rated sites in District 2. No specific enhancements to the weigh station have been identified, but the results validate that this is a good location for enforcement presence in the District.

District 3 Top Rated Site (3.3)

Site 3.3 on MN 28 between Sauk Centre and Little Falls in Morrison/Todd County was the top-rated site in District 3 in the Constrained Analysis. As described in Section 5.3 above, this site was identified as a need for a pull-off site to enforce trucks carrying aggregate along the corridor. This site should be considered for a Class E and should coordinate with the future highway construction project for pull-off site development.



District 7 Top Rated Site (7.1)

Site 7.1 on US 169 in Nicollet County was the top-rated site in District 7 in both the Constrained and Unconstrained analysis. This is a main link between Mankato and the Twin Cities. This site should be considered for a Class E site to provide an enforcement presence on this corridor.

A summary of all High rated sites and other top district needs is shown in Table 5.10 along with high level capital costs for implementation and potential annual maintenance costs.

Table 5.10: Additional Weight Enforcement Facility Capital and Maintenance Investment

D.#	Highway	Location	Classification	Construction Cost	Design Costs (15%)	Annual Maintenance Costs
M.4, 3.2	I-94 WB	Minneapolis to St. Cloud	A	\$16,000,000	\$2,400,000	\$80,000
M.2	I-35 NB	MN/IA Border to Minneapolis	A	\$16,000,000	\$2,400,000	\$80,000
6.2, 6.12	I-90 WB	MN/WI Border to Rochester	B	\$7,000,000	\$1,050,000	\$50,000
6.3	US 52 SB	Rochester to St. Paul	C	\$3,000,000	\$450,000	\$20,000
M.1	I-494 SB	US 12 to MN 55	C	\$3,000,000	\$450,000	\$20,000
8.8, 8.10	US 71	Willmar	C	\$3,000,000	\$450,000	\$20,000
1.1	I-535	Blatnik Bridge	E	\$1,000,000	\$150,000	\$20,000
M.11	US 52 NB	Butler Avenue Interchange	E	\$250,000	\$37,500	\$5,000
M.5	US 12	Metro and District 3 Border	E	\$250,000	\$37,500	\$5,000
8.15	MN 212	WIM site #33	E	\$250,000	\$37,500	\$5,000
2.1	MN 11	Warroad to Baudette	E	\$250,000	\$37,500	\$5,000
2.3	CSAH 87	US 71 to MN 64	E	\$250,000	\$37,500	\$5,000
3.3	MN 28	Sauk Centre to Little Falls	E	\$250,000	\$37,500	\$5,000
7.1	US 169	North of St. Peter	E	\$250,000	\$37,500	\$5,000
Total Cost =				\$50,750,000	\$7,612,500	\$325,000



5.10 Investment Summary

There are a variety of investments outlined in the eight investment categories above. These investments represent a 10-year funding and investment scenario which will assist State Patrol in meeting a program goal of 55,000 inspections. Securing funding for all of these investments can certainly present challenges that may require future program decisions to meet a lower investment level. For example, constructing a Class C facility instead of a Class A facility. However, these decisions will also impact State Patrol’s plan for future staffing. All of the investments which are in addition to current program operations are summarized in Table 5.11 for capital and design investment, and Table 5.12 for annual operations and maintenance investments. These investments are shown geographically on the map in Figure 5.5 with need identification numbers matching into the Needs Assessment Report in Appendix A.

Table 5.11: 10-Year Capital and Design Investment Summary

Investment Category	Future Needs Capital Costs	Future Needs Design Costs	Future Needs Total Costs	Existing Program Funding Level	Anticipated Funding Gap
Existing Facilities	\$3,650,000	\$550,000	\$4,200,000		
Inspection Buildings	\$6,000,000	\$900,000	\$6,900,000		
WIM Camera Integration	\$300,000	\$50,000	\$350,000		
Mainline WIM Installation	\$450,000	\$75,000	\$525,000		
New Facilities	\$50,750,000	\$7,600,000	\$58,350,000		
MnDOT Subtotal	\$61,150,000	\$9,175,000	\$70,325,000	\$25,000,000	\$45,325,000
Portable Scales	\$530,000	--	\$530,000		
Staff Wages and Fringe	--	--	--		
New Staff Equipment	\$2,675,000	--	\$2,675,000		
State Patrol Subtotal	\$3,205,000	--	\$3,205,000	\$0	\$3,205,000
Program Total =	\$64,355,000	\$9,175,000	\$73,530,000	\$25,000,000	\$48,530,000

Table 5.12: Annual Operations & Maintenance Investment Summary

Investment Category	Future Needs Operations & Maintenance Annual Costs	Existing Program Funding Level	Anticipated Annual Funding Gap
Existing Facilities	--		
Inspection Buildings	\$65,000		
WIM Camera Integration	--		
Mainline WIM Installation	\$10,000		
New Facilities	\$325,000		
MnDOT Subtotal	\$400,000	\$0	\$400,000
Portable Scales	--		
Staff Wages and Fringe	\$4,325,000		
New Staff Equipment	--		
State Patrol Subtotal	\$4,325,000	\$0	\$4,325,000
Annual Program Total =	\$4,725,000	\$0	\$4,725,000
10-Year Program Total =	\$47,250,000	\$0	\$47,250,000

5.11 Investment Scenarios

In addition to the baseline funding scenario, MnDOT and the State Patrol will seek additional funding for strategic investments in commercial vehicle enforcement facilities and resources using the Needs Assessment Report to help identify high priority projects and initiatives. This plan also studied and developed a series of investment scenarios that describe alternative investment approaches if higher funding levels can be secured.

Three additional, higher funding level scenarios were identified in the planning process as alternative investment approaches. This plan recommends that sources such as state funds be solicited both internally, as well as through the state bonding process, to fully address the funding gap identified in the Need Assessment Report. Potential specific improvements are shown in more detail for each of the three investment scenarios in Appendix B.

It is important to note that MnDOT and State Patrol will use these alternative investment scenarios as a general framework to coordinate future commercial vehicle enforcement projects if additional dollars are secured or identified. In general, additional staffing is needed not only to achieve optimum efficiency and effectiveness of enforcement operations under current facility investment levels, but also if additional capital funding is secured then additional staffing will be needed to fully use those new capital investments. In each alternative investment scenario, additional staffing is recommended.

In terms of long term performance, only the highest cost alternative among these three investment scenarios will fully address the entire funding gap over 10 years. Scenario A represents a modest increase in funding sufficient enough to achieve about 30 percent of the needs identified in the Needs Assessment Report, while the Scenario B represents funding to achieve about 60 percent of the needs, and the Scenario C would achieve 95 percent of the identified needs. A 10-year outlook of proposed investment under each of these three investment scenarios is described in Figure 5.6 below. A more detailed description of each scenario follows the diagrams.

Figure 5.6: Investment Scenario Comparison

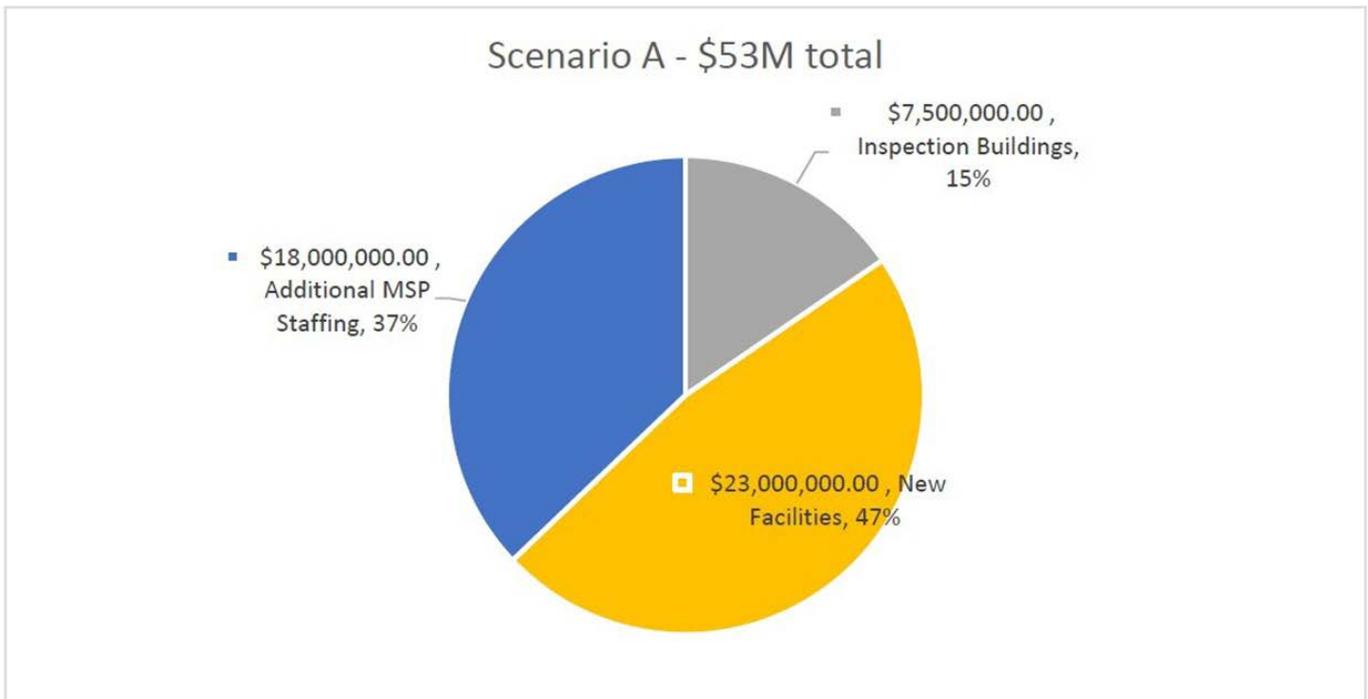
Ten Year Outlook Investment Scenarios



Scenario A – Moderate Investment Increase

Scenario A provides a scenario where the commercial vehicle enforcement program has received an infusion of \$30 million from a state source, such as state General Obligation bonds, and a \$1 million increase from the State Road Construction program. In this scenario, only the highest ranked needs from the needs assessment are used to identify the highest project priorities, including a new facility, enhancing some existing facilities and other related initiatives.

Figure 5.7: Investment Scenario A



It is important to note that in this scenario increased staffing is needed to operate and maintain a new facility and existing facilities based on regional comparisons of staffing levels. The State Patrol Commercial Vehicle Unit will need approximately 15 staff at minimum in this scenario. This corresponds to an approximately \$1 State Patrol staffing need per year that can be addressed through internal reallocation of existing staff or through an increased funding appropriation request to the Legislature.

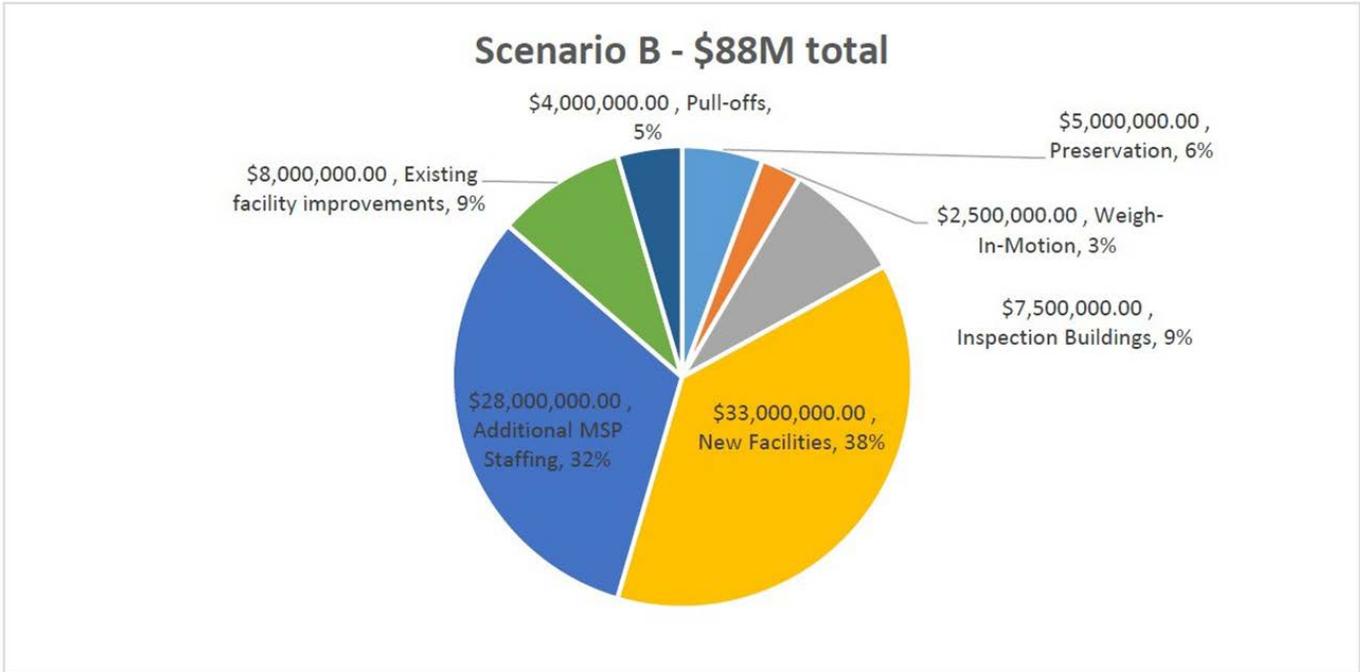
Category	Percentage
New Facilities	47%
Investment in Existing Facilities	0%
Inspection Building	15%
Pull-off Area	0%
Weigh In Motion improvement	0%
Additional Staffing	37%
Education and Outreach	<1%
Preservation	0%



Scenario B – Large Investment Increase

Scenario B provides a scenario where the commercial vehicle enforcement program has received an infusion of \$60 million from a state source, such as the state General Obligation bonds and a \$2 million increase from the State Road Construction program. In this scenario, the highest ranked needs from the needs assessment are used to identify the highest project priorities, including two or more new facilities, enhancing some existing facilities and other initiatives.

Figure 5.8: Investment Scenario B



In this scenario increased staffing is needed to operate and maintain the new facilities. The State Patrol Commercial Vehicle Unit will need approximately 36 staff at minimum to conduct the regular operations of each facility long term. This corresponds to an approximately \$28 million through internal reallocation of staff or through an increased funding appropriation request to the legislature.

Category	Percentage
New Facilities	38%
Investment in Existing Facilities	9%
Inspection Building	9%
Pull-off Area	5%
Weigh In Motion improvement	4%
Additional Staffing	32%
Education and Outreach	<1%
Preservation	6%

Scenario C – Largest Investment Increase

Scenario C provides a scenario in which the commercial vehicle enforcement program has received an infusion of \$90 million from a state source, such as state General Obligation bonds and a \$3 million increase from the State Road Construction program. In this scenario, the highest ranked needs from the needs assessment are used to identify the highest project priorities including several new facilities, enhancing existing facilities, and other initiatives.

Figure 5.9: Investment Scenario C



In this scenario increased staffing is needed to operate and maintain the facility. The State Patrol Commercial Vehicle Unit will need approximately 60 staff at minimum to conduct the regular operations to address all staffing needs across the state for enforcement. This corresponds to an approximately \$4.5 million staffing need per year that may be partially addressed through internal reallocation of staffing, but will most likely require an increased funding appropriation request to the legislature.

Category	Percentage
New Facilities	34%
Investment in Existing Facilities	9%
Inspection Building	6%
Pull-off Area	3%
Weigh In Motion improvement	4%
Additional Staffing	45%
Education and Outreach	<1%
Preservation	8%



6 Implementation Steps

Accomplishing this expanded level of investment in Minnesota’s commercial vehicle enforcement program described in Section 5 will require a coordinated effort by MnDOT and the State Patrol. Some of the investments will require more strategic and effective use of existing operations and highway improvement funding. Other investments will require securing additional capital improvement funding. However, all of the investments will require careful planning of staff resources and operations funding to ensure that any new implementations can be used to their fullest extent. The following subsections outline several action items and implementation steps for MnDOT and State Patrol for moving toward their future program goals.

6.1 Needs Assessment Action Items

The Needs Assessment report and this Weight Enforcement Investment Plan have outlined eight main topic areas in which to focus future investments and resources. There are many different strategies available to enhance the existing commercial vehicle enforcement program in Minnesota using these Investment Categories. Table 6.1 below briefly describes a number of recommended action items that are the next steps to moving forward with strategy implementation.

Table 6.1: Implementation Action Items

Investment Category	Action Items
Investment in Existing Facilities	<ul style="list-style-type: none"> Program new investments to ensure they are completed before the need is critical Stagger the St. Croix platform scales to allow of continued operations during construction
Inspection Buildings	<ul style="list-style-type: none"> Complete a preliminary layout of the existing facilities with inspection buildings Determine which buildings features to include in the design Determine the type of technology and equipment to incorporate into the buildings, such as Performance-Based Brake Testers (PBBT) Coordinate the new building needs with the 20-Year Strategic Building Plan
Coordination of Enforcement Pull-Off Areas	<ul style="list-style-type: none"> Review existing WIM sites with cameras to create a pull-off downstream to enhance the usability Review the STIP and CHIP program and coordinate with Districts (i.e. map the 77 specific sites to individual future construction projects) Ensure that State Patrol District 4700 is formally part of the project scoping process statewide. Create a standard detail drawing to share with District personnel during design Coordinate with rest area program any rest area enhancements, modifications, or closures
Improved WIM Utilization	<ul style="list-style-type: none"> Coordinate enhanced maintenance efforts for WIM utilized for enforcement purposes Coordinate WIM integration at St. Croix, Red River, and Worthington with a preclearance program
Portable Scale Replacement Plan	<ul style="list-style-type: none"> Develop a procurement process to replace portable scales on a 2-year cycle. The number of scales to be replaced will be based on funding levels and the condition needs of the scales.
Increased Minnesota State Patrol Staffing	<ul style="list-style-type: none"> Request additional state funding for enforcement resources Fill new positions to achieve the target staffing levels over the 10-year plan Enhance recruitment efforts to be able to fill the positions with qualified candidates
Education and Outreach	<ul style="list-style-type: none"> Develop a strategic marketing and outreach plan to determine the target audience and methods to conduct effective outreach Consider the needs of this plan with the increased staffing to determine if a dedicated position is required for education and outreach purposes
Additional Weight Enforcement Facilities	<ul style="list-style-type: none"> Request special improvement funding for the investment needs for the additional weigh stations Identify potential locations for the proposed weigh stations for planning purposes Complete a detailed concept of operations for all new sites



6.2 Detailed Concept of Operations

The High-rated locations in the evaluation are summarized in Section 5.10 above. However, each one of these sites has unique qualities, such as traffic volume and operations, geography, and property development. Each one of these sites requires a detailed concept of operations in order to move to the design phase. For example, a Class A weigh station is recommended on I-94 WB between Minneapolis and St. Cloud. This segment is over 30-miles in length, and several different factors such as interchange spacing, lane availability, sight distance, and other features will impact selecting the precise location at which to site the facility. A detailed concept of operations should include the following features:

- Roadway characteristics, such as traffic data and roadway cross section
- Lane use and availability
- Scope of technology and infrastructure required both on the mainline and off the roadway
- The concept of how trucks and enforcement personnel will interact with the facility/system and each other
- Identification of a safe location in which to perform inspections
- Staff who will be allocated to operate the facility/system
- Performance measures to track after the facility/system is operational to ensure it is functioning as intended

The detailed concept of operations will assist in vetting various weigh stations classifications to identify the most effective solution to be deployed in field operations.

6.3 Current and Future Technology

The current program in Minnesota utilizes the following technology:

- WIM technology for patrol operations, sorting at two Class A facilities, and portable WIM
- Overheight detection at various fixed facilities
- Vehicle screening for weights and heights at two Class A facilities
- Preclearance at all fixed weigh stations and permanent pull-off sites
- Aspen computerized data system for reporting inspections data

As outlined in Section 2.2 above, Minnesota State Patrol is restricted from using license plate readers and US DOT readers for commercial vehicle enforcement operations. However, there are some other technology deployments to consider for enhancing operations. Some of these potential technology deployments for consideration and future testing include:

- Performance-Based Brake Testers to be used with inspection buildings, if they are constructed
- Tire pressure and anomaly sensors are a new technology that several states are moving toward deploying. With the critical importance of tire condition on vehicle safety, this is a technology that may be installed at one location in Minnesota as a pilot installation.
- There are many unknowns and challenges related to future Connected and Autonomous Vehicles (CAV) as it relates to the trucking industry. Minnesota commercial vehicle enforcement and operations personnel should stay engaged in progress being made in these CAV activities to keep track on new developments likely to occur in the future. One



strategy may include being involved in activities related to the Governor's Advisory Council on Connected and Automated Vehicles and the Interagency Connected and Automated Vehicle Team (I-CAV Team). Future investments may need to be adjusted based on these developing technologies.

The federal Innovative Technology Deployment (ITD) Program (formerly known as CVISN) is another opportunity for Minnesota to enhance and leverage future technology related to commercial vehicle enforcement. The overall goals of the ITD program are to improve safety and productivity of motor carriers, commercial vehicles and their drivers.

In addition, the ITD program has goals to simplify enforcement operations through targeted enforcement, improve security and commercial vehicle data sharing within states and between states and FMCSA and reduce state and industry regulatory costs. Minnesota is one of only nine states (plus Washington D.C.) that are not Core Compliant with ITD. Minnesota currently meets the requirements for using Aspen, e-screening through their preclearance subscription, and IFTA/IRP credential administration. However, Minnesota needs to develop or update a CVIEW system to meet the program requirements. Coordination with the Driver and Vehicle Services Division in DPS will be required to update the CVIEW to current standards. This information would also need to be compiled into an ITD Program Plan and Top Level Design document and submitted to FMCSA for official review and approval.

One benefit of working toward ITD Core Compliance is making Minnesota eligible for ITD funding in the future. In FFY2017, over \$21 million in ITD grant funding was awarded to various states through this federal program. Minnesota is not currently eligible to even apply for ITD-specific grants, except for funding of initiatives to work toward Core Compliance. With the various investments outlined in this report, as well as other state initiatives such as truck parking, access to an additional funding source could prove beneficial in being able to deploy needed technology.

6.4 Performance Measures

Many elements of this investment plan are based on target goals and projections for inspections as well as operating fully functional facilities. A comprehensive performance management and measurement system will help to track that State Patrol and MnDOT are working toward these two primary stated goals:

- State Patrol – Number of inspections by level on patrol and at individual facilities
- MnDOT – Percentage of buildings in a state of good repair

State Patrol has the ability to track inspections using Aspen, FMCSA's inspection reporting application, supported through accurate location data entry by enforcement personnel. In addition, MnDOT has the ability to track the building condition. This information could be compiled and reported on a quarterly basis. This is data that can also be used in communications and outreach efforts to help reinforce the importance of the commercial vehicle enforcement program. MnDOT and State Patrol can work collaboratively to implement strategies identified in this 10- Year WEIP to meet these goals while also ensuring these strategies and goals are integrated in the annual CVSP and SEP. Potential performance measures which could be considered in the future may include:

- Vehicle and Driver Out-of-Service (OOS) rates
- Number of violations detected
- Number of trucks weighed and trucks screened
- Number of hours and days a weigh station is open



6.5 Funding Sources

In order to meet the investments outlined in this plan, Minnesota will need to secure additional funding from existing sources or new sources. The construction of new fixed weigh stations is a significant investment, which may require a special joint request for funding by the MnDOT and State Patrol. Some of the other capital investment in facilities may be able to be achieved through the standard \$2 million per year allotment for commercial vehicle enforcement improvement projects. The current level of investment will be insufficient to fully fund the range of needs previously identified.

Funding for additional staff would most likely be a request for additional state funding to the Minnesota State Patrol operating budget since the annual MCSAP grant amount is not anticipated to increase dramatically in the future. Operations and maintenance of the existing facilities are funded jointly by the OFCVO, Building Services and the MnDOT Districts. OFCVO may need to consider using its own dedicated budget for the weight enforcement program in the future to meet the current program needs but also for the expansion of needs of new facilities. In addition, future funding levels will need to be coordinated with Building Services and the MnDOT Districts to ensure the budget for operating and maintaining new facilities is available.

New sources for funding may include taking advantage of future FAST Act freight funding as it becomes available, applying for ITD grants if Minnesota becomes Core Compliant, and using the highway improvement program to construct improvements as part of typical highway construction projects.

6.6 Memorandum of Understanding (MOU)

With commercial vehicle enforcement program operation responsibilities divided between MnDOT and State Patrol, close coordination needs to continue to meet the aggressive program enhancement goals identified in this document. The CVIC provides an appropriate venue for leadership from both agencies to coordinate program operations and enhancements. However, construction of any new enforcement facility will require commitments from both agencies. For example, MnDOT will need to commit to funding the capital costs and for maintaining a new facility, while State Patrol will need to commit to adequately staffing that facility to make full use of the investment. Planning for and scheduling these funding and staffing commitments will require both agencies to fully and mutually understand their respective roles. Formalizing this shared understanding through a Memorandum of Understanding is an opportunity for both agencies to document their expectations and responsibilities. The MOU could be a brief agreement drafted by MnDOT and State Patrol program leaders and formally approved through the CVIC.



7 APPENDICES

Appendix A: Needs Assessment Report

Appendix B: Investment Scenarios

Appendix C: Peer State Review

Appendix D: Classification Systems for Weight Enforcement Locations