

2022 Report on the

Corridors of Commerce Program

November 2022



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Cover photo: Corridors of Commerce project in Albertville, Minnesota

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Legislative Request

This report is issued to comply with [Minnesota Statutes 161.088, subdivision 7](#).

161.088 CORRIDORS OF COMMERCE PROGRAM.

Subd. 7. Legislative report; evaluation.

- (a) Annually by November 1, the commissioner must electronically submit a report on the corridors of commerce program to the chairs and ranking minority members of the legislative committees with jurisdiction over transportation policy and finance. At a minimum, the report must include:
 - (1) a summary of the program, including a review of:
 - (i) project selection process details that address program design and implementation, decision-making procedures, and eligibility evaluation;
 - (ii) criteria measurement methodologies and criteria weighting used in project selection; and
 - (iii) the policy that provides the weight given each criterion;
 - (2) a summary of program finance, including funds expended in the previous selection cycle, any future operating costs assigned under subdivision 6, and total funds expended since program inception;
 - (3) a list of projects funded under the program in the previous selection cycle, including:
 - (i) project classification;
 - (ii) a breakdown of project costs and funding sources; and
 - (iii) a brief project description that is comprehensible to a lay audience;
 - (4) a comprehensive list of evaluated projects and candidate project recommendations as required under subdivision 5, paragraph (b), that identifies for each project: eligibility, classification, evaluation results for each criterion, score, and disposition in the selection process; and
 - (5) any recommendations for changes to statutory requirements of the program.
- (b) In every even-numbered year, the commissioner must incorporate into the report the results of an independent evaluation of impacts and effectiveness of the program. The evaluation must be performed by agency staff or a consultant. The individual or individuals performing the evaluation must have experience in program evaluation, but must not be regularly involved in the program's implementation.
- (c) Notwithstanding paragraph (a), a report is not required in a year in which:
 - (1) no project selection was completed during the preceding 12 months; and
 - (2) an evaluation under paragraph (b) is not due.

The cost of preparing this report is less than \$5,000.

Corridors of Commerce Program - Overview

A healthy transportation network supports a growing economy by facilitating commerce throughout the state. Transportation investments directly and indirectly foster economic growth with construction jobs and a commerce friendly network of corridors to ship goods and provide mobility to citizens. In 2013, the Minnesota Legislature created the Corridors of Commerce program with the purpose of achieving two major goals:¹

- Provide additional highway capacity on segments where bottlenecks occur in the system
- Improve and preserve the movement of freight and reduce barriers to commerce

Project Eligibility

The original 2013 law established eligibility requirements, which are detailed below in the Project Selection section, for a trunk highway project to be included in the program. In 2017 and again in 2021, legislators updated the criteria for a project to be eligible for the program:

1. The project must be classified as a Capacity Improvement Project or a Freight Improvement Project. The qualifying criteria for each classification are outlined below.
 - a) Capacity Improvement Project
 - The highway is currently not a divided highway, and the highway is an expressway or a freeway beyond the project limits.
 - The highway intersects with another highway but lacks an access between them either at-grade or an interchange. In other words, the junction of two highways contains an endpoint rather than access to the other highway, such as an intersection or interchange.
 - The highway contains a highway terminus that lacks an intersection or interchange with another state highway.
 - The highway has fewer travel lanes in the project area than the number of travel lanes beyond the project limits.
 - Within the proposed project there is a new interchange or an intersection that will be reconstructed from an at-grade intersection to an interchange.
 - b) Freight Improvement Project
 - Removes or reduces an existing barrier to commerce.
 - Preserves existing freight movement.
 - Supports an emerging industry.
 - Provides connections between the state highway system and other transportation modes for the movement of freight.
2. Projects must be consistent with the Statewide Multimodal Transportation Plan.

¹ Created by [Laws 2013, Ch. 117, Art. 3, sec. 1](#), becoming [Minn. Stat. 161.088](#).

3. Projects must be on the Interregional Corridor Network of state highways, which includes MnDOT's supplemental freight routes, for Greater Minnesota or on any state highway in the eight-county MnDOT Metro District².
4. Projects must be able to begin construction within three years of the award of the funding, but may take longer than three years to complete.
5. The amount of Corridors of Commerce funding needed to construct the project (including construction cost, right of way and engineering) cannot exceed the amount of funding available.
6. The project cannot already be listed in MnDOT's State Transportation Improvement Program unless the project was programmed in the STIP as a result of a previous selection from this program.

Project Selection

Project selection for the first three funding rounds (2013, 2014 and 2015) of the Corridors of Commerce program was governed by the seven selection criteria that were in the original 2013 legislation. Those seven criteria were:

- Commerce and economic impacts
- Return on investment
- Efficiency in freight movement
- Traffic safety improvements
- Transportation system connections
- Transportation policy objectives addressed
- Community support

As authorized under the original statute, MnDOT varied its application of some of the selection criteria based on the circumstances surrounding each program year for funding and program development. For example, there were some project selection constraints because trunk highway bonds were used to finance the program in 2013. As another example, a higher emphasis was placed on project readiness in 2013 and 2014.

In 2016, the Office of the Legislative Auditor evaluated MnDOT's highway project selection processes³. The report recommended some specific improvements to how MnDOT selected projects for the Corridors of Commerce program. Following that report came the passage of [2017 Laws of Minnesota, 1st Special Session, Chapter 3, Article 3, Sections 20-22](#). This legislation required changes in the process for how MnDOT selects projects for the program. Those required changes included:

- MnDOT needed to establish a process to identify, evaluate and select projects under the program.
- The process must use all seven of the original selection criteria in the law, plus an eighth criteria of "regional balance" and may not include any additional evaluation criteria.
- All projects that meet the eligibility criteria for the program must be scored.
- The list of projects evaluated must be made public and include the score of each project.

In summer 2017, MnDOT began developing a more formalized project selection process. While developing the scoring process and factors to be used for each criterion, MnDOT conducted two rounds of input meetings statewide seeking input from stakeholders, businesses, corridor coalitions and the public. MnDOT used these meetings to draw

² Unlike other definitions for the counties within the Twin Cities Metropolitan area, [MnDOT Metro District](#) serves the following eight counties in Minnesota: Anoka, Carver, Chisago, Dakota, Hennepin, Ramsey, Scott, and Washington.

³ Office of the Legislative Auditor, ["MnDOT Highway Project Selection,"](#) March 2016.

attention to the 2017 changes to the Corridors of Commerce law and to promote understanding about the process and criteria. After considerable input, particularly regarding the new “regional balance” criteria, MnDOT adopted its new “Corridors of Commerce Program Guidance & Selection Process” in January 2018.

In spring 2021, the Legislature made additional changes to the project selection criteria. A new scoring criterion, “project deliverability” was added to the previous seven alongside regional balance. In the project deliverability scoring category, submitted projects would receive more points if they had time and work already put into the projects to help get them ready for construction. All eight of the scoring criteria must have equal weight on the final score, which means the maximum number of points a project can receive from project deliverability is 100. MnDOT’s project selection process for 2022-2023 reflects this addition.

Public Recommendations

One of the requirements of the Corridors of Commerce program is that MnDOT must accept recommendations on candidate projects from area transportation partnerships and other interested stakeholders. For the 2013 funding, MnDOT developed and selected the list of projects for Corridors of Commerce funding after asking for recommendations from stakeholders, the public and MnDOT’s district staff. In light of the 2017 revisions that all eligible recommended projects be evaluated, and because of some of the issues raised in the Office of Legislative Auditor’s Report, MnDOT made an agency decision that it would not submit any project recommendations for the 2017 funding and would instead score and select only projects submitted through the public recommendation process.

In January 2018, MnDOT used an on-line project process to receive public project recommendations for the 2017 funding. Local governments, corridor coalitions, businesses and the general public submitted recommendations. From those project submissions, a total of four projects were awarded funding. After MnDOT announced the projects in May of 2018, the Legislature passed another 2018 funding package for Corridors of Commerce. That legislation required MnDOT to use the projects previously submitted and scored, so no additional public recommendations were taken at that time.

During the 2021 Legislative Session, the Legislature again made changes to the existing program requirements and added 2021 funding to the program. Because of those changes and lessons learned by MnDOT from the 2018 project selection process, MnDOT chose to implement a series of changes to the project recommendation process for the 2022-2023 project selections. These changes are intended to help reduce the number of projects MnDOT must take through the complete development, cost estimation, and scoring process (During the 2018 scoring process, MnDOT had 173 unique projects that needed to go through the complete process). The following are the changes made to the program:

1. MnDOT limited who is eligible to submit project recommendations to area transportation partnerships, cities, counties, townships, tribal governments, corridor coalitions, regional development organizations and metropolitan planning organizations.
2. Each eligible entity may only submit one project recommendation.
3. The on-line recommendation process requires a more detailed project description and a construction estimate that has been reviewed and agreed to by a licensed professional engineer.

MnDOT also increased the amount of time the on-line submittal process is open to help with these changes.

Funding

In 2013, the initial funding for the program was from \$300 million in trunk highway bonds, which MnDOT supplemented with funds from other state and federal sources. In the 2014 legislative session, the Legislature provided trunk highway funds totaling \$31.5 million for FY 2014 and FY 2015. The program did not receive funding as part of the 2016-2017 transportation budget, so there was not a 2016 solicitation and project selection round.

During the 2017 legislative session, a total of \$300 million in trunk highway bonds was made available for the program for FY 2018 through FY 2021. In addition, \$25 million in cash each year was added for Corridors of Commerce. The cash addition extends to future biennium budgets, so the cash amounts to \$100 million. As a result, MnDOT targeted a \$400 million level for 2017 funding for project selection (\$300 million in bonds and \$50 million in trunk highway cash from the 2018-2019 biennium and \$50 million in trunk highway cash from the 2020-2021 biennium). When MnDOT completed the scoring and ranking process on the projects, a natural break in the scoring of the projects occurred at the \$417 million level. MnDOT made the decision to program the \$417 million worth of projects, essentially committing \$25 million from the 2022-2023 biennium as well. After MnDOT announced the four projects receiving the 2017 funding in May of 2018, the Legislature passed another \$400 million in bonding later that month, which resulted in the selection of another three projects for funding.

During the 2021 legislative session, another \$200 million in bonds was provided to the program, along with a few minor revisions to the legislation. Like the previous 2017 solicitation, MnDOT is assuming that \$50 million in cash will also be available from the 2024-2025 biennium to add to the \$200 million in bonds. Therefore, the 2022-2023 project selections will have \$250 million in total available for the program. MnDOT anticipates announcing the 2022-2023 project selections by May 2023.

For a complete historical breakdown of the Corridors of Commerce funding, see Table 1.

Details on the active Corridors of Commerce projects from the 2017 and 2018 legislative sessions are found on the following pages. For project summary information on past projects selected as a part of the 2013, 2014 and 2015 legislative sessions, refer to Appendix A.

Table 1: Corridors of Commerce Funding Overview

Year*	Trunk Highway Bonds	Trunk Highway Funds	Total Funding	No. of Projects
2013	\$300,000,000	\$0	\$300,000,000	11
2014	\$0	\$6,500,000	\$6,500,000	4
2015	\$0	\$25,000,000	\$25,000,000	12
2016	\$0	\$0	\$0	0
2017	\$300,000,000	\$125,000,000	\$425,000,000	4
2018	\$400,000,000	\$25,000,000	\$425,000,000	3
2021	\$200,000,000	\$50,000,000	\$250,000,000	TBD
Total	\$1,200,000,000	\$231,500,000	\$1,431,500,000	34

*There were no funding opportunities in 2019 and 2020
 Note: amounts exclude project funding from other sources

Table 2: List and Status of All Selected Corridors of Commerce Program Projects

Selection Year	District/ Area	Route	Project Description	COC Funding	Project Status
2013	1	Hwy 169	Lane expansion in Itasca County	\$7,900,000	Complete
	2	Hwy 2	Passing lanes between Cass Lake and Deer River	\$13,910,000	Complete
	3	I-94	Auxiliary lanes from Rogers to St. Michael	\$31,300,000	Complete
	4	Hwy 34	Passing lanes between Detroit Lakes and Nevis	\$8,612,000	Complete
	M	Hwy 610	Freeway completion to I-94	\$80,300,000	Complete
	M	I-694	Reconstruction and lane expansion in Arden Hills and Little Canada	\$38,800,000	Complete
	6	Hwy 14	Lane expansion near Owatonna	\$12,100,000	Complete
	7	Hwy 14	Lane expansion from Nicollet to North Mankato; Nicollet bypass	\$34,700,000	Complete
	8	Hwy 23	Passing lanes between Willmar and I-90	\$8,686,000	Complete
	3	Hwy 371*	Lane expansion from Nisswa to Jenkins	\$45,400,000	Complete
	M	I-35W*	I-35W North MnPASS expansion	\$18,292,000	Complete
2014	6	Hwy 14	Purchase right of way for expansion between Dodge Center and Owatonna	\$1,500,000	Complete
	8, 3	Hwy 23	Environmental work for expansion on two segments, from New London to Paynesville and from Paynesville to Richmond	\$1,500,000	Complete
	4	Hwy 34	Center left turn lane in Detroit Lakes from Hwy 59 to CR 141	\$1,900,000	Complete
	1	Hwy 2	Reconstruct segment of roadway in Deer River	\$2,300,000	Complete
2015	7	Hwy 14, Hwy 15	Preliminary design work	\$700,000	Complete
	M, 3	I-94	Design options for lane addition	\$1,400,000	Complete
	2	Hwy 11	Design passing lanes	\$500,000	Complete
	6	Hwy 14	Purchase right of way for expansion	\$7,300,000	Complete
	8, 3	Hwy 23	Purchase right of way for expansion	\$800,000	In-Progress
	4, 3	Hwy 34	Mill and overlay	\$3,000,000	Complete
	M	Hwy 169	Design work for bridge replacement	\$1,500,000	Complete
	M	I-35W	Design work	\$5,500,000	Complete
	M	I-35W	Design work for MnPASS system	\$1,100,000	Complete
	M	Hwy 65	Design work for bridge deck replacement	\$1,000,000	Complete
	M	I-94	Design work for new pavement, bridges and managed lanes	\$2,000,000	In-Progress
M	Hwy 51 (Snelling Ave)	Added funding for reconstruction	\$1,400,000	Complete	

Selection Year	District/ Area	Route	Project Description	COC Funding	Project Status
2017	Greater Minnesota	I-94	Add an auxiliary lane from St. Michael (Trunk Hwy 241) to Albertville (Country Road 37).	\$60,000,000	Complete and open to traffic
	M	I-494	Add MnPASS lanes in both directions from France Avenue to Hwy 77 eastbound and from Hwy 77 to I-35W westbound	\$134,000,000	In final design
	M	I-494 & I-35W	Complete Phase 1 of the I-494/I-35W turbine interchange, northbound to westbound directional ramp. Project has been combined with I-494 project above.	\$70,000,000	In final design
	Greater Minnesota	Hwy 169	Convert Hwy 169 to a freeway in Elk River, from Hwy 101 to 197 th Avenue	\$157,000,000	Under construction
2018	Greater Minnesota	Hwy 14	Expand Hwy 14 from two lanes to four lanes between Owatonna and Dodge Center, completing a continuous four-lane roadway between I-35 and Rochester.	\$138,000,000	Complete and Open to Traffic
	Greater Minnesota	Hwy 23	Complete two gaps (New London to Paynesville – South Gap and Paynesville to Richmond – North Gap) to create a continuous four-lane roadway from Willmar to St. Cloud.	\$95,000,000	North gap under construction south gap in final design
	M	Hwy 252 / I-94	Convert to a freeway and add MnPASS lanes from Dowling to Hwy 610.	\$119,000,000	In design

* Indicate projects that were added after the initial list of projects were selected, because of savings in delivering the program.

2017 Corridors of Commerce Summary

During the 2017 session, legislators put \$300 million in funding from trunk highway bonding to the Corridors of Commerce program. In addition, they appropriated \$50 million in trunk highway cash to the Corridors of Commerce program, \$25 million each fiscal year. The trunk highway cash piece of the legislation was a change to MnDOT's base budget and will carry on in future years unless the Legislature specifically changes the law. MnDOT decided to target a \$400 million Corridors of Commerce funding level in 2017 because the trunk highway cash transfer language increased the base budget and because it takes a few years to deliver the bigger capacity projects the program targets.

In January 2018, the recommendation period using the new selection process opened for project proposals. Since this was a new process, MnDOT was not sure what the final project scoring and selection results would be or how much the selected projects would cost. MnDOT received 173 unique project submissions for a total cost of just over \$8.1 billion. When the final project scoring list was completed, MnDOT decided to program \$417 million because it allowed for a more natural break in the project selection. The additional \$17 million will be covered by part of the future FY 2022-2023 trunk highway cash transfer.

Listed in Appendix D is the final project scoring for all the eligible project recommendations received for the FY 2017 funding.

Based upon the scoring outcome, Table 2 represents those projects selected for the 2017 funding. The budget programmed for each selected project represents a 10 percent reduction in the cost estimate to encourage and re-incorporate savings efficiencies within the program. A total of \$213 million of the 2017 funding was selected for Greater Minnesota projects and \$204 million was selected for Twin Cities Metro District projects. That split of funding is within MnDOT's stated "Regional Balance Criteria" of a soft 50-50 split of the funding between the two regions.

The I-94 project selected was the lowest priced alternative submitted for scoring and did not include the rebuilding of the County Road 37 interchange or the construction of the commercial development road. Since the selection of the 2017 projects, MnDOT determined that the I-94 bridges over County Road 37 will need to be replaced in the future. There are some substantial efficiencies in both cost and construction traffic mitigation to be gained from including the rebuilding of the interchange and construction of the commercial development road at the same time as I-94 Corridors of Commerce project. MnDOT is working with local officials to find additional funding beyond the Corridors of Commerce program to cover those costs.

Table 3: Projects Selected with 2017 Corridors of Commerce Funding

Geographic Region	Route	Project Description	COC Funding Award	Project Status
Greater Minnesota	I-94*	Add an auxiliary lane from St. Michael (Hwy 241) to Albertville (Country Road 37)	\$60,000,000	Project is Complete
Metro District	I-494	Add MnPASS lanes in both directions from France Avenue to Hwy 77 eastbound and from Hwy 77 to I-35W westbound.	\$134,000,000	In final design and expected to start construction in summer 2023.
Metro District	I-494 & I-35W	Complete Phase 1 of the I-494/I-35W turbine interchange, northbound to westbound directional ramp. Project has been combined with I-494 project above.	\$70,000,000	In final design and expected to let in spring 2023, and construction to start in summer 2023.
Greater Minnesota	Hwy 169	Convert to a freeway from Hwy 101 to 197 th Avenue in Elk River	\$157,000,000	Under construction with anticipated completion in fall 2025.

*Project award amount was increased from \$56 million because of some increased costs

2018 Corridors of Commerce Summary

During the 2018 session, legislators approved \$400 million in trunk highway bonding for the Corridors of Commerce program. The bond funding came with some special provisions that affected which projects were eligible for the funding. Those special provisions were:

- MnDOT must select projects solely using the scoring results from the 2017 funding program.
- Projects will be selected based up the projects scored order or rank.
- At least two projects from outside of MnDOT’s Metro District must be selected.
- For projects outside of MnDOT’s Metro District, MnDOT must select projects in counties that did not receive project funding from the 2017 funding program.

After applying the special provisions, MnDOT selected the next three projects for the 2018 funding. Table 4 below provides information regarding the three selected projects. Like Table 3, the project budget amount programmed for each selected project represents a 10 percent reduction in the cost estimate to encourage and re-incorporate savings efficiencies within the program.

Table 4: Projects Selected with 2018 Funding

Geographic Region	Route	Project Description	COC Funding Award	Project Status
Greater Minnesota	Hwy 14*	Expand Hwy 14 from two lanes to four lanes between Owatonna and Dodge Center, completing a continuous four-lane roadway between I-35 and Rochester	\$138,000,000	Complete
Greater Minnesota	Hwy 23**	Complete two gaps (New London to Paynesville – South Gap and Paynesville to Richmond – North Gap) to create a continuous four-lane roadway from Willmar to St. Cloud.	\$95,000,000	North Gap is under construction with anticipated completion in fall 2023. South gap is in final design with project construction to begin spring 2023.
Metro District	Hwy 252 / I-94	Convert to a freeway and add MnPASS lanes from Dowling to Hwy 610.	\$119,000,000	Environmental Impact Study in progress. Construction anticipated to start summer 2026.

*This project came in below the original COC funding award.

** Although selected as one project for funding, for efficiency and traffic mitigation construction will be as two separate projects.

From Table 4, a total of \$364 million was awarded for the three projects. The remaining \$36 million in bonds from 2018 funding and the \$25 million in cash will be used as a contingency to cover potential inflation on all the projects from the 2017 and 2018 legislation. MnDOT is striving to deliver the 2017 and 2018 projects as close to or within their award amounts; however, each of the projects are at different stages in the project development process and some projects may need to find additional resources to be delivered. Any savings from projects already awarded to contractors will be given back to the program to help other projects that may be short in the future.



Photos of Hwy 14 project, before and after with first vehicles driving the new roadway

2021 Corridors of Commerce Summary

During the 2021 session, legislators approved another \$200 million in bonds and the program will likely receive another \$50 million in cash from the 2024-2025 biennium budget. MnDOT is currently seeking project recommendations for this funding on-line at the Corridors of Commerce website through November 30, 2022. After the on-line recommendation process closes, MnDOT will work to develop, estimate and score those projects deemed eligible for the program. MnDOT anticipates announcing the selected projects during the first week of May 2023. The new projects selected will be included in the 2023 edition of this report.

Program Effectiveness Evaluation Summary

A feature of the Corridors of Commerce program is legislative direction to incorporate into the legislative report the “results of an independent evaluation of impacts and effectiveness of the program,” which is to be provided biennially starting in 2016.⁴ MnDOT staff not involved with regular Corridors of Commerce program implementation performed the analysis. Findings are summarized below, and the full evaluation is provided in Appendix C.

The program effectiveness evaluation reviewed Corridors of Commerce projects that are now complete and funded from the initial implementation in 2013, projects from the 2014 selection round and projects from the 2015 project selection round. A highway project is typically a multiyear endeavor and proceeds through project development (such as design, engineering and environmental analysis) and construction steps. As a result, for this evaluation there are 13 completed projects ready for review. The projects are listed in Table 5.

Table 5: Completed 2013-2015 Projects

District	Route	Construction End Month
2	Hwy 2 (Passing lanes from Cass Lake to Deer River)	Oct. 2015
3	I-94	Oct. 2015
4	Hwy 34 (Passing lanes from Detroit Lakes to Nevis)	Nov. 2015
6	Hwy 14 (“Segment 1” of Owatonna to Dodge Center)	Oct. 2015
Metro	Hwy 610	Oct. 2016
8	Hwy 23 (Passing lanes -- South)	Aug. 2016
8	Hwy 23 (Passing lanes – North)	Oct. 2016
7	Hwy 14 (North Mankato to Nicollet)	Nov. 2016
4	Hwy 34 (Center left turn lane in Detroit Lakes / Mill and overlay)	Aug. 2017
2	Hwy 2 (Reconstruct in Deer River)	Aug. 2017
Metro	I-694	Sept. 2017
3	Hwy 371	Oct. 2017
1	Hwy 169	June 2018

The evaluation focuses on the quantifiable criteria used in selecting projects, outlined below.

- **Construction timing and duration.** Project delivery effectiveness was gauged by comparing the original estimates of construction start date (made when projects were selected into the program) to actual commencement and completion of construction work.
- **Construction cost.** Cost management and oversight was reviewed by comparing construction cost estimates made at different points in the project development process and final cost amounts.
- **Vehicle speeds.** Traffic speed can be used to measure roadway capacity and efficient movement. Speed for both passenger automobiles and trucks were examined, comparing speed averages prior to construction against both predicted and observed speeds following project completion.

⁴ [Minn. Stat. 161.088, subd. 7 \(b\).](#)

- **Traffic safety – crash incidence and severity.** Crash data provides an important way to help identify changes in traffic safety at each of the project locations. However, it is too soon following construction to be able to obtain information on crashes that occurred in the areas of the Corridors of Commerce projects. The evaluation established an analytical approach that can be used—once sufficient post-construction data is available—to identify any likely change in crashes. This approach is based on comparing crash incidents before and after a given Corridors of Commerce project.
- **Freight movement – commercial vehicle traffic growth.** To track developments in freight movement, a trend analysis evaluation technique was created that reviews truck traffic changes in each of the Corridors of Commerce project corridors. This technique is designed to isolate traffic impacts that are more likely to come from the Corridors of Commerce project itself. It reviews heavy commercial vehicle growth over a period of years prior to each project, while adjusting for general statewide growth in truck traffic. As with the analysis of crashes, there is too little post-construction traffic data to observe whether there is commercial vehicle growth (beyond a general statewide “baseline”) that is attributable to the Corridors of Commerce project.

Summarizing the findings, the set of completed Corridors of Commerce projects uniformly score well on the dimension of construction scheduling, namely timing and duration. In all projects, construction started before or in the originally estimated year. The majority of projects also demonstrate effective cost management throughout their development cycle with respect to initial construction cost estimates, shown by final construction costs coming in below the initial estimates. All but one of the corridors (U.S. Highway 2 between Cass Lake and Deer River) evaluated in this study now support measurably higher vehicle speeds than the pre-expansion baseline levels, although the magnitude of the speed improvement is generally below planning expectations.

The remaining two criteria of traffic safety based on crashes and freight movement growth cannot yet be fully assessed because there is insufficient performance data published to date reflecting actual conditions following the Corridors of Commerce work. Official crash rate data is not available for a long enough post-construction period to permit a reliable analysis of safety conditions, while heavy commercial vehicle data allows for only a single year of observed traffic growth rates following completion of construction and opening to traffic. For the time being, the descriptions for these measures include historical trend data, analysis examples with hypothetical data and expected crash rate reductions in the case of traffic safety to guide upcoming before/after comparisons once a more complete data series extending beyond the end of construction can be compiled.

Appendix A: Past Corridors of Commerce Program Projects

2013 Corridors of Commerce Summary

MnDOT originally selected 10 projects for the \$300 million in bonds from the 2013 funding. After the initial selection, two individual Highway 14 projects were merged into one project resulting in a total of nine projects. Following the original project selection, MnDOT placed an emphasis on managing the scope and cost of the selected projects to minimize the risk of exceeding the program budget. The efforts resulted in projected total costs coming in substantially below the original estimated amount, allowing MnDOT to capture project savings and delivery efficiencies. As a result, two additional projects were added to the program using 2013 funding. Those projects were a four-lane widening project on Highway 371 from Nisswa to Jenkins in District 3 and the I-35W MnPASS north expansion project in the Twin Cities Metro area. These projects did not rely solely on the Corridors of Commerce funding for construction. A summary of all projects that received 2013 funding is listed in Table 6.



Photo of I-94 Corridors of Commerce project during construction from Rogers to St. Michael

Table 6: Projects Selected with 2013 Funding

District	Route	Project Description	Project Category	Project Status	Project Delivery*	Construction	Total Funding Needed
Original Projects Selected							\$300,000,000
1	Hwy 169	Lane expansion in Itasca County	Freight Bottleneck	Complete and open to traffic	\$1,800,000	\$6,100,000	\$7,900,000
2	Hwy 2	Passing lanes between Cass Lake and Deer River	Freight Bottleneck	Complete and open to traffic	\$110,000	\$13,800,000	\$13,910,000
3	I-94	Auxiliary lanes from Rogers to St. Michael	IRC Capacity Improvement	Complete and open to traffic	\$2,900,000	\$28,400,000	\$31,300,000
4	Hwy 34	Passing lanes between Detroit Lakes and Nevis	Freight Bottleneck	Complete and open to traffic	\$46,000	\$8,566,000	\$8,612,000
M	Hwy 610	Freeway completion to I-94	Metro Capacity Improvement	Complete and open to traffic	\$4,643,000	\$75,657,000	\$80,300,000
M	I-694	Reconstruction and lane expansion in Arden Hills and Little Canada	Metro Capacity Improvement	Complete and open to traffic	\$2,800,000	\$36,000,000	\$38,800,000
6	Hwy 14	Lane expansion near Owatonna	IRC Capacity Improvement	Complete and open to traffic	\$46,000	\$12,054,000	\$12,100,000
7	Hwy 14	Lane expansion from Nicollet to North Mankato; Nicollet bypass	IRC Capacity Improvement	Complete and open to traffic	\$2,200,000	\$32,500,000	\$34,700,000
8	Hwy 23	Passing lanes between Willmar and I-90	Freight Bottleneck	Complete and open to traffic	\$286,000	\$8,400,000	\$8,686,000
Original Projects Total				All Complete	\$14,831,000	\$221,477,000	\$236,308,000
Additional Projects Selected							
3	Hwy 371**	Lane expansion from Nisswa to Jenkins	IRC Capacity Improvement	Complete and open to traffic	\$3,500,000	\$41,900,000	\$45,400,000
M	I-35W**	I-35W North MnPASS expansion	Metro Capacity Improvement	Complete and open to traffic	\$3,000,000	\$15,300,000	\$18,292,000
Additional Projects Total				All Complete			\$63,692,000
Remaining Balance							\$0

*Professional/Technical Only

Note: Table excludes project funding from other sources.

2014 Corridors of Commerce Summary

As part of a supplemental budget, the 2014 Legislature provided \$31.5 million in trunk highway funding for Corridors of Commerce. The law required that \$6.5 million was available in FY 2014 for projects only in Greater Minnesota and \$25 million was available in FY 2015 for projects statewide. The legislation allowed the funding to be used to prepare potential projects for future construction. Preparations could include right of way purchases, environmental work and design engineering. These activities were not allowed with the 2013 funding, so this helped MnDOT advance more complex projects towards the shovel-ready status for construction.

There was an immediate need to identify FY 2014 projects, so MnDOT used the projects previously suggested by the MnDOT districts, stakeholders and the public. Since the focus of the 2014 program was to prepare projects for future construction, MnDOT adjusted its project consideration criteria to include the following:

- Advancement of the readiness of a future project
- Preservation of efficient freight movement
- Return on investment
- Local support

Four projects were selected for this round of funding (see Table 7). Two of the projects, Highway 14 and Highway 23, involved preparing major corridors for future expansion should additional funding become available. The Highway 34 project was to complete a gap on the corridor that was not covered with the project funded in the 2013 Corridors of Commerce program. The final project selected, Highway 2 in Deer River, was a reconstruction along the main corridor through town. This “Main Street” rebuilding project is an example of how the Corridors of Commerce program can provide statewide transportation benefits (through the improved condition and operation of Highway 2) and local economic benefits. In this instance, the community was able to access and improve their underground utilities.

Table 7: Projects Selected with FY 2014 Funding

District	Route	Project Description	Project Category	Cost Estimate	Project Status
6	Hwy 14	Purchase right of way for expansion between Dodge Center and Owatonna	IRC Capacity Development	\$1,500,000	Complete
8, 3	Hwy 23	Environmental work for expansion on two segments, from New London to Paynesville and from Paynesville to Richmond	IRC Capacity Development	\$1,500,000	Complete
4	Hwy 34	Center left turn lane in Detroit Lakes from Highway 59 to CR 141	Freight Improvement	N/A	Complete
1	Hwy 2	Reconstruct segment of roadway in Deer River	Freight Improvement	\$2,300,000	Complete

2015 Corridors of Commerce Summary

For the \$25 million allotted in FY 2015, MnDOT used the same process it used on the FY 2013 projects, with the addition of the following:

- Approximately 50 percent of the funding went to the Twin Cities metro area and 50 percent of the funding went to Greater Minnesota

Unlike the FY 2014 funding round, there was sufficient time to go through the same type of project solicitation and selection process that was done in 2013. MnDOT again used the Corridors of Commerce website to allow stakeholders, businesses and the public to submit potential projects for consideration. MnDOT used the projects submitted during the 2013 project identification process as a starting point for the 2015 list. This meant that all the projects suggested from the 2013 process were automatically included on the 2015 list unless the project was constructed. New suggestions were then added, including any new ones received from the public solicitation or from internal district submissions.

The focus of the 2014 legislation was on getting projects ready for construction if new funding became available. MnDOT's selected projects that:

- Met the goals and were eligible for the program
- Were a high priority from the district perspective
- Would substantially accelerate the project's readiness
- Had local support

Twelve projects were selected for funding—six in Greater Minnesota and six in the Twin Cities metro area.

In Greater Minnesota, five of the projects specifically accelerated major improvements along several key corridors. From preliminary design to right of way acquisition, these five projects would enhance MnDOT's ability to deliver major corridor investments if funding became available. The sixth Greater Minnesota project involved greatly needed resurfacing work on Highway 34 to help maintain reliable east-west freight movements in northern Minnesota.

In the Twin Cities metro area, three of the six projects selected involved developing the designs for major bridge and roadway replacements to improve freight movement. Two other projects involved design work for major capacity improvements on I-35W and I-94. One project was for construction work along Snelling Avenue in St. Paul for freight improvements, which was part of a larger project on Snelling.

Table 8: Projects Selected with FY 2015 Funding

District	Route	Location	Project Description	Project Category	Total Funding	Project Status
7	Hwy 14 and Hwy 15	New Ulm	Preliminary design work	Freight Improvement	\$700,000 (actual cost about \$1,000,000)	Complete
M, 3	I-94	St. Michael to Albertville	Design options for lane addition	IRC Capacity Development	\$1,400,000	Complete
2	Hwy 11	Greenbush to Warroad	Design passing lanes	Freight Improvement	\$500,000	Complete
6	Hwy 14	Owatonna to Dodge Center	Purchase right of way for expansion	IRC Capacity Development	\$7,300,000	Complete
8, 3	Hwy 23	New London to Paynesville	Purchase right of way for expansion	IRC Capacity Development	\$800,000	In-progress
4, 3	Hwy 34	Detroit Lakes to Becker	Mill and overlay	Freight Movement Preservation	\$3,000,000	Complete
M	Hwy 169	Nine Mile Creek	Design work for bridge replacement	Freight Movement Preservation	\$1,500,000	Complete
M	I-35W	Minnesota River crossing	Design work	Freight Movement Preservation	\$5,500,000	Complete
M	I-35W	Northern suburbs	Design work for MnPASS system	Metro Capacity Development	\$1,100,000	Complete
M	Hwy 65	3 rd Avenue Bridge over Mississippi	Design work for bridge deck replacement	Freight Movement Preservation	\$1,000,000	Complete
M	I-94	Between Minneapolis and St. Paul	Design work for new pavement, bridges and managed lanes	Metro Capacity Development	\$2,000,000	In-progress
M	Hwy 51 Snelling Ave	Selby Ave. to Pierce Butler in St. Paul	Added funding for reconstruction	Freight Improvement	\$1,400,000 ¹	Complete

¹ Amount is only the portion provided from Corridors of Commerce program

Appendix B: Corridors of Commerce Program Guidance and Selection Process for 2022-2023⁵

I. Overview

A healthy transportation network supports a growing economy by helping facilitate commerce throughout the State. Transportation investments directly and indirectly foster economic growth through the provision of construction jobs and a commerce-friendly network of corridors to ship goods and provide mobility to citizens. In 2013, the Minnesota Legislature created the Corridors of Commerce Program with the purpose of achieving two major goals.

- Provide additional highway capacity on segments where there are currently bottlenecks in the system.
- Improve the movement of freight and reduce barriers to commerce.

The Corridors of Commerce program is not intended to serve as an alternative funding mechanism for MnDOT's regular preservation and expansion program. The Minnesota Legislature enacted this program to be separate from MnDOT's regular program and established separate eligibility and scoring criteria for the program that are different than MnDOT's regular program priorities.

II. Project Eligibility

The Corridors of Commerce law specifically laid out program eligibility guidelines. In order for a project to be eligible for the program, it must meet the following eligibility requirements.

1. Projects must either be classified as a Capacity Improvement Projects or Freight Improvement Projects. The requirements for each of those classifications are as follows:
 - Capacity Improvement Projects must meet one of the following bullets:
 - Currently is not a divided highway, and that highway is an expressway or freeway beyond the project limits.
 - Contains a highway terminus that lacks an intersection or interchange with another trunk highway.
 - Contains fewer lanes of travel compared to that highway beyond the project limits.
 - Contain a location that is proposed as a new interchange or to be reconstructed from an intersection to an interchange.
 - Freight Improvement Projects must meet one of the following bullets:
 - Remove or reduce an existing barrier to commerce.
 - Preserve existing freight movement.
 - Support an emerging industry.
 - Provide connections between the trunk highway system and other transportation modes for the movement of freight.

⁵ Reprinted from Corridors of Commerce [website](#)

- Projects must be consistent with MnDOT’s Statewide Multimodal Transportation Plan.
- Projects must be able to begin construction within four years of award of the funding, but the actual construction start may be delayed beyond 4-years to avoid significant impacts to the travelling public by having parallel routes in the same region under construction at the same time.
- Projects must be on the Interregional Corridor Network of state highways, including the supplemental freight routes, in Greater Minnesota or any state highway in the eight-county MnDOT Metropolitan District.
- The amount of corridors of commerce funding needed to construct the project (including construction cost, right-of-way, & engineering) cannot exceed the amount of funding available.
- A project that is listed in MnDOT’s State Transportation Improvement Program is not eligible for funding, unless the project was listed in the STIP because it previously received Corridors of Commerce funding.

III. Project Recommendations

The Process

MnDOT will use an online project recommendation process. **(New for 2022)** Only an individual serving as an official representative of one of the following organizations may submit a project recommendation for consideration of the program below:

- An area transportation partnership
- Any city, county, or township in Minnesota
- Any tribal government in Minnesota
- Any corridor coalition which is formally organized as a not-for-profit organization.
- Any metropolitan planning organization
- Any regional development organization

Each project submitted needs to be able to provide to MnDOT, upon request, a copy of a resolution or letter authorizing them to submit that project on behalf of the organization. **(New for 2022)** Each organization is limited to submitting one project recommendation during each project recommendation cycle.

The following information needs to be provided through the online system for the project to be considered recommended to MnDOT:

- A. Name of applicant
- B. Email address of applicant
- C. Phone number for applicant
- D. Name of the organization applicant represents
- E. Project location
- F. **(New for 2022)** A detailed project description that corresponds with the cost estimate identified in item “G” below.
- G. **(New for 2022)** A cost estimate (construction only) for the project in FY 2022 dollars that has been reviewed and agreed to by any registered engineer in the State of Minnesota.

- H. (New for 2022) Name and contact information for licensed engineer who reviewed cost estimate
- I. Identify source and dollar amount for other funding sources committed to the recommended project.
- J. Name and contact information for those funding source commitments.

MnDOT Recommendations

MnDOT will not make any agency project recommendations as a part of this process. MnDOT will rely solely upon the online recommendation process to provide the list of projects to be considered for the program.

IV. Scoring and Ranking

Legislative Criteria

The Corridors of Commerce law includes nine criteria which MnDOT must use to score and rank projects for the program. The law requires that all nine criteria must be used and that MnDOT cannot add any additional criteria. The nine criteria in the law are as follows:

- Return on Investment
- Economic Competitiveness
- Freight Efficiency
- Safety
- Regional Connections
- Policy Objectives
- Community Consensus
- Project Deliverability
- Regional Balance

Scoring Overview

All projects that have been determined to be eligible for the program will be scored. Up to a 100 Points each will be awarded to projects in eight of the nine criteria. The top point score for a project would be 800 points. The ninth criteria, Regional Balance, has been set-up as a funding division criterion that will be applied after the projects have been scored and ranked using the other seven criteria.

Return on Investment, Economic Competitiveness, Freight Efficiency, and Safety criteria, MnDOT will be scoring using a decile system approach. Under this approach, project outputs that relate to each of the criteria will be compared against each other by sorting them from the best output down to the lowest output. The project outputs will then be divided into ten equal groups or deciles based upon where they compare to all the other projects. Those projects with an output in the top decile (the top 10%) will receive the maximum number of points for that output. Those projects with an output in the bottom decile (bottom 10%) will receive the lowest number of points for that output. Below is an example of how the decile scoring system works:

Top Decile	=	50 points
2 nd Decile	=	45 points
3 rd Decile	=	40 points
4 th Decile	=	35 points
5 th Decile	=	30 points
6 th Decile	=	25 points
7 th Decile	=	20 points
8 th Decile	=	15 points
9 th Decile	=	10 points
Bottom Decile	=	5 points

There are two project outputs for each criterion, except economic competitiveness (it has just one). Therefore, a project may score 50 points in one output and only 30 points in the other output to get a combined 80 points for that criterion.

The remaining four scoring criteria of Regional Connections, Policy Objectives, Community Consensus, and Project Deliverability have had specific scoring matrixes developed for them. Each of those matrices will determine the amount of points a project receives from that criterion. Each of the scoring criteria and the methodology being incorporated with them is discussed briefly in the next section.

Individual Criteria Scoring Methodology

Return on Investment. The law states the first criteria is a return on investment (ROI) measure that provides for comparison across eligible projects. MnDOT will incorporate the Project Effectiveness analysis from the FHWA Highway Capacity manual as the basis for determining ROI outputs. There are essentially two outputs as a part of this analysis: Travel Time Savings and 5-year Crash Reduction Savings.

Travel Time Savings are calculated by first determining what the current travel times are along the roadway (MnDOT will be using one of two available travel time data sets which incorporates cell phone and GPS data). Next, future travel times are calculated based upon the recommended project being constructed. There are two factors which can impact future travel times on the corridor, increases in the capacity of the roadway and increases in the posted speed limit resulting from the improvement. Combined, these savings represent the total travel time savings. The total savings is then divided by the cost of the project to the Corridors of Commerce Program to determine a Return on Investment output for travel time.

Please note the cost used to determine the ROI is the cost to the corridors of commerce program and not the total cost of the project. As an example, if a project's total cost was \$100 M but the submitter was only asking for \$50 M from the program because the other \$50 M is covered from other sources, the travel time savings would be divided by \$50 M and not \$100 M. This is also true for the 5-year Crash Reduction Savings below.

5-Year Crash Reduction Savings are calculated by first determining the type and severity of crashes at the proposed project locations for the last five years using MnDOT's crash data. Using FHWA's Crash Modification Factors, it is possible to project the amount of reduction in crashes a particular type of improvement can be expected to generate.

For example, if there are 100 specific types of crashes in the project area and the modification factor projects the project will result in a 50% savings in those crashes, the project will result in savings of 50 of those particular crashes. The number of crash savings by each type is then multiplied by the individual crash cost to produce a Total Crash Savings from the improvement. The total savings is then divided by the cost of the project to the Corridors of Commerce Program to determine a Return on Investment output for 5-Year Crash Savings.

Economic Competitiveness. The law states that the project must produce a measurable impact on commerce and economic competitiveness. MnDOT purchased the Regional Input-Output Modeling System (RIMS-II) data set for each MnDOT district. That data set summarizes a multiplier of the Number of Jobs per Million dollars of investment factor for each of the eight MnDOT Districts. To determine the output for the criteria, the total cost of the project (not the cost to the corridors of commerce program) is multiplied by the respective multiplier factor in Table 1.

Table 1

District	Multiplier
District 1 – Northeast Minnesota	9.9502
District 2 - North Central Minnesota	8.6916
District 3 – Central Minnesota	10.2447
District 4 – Northwest Minnesota	8.4549
District 6 – Southeast Minnesota	9.6264
District 7 – Southern Minnesota	9.6277
District 8 – Southwest Minnesota	9.5527
Metro	11.4459

RIMS-II estimates the total amount of direct and indirect economic benefit from the total investment. It does not estimate increased economic development potential. MnDOT plans to conduct additional research into better methods for calculating the economic competitiveness benefits of a project for future Corridors of Commerce program selections.

Freight Efficiency. For this criterion in the law it states, “measures of annual average daily traffic and commercial vehicle miles traveled, which may include data near the project location on the trunk highway or on connecting trunk or local highways; and measures of congestion or travel time reliability, which may be within or near the projects limits, or both.” To cover this criterion effectively, two project outputs will be used to calculate points; Travel Reliability and Heavy Commercial Average Annual Daily Traffic.

Travel Reliability will be calculated using the same travel time data from the Return on Investment Travel Time Savings output, however the data will be looked at differently. Instead of calculating the travel time savings, the reliability of the roadway’s travel time will be evaluated. Both the percentage and degree of travel time un-reliability will be utilized to develop an index that can be compared to all the other projects. For more specific information about the Travel Reliability calculation, please consult the technical scoring system document also located on the Corridors of Commerce website.

Heavy Commercial Average Annual Daily Traffic (HCAADT) will be taken from MnDOT’s traffic count volumes maps and used directly as this output. MnDOT will determine the closest HCAADT to the project or use a weighted HCAADT figure if more than one volume is available along the project area.

Safety. This criterion in the law is a measure in traffic safety improvement. Safety is one of the few areas that can impact multiple scoring criteria. As noted in the Return of Investment criteria, 5-year Crash Savings from safety improvement from the project has already been given points. For the Safety Criteria, MnDOT did not want to use the exact same data from the ROI criteria. As a result, MnDOT decided to use two different outputs from its 5-year crash statistics for this criterion which measures the existing crash conditions of the project roadway in comparison to the other project roadways being scored. The two outputs being used are;

- 5-Year Average Number of Fatal and Type A Injury Crashes
- 5-Year Average Number of All Crashes

A decile output score for both the Fatal/Type A Injury Crashes and All Crashes will be calculated for all the projects.

Regional Connections. The law defines this criterion as “connections to regional trade centers, local highway systems, and other transportation modes.” To score points for this criterion, MnDOT developed the following point matrix (Table 2) for scoring projects according to this criterion. As a point of clarification, if a recommended project has more than one applicable Project Type, MnDOT will apply the highest scoring Project Type from the table to calculate the points.

Table 2

Project Type	Greater Minnesota			Metro District	
	Interstate System/ Connection to Level 1 Trade Center	IRC System	Supplemental IRC System	Principal Arterials	All Other THs
Closing a Gap in a Larger Corridor	100	90	50	100	50
Add Lanes to Existing Facility (expands capacity) Does not include filling a gap	90	80	50	90	50
Eliminate Existing Isolated Intersection with an Interchange or Grade Separation; Reconstruct Intersection/Interchange with More Capacity	80	70	20	80	20
Completing a Corridor Conversion (Multiple Interchange and Access Patterns)	N/A	N/A	N/A	70	20
Creating/Improving Connection (Multiple Interchanges and Access Patterns)	60	50	30	60	30
Add Passing Lanes to a Facility	N/A	40	10	10	10
Missing Interchange Ramps/Movements	20	10	10	20	10
Project Minimally Impacts Connectivity between Trade Centers for Users	0	0	0	0	0

Policy Objectives. The Corridors of Commerce law defines this criterion as “the extent to which the project addresses multiple transportation system policy objectives and principles.” MnDOT chose to use its Statewide Multimodal Policy Plan as the basis for developing a point matrix for this criterion, see Table 3. Unlike the Corridor Connections matrix, the Policy Objectives matrix has two separate scoring areas.

The first is the Open Decision Making section. Projects which have had a corridor study, safety plan, safety audit, or environmental document that covers the proposed project area will receive 50-points. If the project does not have any of those things, it will receive no points from this section. For a corridor or safety plan to receive points, it must

have been completed within the last ten years for the eight-county metro area or within the last twenty years for the rest of the counties in Minnesota. Although MnDOT does not need to have contributed financially to the study for it to count, MnDOT needs to have been involved and concur with the findings of the study, otherwise it will not receive any points.

The second section on Policy Objectives matrix covers System Stewardship and Healthy Communities policy areas from MnDOT’s policy plan. For each of the bullets a project meets, it receives 10-points for up to a maximum of 50-points for this section. The bullets have been developed based upon stated goals and priorities from MnDOT’s SMPP. Combining Section one and two then represent a project’s score for the Policy Objectives criteria.

Table 3

Policy Area	Criteria	Scoring
Open Decision-Making	There has been a corridor study, safety plan, safety audit, or environmental document that covers the proposed project	50 - Points
System Stewardship and Healthy Communities	<ul style="list-style-type: none"> • Pavement and/or bridges within the project area are due for a major rehabilitation or replacement within the next eight years • Project incorporates ITS technology or traveler information system component • The project addresses a significant flooding risk, snow trap/drifted issue, or other environmental impact that affects the reliability of the roadway • Project reduces VMT or hours of congestion • Project removes an at grade rail crossing • Project replaces existing overhead lighting with new L.E.D lighting • Project includes improvements for bicyclists and pedestrians • Adds or supports transit service (like park and ride facilities, transit only shoulders, and park and pool locations). • Project will improve access to health care or to recreational areas of the State 	10 – Points for each category Maximum of 50
Total Points available		100

Community Consensus. The Corridors of Commerce definition for this criterion is support and consensus for the project among members of the surrounding community. To best achieve that, MnDOT has developed a matrix which asks for resolutions and letters support from three different groups. Looking at Table 4, notice that the first area requires a resolution of support for the project from each of the municipalities and counties touched by the proposed project. To help ensure that projects meet the spirit of this criteria, MnDOT has made this section an all or nothing points area. In order to receive the 45-points, all the municipalities and counties impacted (touched) by the project need to provide a resolution of support for the project, otherwise the project does not receive any of the 45-points.

The next section of the matrix covers support from the local planning agency for the area. For this section, only letters of support are needed not resolutions. The letters can be from either the Chair of the Planning Agency or its

lead staff member. However, if a project impacts more than just one regional planning agency, it will need a letter from each planning agency to get the points. Otherwise it will not receive any points.

The last section of the Community Consensus matrix requests a single letter of support from any chamber of commerce. This section was added to help reflect the economic impact nature of the Corridors of Commerce program. There is no requirement that the chamber of commerce letter come from a chamber in the project’s geography, just that a single letter of support be received for the project.

The resolutions and letters of support are not needed for the projects until 60-days after the closing of the on-line recommendation process. MnDOT will contact all the municipalities and counties impacted by a recommended project by letter to request they consider providing a resolution of support for the project. Within that letter, MnDOT will note that if the local government does not provide a support resolution it will impact the projects scoring within the Corridors of Commerce program. MnDOT will likewise notify the regional planning agencies of projects that will need letters of support from them. The project submitter is responsible for contacting a local chamber of commerce and have them send a letter of support. All resolutions and letters should be sent by mail or electronically to Patrick Weidemann at MnDOT (See Section VI for contact information).

Table 4

Type of Support	What is Needed	Points
Resolutions of Support from Impacted Jurisdictions	Resolutions supporting the project from each municipality and county that is touched by the project limits.	45 (If all jurisdictions provide a resolution, otherwise no points.)
Letter of Support	A letter of support for the project from the metropolitan planning organization, regional development commission, or regional planning agency	45 (If more than one planning agency touched by the project, must have all provide letters of support or no points awarded)
Letter of Support	A single letter of support for the project from any chamber of commerce	10

Project Deliverability. (NEW for 2022) This criterion was added during the 2021 Legislative Session.

The criteria are designed to award points for those projects which are further along in the project development process and thus have a higher likelihood to be delivered within the funding timeframe for the program. One of the best lead measures for being able to deliver a project within a reasonable time frame and budget is to determine where a recommended project is at in the environmental review process. MnDOT has developed the table below to award the Project Deliverability criteria points based upon where the project is at in the environmental review process.

Table 5

Description	Points
Projects with environmental review process complete	100
Project with environmental review process started, but not yet complete.	50
Projects that have not started the environmental review process.	0

Regional Balance. The criteria Regional Balance does not have any accompanying language with it in the law. MnDOT intends to use the division/awarding of the funding across the state as the way this criterion gets incorporated.

Project Selection Process

All recommended projects that meet both the eligibility requirements and project recommendations requirements of the program will be scored. MnDOT will develop project descriptions and cost estimates from the information provided by the submitters to a sufficient enough level, so that they can be scored in each of the eight-point scoring criteria. The projects will then be scored and ranked together on a single list from the highest scoring project to the lowest.

MnDOT will award funding to the projects starting with the top scoring project and continuing down the list until all the funding is expended. The Regional Balance Criteria may result in some projects being skipped over in lieu of lower scoring projects from another region or area of the State, in order to ensure the funding is “regionally balanced.” MnDOT intends to work with the Legislature during the 2023 session to help get more direction and/or definition to what they mean by Regional Balance. Should MnDOT not get any additional direction from the Legislature, MnDOT will look at its past usage of a soft 50-50 split and discuss other approaches publicly in the Spring of 2023 before making any final decisions on splits.

V. Additional Program Guidance

The following is some additional program guidance and clarifications:

1. MnDOT’s cost participation policy applies to all the selected corridors of commerce projects. For purposes of that policy, all projects selected for award in the program will be treated as “MnDOT Initiated” projects.
2. MnDOT will not award funding to a project that does not meet all the applicable state and federal laws, even if it scores the highest in the program.
3. Use of FHWA federal funding on a Corridors of Commerce project is limited to only those projects which have previously been identified through MnDOT’s performance based planning process and have been developed to be eligible for federal funding (i.e. followed the NEPA process).

VI. FY 2022-2023 Program Schedule:

Table 6

Key Activity	Schedule
Announce 2022 recommendation process and open online submittal process	Aug. 1, 2022
Close online submittal process	Nov. 30, 2022
Project review begins by Districts	Dec. 1, 2023
Final project descriptions, cost estimates, and letters of support are due to Central Office	March 1, 2023
Consultant begins evaluation and scoring of projects	March 1, 2023
MnDOT announces project awards	May 1, 2023

VII. Program Contacts

If you have additional questions about the Corridors of Commerce Program, please feel to contact one of the individuals below.

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Appendix C: 2022 Program Effectiveness Evaluation

This appendix provides the results of an evaluation of the Corridors of Commerce program. The discussion includes analysis and methodology details. As directed in the statute, the evaluation was performed by MnDOT staff independent of those who oversee regular program implementation.

As of August 2022, there were 14 projects funded through previous rounds of the program that are substantially complete and open to traffic. These include the nine projects funded through the initial 2013 Corridors of Commerce program (listed in Table 13), two of the projects funded by fiscal year 2014 legislation and three from fiscal year 2015. The 2014 projects include the reconstruction of Highway 2 through the City of Deer River and the addition of a center left turn lane along Highway 34 in the city of Detroit Lakes. The 2015 projects include the two to four-lane expansion of Highway 371 from Nisswa to Jenkins, the reconstruction of a portion of Highway 51 (also known as Snelling Avenue) within the city of Saint Paul, and a mill and overlay project on Highway 34 in and near Detroit Lakes. The Highway 34 project was bundled together with the 2014 turn lane project for contracting and construction efficiency and will be treated as a single project for evaluation purposes. Together, these projects form the set of evaluated projects. Two additional projects, one funded in 2017 and the other in 2018, were close to complete as of the time of this analysis. For purposes of evaluation, these projects will be deferred to the next study in 2024.

Evaluation Criteria and Considerations

The 2015 legislative report on Corridors of Commerce⁶ lists the following criteria that were applied to candidate projects in 2013 after pre-screening for delivery time frame and amount of additional funding required:

- Construction start date
- Relative return on investment
- Travel time improvement
- Local support
- Multimodal connections

The first three factors translate most readily to quantitative comparisons, which are the appropriate starting points in choosing the objective measures used for this evaluation. The target measures are identified below. The recent completion of some Corridors of Commerce projects means before/after data is not yet available in some cases. The comparison data is also limited because there are projects approved for Corridors of Commerce funding in subsequent years that partially overlap areas already improved by the 2013 projects. These overlaps are noted where they occur.

Projects are judged by whether they are performing in line with expectations with respect to the following:

- Construction timing and duration
- Construction cost
- Vehicle speeds
- Crash incidence and severity
- Heavy commercial vehicle traffic growth

Even where data exists to allow for comparisons between (1) the scoping and selection phase and (2) early post-opening operations on the facility, strict causality cannot be reliably assigned to each improvement funded under

Corridors of Commerce. This is due to the difficulty of controlling for all other behavioral, economic, engineering and sample size considerations.

Instead, the analysis seeks correlations and directional trends to understand how the priorities advanced by the Corridors of Commerce legislation are being brought to life.

Lastly, while all 14 of the projects identified for evaluation are effectively complete and open to traffic, the set of projects available for evaluation on each of the five criteria listed above will vary depending on data availability, timing of project completion and applicability. All projects will be evaluated on the construction timing and cost criteria but some of the projects will necessarily be left out of the analysis of the other three criteria.

Each project is populated with the best available estimates and projections, most specific and closest to the time of construction. In most cases, the planning or predicted values dating from the time of project selection are obtained from high-level modeling conducted by MnDOT’s Office of Transportation System Management. For any projects with more detailed third-party consultant studies preceding construction, those results are shown here and supersede the preliminary planning inputs.

Construction Timing and Duration

Table 14 checks the actual beginning and endpoints of construction against the timing anticipated during project selection. (Expectations for duration or construction finish were not then established or known.) The construction schedule is defined as running from when traffic on the corridor first experiences road work impacts such as reduced speeds, temporary lane reconfigurations and related disruption. Similarly, the end of construction is considered to be the time when free-flow conditions are restored, as confirmed with project managers. This timing may not coincide with the dates specified in the contract in every case, due to preparation and wrap-up work undertaken that does not noticeably affect the roadway environment.

Table 14: Completed Project Construction Dates

District	Route	Potential Start Time Frame (estimate)	Contract Letting Month	Construction Start Month	Construction End Month
2	Hwy 2	2016 - 2018	Aug. 2014	Oct. 2014	Oct. 2015
3	I-94	2016 - 2018	May 2014	July 2014	Oct. 2015
4	Hwy 34	2014 - 2015	June 2014	Aug. 2014	Nov. 2015
6	Hwy 14	2014 - 2015	Apr. 2014	July 2014	Oct. 2015
7	Hwy 14	2016 - 2018	May 2015	June 2015	Nov. 2016
8	Hwy 23 (North)	2016 - 2018	Apr. 2016	June 2016	Oct. 2016
8	Hwy 23 (South)	2016 - 2018	Oct. 2015	May 2016	Aug. 2016
1	Hwy 169	Summer 2016	June 2016	Sept. 2016	June 2018
M	Hwy 610	2014 - 2015	Aug. 2014	Oct. 2014	Oct. 2016
M	I-694	Spring 2016	Nov. 2015	Feb. 2016	Sept. 2017
2	Hwy 2	Summer 2017	Mar. 2017	June 2017	Aug. 2017
4	Hwy 34	Summer 2016	Feb. 2016	July 2016	Aug. 2017
3	Hwy 371	2016 - 2017	Oct. 2015	Feb. 2016	Oct. 2017
M	Hwy 51	Summer 2015	Mar. 2015	May 2015	Oct. 2015

All of the projects listed meet the broad guidelines specified for groundbreaking, and two of the projects were finished before the first year shown in their preliminary start schedules. These comparisons justify the high

deliverability rating assigned to the awarded projects. Note also that the project adding several passing lane segments along Highway 23 in District 8 was split into two separate sponsored projects, identified in Tables 14 and 15 as the north and south sections. Accordingly, these two projects are treated separately in this instance, since they were conceived with different start and contract letting dates; however, for most of the remaining sections of the analysis not related to project delivery, these two projects will be treated as a single project

Construction Cost

Table 15 compares project cost estimates recorded at four major development stages. Chronologically from earliest to most current, the snapshots describe the cost progression from: the original construction estimate;⁷ the pre-letting engineer’s estimate; the awarded contractor bid; and the final total payment by MnDOT to the contractor (designated as the 95 percent or more complete value certified amount).

Table 15: Completed Project Construction Cost Comparison (millions)

Route	Original (2013) Construction	Engineer's Estimate (EE)	Awarded Bid (BID)	Final Amount (FINAL)
Hwy 2 (Passing lanes)	\$10.5	\$10.8	\$13.3	\$14.1
I-94	\$32.4	\$30.6	\$28.3	\$28.4
Hwy 34 (Passing lanes)	\$10.0	\$9.0	\$7.9	\$8.5
Hwy 14 (East of Owatonna)	\$15.0	\$12.6	\$12.0	\$11.1
Hwy 14 (Mankato to Nicollet)	\$38.5	\$31.2	\$31.7	\$33.6
Hwy 23 (North)	\$10.9	\$4.1	\$3.9	\$3.8
Hwy 23 (South)	\$10.9	\$4.3	\$4.1	\$4.3
Hwy 169	\$8.3	\$6.7	\$5.9	\$6.3
Hwy 610	\$100.3	\$83.6	\$80.7	\$80.3
I-694	\$42.3	\$35.0	\$34.7	\$35.0
Hwy 2 (Reconstruct)	\$1.5	\$1.9	\$2.2	\$2.5
Hwy 34 (turn lanes)	\$3.7	\$2.7	\$2.6	\$2.6
Hwy 371	\$41.9	\$56.9	\$49.9	\$50.2
Hwy 51	\$7.1	\$10.5	\$12.9	\$13.3

All amounts are in millions

Note that in Table 15 the original construction cost estimates for the north and south segments of the Highway 23 passing lanes project are identical. This reflects the original construction cost for the project applying to the entire corridor, including both segments. Also, as noted previously, the Highway 34 turn lanes project was combined with a mill and overlay project on a concurrent section of the highway. So, the original construction cost estimate reflects the combined estimates for both project components rather than just the construction of the turn lanes.

Findings

For most of the projects examined, with the exception of the two projects located on Highway 2 and the Highway 51 reconstruction, none of the engineer’s estimates, awarded bids or final amounts are greater than the original construction estimate. This is one indicator of desired cost control and oversight. In other words, no more resources were consumed at later project stages than what was initially expected at the time of project selection. Additionally, only these three projects and the expansion of Highway 14 between North Mankato and Nicollet resulted in awarded

⁷ 2013 estimates were presented in the “Construction Letting (Estimate)” field of Figure 1 on page 6 of the 2015 Report on the Corridors of Commerce Program and exclude project delivery expense.

bids and/or final amounts that were above the engineer's estimate. The final amounts for construction cost all remain fairly close to the awarded bid amounts. Only in one instance (the Highway 2 reconstruction project in Deer River) does the final amount exceed the awarded bid by more than 10 percent.

Only for the pair of Highway 2 projects and the Highway 51 reconstruction project do estimated and actual costs continually increase over the course of project preparation and execution from the low of the original estimate to the final amount. The biggest escalation in cost of \$2.5 million (24 percent of the original estimate) occurs between the engineer's estimate and awarded bid values for the passing lanes project. In contrast, the largest increase in cost for the Highway 2 reconstruction project occurs earlier in the project development process, between the original construction estimate and the development of the engineer's estimate.

Vehicle Speeds

Another requirement of the Corridors of Commerce legislation is that project selection must consider "efficiency in the movement of freight, including... measures of congestion or travel time reliability."⁸ Although recurring reliability problems such as weather events or rush hour backups affect vehicle speeds, these types of events have at most a secondary influence on most of the Corridors of Commerce candidate routes, because these projects are located outside of the Twin Cities metro area and do not experience significant congestion-related delays or travel time variability. The measurement of reliability remains less systematic and routine than other traffic benchmarks, although progress is being made through pilot research led by MnDOT's Metro District that draws on new data collection technology to obtain, validate and report regular, widespread reliability information in the future. For these reasons, travel efficiency is chiefly judged by reference to average vehicle speeds, recorded for autos and trucks.

Required decades ago as a condition for receiving federal highway funding, speed monitoring was left up to state discretion in 1995, and since then has been carried out as a voluntary service by MnDOT to facilitate statewide analysis. Speed monitoring generally involves two methods to collect data. Fixed-point automated speed monitoring stations continuously collect geographically dispersed data for all state-owned roadway classifications—urban and rural, divided/undivided highways and limited-access freeways. Average travel speeds have traditionally been estimated on the basis of vehicle volume, capacity and presence of intersection traffic control. More recently, the availability of data from global positioning system, GPS, readings from smartphones and on-board navigation units is providing a new source of speed data with better spatial coverage and more regular reporting.

Overlapping with Corridors of Commerce improvements around the state, a multiyear review was under way of speed limits governing two-lane highways having a posted limit of 55 miles per hour. The study, required by a 2014 law⁹, was initiated in 2014 and was completed in 2018. For each qualifying location, the review considered engineering and safety criteria to determine the appropriateness of raising the posted speed limit to 60 miles per hour. The year-by-year list of evaluated routes is contained in the report published in January 2018.¹⁰

The completion of this speed limit review resulted in two of the highways under study corresponding to Corridors of Commerce projects receiving higher posted speed limits. The corridor of TH 34 between Detroit Lakes and Nevis had its speed limit increased from 55 to 60 miles per hour, though not until after the completion of the construction of the passing lane segments. TH 14 between Owatonna and Dodge Center also had its speed limit raised from 55 to 60 miles per hour, though this did not affect the first phase of the project which had its speed limit raised to 65 as part of the four-lane expansion. This portion of the project opened to traffic in late 2015.

⁸ [Minn. Stat. 161.088, subd. 5.](#)

⁹ [Laws 2014, Chapter 312, art. 11, sec. 36](#)

¹⁰ Minnesota Department of Transportation, "[2018 Report on the Evaluation of Certain Highway Speed Limits](#)," Jan. 2019.

The most recent speed limit report makes a point equally relevant to the Corridors of Commerce assessment about the nature of the relationship between faster allowed speeds and resulting safety outcomes:

It is important to remember that raising a posted speed limit is not inherently making a road “less safe.” A properly selected speed limit can increase the safety of the roadway by creating uniform travel speeds for all vehicles, and by setting realistic driver expectations of those trying to cross or enter the roadway.¹¹

In other words, there is not necessarily a tradeoff between speed and safety of travel. This uncertainty supports the independent testing within each completed corridor of the speed and safety criteria described in this evaluation.

When investigating typical, representative speed conditions, there are two common reporting practices depending on context. Return on investment modeling, including the modeling that is run during Corridors of Commerce screening, adopts the simple arithmetic mean for an average measure, dividing vehicle miles traveled by vehicle hours traveled. Alternatively, engineering analysis of speed differentials for individual vehicles shows summary statistics in percentile terms, which has the effect of minimizing the impact of extreme but rare high- and low-speed (e.g., farm tractor) observations. Future reports may use both reporting practices; however, this update of the report relies on the former.

Since there are so many vehicles traveling at very similar speeds clustered around the posted speed limit, before-and-after mean speed comparisons tend to show larger changes rather than when using an equivalent percentile measurement. Likewise, speed changes will be greater when focusing on peak time-of-day travel—defined as 6 to 9 a.m. and 4 to 7 p.m.—instead of 24-hour averages that include relatively uncongested intervals. To understand the magnitude of improvement under the high-traffic conditions of greatest concern to drivers, the actual speed data that follows is restricted to peak hours. Obtaining custom, timely actual speed information has historically been difficult, until the introduction of a still-emerging breakthrough technology application developed to advance regulatory effectiveness. As part of the Federal Highway Administration’s National Performance Management Research Data Set, also called NPMRDS, private sector probe data is available for analysis by public agencies at the federal, state and municipal levels on a near-real time basis. Specifically, actual average travel times—and by extension vehicle speeds—are reported around the clock and throughout the year in monthly data tables containing fine detail by time-of-day (down to five-minute slices). Travel time information is obtained from smartphones, dedicated navigation devices, integrated personal vehicle technology and freight fleet reporting coordinated by the research division of the largest national trucking trade association. Roadway network coverage consists of all Corridors of Commerce locations selected to date. However, NPMRDS breaks highways into segments known as traffic message channels. In some cases, Corridor of Commerce project areas do not align well with TMC segments. Streetlight Data provides a similar data set to NPMRDS and allows users to manually select start and end locations. Instances that use Streetlight Data are noted in the analysis.

Analysis of Vehicle Speeds

Table 16 contains 2021 speed information for each evaluated Corridors of Commerce project with passenger vehicle and truck speeds separated.

¹¹ Ibid., p. 7

Table 16: Comparison of Auto and Truck Observed Mean Vehicle Speed Estimates for 2021

Hwy	Description	Autos Observed over Peak Period: Jan-June 2021	Trucks Observed over Peak Period: Jan-June 2021
Hwy 2	Passing Lanes	59.8	54.3
I-94	Rogers to St. Michael	67.8	64.2
Hwy 34	Passing Lanes	52.5	54.1
Hwy 14	East of Owatonna*	65.5	63.1
Hwy 14	Mankato to Nicollet	67.9	65.4
Hwy 23	Passing Lanes - North	57.8	55.8
Hwy 23	Passing Lanes - South	59.1	56.1
Hwy 34	Turn Lanes	25.7	28.4
Hwy 371	Nisswa to Jenkins	62.7	60.4
I-694	Lexington Ave to Junction I-35E	62.5	61.9
Hwy 51	Snelling Ave*	19.3	18.5
Hwy 169	Near Taconite*	64.3	60

* Calculated using Streetlight

Note: Speeds were observed over peak periods

Tables 17, 18, and 19 take a closer look at 2021 speed averages for three corridors of commerce projects. For the first two tables speed averages are broken out by vehicle type, direction (east and west), and AM and PM peak periods. The chosen projects exemplify that average speed can, but does not always, vary by vehicle type, direction, and peak period. The third table, 19, shows speed averages for select construction sections where passing lanes were constructed.

Exceptions include the completion of Highway 610 which, as a new construction project, has no data representing pre-construction conditions. The Highway 2 reconstruction in Deer River is also excluded, as the project contained no operational improvements that would be expected to affect vehicle speeds. Additionally, Highway 23 was analyzed as two parts, north and south.

Table 17: Breakout Comparison of I-694 during AM and PM Peak Periods in 2021

I-694	East	West
Autos		
AM	62.4	63.9
PM	60.2	63.5
Trucks		
AM	62.0	62.8
PM	63.4	62.5

Table 18: Breakout Comparison of I-94 during AM and PM Peak Periods in 2021

I-94	East	West
Autos		
AM	68.2	67.8
PM	66.4	68.7
Trucks		
AM	64.0	65.4
PM	64.5	62.9

Table 19: Breakout Comparison of Highway 34 Passing Lanes Construction Sections

	Section 2	Section 4	Section 5	Section 6	Section 7	Section 8
Autos						
AM	58.0	62.0	62.0	60.5	58.5	59.5
PM	59.0	62.5	62.5	60.5	58.5	59.0
Trucks						
AM	59.5	60.5	60.5	60.0	58.0	59.0
PM	60.5	60.5	61.5	61.0	59.5	60.0

Note: Calculated using Streetlight

Table 20 contains speed information for each evaluated Corridors of Commerce project. Columns on the left display the absolute mean speeds estimated under baseline capacities and predicted after the Corridors of Commerce enhancements. The rightmost columns provide actual NPMRDS, or Streetlight, speed point estimates recorded at peak times and averaged across all vehicles for the first six months¹² of 2014, 2018, 2019, and 2021. Given the staggered construction start and end dates for the projects under evaluation, these two six-month periods capture pre- and post-construction conditions for nearly all projects while also controlling for seasonal effects.

Table 20: Comparison of Estimated/Predicted and Observed Mean Vehicle Speed Estimates¹³

		Estimated/Predicted (absolute mean speeds)				Observed Passenger and Truck Peak Periods			
		Auto		Truck		Combined Auto and Truck			
Route	Description	Baseline	Improved	Baseline	Improved	Jan-June 2014	Jan-June 2018	Jan-June 2019	Jan-June 2021
Hwy 2	Passing Lanes	55	60	55	55	54	53.1	52.2	57.1
I-94	Rogers to St. Michael	62	70	62	65	61.1	63.9	62.2	65.9
Hwy 34	Passing Lanes	50	55	50	50	49.8	52.9	54.6*	53.2
Hwy 14	East of Owatonna	55	65	55	65	58.7*	62.9*	62.7*	64.3*
Hwy 14	Mankato to Nicollet	55	65	55	65	54	58.1	64.3	66.7
Hwy 23	Passing Lanes - North	55	60	55	55	53.8	55.3	55.2	56.8
Hwy 23	Passing Lanes - South	55	60	55	55	53.8	55.3	55.4	57.6
Hwy 34	Turn Lanes	30	30	30	30	26.6	27.6	27.4	27
Hwy 371	Nisswa to Jenkins	52	60	52	60	47.3	52.6	59.7	61.6
I-694	Lexington Ave to Junction I-35E	60	60	60	60	43.5	53.2	56.5	62.2
Hwy 51	Snelling Ave	30	30	30	30	17*	18.1*	17.4*	18.9*
Hwy 169	Near Taconite	55	65	55	65	54.5*	51.4*,**	60.5*	62.1*

* Calculated using Streetlight,

** Under construction during time period

¹² The NPMRDS speed data series begins in July 2013, making the presence of some winter months unavoidable in the pre-construction baseline. Future evaluation iterations can test the stability of post-construction speed snapshots so as to qualitatively control for unusually severe or mild winters.

¹³ Because sample size is suppressed in the NPMRDS data made available, a margin of error cannot be calculated for observed speeds. Everything else being equal, higher-volume roads will have more precise estimates.

Figure 1 below spotlights the observed changes in speed for autos and trucks, comparing the January through June period of 2014 to the same period in 2021. Ascending or positive data points, indicating higher speeds in the current time frame, are desirable. Figure 2 below spotlights the observed changes in speed for autos and trucks between 2019 and 2021.

Figure 1: Change in Peak-Period Vehicle Speeds (miles per hour) for January-June 2014 Compared to January-June 2021

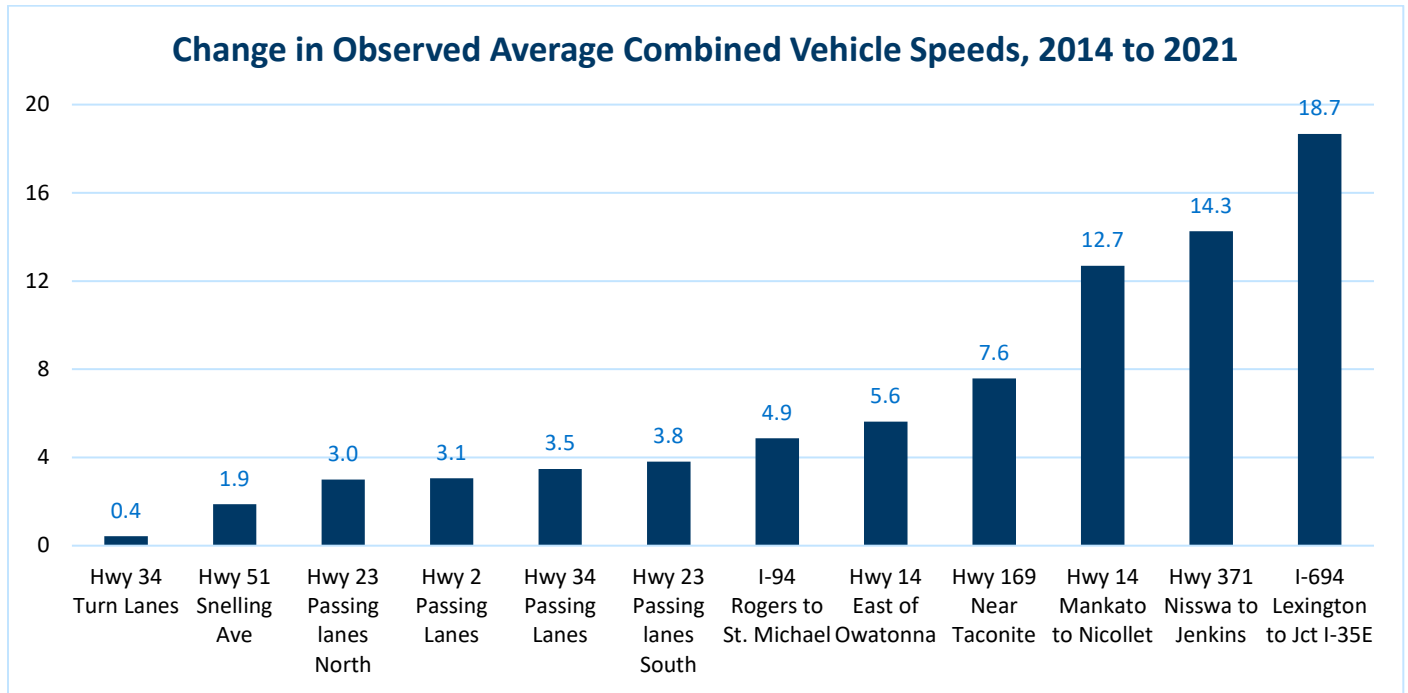
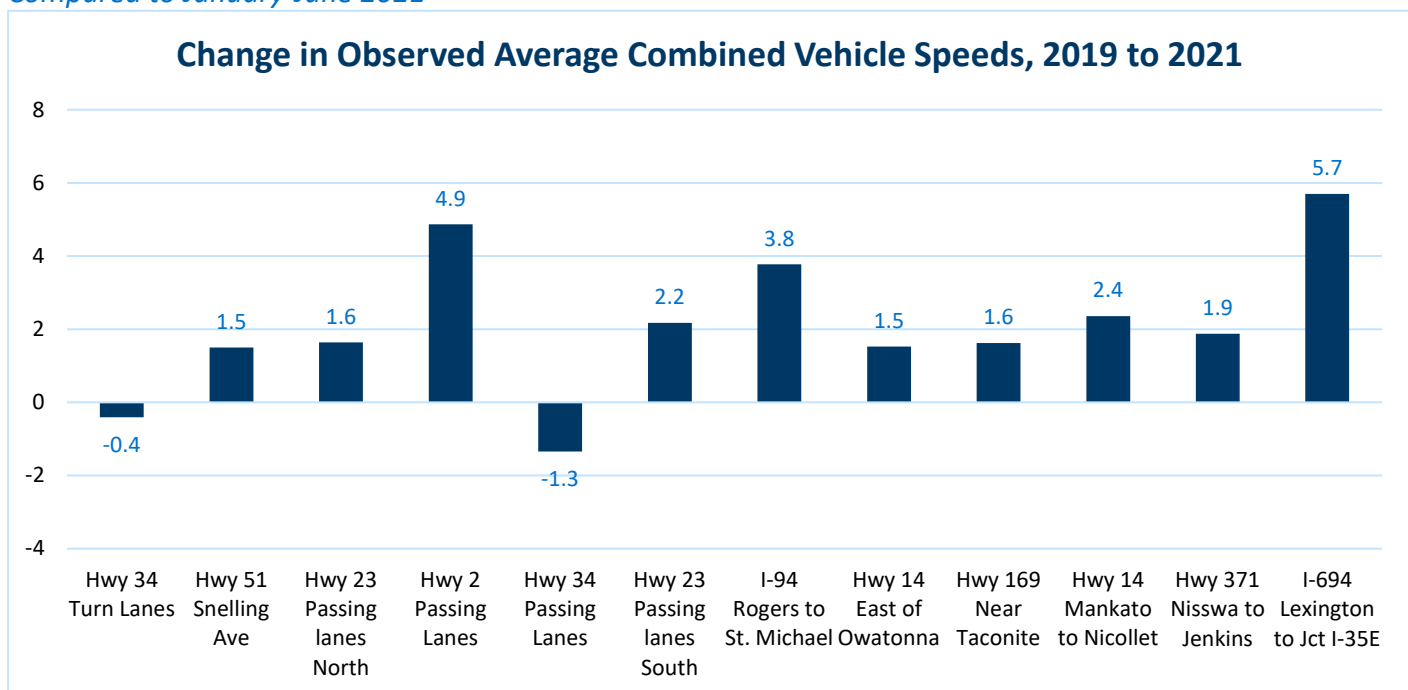


Figure 2: Change in Peak-Period Vehicle Speeds (Passenger Cars and Trucks) for January-June 2019 Compared to January-June 2021



Findings

The results displayed in Figure 1 indicate that all of the projects examined here showed at least some observed increase in average speeds between the first half of 2014 and 2021. Highway expansion projects tended to show the largest increase in average peak-period speeds among those sampled. The most dramatic increase in speeds was observed on Interstate 694 between Lexington Avenue and I-35E, where average peak-period speeds increased by 18.7 miles per hour during the observation period. The next-largest speed increases were recorded on Highways 371 and 14 between Mankato and Nicollet. Both of these projects involved capacity expansion from two to four lanes with a bypass segment.

The average peak-period speeds on Highway 14 East of Owatonna increased by 5.6 miles per hour between 2014 and 2021. It is important to note that these findings differ from those previously reported in 2018. In March 2019 a study was conducted using Streetlight Data to find the 2014 average speeds. This data better represents the project area. 2018, 2019, and 2021 average speeds are derived from Streetlight Data using the same project area although in a separate study.

The passing lane projects examined tended to show smaller, though positive changes in speeds. In addition, the segment of Highway 34 through Detroit Lakes where center-running left turn lanes were installed showed a modest, 0.4-mile per hour increase in average peak speeds.

The results displayed in Figure 2 indicate that all projects had positive speed increases from 2019 to 2021, except the two projects on Highway 34 which had slightly decreased average speeds. The difference in average speed from 2019 to 2021 is of particular interest because of the COVID-19 Pandemic. Changing travel patterns impacted the historical trend of congestion and average speeds. Impacts are likely to continue unfolding in the coming years.

Crash Incidence and Severity

One of the Corridors of Commerce project selection criteria is “improvements to traffic safety.” Adding to the overriding importance all highway users assign to safe travel, routes with significant commercial traffic volumes warrant further attention in a safety review. Differences in speed and acceleration/deceleration characteristics and reduced visibility around large vehicles, in combination with individual driver decisions, can produce hazardous conditions in certain weather, topography and roadway configurations. Building new lanes to create protected passing opportunities and promote increased vehicle separation is intended to mitigate some of this complex risk interaction.

Analysis of Crashes

MnDOT’s Office of Traffic Engineering uses crash records from the Department of Public Safety to spatially locate crash data and conduct safety analyses. Crash data can be collected on a project-by-project basis and, along with traffic volume data, crash rates can be calculated for segments, intersections, or areas. Crashes are categorized by severity according to the following coded scale:

- Fatal (K) – crash resulted in at least one fatality
- Serious Injury (A) – crash resulted in at least one life altering injury
- Minor Injury (B) – crash resulted in at least one clearly determined injury
- Possible Injury (C) – crash may have resulted in an injury that was not diagnosed at the scene
- Property Damage Only (PDO) – crash resulted in no apparent or recorded injuries but caused damage to vehicle(s) or other property

Additionally, the Office of Traffic Engineering reports detailed trunk highway crash statistics annually in a spreadsheet called the Crash Data Toolkit. The toolkits are published midyear with data compiling five-year crash counts. This toolkit data is used to identify statewide average crash rates for different facility types.

For this Corridors of Commerce safety analysis, 11 projects were identified. Because the traffic volumes—and resulting opportunities for conflict—vary substantially across the approved route improvements, using crash rates gives a better comparison as opposed to crash counts. Comparison of crash rates before and after the implementation of the projects under study thus forms the basis of the evaluation.

Crash data and volume data was collected for several periods for each project. A “before” period included several years before the project was constructed to give a baseline of the crash rates along a route. A “construction” period accounted for the calendar years when a project was being constructed. The entire year of construction is not included in the before or after years due to abnormal traffic patterns/volumes during construction as well as to avoid partial years in the analysis. An “after” period accounted for the same number of years as the “before” period but beginning the year after construction finished and ending in 2021. Lastly, an “after (non-Covid)” period was used which is similar to the “after” period but did not include 2020 or 2021 data due to the significant changes in driver patterns and behavior that occurred during those times due to the COVID-19 Pandemic.

Using the crash and traffic volume datasets, a single crash rate was calculated for each period in each project. This involved using a length-weighted measure of annual average daily traffic, or AADT, which represents the total vehicle-miles driven within the project limits when there were multiple roadways and/or intersections being included, along with the sum of all the crashes in the area. Some notes about each project are included later in this section. A similar process was done to calculate fatal and serious injury, or KA, crash rates.

A note of caution when making comparisons before and after 2016. Serious injury crashes are particularly sensitive to this period, as this is year that the Department of Public Safety changed the injury severity definitions in crash reports and also introduced a new crash reporting system. The new description for serious injury crashes was changed to “suspected serious injury” crashes. This description brings it more in line with national standards. This change has led to a substantial increase in reported serious injury crashes, with an approximately 40 percent increase in serious injury crashes between 2015 and 2019 as measured by a five-year rolling average. It is likely that much of this increase is due to the reclassification process. Thus, comparisons using data from before and after 2016 are likely to show increases in later years, especially where crash counts or rates for serious injuries are included. Since the comparisons include rates for fatal and serious injury crashes, one could expect in many cases to see possible increases in these rates for the “construction” or “after” periods.

With this in mind, a comparison of total crash rates including all crash severities is presented below in Table 21 and Figure 3, while Table 22 and Figure 4 show the KA crash rates for each project. Statewide average crash rates are shown for each project utilizing the facility type in the after period.

Overall, seven of the 11 projects saw an increase in either crash rates or KA crash rates with the construction of the project. The type of project does not seem associated with an increase or decrease in crash rates, as there are lane additions, two-lane to four-lane expansions, and passing lane addition projects that saw both increases and decreases in crash rates.

Table 21: Project Crash Rates per Million Vehicle Miles

Project	Before	After	After (non-Covid)	Statewide Average
I-94 (Rogers to St. Michael)	0.758	1.162	1.207	0.324
TH 34 (Detroit Lakes)	1.798	1.886	2.123	1.305
TH 14 (East of Owatonna)	0.263	0.232	0.158	0.481
TH 14 (North Mankato to Nicollet)	0.499	0.287	0.318	0.481
TH 169 near Taconite	0.637	1.161	0.777	0.481
TH 371 (Nisswa to Jenkins)	0.727	0.390	0.433	0.481
I-694 (Arden Hills/ Shoreview)	0.897	0.684	0.827	0.324
TH 2 (Cass Lake to Ball Club)	0.250	0.316	0.423	0.440
TH 23 (I-90 to Willmar)	0.413	0.396	0.426	0.440
TH 34 (Detroit Lakes to Nevis/Akeley)	0.759	0.520	0.479	0.440
TH 51/Snelling Ave (St. Paul)	10.084	4.825	4.974	1.993

Figure 3: Project Crash Rates per Million Vehicle Mile

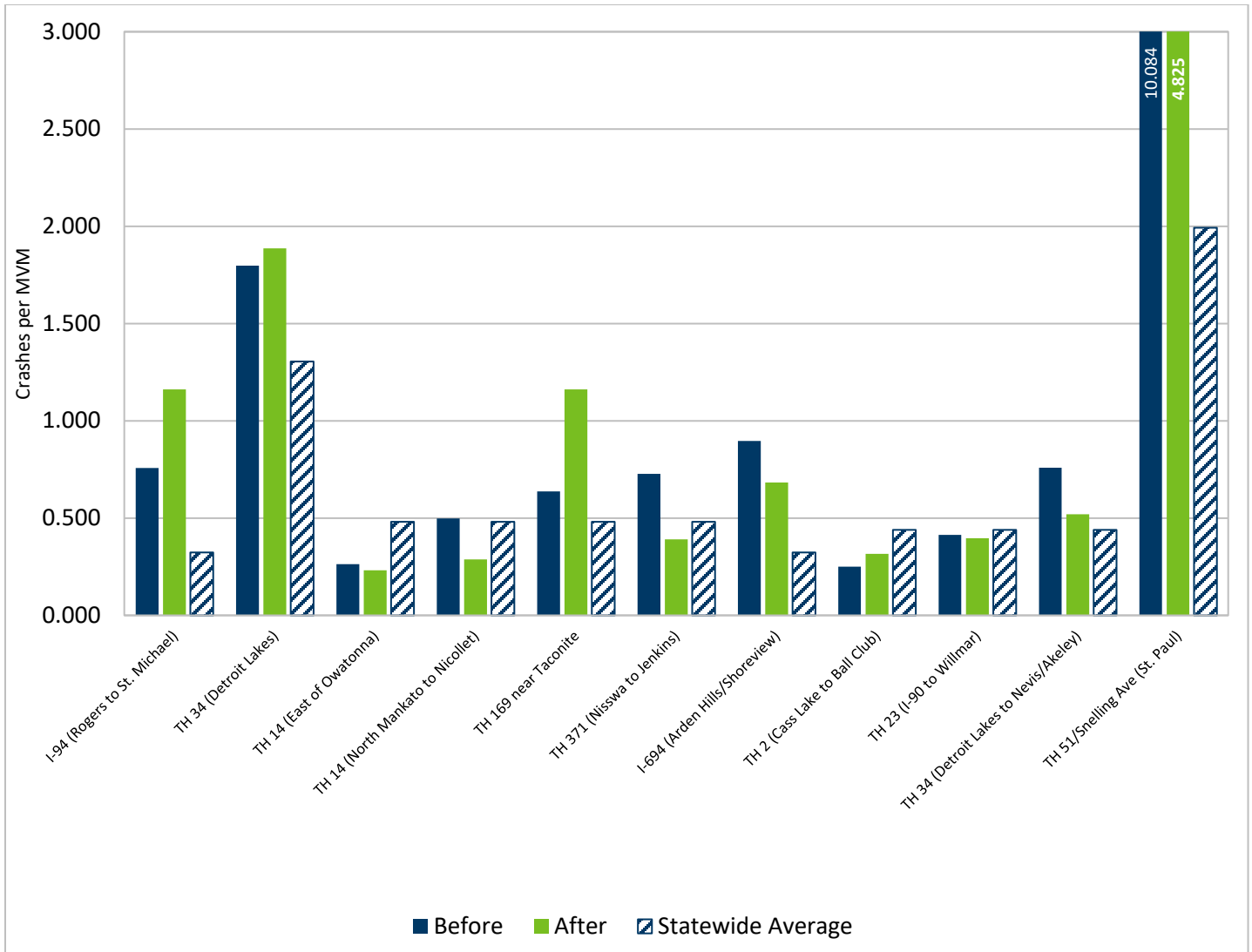
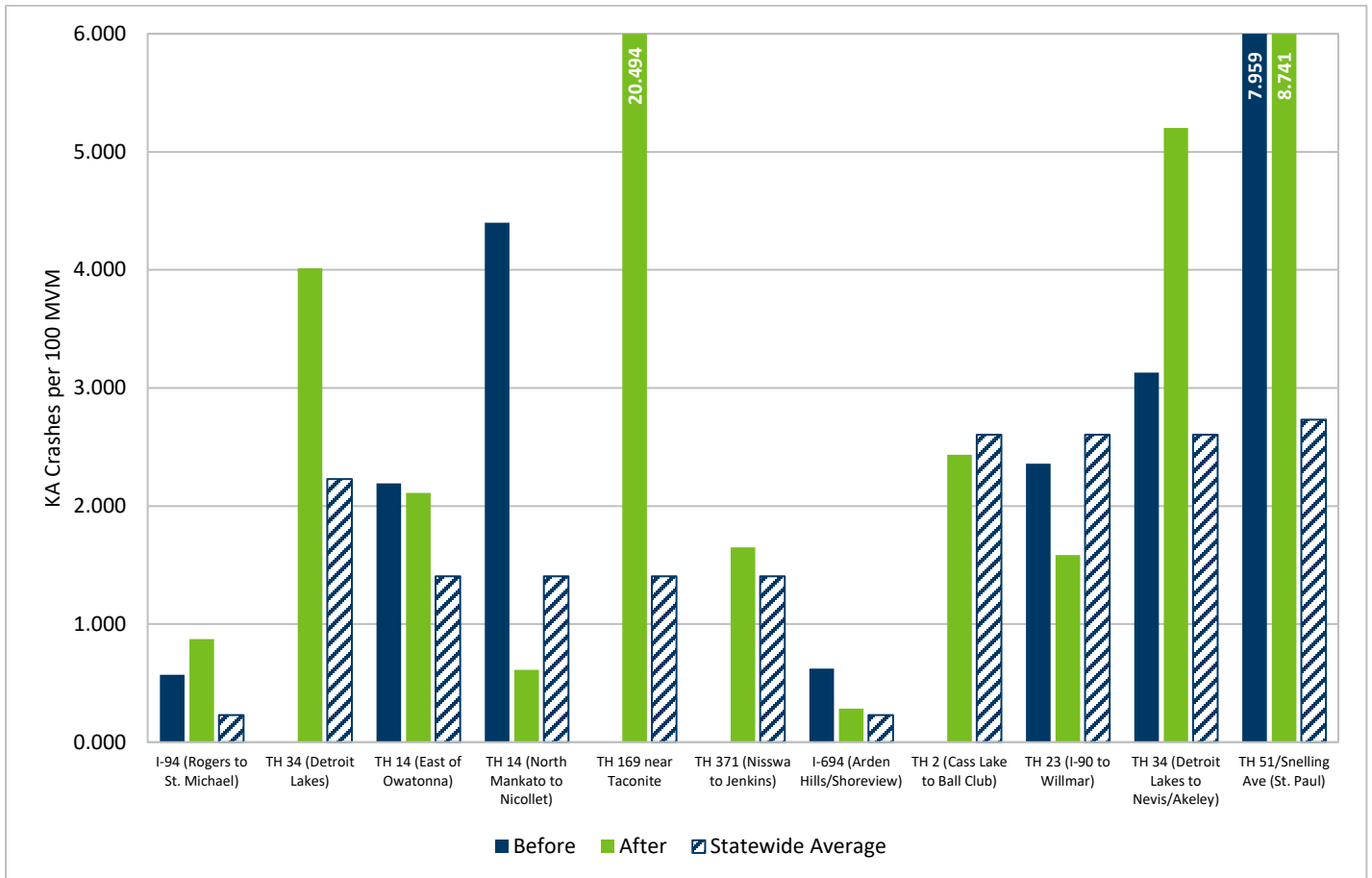


Table 22: Project Fatal and Serious Injury (KA) Crash Rates per 100 Million Vehicle Miles

Project	Before	After	After (non-Covid)	Statewide Average
I-94 (Rogers to St. Michael)	0.572	0.874	1.236	0.230
TH 34 (Detroit Lakes)	0.000	4.013	0.000	2.229
TH 14 (East of Owatonna)	2.192	2.112	3.167	1.405
TH 14 (North Mankato to Nicollet)	4.400	0.611	0.994	1.405
TH 169 near Taconite	0.000	20.494	0.000	1.405
TH 371 (Nisswa to Jenkins)	0.000	1.650	2.280	1.405
I-694 (Arden Hills/ Shoreview)	0.623	0.284	0.000	0.230
TH 2 (Cass Lake to Ball Club)	0.000	2.434	0.000	2.605
TH 23 (I-90 to Willmar)	2.360	1.585	1.311	2.605
TH 34 (Detroit Lakes to Nevis/Akeley)	3.130	5.203	1.113	2.605
TH 51/Snelling Ave (St. Paul)	7.959	8.741	9.729	2.732

Figure 4: Project Fatal and Serious Injury (KA) Crash Rates per 100 Million Vehicle Miles



The crash rates shown above are discussed for each project below along with other details about the analyses.

- **I-94 (Rogers to St. Michael): Lane Addition**

The safety analysis for this project on I-94 focused solely on the mainline of I-94 between the TH 101 and TH 241 interchanges, but did not include the interchanges themselves. The before period used in the analysis was 2008-2013 with construction years being 2014-2015, the after period being 2016-2021 and the after, non-Covid period being 2016-2019. Crash rates before and after the project are well above the statewide averages for total crashes and KA crashes. Both crash rates increased in the after period whether or not Covid years were included.

Five KA crashes occurred in the project area during the construction and after periods which were:

- A 2014 fatal crash involving multiple vehicles due to ice.
- A 2014 serious injury crash involving a rear end due to slow traffic.
- A 2016 serious injury crash involving a single vehicle lane departure due to a driver falling asleep.
- A 2017 serious injury crash involving a rear end due to slow traffic.
- A 2018 serious injury crash involving a rear end due to slow traffic.

- **TH 34 (Detroit Lakes): Center left turn lane addition**

The before period used in the analysis was 2012-2015 with construction years being 2016-2017, the after period being 2018-2021 and the after, non-Covid period being 2018-2019. Total crash rates increased slightly in the after period and KA crash rates also increased in the after period, however there was only one KA crash in the after period as compared to none in the before period. In the after period, both crash rates are above statewide averages. Intersection related crashes accounted for approximately 70 percent of the total crashes with most of them occurring at the TH 34 intersections with US 59 and Roosevelt Avenue. Intersection related crashes increased from 29 in the before period to 34 in the after period.

Two KA crashes occurred in the project area during the construction and after periods which were:

- A 2016 serious injury crash involving a vehicle turning left into traffic at the US 59 intersection.
- A 2020 serious injury crash involving a vehicle turning left into traffic at the US 59 intersection.

- **TH 14 (East of Owatonna): Two-lane to four-lane expansion**

The before period used in the analysis was 2008-2013 with construction years being 2014-2015, the after period being 2016-2021 and the after, non-Covid period being 2016-2019. Before and after crash rates were very similar with a slight decrease in total crashes, but effectively no change in KA crashes. The total crash rate in the after period here is lower than the statewide average for similar facilities, but the KA crash rate is above the statewide average, though there was only one KA crash recorded in the after period. Overall, this project had little impact on the crashes along this stretch.

One KA crash occurred in the project area during the after period which was:

- A 2016 serious injury crash involving a sideswipe with vehicles travelling the same direction.

- **TH 14 (North Mankato to Nicollet): Two-lane to four-lane expansion with bypass and new interchange**

The before period used in the analysis was 2010-2014 with construction years being 2015-2016, the after period being 2017-2021 and the after, non-Covid period being 2017-2019. Both total crash rates and KA crash rates decreased with this project to levels below the statewide averages.

Three KA crashes occurred in the project area during the construction and after periods which were:

- A 2016 fatal crash involving a single vehicle lane departure due to alcohol.
- A 2016 fatal angle crash at the 421st Avenue intersection.
- A 2017 serious injury crash involving a single vehicle lane departure.

- **TH 169 near Taconite: Two-lane to four-lane expansion**

The before period used in the analysis was 2013-2015 with construction years being 2016-2018, the after period being 2019-2021 and the after, non-Covid period being 2019. The total crash rate nearly doubled in the after period and the KA crash rate also went up. Both of these rates are above statewide averages.

Four KA crashes occurred in the project area during the construction and after periods which were:

- A 2017 serious injury crash involving a single vehicle lane departure due to alcohol.
- A 2020 serious injury angle crash at the CR 61 intersection.
- A 2021 serious injury crash involving a single vehicle lane departure due to alcohol.
- A 2021 serious injury crash involving a single vehicle lane departure due to a blown tire.

- **TH 371 (Nisswa to Jenkins): Two-lane to four-lane expansion with bypass and new interchange**

The before period used in the analysis was 2012-2015 with construction years being 2016-2017, the after period being 2018-2021 and the after, non-Covid period being 2018-2019. After the project, the total crash rate decreased to be below the statewide average, but the KA crash rate increased to be above the statewide average.

Four KA crashes occurred in the project area during the construction and after periods which were:

- A 2017 fatal crash involving head-on collision.
- A 2019 fatal crash involving a single vehicle lane departure.
- A 2019 fatal crash involving a snowmobile entering the median.
- A 2021 serious injury crash involving a vehicle turning left into traffic at the County Road 107 intersection.

- **I-694 (Arden Hills/Shoreview): Lane addition**

The safety analysis of I-694 focused solely on the mainline of I-694 between the Lexington Avenue and Rice Street bridges, but did not include the interchanges themselves. The before period used in the analysis was 2012-2015 with construction years being 2016-2017, the after period being 2018-2021 and the after, non-Covid period being 2018-2019. Both total crash rate and KA crash rates decreased after the project, but both are still above statewide averages.

Two KA crashes occurred in the project area during the construction and after periods which were:

- A 2017 serious injury crash involving a rear end with a motorcycle
- A 2021 serious injury crash involving a rear end with a parked tow truck.

- **TH 2 (Cass Lake to Ball Club): Passing lane addition**

The before period used in the analysis was 2008-2013 with construction years being 2014-2015, the after period being 2016-2021 and the after, non-Covid period being 2016-2019. Both total crash rate and KA crash rates increased after the project, but both are still below statewide averages.

Along this 7.7-mile stretch, one KA crash occurred during the after period which was:

- A 2020 fatal crash involving a single vehicle lane departure.

- **TH 23 (I-90 to Willmar): Passing lane addition**

The before period used in the analysis was 2011-2015 with construction year being 2016, the after period being 2017-2021 and the after, non-Covid period being 2017-2019. Both total crash rate and KA crash rates decreased after the project, with both being below statewide averages.

Along this 36.7-mile stretch, five KA crashes occurred during the construction and after periods which were:

- A 2016 fatal crash involving a rear end
- A 2018 fatal crash involving a train
- A 2019 serious injury crash involving a vehicle turning right into traffic
- A 2021 fatal crash involving an angle crash at an intersection
- A 2021 serious injury crash involving a single vehicle lane departure

- **TH 34 (Detroit Lakes to Nevis/Akeley): Passing lane addition**

The before period used in the analysis was 2008-2013 with construction years being 2014-2015, the after period being 2016-2021 and the after, non-Covid period being 2016-2019. The total crash rate decreased after the project while the KA crash rate increased. Both rates are above statewide averages.

Along this 22.3-mile stretch, nine KA crashes occurred during the construction and after periods which were:

- A 2015 fatal crash due to a head on collision.
- A 2015 serious injury crash with an animal.
- A 2018 serious injury crash involving a single vehicle lane departure.
- A 2020 fatal crash involving a single vehicle lane departure.
- A 2020 serious injury crash involving a single vehicle lane departure.
- A 2021 fatal crash involving a single vehicle lane departure.
- A 2021 fatal crash involving a single vehicle lane departure.
- A 2021 serious injury crash involving a sideswipe in the same direction.
- A 2021 serious injury crash involving a single vehicle lane departure.

- **TH 51/Snelling Avenue: Urban arterial reconstruction**

The before period used in the analysis was 2009-2014 with construction year being 2015, the after period being 2016-2021 and the after, non-Covid period being 2016-2019. The total crash rate decreased after the project while the KA crash rate increased. Both rates are above statewide averages.

Intersection crashes accounted for approximately a third of the total crashes in the before period and about two thirds of the total crashes in the after period, though intersection crash rates stayed about the same in the before and after periods. Approximately half of KA crashes in the before period were at intersections while nearly all of the KA crashes in the after period are at intersections. The KA crash rate at intersections more than doubled in the after period with a large number of pedestrian and bicycle serious injury crashes at intersections along this stretch of TH 51.

12 KA crashes occurred in the project area during the construction and after periods which were:

- A 2015 serious injury crash involving a vehicle turning left into traffic.
- A 2015 fatal crash involving a single vehicle lane departure into a signal pole.
- A 2016 serious injury crash involving a rear end.
- A 2016 serious injury crash involving a pedestrian.
- A 2017 serious injury crash involving a pedestrian.
- A 2018 serious injury crash involving an angle crash at an intersection due to red light running.
- A 2018 serious injury crash involving a pedestrian.
- A 2018 serious injury crash involving a pedestrian.

- A 2019 serious injury crash involving a pedestrian.
- A 2019 serious injury crash involving a pedestrian.
- A 2021 serious injury crash involving a bicycle.
- A 2021 serious injury crash involving a rear end.

The crash rate comparisons for the 11 projects included here should be interpreted as preliminary evidence of the effects of the implementation of these projects on highway safety.

Freight Movement Growth

The statute governing the Corridors of Commerce program lists “freight improvement” as one possible project classification:

- (2) freight improvement, for an asset preservation or replacement project that can result in:
 - (i) removing or reducing barriers to commerce;
 - (ii) easing or preserving freight movement;¹⁴

Seven of the projects completed to date, including passing lane additions on Highways 2, 23 and 34 received this designation, while the others were primarily considered “capacity development” work.

The law identifies project selection criteria, including:

- (3) efficiency in the movement of freight, including but not limited to:
 - (i) measures of annual average daily traffic and commercial vehicle miles traveled, which may include data near the project location on that trunk highway or on connecting trunk and local highways;¹⁵

To address the freight movement aspect of Corridors of Commerce performance, a trend analysis was generated for heavy commercial vehicle traffic on each affected corridor. Review of these traffic patterns—particularly in future evaluation summaries, once initial post-opening data becomes available—will provide a gauge of how the Corridors of Commerce improvements may have contributed to the corridors’ relative attractiveness on the statewide freight network.

Bearing in mind that market factors can influence freight volumes independent of road infrastructure characteristics, placing the Corridors of Commerce investment in context along a longer timeline demonstrates how the current trajectory for truck traffic measures up against the historical benchmark.

Annual average daily traffic data is collected for trunk highway segments on a rotating basis approximately every other year. The intent is to capture typical prevailing conditions and avoid construction-related anomalies. A variety of methods are then employed for classifying vehicles to estimate truck volumes, expressed as heavy commercial annual average daily traffic. (Data for corridors that span multiple road segments can be calculated by averaging the HCAADTs for each shorter segment and weighting by segment length.) Details on these procedures can be found [online](#) from the Traffic Forecasting & Analysis unit of MnDOT’s Office of Transportation System Management, which publishes the data presented below.

¹⁴ [Minn. Stat. 161.088, subd. 3.](#)

¹⁵ [Minn. Stat. 161.088, subd. 5.](#)

The related measure of heavy commercial vehicle miles traveled simply combines road segment length with vehicle counts registered at specific points within the segment. For instance, two trucks traveling a five-mile segment yield a total of 10 HCVMT. Statewide HCVMT serves as a control or normalization factor for corridor-level HCAADT figures so that the adjusted HCAADT values can be directly interpreted as traffic changes particular to a given corridor, after netting out average “background” traffic growth observed across Minnesota.

Table 23, Table 24 and Figure 5 gives an example with hypothetical data to illustrate this adjustment process.

Table 23 contains an illustrated HCVMT trend for the period 2008 to 2016, with annualized growth rates ranging from 1 percent to 5 percent. The “HCVMT Index” column values are the result of dividing each year’s HCVMT by the constant 2008 level of 2.50 billion. For instance, the 2013 HCVMT of 3.04 billion is 22 percent higher than the 2008 amount, producing an index reading of 1.22. Note that the years 2014 and 2015 are missing from this table. Due to the development and implementation of replacement database systems during this period, official statewide VMT estimates are not available for these years.

Table 23: HCAADT Normalization Example

Year	State HCVMT (billions)	Annual HCVMT Growth Rate	HCVMT Index to 2008
2008	2.5	-	1
2009	2.58	3%	1.03
2010	2.7	5%	1.08
2011	2.81	4%	1.12
2012	2.95	5%	1.18
2013	3.04	3%	1.22
...	-	-	-
2016	3.13	1%	1.25

Table 24: HCAADT Normalization Example (continued)

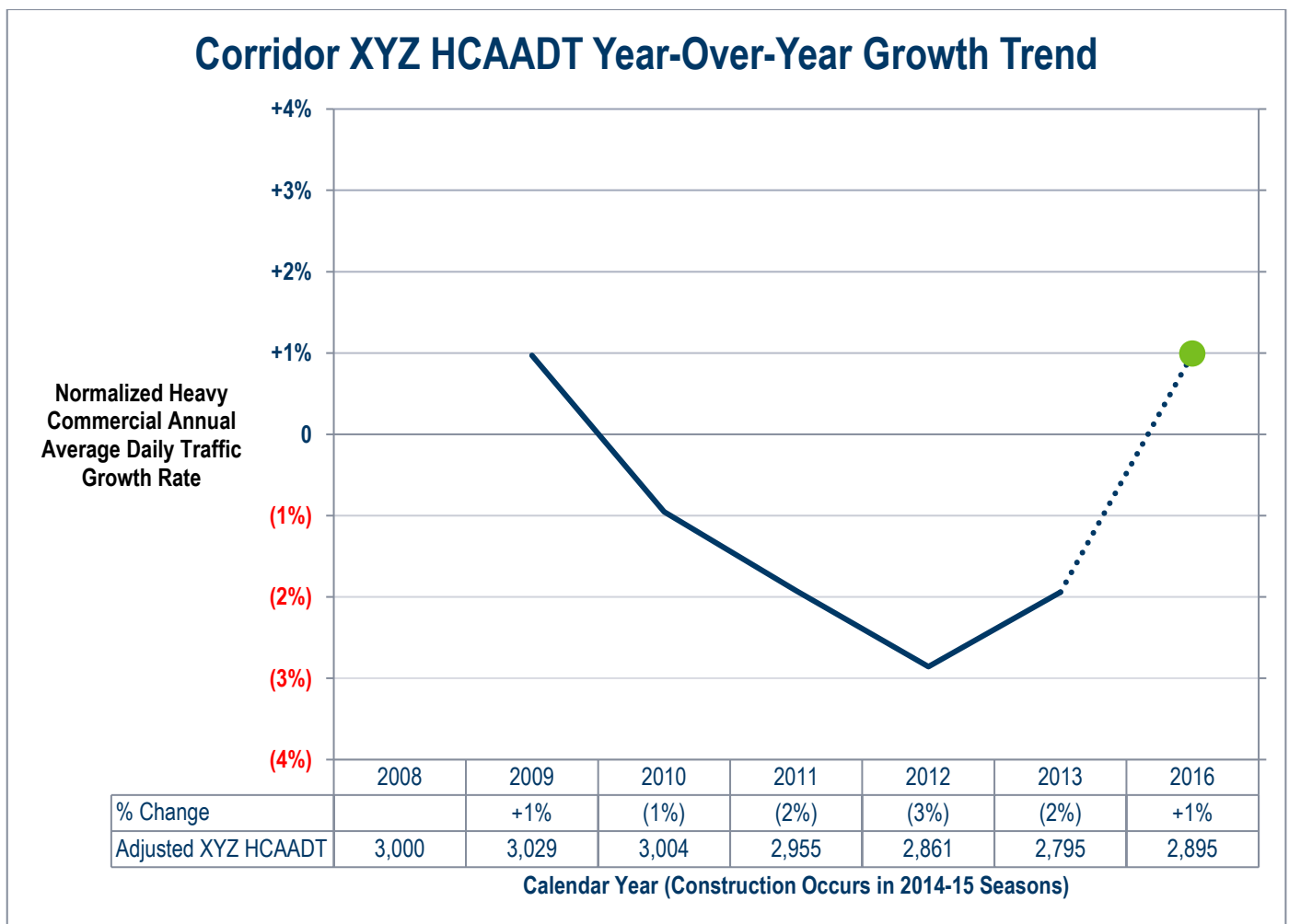
Year	Years Before (-) / After (+) Construction	Corridor XYZ Raw HCAADT	Raw Annual HCAADT Growth Rate	HCAADT Adjusted for State HCVMT	Adjusted Annual HCAADT Growth Rate
2008	-6	3,000		3,000	
2009	-5	3,120	4%	3,029	1%
2010	-4	3,245	4%	3,004	-1%
2011	-3	3,31	2%	2,955	-2%
2012	-2	3,376	2%	2,861	-3%
2013	-1	3,410	1%	2,795	-2%
...	...	-	-	-	-
2016	1	3,618	2%	2,895	1%

In Table 24, the data shows corridor heavy commercial average annual daily traffic history for a number of years before construction and the first year after project completion. Construction lasted for two seasons (2014 and 2015)

in this example. “Raw HCAADT” lists the actual reported traffic numbers alongside the resulting growth rate over the prior year. Finally, “HCAADT Adjusted for State HCVMT” divides raw HCAADT by the heavy commercial vehicle miles traveled index value in that year. For instance, the raw 2013 HCAADT of 3,410 becomes 2,795 after dividing by 1.22.

Consequently, adjusted HCAADT can be thought of as the corridor-specific traffic growth (or decrease) after “subtracting” overall state HCVMT change. When the adjusted annual HCAADT growth rate is positive, the corridor is experiencing faster growth than the state as a whole; when negative, the corridor’s growth trails the statewide benchmark for that year. The adjusted annual HCAADT growth rate is very close¹⁶ to the difference between raw HCAADT growth and HCVMT growth. For instance, adjusted HCAADT growth in 2013 of negative 2 percent is attributable to raw HCAADT growth at 1 percent being more than offset by the state HCVMT growth rate of 3 percent.

Figure 5: Chart for HCAADT Normalization Example



Charting the adjusted heavy commercial average annual daily traffic growth rates is a useful way of summarizing traffic developments. In this example, the corridor registers growth in 2009 above the statewide reference level, but three years of declining relative performance follow in 2010 through 2012, as the corridor loses ground against the broader statewide trend. In 2013 the decline continues but at a slower rate. Following the two-year data gap during construction, in 2016 the corridor posts its first positive result since 2009, exceeding statewide heavy commercial

¹⁶ The math is generally not exact due to the changing baselines used in the index adjustment step.

vehicle miles traveled growth by 1 percent annualized. The dashed line signals the discontinuity in the annual series because of the construction gap. Although the investment is associated with encouraging ensuing growth, this better-than-average performance would need to be sustained for additional years just to catch up with the HCVMT track starting in 2008. Noting that the 2016 adjusted HCAADT of 2,895 lies below the 2008 baseline level of 3,000 leads to the conclusion that the deficit amassed in the down years collectively outweighs the progress made in 2009 and 2016.

Heavy Commercial Vehicle Traffic Growth Trends on Completed Projects

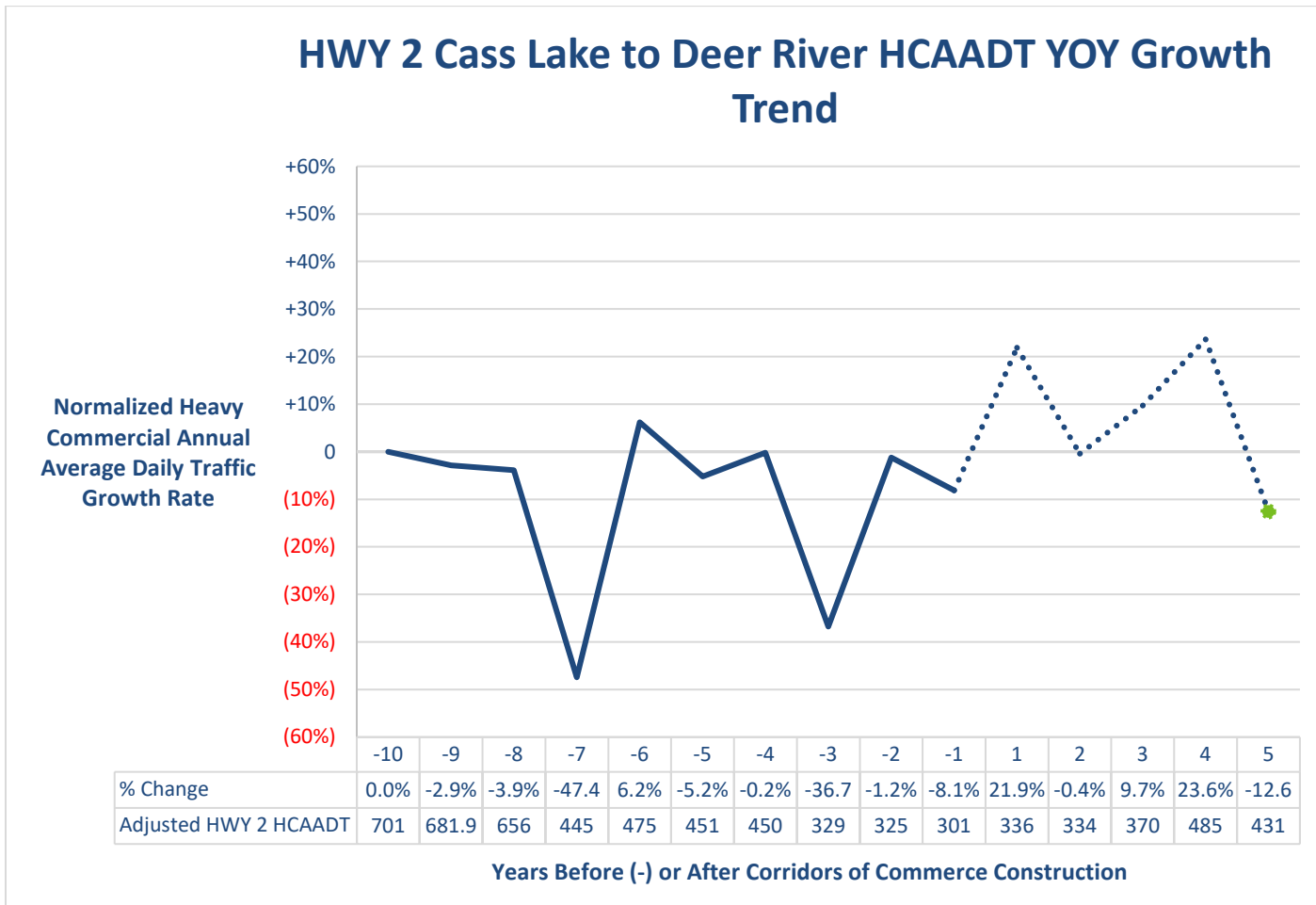
Replicating the traffic trend analysis with at least one year of post-construction data is possible for select Corridors of Commerce projects funded in 2013, 2014 and 2015. Currently, the most recent official HCAADT figures date from 2021. The post-construction evaluation requires at least two full years of volume data following project completion, since the effects are reported in the form of year-over-year rates of growth or decline. Requiring a second year of post-construction traffic volumes ensures that sharp increases in volumes between the final construction year (due to the effects of road closures, lane closures or detours) and the first post-construction year do not appear as part of the results.

MnDOT's methodology for calculating statewide heavy commercial vehicle miles of travel changed in 2021. This change reflects a transition in data collection methods for vehicle class and commercial truck volume data, from a reliance on manual, short-duration counts using pneumatic tubes to the use of radar-based roadside units that can generate continuous counts. The latter method provides a higher level of safety for collecting volume data on high-volume roadways. While this safety improvement is welcome, there have been observed discrepancies in volume counts by vehicle class, including heavy trucks, between the manual counts and radar-based counts. This has resulted in an artificially high increase in heavy commercial vehicle miles traveled from 2020 to 2021. In order to mitigate these impacts, an estimate of HCVMT growth was derived from the Bureau of Transportation Statistics. BTS generates weekly estimates of nationwide vehicle miles traveled on interstates, which were used to derive an annual estimated growth rate. In future years, other local sources will be considered.

The onset of COVID-19 in 2020 caused a shift in heavy commercial traffic. In 2020, passenger car traffic was significantly reduced with stay-at-home orders and other COVID-related policies. Travel patterns shifted as a result of these policies, including social distancing. Additionally, consumption patterns shifted as in-person shopping became difficult. Heavy commercial traffic likely increased as a result of the pandemic, but the story is complex given driver shortages and other complicating factors.

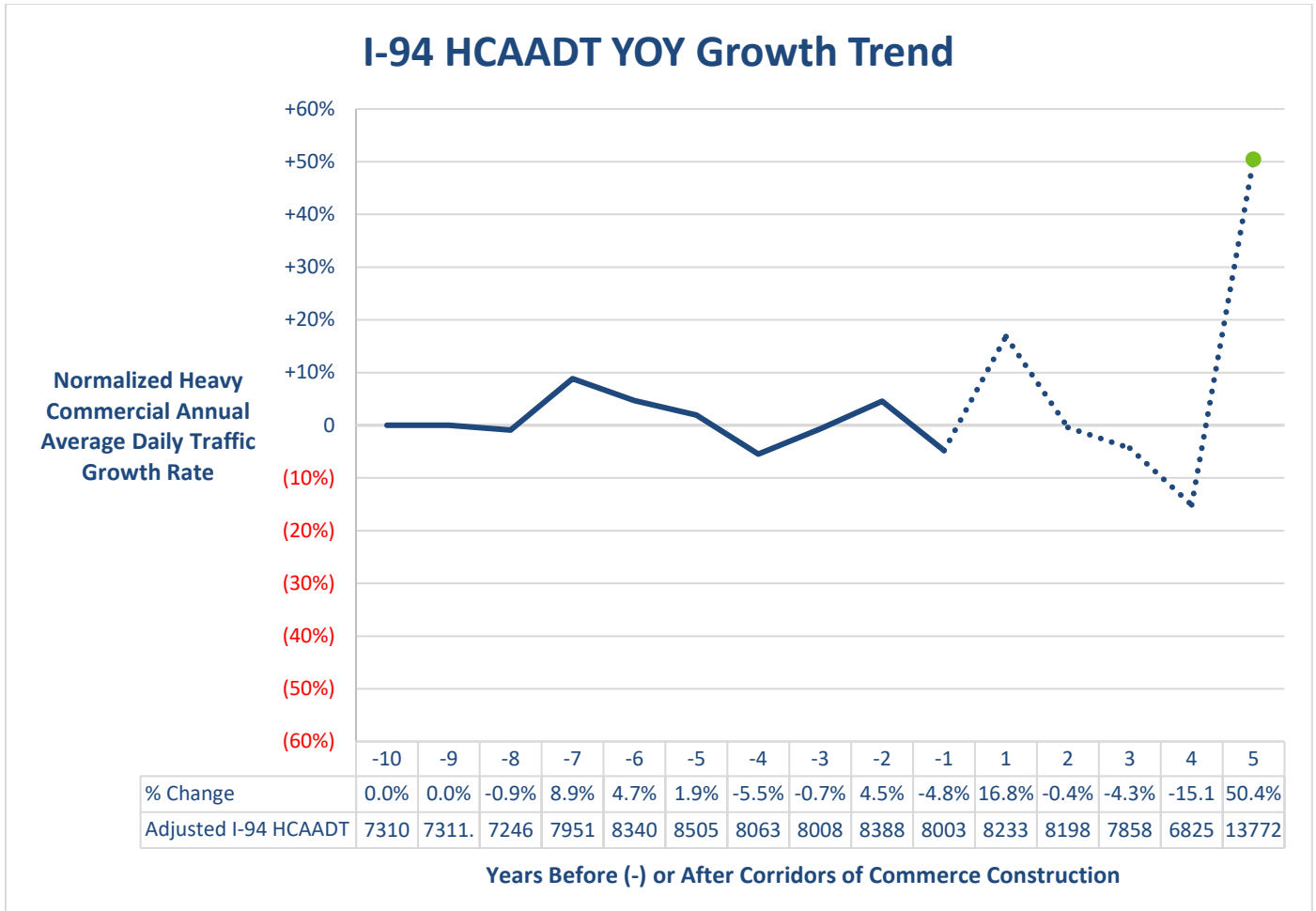
The 10-year historical trends, along with the change in the volumes between, at least, the first two post-construction years for the 2013 and 2015 Corridors of Commerce project locations can be inspected and are summarized in the figures below. For the time dimension along the x-axis, [-10] (10 years before Corridors of Commerce construction) corresponds to the observation year 2004, [-1] refers to the year 2013 and [1] refers to the second full year post construction. For the included projects [1] ranges from 2017 to 2020 Any subsequent years are referred to as [2] and [3], and so on. (The growth rate scale on the y-axis is recalibrated in each case to fit the data range, and each graph is vertically centered at 0 percent.)

Figure 6: Highway 2 HCAADT Trend



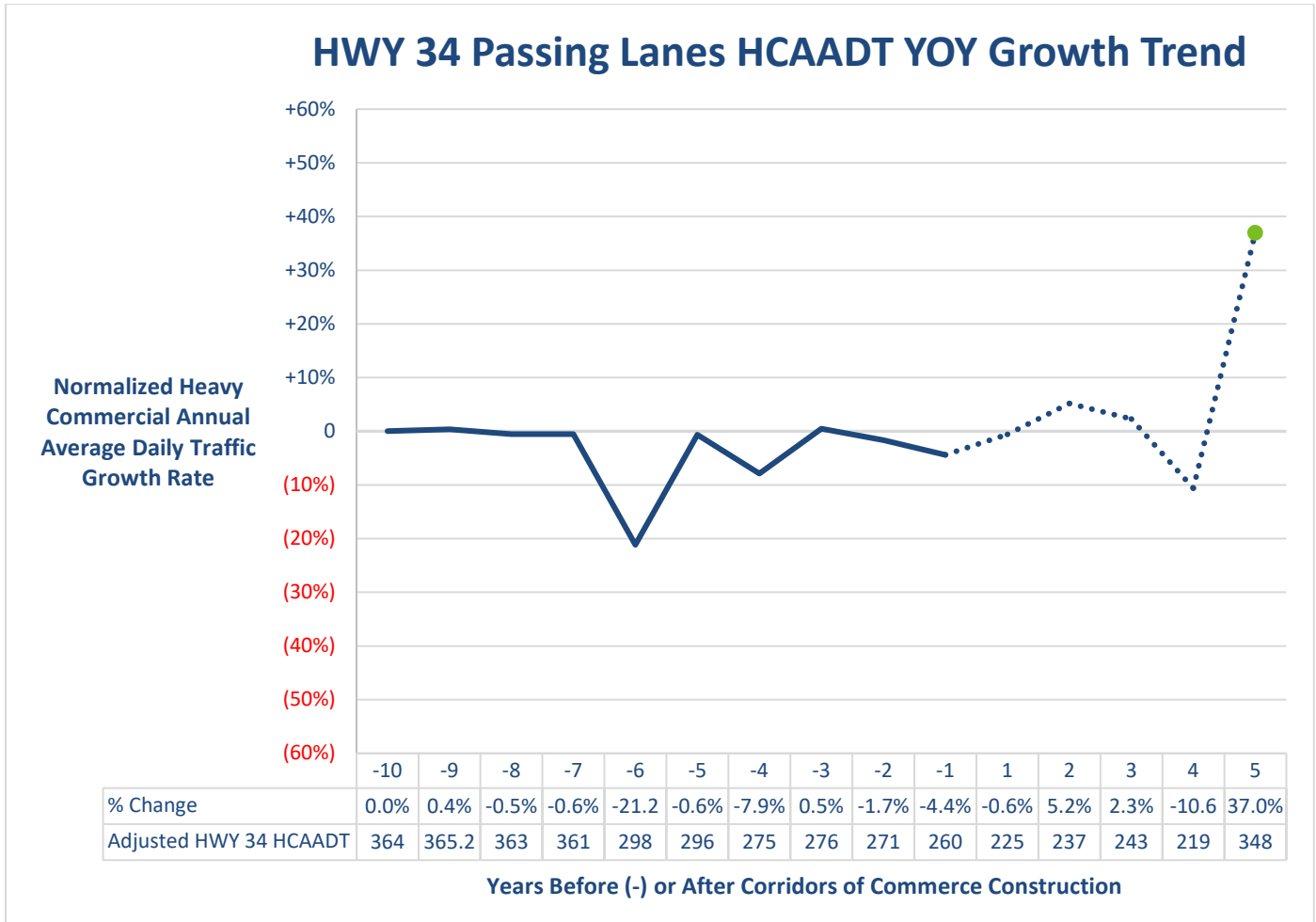
The segments of Highway 2 that include the Corridors of Commerce passing lane improvements generated low heavy commercial traffic growth in the preceding 10 years (depicted in Figure 6), beating state heavy commercial growth just once (six years before, in 2008) and tying the benchmark on one other occasion (in 2010). Particularly sharp declines occurred in 2007 and again in 2011. However, the corridor’s decline in traffic volumes began to level off by the following year and has actually begun to show an increase from the last year before the start of construction to the beginning of the post-construction period. Heavy commercial traffic outpaced state heavy commercial growth in all post construction years with the exception of the most recent year. In year 5 (2021), the corridor saw a moderate decrease in heavy commercial traffic. From 2004 to 2021, heavy commercial volumes reduced by just about 50 percent.

Figure 7: Interstate 94 HCAADT Trend



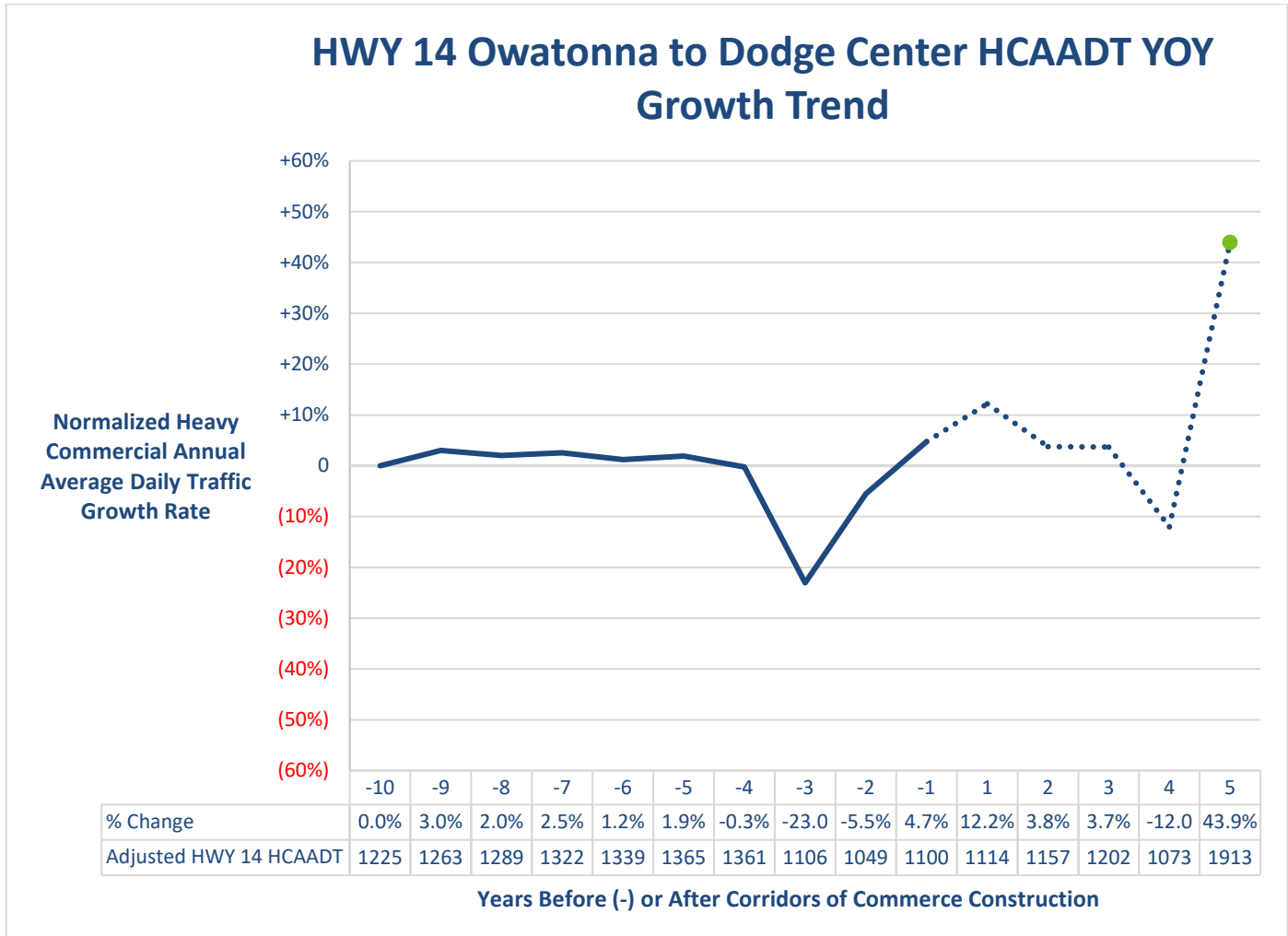
In pre-construction years (2004 to 2013), the I-94 expansion segment between Rogers and St. Michael (shown in Figure 7) generally outpaced state heavy commercial growth, only posting two years that were substantially below the statewide level (during 2010 and 2013). In post-construction years (1-5), heavy commercial traffic growth initially outpaced state growth before two years of below state growth levels. In year 5, 2021, the corridor saw a substantial increase in heavy commercial traffic growth.

Figure 8: Highway 34 Passing Lanes HCAADT Trend



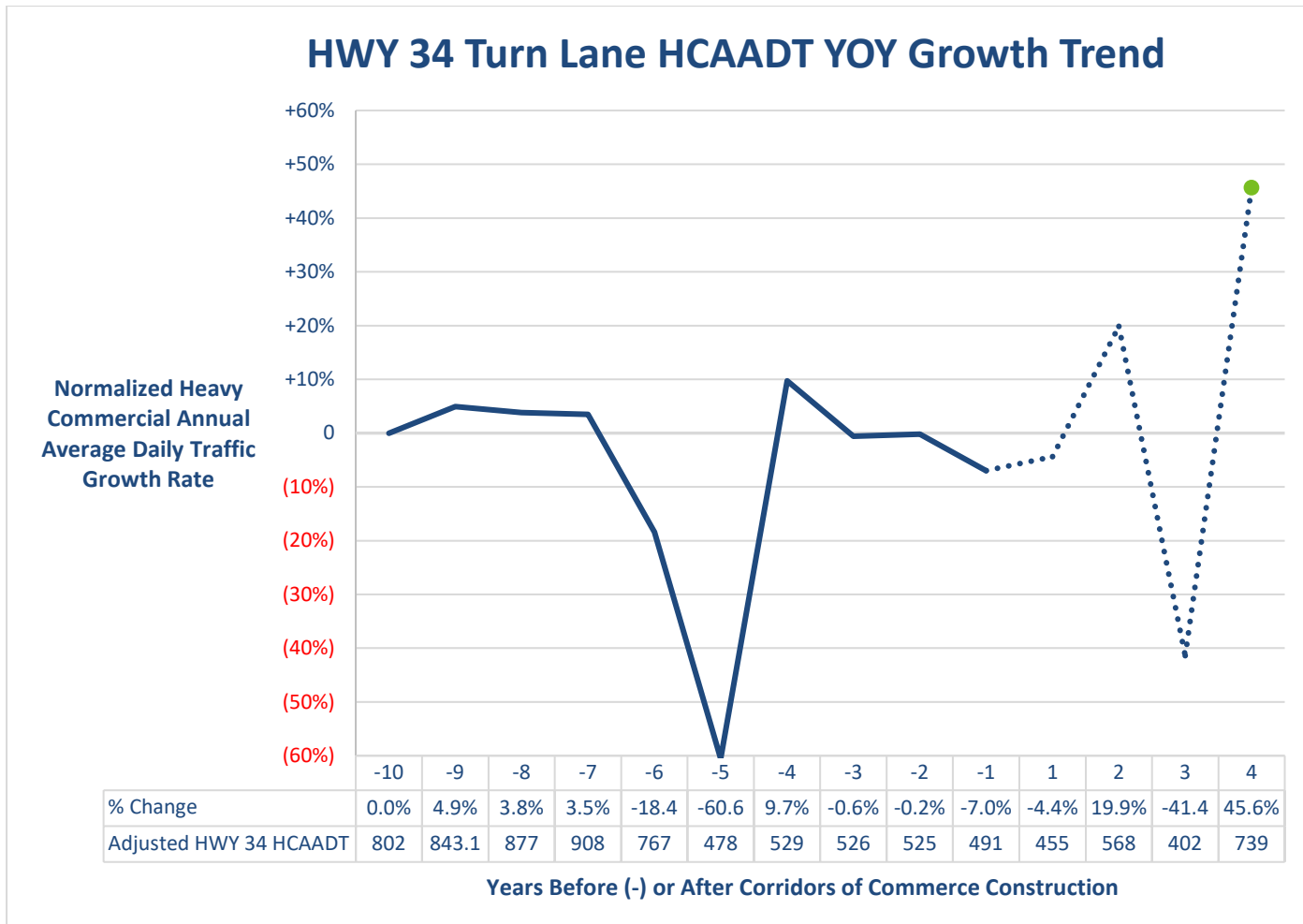
Interestingly, the picture for Highway 34 leading up to construction of its passing lane sections resembles that for the nearby and parallel passing lanes project site along Highway 2 (Figure 13). As shown in Figure 8, each location featured two isolated years of sharp HCAADT reductions—although Highway 34’s downturns were less severe—amid otherwise flat adjusted traffic. In the years immediately preceding and following construction, heavy commercial traffic volumes were relatively stable, with trends mirroring or only slightly lagging trends in state heavy commercial growth. In the year 2 and 3 (2018 and 2019) post construction traffic volumes began to slightly outpace state commercial traffic growth. In year 4 (2020), the corridor saw a moderate decrease in heavy commercial traffic volumes which may be a result of the COVID-19 pandemic. In year 5 (2021), the corridor outpaced state heavy commercial growth.

Figure 9: Highway 14 Owatonna to Dodge Center HCAADT Trend



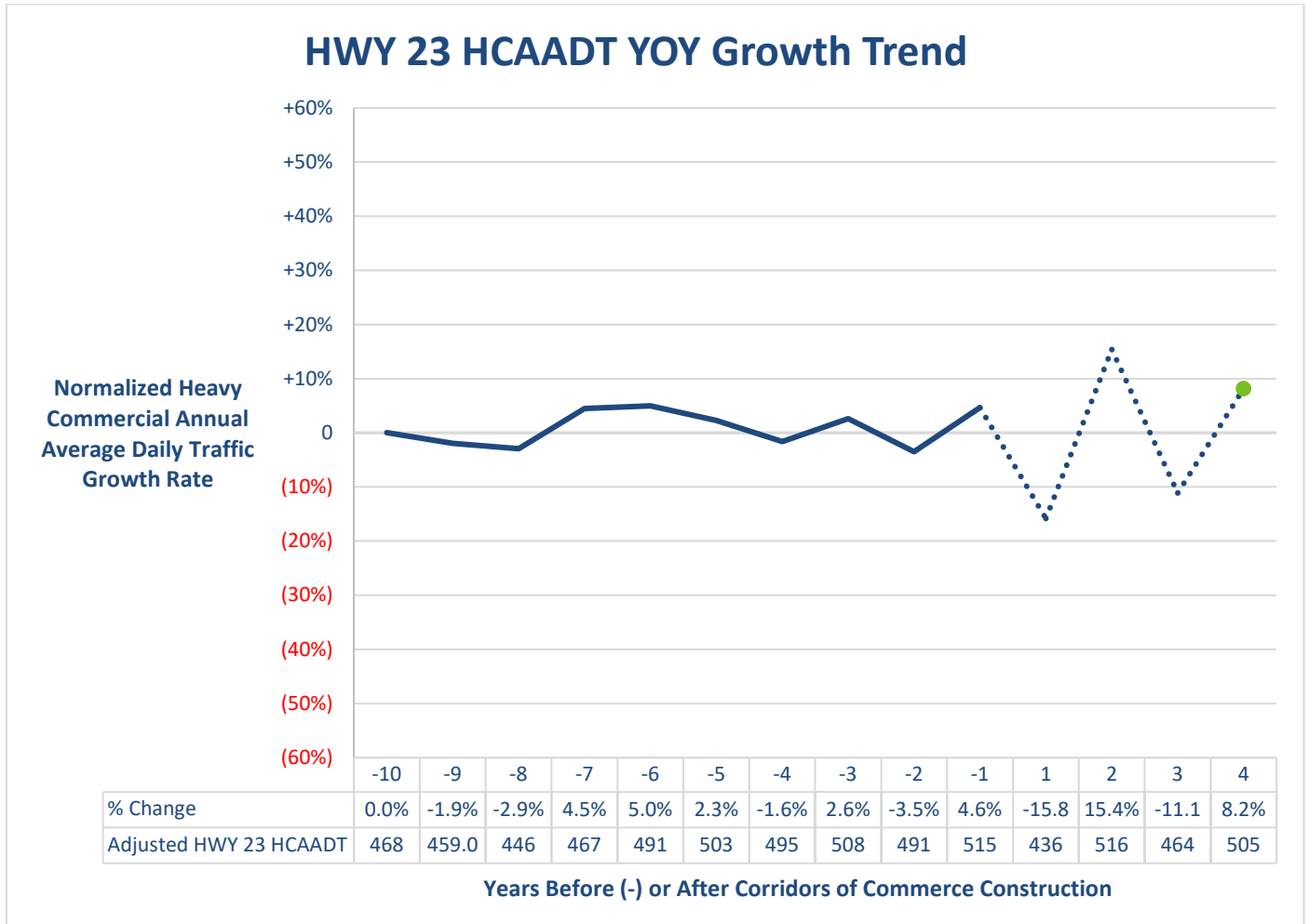
Between 2005 and 2010, the segments of Highway 14 that comprise the Corridors of Commerce expansion area (running just east of Owatonna) closely tracked with state heavy commercial growth, modestly exceeding that baseline by 1 percent to 5 percent each year (see Figure 9). This period of parity ended abruptly in 2011, three years before the widening, when adjusted truck volume fell approximately 20 percent. This sharp decline appears to have been a single-year phenomenon, with heavy commercial traffic growth rates rebounding to near state heavy commercial growth in the year prior to construction. This section of Highway 14 generally outpaced state heavy commercial growth in the five years post-construction, with a moderate decline in year 4 (2020) before a rebound in year 5 (2021).

Figure 10: Highway 34 Turn Lane HCAADT Trend



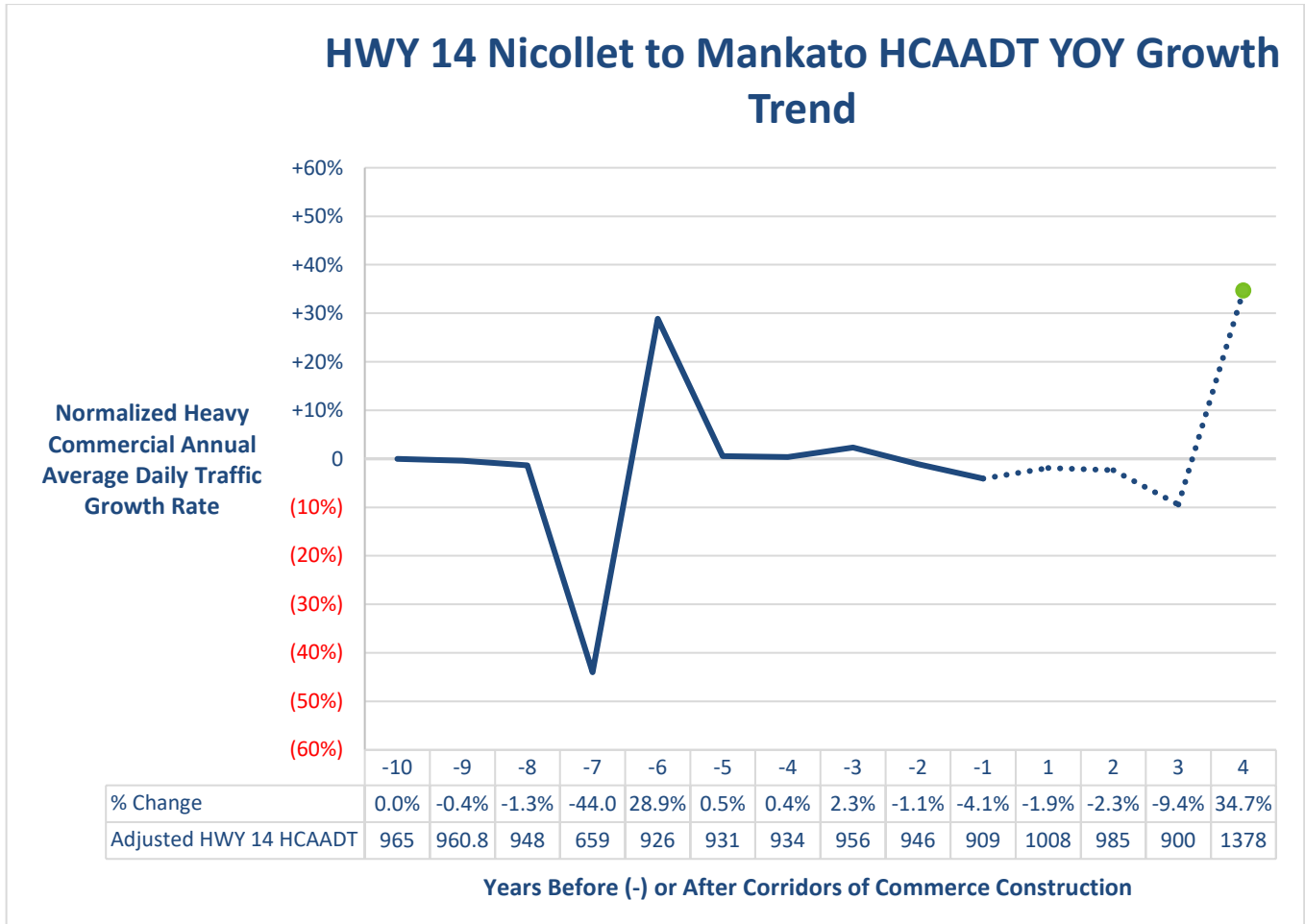
The turn lane segments of Highway 34 in Detroit Lakes experienced heavy commercial traffic growth, relative to state heavy commercial growth, between 3 and 5 percent until a sharp reduction in 2008 and 2009 (see Figure 10). In 2009 traffic volumes were just below 60% of 2004 values. Following the decline, volumes rebounded slightly and remained consistent with minor fluctuation in the prior and post construction years. Year 2 (2019) through year 4 (2021) post construction saw a significant increase, despite a one year drop in volumes in year 3 (2020), with volumes significantly outpacing state heavy commercial growth. The reduction in year 3 (2020) is likely due to the COVID-19 pandemic.

Figure 11: Highway 23 HCAADT Trend



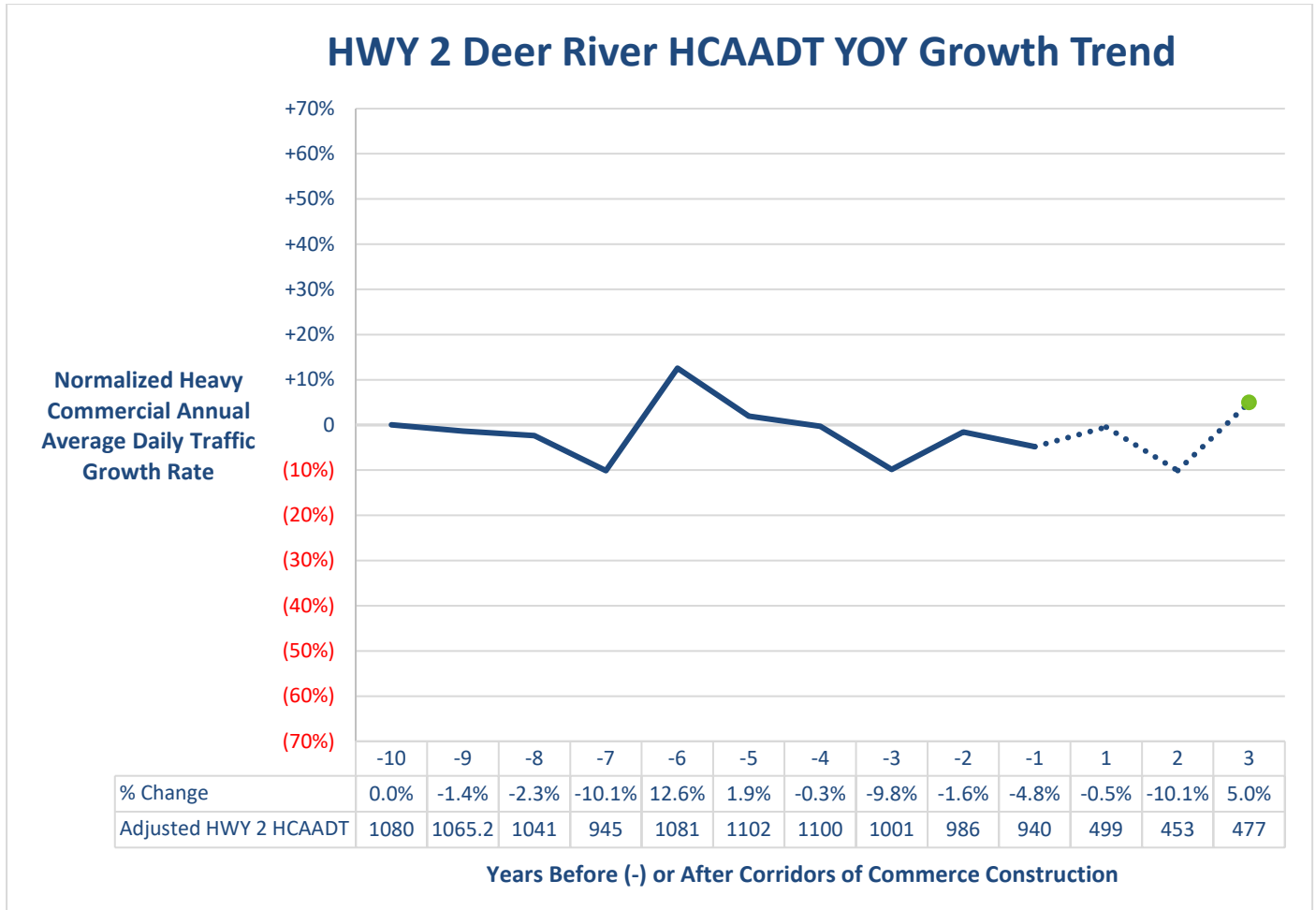
In the 10-year pre-construction period, Highway 23 fluctuated between -3.5 percent and 5 percent growth relative to state heavy commercial growth. This period of relative consistency ended post construction. Between year 1 (2018) and year 4 (2021), traffic volumes bounced between under and outpacing state heavy commercial growth with fluctuations between -15.8% and 15.4%.

Figure 12: Highway 14 Nicollet to Mankato HCAADT Trend



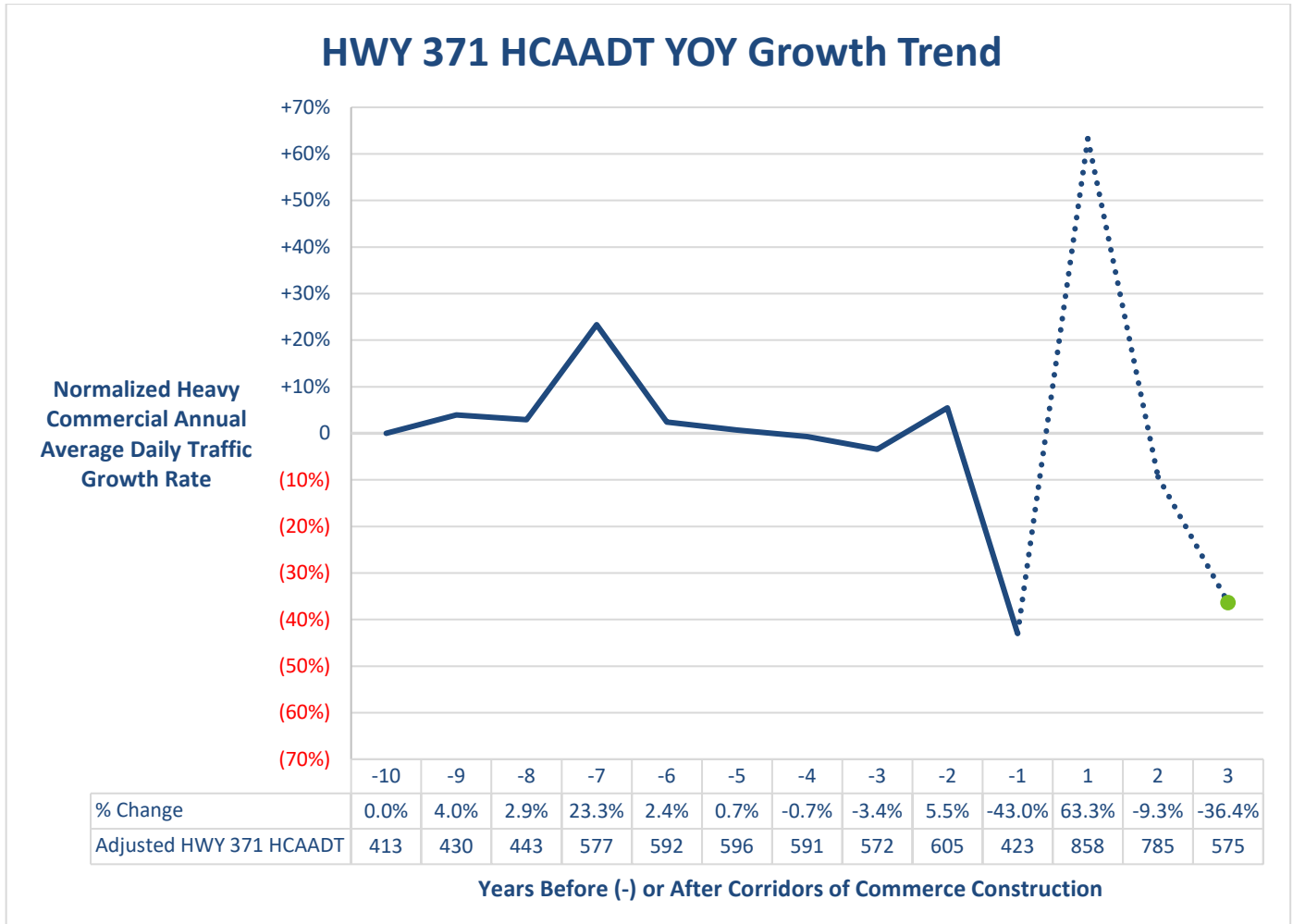
The segments of Highway 14 between Nicollet and Mankato tracked closely with state heavy commercial growth, except in 2007 and 2008 which saw a rapid reduction and subsequent growth in volumes. In 2010 the volumes stabilized just below state heavy commercial growth. Traffic volumes post construction are within 5 percent of 2004 values and continued to lag slightly behind state heavy commercial growth until year 4 (2021) where traffic volumes increased 30 percent over statewide growth.

Figure 13: Highway 2 Deer River HCAADT Trend



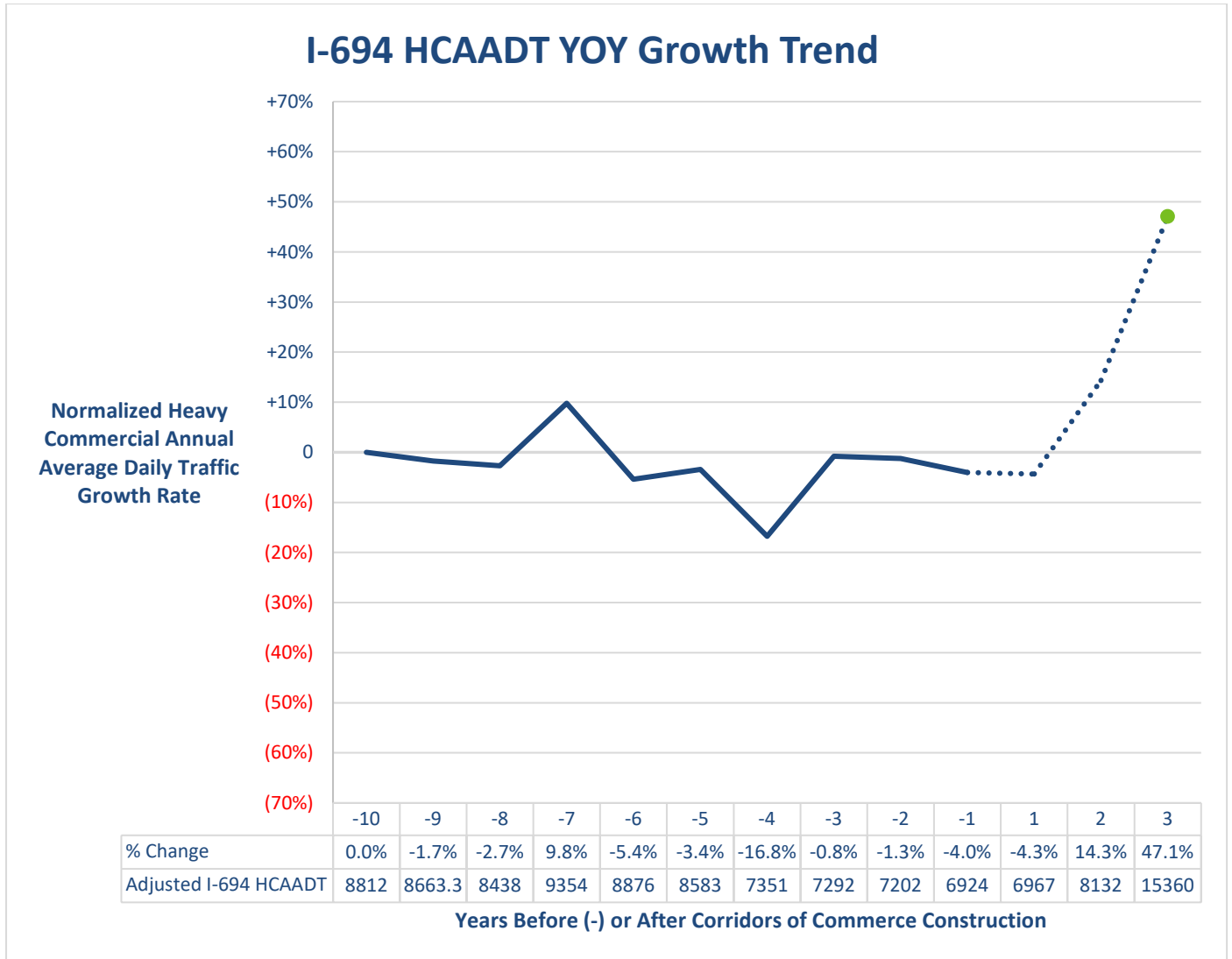
The Highway 2 reconstruction project in Deer River has generally lagged behind state heavy commercial growth. The most significant reductions in volume occurred in 2007 and 2011, interestingly there was a spike in 2008 which increased the volume to match 2004. This trend has continued post-construction. Year 3 (2021), traffic volumes moderately outpaced state heavy commercial growth, however traffic volumes were significantly reduced compared to pre-construction levels.

Figure 14: Trunk Highway 371 HCAADT Trend



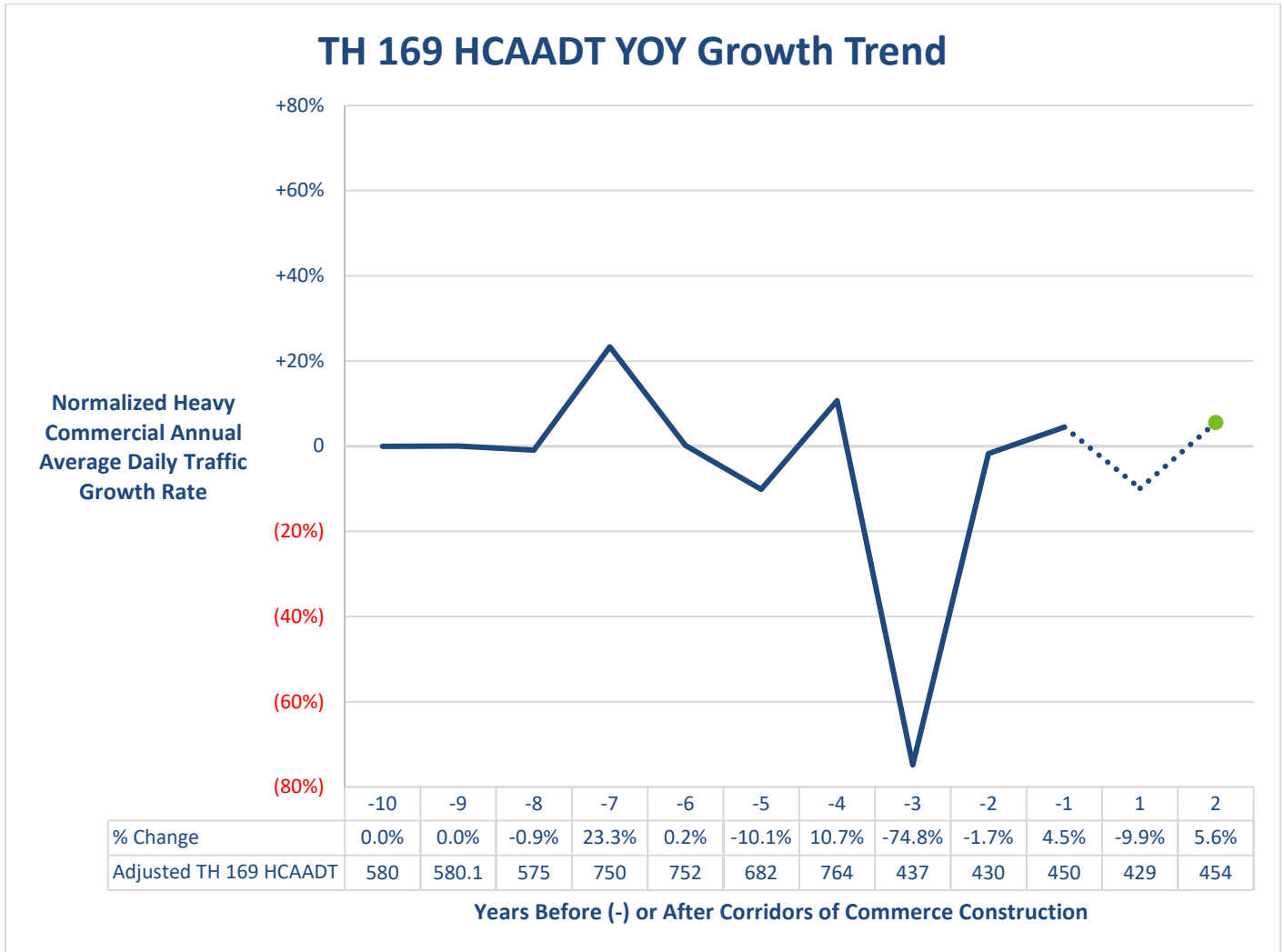
Highway 371 had relatively consistent heavy commercial traffic volumes prior to construction with two significant exceptions. In 2007, the project area had a 23 percent increase in volume which hovered around the same value until it dipped back to 2004 volumes in 2013. The expansion of Highway 371 included a realignment. The route previously went through Pequot Lakes and now runs further east bypassing the city and has an interchange with County Highway 11. In the three years post-construction, Highway 371 heavy commercial traffic growth was significantly lower than state heavy commercial growth with the exception of year 1 (2019). In year 3 (2021), traffic volumes matched 2007 volumes.

Figure 15: Interstate 694 HCAADT Trend



Since 2004 the Interstate 694 project has underperformed compared to state heavy commercial growth. 2007 was the only year to experience positive, greater than statewide, growth. Year 1, 2019, post construction has a nearly identical volume to 2013, although this value is 80 percent of the 2004 volume and is 4.3 percent below statewide growth. Year 2 (2020) and 3 (2021) the corridor experienced growth significantly higher than statewide growth. This represents a dramatic shift from previous years. In year 3 (2021), heavy commercial volumes were nearly double those in 2004. This may be due to different collection methods or COVID-19 pandemic shifting travel patterns. Future analysis will help inform this.

Figure 16: TH 169 HCAADT Trend



Between 2004 and 2011 heavy commercial traffic on TH 169 mirrored or exceeded state heavy commercial traffic growth. The corridor experienced a dip in 2012, which was followed with a rebound in traffic in 2013. In year 1 (2020), the corridor experienced a moderate drop in heavy commercial traffic volumes. This was likely due to the COVID-19 pandemic. In year 2 (2021), heavy commercial traffic slightly outpaced statewide growth.

Corridors of Commerce projects examined in this analysis have experienced unprecedented changes due to the COVID-19 pandemic. A large share of projects have rebounded in 2021. It is difficult to know for certain how much of this estimated increase is due to genuine growth in commercial vehicle traffic, as opposed to the effects of introducing new data collection methods. In the next evaluation period (approximately mid-2024), there will be an additional 2 years worth of data to help inform the continued effects of the COVID-19 pandemic.

Appendix D: 2017 Funding – Project Scoring Greater Minnesota

Greater Minnesota Projects: 2017 Corridors of Commerce Program

District	Highway	Description*	Cost	Total Points
3	169	TH 101 to 197th - full freeway conversion	\$174,110,000	600
3	I-94	St. Michael to Albertville - construct auxiliary lane	\$62,420,000	580
3	169	TH101 to 197th 01 partial freeway conversion	\$92,040,000	575
3	I-94	St. Michael to Albertville - construct 4 to 6 lane conversion	\$77,800,000	570
3	I-94	St. Michael to Albertville - construct 4 to 6 lane conversion & Int. A	\$77,800,000	570
6	14	Owatonna to Dodge Center construct 2 to 4 lane conversion	\$160,410,000	525
3, 8	23	Willmar to St. Cloud - construct 2 to 4 lane conversion	\$105,070,000	520
1	I-35	21st Ave to Garfield Avenue - TPP #2	\$270,570,000	515
1	I-35	27th Ave to Garfield Avenue - TPP #1	\$270,570,000	515
3	23	Paynesville to Richmond construct 2 to 4 lane conversion	\$57,520,000	515
3	I-94	Albertville to Clearwater construct 4 to 6 lane conversion	\$179,540,000	510
6	14	CR 16 to Dodge Center construct 2 to 4 lane conversion	\$138,610,000	510
3	10	Wadena construct 2 to 4 lane conversion	\$39,210,000	490
3	371	Jenkins to Pine River construct 2 to 4 lane conversion	\$48,020,000	485
6	14	54th Ave to CR 3 construct 2 to 4 lane conversion	\$100,060,000	485
6	14	CR 3 to Dodge Center construct 2 to 4 lane conversion	\$85,850,000	485
7	14	New Ulm to Nicollet construct 2 to 4 lane conversion	\$79,200,000	485
M, 8	212	Granite Falls to Chaska construct 2 to 4 lane conversion	\$398,660,000	485
3	I-94	Monticello to Clearwater construct 4 to 6 lane conversion	\$54,720,000	485
3	371	Junction of TH 210 construct interchange	\$43,040,000	480
6	14	Junction CR 104 construct an interchange	\$39,180,000	465
6	52	Junction TH 14 capacity improvements	\$34,140,000	465
7	14	New Ulm to Courtland construct 2 to 4 lane conversion	\$64,320,000	465
7	14	CR 37 to Nicollet Expansion	\$67,550,000	460
2	11	Roseau to Warroad construct 2 to 4 lane conversion	\$56,970,000	455
3	I-94	Monticello to Hasty construct 4 to 6 lane conversion	\$86,120,000	455
1	169	Pengilly to Bovey construct 2 to 4 lane conversion.	\$75,530,000	450
1	169	CSAH 7 to TH 65 construct 2-to 4 lane conversion	\$75,530,000	445
6	14	56th Ave to CR 16 construct 2 to 4 lane conversion	\$28,900,000	445
6	14	Construct Byron Interchange Option 1	\$17,190,000	445
6	14	Construct Byron Interchange Opt2	\$16,500,000	445
6	14	Construct Byron Interchange Option 3	\$24,780,000	445
7	14	New Ulm to W. Courland Expansion	\$36,840,000	445
3	210	Pillager to Ironton construct 2 to 4 lane conversion	\$98,480,000	440
7	14	Nicollet to W. Courtland construct 2 to 4 lane conversion	\$54,090,000	440
3	I-94	Construct improved interchange at TH 23	\$2,500,000	435

District	Highway	Description*	Cost	Total Points
6	52	Junction TH 57 construct interchange	\$10,590,000	430
3	10	Royalton interchange construction	\$35,280,000	425
3	210	Motley to Baxter construct 2 to 4 lane conversion	\$86,250,000	425
8	23	New London to Paynesville construct 2 to 4 lane conversion	\$47,550,000	425
7	14	Nicollet to E. Courtland Expansion	\$19,060,000	410
1	169	CSAH 7 to CSAH 80 construct 2 to 4 lane conversion.	\$28,150,000	400
8	23	Junction TH 19 construct interchange	\$13,350,000	390
7	60	Construct interchanges through Windom	\$58,070,000	385
1	61	Construct a roundabout at 40th Ave	\$14,990,000	375
7	14	Junction TH 14 construct new interchange	\$94,920,000	375
8	23	Pipestone to Willmar construct passing lanes	\$8,320,000	370
8	23	Junction. TH 59 construct interchange	\$15,090,000	370
7	169	Construct bypass of St. Peter	\$224,590,000	365
1	169	CSAH 83 to TH 65 construct 2 to 4 lane conversion	\$18,530,000	360
1	I-35	Junction CSAH 3 construct interchange	\$4,610,000	360
3	23	Downtown St. Cloud - Freeway Conversion	\$45,350,000	360
1	2	Junction CSAH 13 construct roundabout.	\$1,640,000	355
1	61	Junction. 40th Ave construct roundabout	\$3,230,000	355
3	10	Junction CSAH 11 safety improvement	\$2,380,000	350
8	212	Granite Falls to Montevideo construct passing lane	\$3,980,000	350
1	61	40th Ave intersection improvements	\$2,230,000	340
2	11	Roseau to Warroad passing lane and realignment near airport	\$8,510,000	340
4	I-94	Construct new interchange	\$19,690,000	340
8	212	Granite Falls to Montevideo reconstruction	\$6,980,000	340
7	169	Construct Lind St. and Webster St. interchanges	\$50,160,000	335
1	61	Junction Homestead Rd construct J-turn	\$630,000	330
1	2	Grand Rapids to TH 63 - 4 to 5 lane conversion.	\$2,880,000	325
1	53	Junction. CSAH 16 construct J-turn	\$610,000	325
2	59	CSAH 3 to Thief Rivers Falls construct 2 to 4 lane conversion	\$16,890,000	325
8	23	Willmar to Priam construct 2 to 4 lane conversion	\$7,650,000	325
1	210	TH 169 to TH 65 reconstruction	\$12,040,000	320
4	59	Detroit Lakes to Mahnomon construct passing lane	\$3,766,000	320
8	23	Junction. CSAH 1 construct left turn lane	\$730,000	320
1	53	Junction TH 1 construct J-turn	\$670,000	315
1	169	Junction TH 25 construct J-turn	\$580,000	310
1	2	Junction TH 194 construct roundabout	\$2,830,000	310
2	11	Roseau to Warroad construct passing lanes	\$3,793,000	310
8	23	TH 71 to CR 5 construct 2 to 4 lane conversion	\$4,790,000	310
1	53	Junction Solway Rd. J-turn	\$560,000	305
1	53	Junction. CSAH 9 construct J-turn	\$620,000	300
8	23	Pipestone to Russell surfacing project	\$44,760,000	300

District	Highway	Description*	Cost	Total Points
1	169	Junction CSAH 137 construct J-turn	\$860,000	295
8	212	Brownnton to Stewart construct passing lane	\$3,500,000	295
8	71	Construct Redwood Falls bypass	\$12,020,000	295
1	61	Junction. McQuade Rd construct J-turn	\$980,000	290
8	212	Buffalo Lake to Steward construct passing lane	\$3,230,000	290
1	53	Junction. CSAH 15 construct J-turn	\$475,000	285
1	169	CSAH 7 to TH 65 safety improvements	\$5,490,000	280
1	33	Junction CSAH 7 construct J-turn	\$510,000	280
8	23	Junction TH 7 construct interchange	\$6,600,000	280
8	212	Sacred Heart to Renville passing lane	\$2,750,000	275
8	212	Junction TH 15 construct roundabout	\$2,443,000	270
1	53	Virginia to Intl Falls install passing lanes	\$2,900,000	260
8	23	Junction. TH 7 construct roundabout	\$3,120,000	260
1	169	Safety Improvements	\$5,490,000	255
1	61	Junction Ryan Rd construct J-turn	\$1,640,000	250
8	212	Replace BNSF bridge in Granite Falls	\$9,790,000	235
8	23	New London to Paynesville construct passing lane	\$9,030,000	210
8	23	New London to Paynesville construct Super 2	\$8,510,000	175

* Highlighted projects indicate those selected for Corridors of Commerce program funds
Note: MnDOT Office of Transportation System Management - April 30, 2018

Appendix E: 2017 Funding – Project Scoring Metro

Metro Projects: 2017 Corridors of Commerce Program

District	Highway	Description*	Cost	Total Points
Metro	I-494	France Ave to TH 77 construct MnPASS lane	\$149,020,000	660
Metro	I-494	Bush Lake Rd to 35W construct a turbine interchange	\$92,170,000	655
Metro	252 / I-94	Convert to a freeway and add MnPASS lanes Dowling to TH 610.	\$163,220,000	645
Metro	I-494	France Ave to I-35W construct improvements	\$91,700,000	640
Metro	I-494	TH 100 to I-35W construct an EB auxiliary lane	\$12,470,000	625
Metro	169	CSAH 17 to I 494 construct MnPASS	\$152,490,000	620
Metro	I-494	Bush Lake Rd to TH 100 construct turbine interchange	\$79,360,000	615
Metro	65	TH 10 to 117th Ave freeway design	\$99,070,000	615
Metro	I-494	Bush Lake Rd to TH 100 interchange improvements	\$13,480,000	610
Metro	I-494	France Ave to I-35W construct auxiliary lane	\$12,010,000	605
Metro	I-94	Junction. with TH 280/Franklin Avenue interchange improvements	\$89,420,000	605
Metro	36	I-35W to I-35E construct MnPASS	\$61,130,000	600
Metro	169	CR 21 to I 494 construct MnPASS	\$39,070,000	595
Metro	10 / 169	TH 169 to Thurston Ave freeway conversion	\$55,180,000	590
Metro	77	Apple Valley to Bloomington add MnPASS	\$37,110,000	580
Metro	252	Convert to a freeway and extend 3rd lane	\$95,670,000	575
Metro	13	Junction Dakota Ave construct interchange	\$25,650,000	570
Metro	I-35W	Construct NB flyover to WB I-494	\$79,890,000	570
Metro	65	105th Ave to 117th construct freeway design	\$57,120,000	565
Metro	65	Junction 109th Ave construct interchange	\$26,360,000	565
Metro	94/494/694	Construct a SB I-694 to EB I-94 flyover ramp	\$26,890,000	565
Metro	62	I-35W to TH77 construct EB auxiliary lane	\$22,560,000	560
Metro	I-35W	Construct a SB I-35W to EB I-694 flyover	\$22,470,000	555
Metro	65	Junction TH 10 construct free flow improvements	\$42,880,000	550
Metro	I-94	Maple Grove to Rogers add lanes in both direction	\$8,250,000	550
Metro	36	Junction Century construct interchange	\$32,170,000	545
Metro	I-494	Bush Lake Rd to TH 100 construct auxiliary lane	\$1,500,000	545
Metro	61	Junction Warner Rd construct interchange	\$33,020,000	545
Metro	169	Junction TH 282 construct interchange	\$13,300,000	540
Metro	212	NYA to Chaska construct 2 to 4 lane conversion	\$97,980,000	535
Metro	62	I-35W to TH 77 construct auxiliary lane both directions.	\$15,230,000	530
Metro	62	Tracy to TH 35W expand roadway 2-lanes to 4-lanes	\$154,050,000	530
Metro	I-94	Construct TH 610 gap	\$37,230,000	525
Metro	212	Dahlgren to Carve construct 2 to 4 lane conversion	\$45,250,000	520
Metro	I-35W	Construct a NB I-35W to WB I-694 flyover	\$24,660,000	520
Metro	I-494	TH 100 to TH 77 construct 2 additional lanes	\$140,820,000	520

District	Highway	Description*	Cost	Total Points
Metro	62	Penn Ave to TH 169 add additional lanes in each direction	\$51,670,000	520
Metro	212	Cologne to Carver construct 2 to 4 lane conversion	\$45,250,000	515
Metro	I-494	TH 100 to TH 77 construct 2 additional lanes & I-35W interchange	\$220,810,000	515
Metro	I-94	Fish Lake to Maple Grove construct auxiliary lane both directions	\$12,680,000	515
Metro	13	Quentin Ave to Washburn Ave add a new interchange	\$33,720,000	510
Metro	62	TH 77 to Portland Ave H Ave add auxiliary lane in each direction	\$19,650,000	510
Metro	77	NB TH 77 to WB TH 62 construct flyover ramp	\$36,550,000	510
Metro	97	I-35 to TH61 expand 2-lanes to 4-lanes	\$16,130,000	510
Metro	65	Junction 117th Ave construct interchange	\$16,110,000	505
Metro	55	Expand the roadway from two lanes to four lanes.	\$38,920,000	500
Metro	8	Expand the roadway from two lanes to four lanes.	\$58,520,000	495
Metro	94/494/694	Construct two flyover ramps	\$101,870,000	495
Metro	I-94	I-94/494/694 interchange reconstruction	\$96,790,000	490
Metro	36	Junction. Manning Ave construct interchange	\$21,170,000	485
Metro	212	NYA to Benton construct 2 to 4 lane conversion	\$53,730,000	480
Metro	212	NYA to Cologne construct 2 to 4 lane conversion	\$53,730,000	480
Metro	36	N. St. Paul to St. Croix River freeway conversion	\$140,170,000	480
Metro	I-94	TH 52 to Jackson St construct WB buffer lane	\$2,510,000	475
Metro	36	I-35W to I-35E construct EB auxiliary lane	\$26,830,000	470
Metro	494 / 694	Expand Tamarack Rd to Co Rd 10 to 6-lanes	\$10,300,000	470
Metro	I-94	Junction. with TH 252 interchange ramp improvement	\$1,960,000	470
Metro	61	Junction Afton Rd construct interchange	\$12,610,000	460
Metro	36	I-35 W to I-35 E construct 4 to 6 lane conversion	\$93,560,000	450
Metro	I-94	I-35E to 5th St construct a WB lane addition	\$8,500,000	450
Metro	252	Extend 3rd lane	\$17,690,000	445
Metro	I-35W	Construct an I-694 exit only lane	\$1,950,000	440
Metro	41	Chaska to CSAH 61 improvements	\$9,180,000	435
Metro	101	Construct interchange from Diamond Lake Rd to I-94	\$28,710,000	425
Metro	55	Lake St interchange reconstruction	\$3,650,000	425
Metro	110	Mendota to Inver Grove freeway conversion	\$121,780,000	420
Metro	62	Junction TH 77 construct ramps	\$1,300,000	415
Metro	101	Construct SB flyover access to I-94	\$41,220,000	405
Metro	36	Construct new interchange at Lake Elmo	\$31,190,000	395
Metro	10	Other: Make Hwy 10 in Blaine at least three lanes in each direction	\$1,400,000	390
Metro	I-35E	Add lanes from I-35E/I35W split to TH 97	\$3,740,000	390
Metro	61	Junction TH 10 construct interchange	\$25,020,000	390
Metro	101	Expand the roadway to 4-lane CSAH 14 to CSAH 61	\$32,150,000	385
Metro	I-35W	CR C to CR D exit lane	\$1,940,000	380
Metro	5	Victoria to Chanhassen construct 2 to 4 lane conversion	\$21,540,000	365

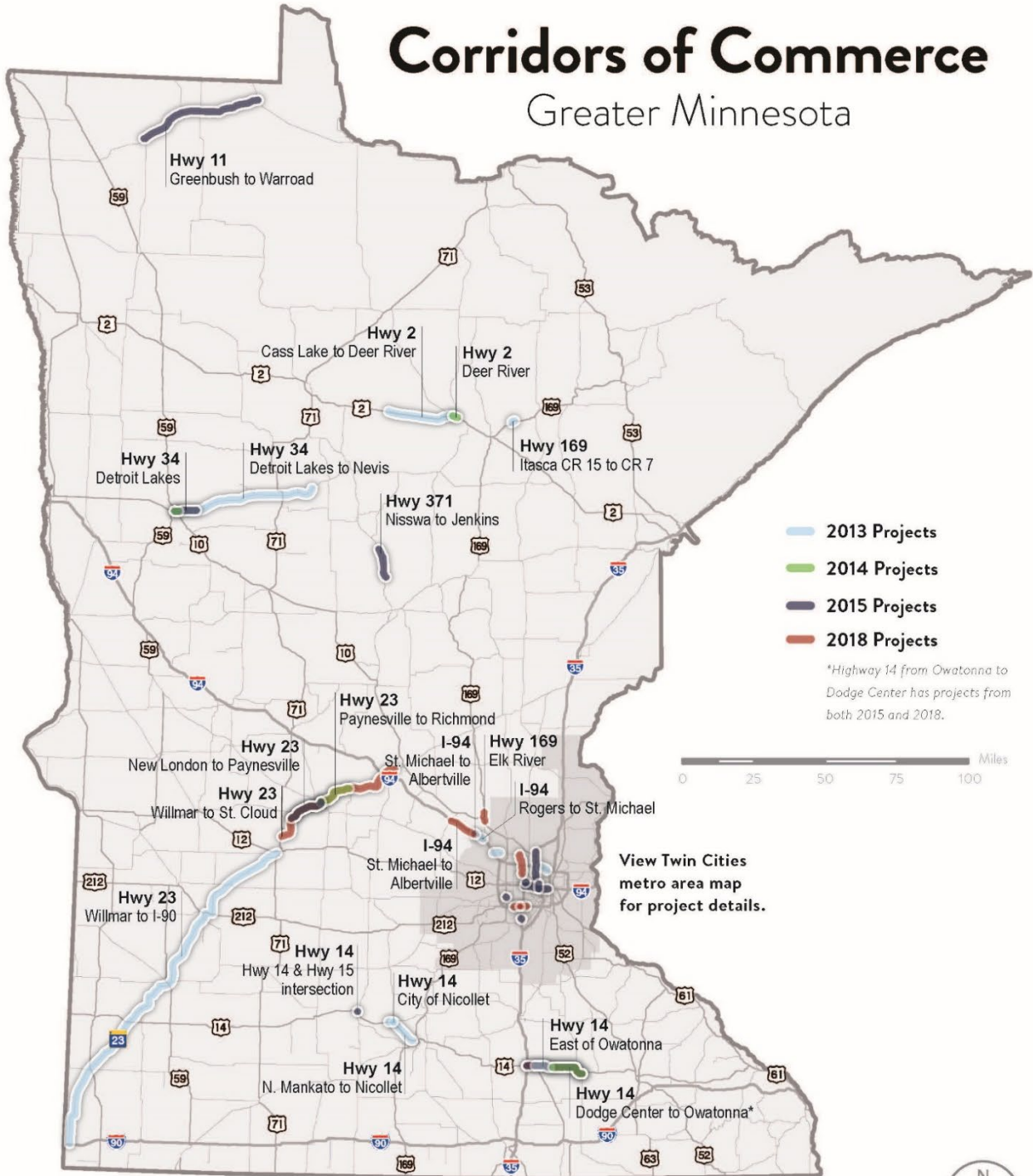
District	Highway	Description*	Cost	Total Points
Metro	61	Junction TH 95 construct interchange	\$23,290,000	365
Metro	61	Junction Warner Rd left turn lane improvement	\$590,000	355
Metro	156	Barge Channel Rd. Project	\$27,630,000	335

* Highlighted projects indicate those selected for Corridors of Commerce program funds
 Note: MnDOT Office of Transportation System Management - April 30, 2018

Appendix F: Maps

Corridors of Commerce

Greater Minnesota



Corridors of Commerce

Twin Cities Metro Area

