



State Trunk Highway Program

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State Trunk Highway Program

The Department of Transportation's (DOT) state trunk highway program is responsible for the construction, improvement, and maintenance of the state's 11,207-mile trunk highway system and for improvement on 538 miles of connecting highways under local jurisdiction. This paper provides an overview of the structure and scope of the program, describes its administration within DOT, details the main program components, and describes the program's financing.

Overview

The responsibility for roads and highways is divided between local governments and the state. The state generally has jurisdiction over arterial roads, which function as corridors for interstate and inter-regional travel. This network is called the state trunk highway system, which includes highways marked as state trunk highways (STH) and U.S. highways (USH), as well as the interstate highway system. Generally, counties are responsible for collector roads, which serve short distance, intra-regional traffic or provide connections between arterial roads and local roads. Municipalities (including towns) are responsible for local roads, such as residential streets and town roads, which provide property access and short distance, local mobility services. Certain municipalities also have arterial streets under their jurisdiction that are marked as state highways, which are designated as connecting highways.

Jurisdiction does not always follow this functional classification. For instance, a county road can begin to function as an arterial highway if

traffic patterns change. However, current DOT policy is to align jurisdictional responsibilities with functional classifications whenever possible.

Table 1 depicts the distribution of centerline miles of roads by current jurisdictional responsibility for 2017. Although state trunk highways and connecting highways together comprise only 10.2% of total road mileage, they carry 58.6% of the total traffic volume. Of the 11,207 miles of state trunk highways (excluding connecting highways), about 87.0% are outside municipal limits and 13.0% are within incorporated areas.

Table 1: Centerline Road Miles by Jurisdiction

Jurisdiction	Miles	% of Total
State Trunk Highways ¹	11,207	9.7%
Connecting Highways	538	0.5
County Trunk Highways	19,750	17.1
Town Roads	61,422	53.1
Municipal Streets ²	20,668	17.9
Other Roads ³	<u>1,958</u>	<u>1.7</u>
Total	115,543	100.0%

¹This system includes 876 miles of interstate highway.

²Excludes connecting highways.

³Includes park and forest roads and county roads not on the county trunk highway system.

In 2017, the state experienced an estimated 65.3 billion vehicle miles of travel (VMT) on this system, an all-time high. In each of the past four years, estimated annual VMT in the state has exceeded 60.0 billion miles, likely due to a relatively strong economy and low fuel prices. The current estimate of 65.3 billion VMT is 16.6% higher than the 56.0 billion VMT estimated to have occurred 20 years earlier in 1998. This equates to an average annual growth rate during the period of 0.8% each year.

Structure of the Program and Its Organization within the Department

The state highway program is often subdivided into two main components: (a) the state highway improvement program (which includes the state highway rehabilitation; major highway development; southeast Wisconsin freeway megaprojects; the major interstate bridge improvement program; and the high-cost bridge program); and (b) the state highway maintenance program (which includes routine maintenance and traffic operations-related activities). State highway improvement projects tend to be major, capital-intensive construction projects that require significant planning and time to complete, whereas maintenance activities are generally frequent, of a shorter duration, and do not involve major construction. This paper provides an overview of these state highway program components, as well as information regarding the funding mechanisms and use of funds within these programs over time.

The administration of the state highway program is shared between the Department of Transportation's Division of Transportation System Development and its Division of Transportation Investment Management. The Division of Transportation System Development is responsible for establishing standards for construction and for the execution of the actual design and construction of projects, while the Division of Transportation Investment Management is responsible for statewide planning and the financial management of the program. [Both divisions also have responsibilities related to the state's administration of non-state-highway (local road, rail, harbor, aeronautics, and other multimodal) transportation projects.]

While the Division of Transportation Investment Management is housed in the Department's central office in Madison, the Division of Transportation System Development has staff in both the central office and in regional offices in different locations throughout the state. For the purposes of administering the highway program

(as well as other DOT programs), the state is divided into five regions. This five-region system replaced a previous, eight-district system in 2005, although the Department maintains administrative offices in all of the former district headquarters cities (Eau Claire, Green Bay, La Crosse, Madison, Rhinelander, Superior, Waukesha, and Wisconsin Rapids).

The five regions and the counties in each region are shown below.

- **North Central Region:** Adams, Florence, Forest, Green Lake, Iron, Langlade, Lincoln, Marathon, Marquette, Menominee, Oneida, Portage, Price, Shawano, Vilas, Waupaca, Waushara, and Wood
- **Northeast Region:** Brown, Calumet, Door, Fond du Lac, Kewaunee, Manitowoc, Marinette, Oconto, Outagamie, Sheboygan, and Winnebago
- **Northwest Region:** Ashland, Barron, Bayfield, Buffalo, Burnett, Chippewa, Clark, Douglas, Dunn, Eau Claire, Jackson, Pepin, Pierce, Polk, Rusk, St. Croix, Sawyer, Taylor, Trempealeau, and Washburn
- **Southeast Region:** Kenosha, Milwaukee, Ozaukee, Racine, Walworth, Washington, and Waukesha
- **Southwest Region:** Columbia, Crawford, Dane, Dodge, Grant, Green, Iowa, Jefferson, Juneau, La Crosse, Lafayette, Monroe, Richland, Rock, Sauk, and Vernon

State Highway Improvement Program Development

The Department's development process for the state highway improvement program can be

divided into four stages: planning, programming, design, and construction.

Planning

Planning involves both the identification of long-term transportation needs and goals and the monitoring of conditions, such as pavement condition, traffic patterns, and safety. Within the Department, the planning function is shared between the Division of Transportation Investment Management and the regional offices.

In order to be eligible for federal transportation aid, the state must have a long-range highway plan covering a period of at least 20 years that outlines the state's broad policy goals for transportation and that establishes performance goals for the highway system. In developing a transportation plan, DOT must consider a range of planning factors, which are listed in the federal transportation law. For instance, the plan must aim to promote economic vitality, safety, system preservation, transportation system security, and the accessibility and mobility of people and freight. It must also seek to protect the environment and promote energy efficiency and the connectivity between different transportation modes. In addition to the requirements that are included in federal transportation law, the federal Clean Air Act requires DOT's transportation plan to be coordinated with the state's implementation plan, developed by the Department of Natural Resources, which designates how the state intends to control emissions of pollutants in ozone nonattainment areas.

In addition, as a condition of using federal transportation aid, DOT must consult with the state's metropolitan planning organizations (MPOs) in developing the statewide plan. Federal transportation law requires each metropolitan area with a population greater than 50,000 to have a designated MPO representing local governments. Each MPO develops a metropolitan transportation plan in consultation with local governments in the region.

DOT's current, long-range transportation plan, entitled *Connections 2030*, addresses all transportation modes, including state highways. In addition to providing an overview of the extent and condition of the various transportation modal systems, the report establishes 37 policy statements, designed to guide future decisions. Those statements are organized around the following seven broad themes: (a) preserve and maintain Wisconsin's transportation system; (b) promote transportation safety; (c) foster Wisconsin's economic growth; (d) provide mobility and transportation choice; (e) promote transportation efficiencies; (f) preserve Wisconsin's quality of life; and (g) promote transportation security. For the state trunk highway system, the plan makes a number of policy recommendations, particularly under the themes related to system preservation and economic growth.

One aspect of the plan is an identification of the *Corridors 2030* highway system. First designated as *Corridors 2020* in 1988 and more recently updated as part of the state's long-range multimodal plan (*Connections 2030*) in 2009, *Corridors 2030* is a state designation of critical highways statewide. These highways encompass approximately 3,930 centerline miles of federal and state highways that link all Wisconsin communities with populations greater than 5,000. DOT classifies these roads as vital to mobility and economic development in the state. The *Corridors 2030* system is divided into two route types: the backbone system and the connector system.

The backbone system includes approximately 1,590 miles of multilane interstate, US, and state highways that connect the major regions and economic centers of the state, as well as to the national highway system outside of Wisconsin. Primary routes include: I-39, I-41, I-43, I-90, and I-94; USH 10, USH 41, USH 51, USH 53, and USH 151; and STH 29. The connector system consists of approximately 2,340 miles of highway linking significant economic and tourism centers to the backbone system. Most of this system consists of

two-lane highways.

Programming

The programming stage involves selecting and scheduling improvement projects based on available funding and policy priorities. In developing this schedule, decisions must be made on which projects should be given highest priority, relying, in part, on the adopted highway plan, which outlines the broad policy goals of the highway program.

The task of programming projects is either done by staff in the transportation regions or by DOT central office staff, depending upon the type of project. Major highway development projects, large or costly bridge projects, and rehabilitation of multi-lane highways outside of DOT's Southeast Region are programmed by the central office, while other rehabilitation projects are programmed by the regional transportation offices. The portion of the rehabilitation budget that is reserved for the more routine highway and bridge projects is allocated to the regions based on an estimate of the total rehabilitation needs within each region. Regional offices develop project schedules based on the amount allocated to the region. Although there is some central oversight of this process, the regions are given considerable discretion in choosing which projects to put into the schedule.

Since the number of major highway development projects and larger highway and bridge rehabilitation projects may vary considerably from year to year within a given region, these projects are scheduled by the central office. As a result, regions are not forced to exhaust their allocations on large projects and thereby neglect routine rehabilitation needs.

The DOT central office, in consultation with the regional offices, compiles program schedules for the following six years for the highway improvements programs into a comprehensive, six-

year program. The six-year program, which is updated periodically based on changes in funding and in the plans for individual projects, provides a listing of all anticipated projects that indicates the type of project, the location, estimated cost, and scheduled construction date. The first two years of the six-year program are based on funding levels provided by the most recent biennial budget. The other years are generally based on this funding level, although the schedule for projects in the later years is more likely to change, since funding levels may be changed in subsequent biennial budgets.

Design

The design process typically begins several years in advance of actual construction. For major highway projects, the design stage may take eight to 10 years, beginning with concept development. Simple resurfacing projects may take one to two years. In part, the length of the design process is dictated by the amount of data that must be collected to complete required environmental reviews and to create the detailed plans for construction. Furthermore, because highway construction affects private landowners, as well as the driving public, the Department uses an extensive public involvement process to receive and respond to multiple concerns regarding proposed projects. In addition, the highway engineers must have detailed information on such things as the quality and type of soil, the physical terrain, and drainage patterns in order to put together the design proposal, which is eventually used to put the project up for bidding.

In addition to the design work that is directly related to the construction of the highway, there are numerous other preconstruction activities that lengthen the process. For instance, the Department frequently must purchase land for the construction of a new highway or the expansion of an existing highway. This requires negotiation with affected landowners.

For many highway projects the design stage includes environmental studies and mitigation. If an initial environmental assessment on a project determines that the impacts of the project on the environment could be significant, federal and state laws require the Department to prepare (or to contract for the preparation of) an environmental impact statement. Because projects can harm or destroy wetlands or other sensitive wildlife habitat, the anticipated consequences of a project must be reported in advance of that project's construction. In response to these expected impacts, the Department must plan to restore or create wetlands to replace those destroyed by the highway project. With regard to project alternatives, environmental impact statements must also forecast impacts on certain social and economic groups, residential and commercial development, and historically or archaeologically significant sites. When possible, the Department must also respond to these impacts. At the end of this process, these impact statements and the mitigation plans must be formally approved by the federal government, which can increase the amount of time required to complete the design phase.

Funding for the design process is provided within the appropriations for the corresponding programs. Typically, the cost of highway project design is approximately 10% to 15% of the cost of construction. The design function is carried out by a combination of DOT staff (both in the Division of Transportation Investment Management and the regional offices) and private firms.

For each component of the highway improvement program, DOT is required to maintain an inventory of completed highway project designs with estimated construction costs equal to or greater than 30% of the annual funding provided for each program. This requirement can enable the Department to quickly increase construction activity in response to a sudden increase in funding, such as was provided by the federal economic stimulus act in 2009.

Construction

The construction stage involves the preparation of projects for bidding and the oversight of the construction work done by contractors. The preparation of bids is done within DOT's central office, while the management of project construction is done by staff in the regional transportation offices.

Projects are put up for bidding every month, generally on the second Tuesday. Although project bidding is spread throughout the year, the busiest months are in the winter and early spring, which allows the largest projects to begin early in the construction season.

The preparation of a project for bidding starts when a design is completed by regional office personnel or an engineering consultant. DOT central office staff reviews the completed project design to ensure that all of its elements are consistent with state standards and then, from the design, develops a project proposal. The proposal contains estimates of the amount and type of work needed to complete the project. For instance, the proposal may provide an estimate of the amount of excavation or crushed rock needed, typically expressed in cubic meters or cubic yards.

Once the proposals have been completed, the project is advertised, which occurs about five weeks in advance of the bidding date. Contractors interested in making a bid on a project request a copy of the proposal from the Department. The bids are submitted on a cost-per-unit basis. That is, contractors estimate how much it would cost them to deliver one unit of every item in the proposal. Once the bids are received, the unit prices are multiplied by the estimated quantities and then totaled to arrive at the final bid price. If there are no irregularities in the submitted bids, the firm with the lowest bid receives the contract.

Once construction begins, a project manager monitors the work done by the contractor. Project managers may be DOT staff from the regional

office or engineering consultants hired by the Department. Project oversight typically involves the monitoring of construction materials and techniques for quality and may involve making minor modifications to the design of the project to account for unanticipated contingencies. For some projects, the extent of DOT monitoring may be limited because the contracts contain warranty provisions that require the contractor to repair any defects that appear within a specified number of years after the completion of the construction.

Project Schedules and Cost Estimates

The Department is required to periodically provide a public schedule and cost estimate for state highway improvement projects. Cost estimates cited reflect the Department's most recent, public estimate.

DOT bases state highway project cost and completion estimates on calculations of material and labor quantities, assessments of project risks (such as design or staging complexity), and construction market trends (such as inflation or deflation). Other factors during the planning, programming, design, and construction processes may also affect the schedules, costs, and completion of state highway projects. These factors include: (a) discovery of previously unknown project characteristics (such as unexpected environmental conditions); (b) the level of program funding provided over time; (c) changes in an administration's or the Legislature's highway program or project priorities; (d) changing federal laws or priorities; (e) departmental decisions to increase or decrease project scope; and (f) litigation related to a project.

State Highway Rehabilitation Program

In 2017-19, a total of \$1,626.2 million (\$740.6 million in state funds and \$885.6 million in federal funds) was provided for the state highway

rehabilitation program.

DOT allocates funding in the state highway rehabilitation program between three subprograms: (1) existing highway improvement; (2) backbone rehabilitation; and (3) state bridges. The purpose of each of these subprograms is to preserve and to make limited improvements on the state highway system.

Existing Highway Improvement and Backbone Rehabilitation

The existing highway and backbone rehabilitation components of the rehabilitation program are responsible for highway surface improvement projects. The existing highway component is responsible for projects on state highways that are not Corridors 2030 backbone routes. These projects are programmed by regions using funds set aside for each regional office by the central office from within the program. Backbone highways, including interstate highways, are typically more expensive to rehabilitate, so these projects are programmed by the central office, in consultation with the regional offices. However, rehabilitation of southeast Wisconsin freeways has generally been managed by the Department's southeast region. Between 2001 and 2011, all southeast freeway projects were done under the southeast Wisconsin freeway rehabilitation program, separate from the state highway rehabilitation program. With the creation of the southeast Wisconsin freeway megaprojects program in the 2011-13 budget act, the more routine southeast freeway projects, such as interstate resurfacing, again became the responsibility of the state highway rehabilitation program.

Highway rehabilitation projects can generally be divided into three main types: resurfacing, reconditioning (further classified as major or minor), and reconstruction. These types of rehabilitation are described below.

Resurfacing means placing a new surface on

existing pavement to provide a better-riding, all-weather surface, and to extend or renew the life of the pavement. It generally does not involve improvement in traffic capacity or geometrics (roadway characteristics such as road width and the number and severity of roadway curves and hills). Resurfacing may include some elimination or shielding of roadside obstacles, culvert replacements, installation of signals, marking signs, and intersection improvements. Usually, the acquisition of additional right-of-way is not required, except possibly minor acquisition for drainage and intersection improvements.

Reconditioning refers to work in addition to resurfacing. Minor reconditioning includes pavement widening and shoulder paving. Major reconditioning includes the improvement of an isolated grade, curve, intersection, or sight distance problem to improve safety. Major reconditioning projects may require the acquisition of additional land for right-of-way.

Reconstruction means the total rebuilding of an existing highway to improve maintainability, safety, geometrics, and traffic service. Major elements may include flattening of hills and grades, improvement of curves, widening of the roadbed, and elimination or shielding of roadside obstacles. Normally, reconstruction would require additional acquisition of right-of-way.

DOT also uses a special classification of reconstruction called pavement replacement. This type of project, like all reconstruction projects, involves the complete rebuilding of the roadway pavement and base. However, pavement replacement generally does not involve changes in the road alignment and does not require additional right-of-way. This type of project is done where an existing pavement and base have deteriorated to the point of needing replacement, but where the road was originally built to high standards, and thus does not need geometric improvements. This is commonly the case on rural interstate highways.

The selection of specific projects is based on an evaluation of surface pavement condition, the number and severity of hills and curves, accident numbers and rates, and traffic congestion. This process, which is also used in preparation of the six-year highway program, allows DOT to identify existing conditions and improvement needs.

In addition to these main highway rehabilitation types, the existing highway and backbone rehabilitation components of the rehabilitation program fund a number of other activities, including: (a) preventative pavement maintenance work that is less extensive than full resurfacing, but more extensive than the pavement repair normally done in the maintenance component of the highway program; (b) additions or deletions to the state trunk highway system through jurisdictional transfer agreements with local governments; (c) improvements to permanent weigh scale facilities; (d) construction projects at rest areas; (e) hazard elimination safety projects; (f) noise barriers; and (g) wetland mitigation projects.

State Highway Bridges

State highway bridge improvement projects are funded under different programs, depending upon their location and scope. The state bridges component of the state highway rehabilitation program is responsible for bridge projects that are not on backbone highways (which are funded from the backbone rehabilitation component) and are not classified as a major interstate highway bridge or a high-cost bridge project under the statutory definitions for those programs.

Within the bridge program component, bridges are divided between routine projects and "large" bridge projects (distinct from the high-cost bridge and major interstate bridge programs described in subsequent sections). Most bridge projects fall into the first category, which are programmed by regional offices using regional allocation funds. DOT allocates funds to the regions for both the bridge and existing highway rehabilitation

Table 2: Large Bridge Rehabilitations Scheduled Between 2019 and 2029 (\$ in Millions)

County	Highway	Bridge	Remaining/Total Cost	
			Completion Year	(2019 Dollars)
Winnebago	Racine St.	Fox River Bridge, Menasha	2021	\$38.2
Crawford	STH 82	Mississippi River Bridge, De Soto	2023	24.2
Richland	STH 130	Wisconsin River Bridge, Lone Rock	2024	31.9
La Crosse	STH 16	CMSTP&P Railroad, La Crosse	2025	27.5
Brown	STH 54	Fox River Bridge, Green Bay	2028	87.2
Winnebago	Jackson St.	Fox River Bridge, Oshkosh	2029	45.0

components of the rehabilitation program, but these sources are combined, so regions can program any mix of bridge and highway projects.

Large bridge rehabilitation projects are programmed by the central office in order to avoid reducing the efforts by the regional offices to improve lower-cost, deteriorating bridges. Large bridges in the state highway rehabilitation program are bridges with a deck area greater than 40,000 square feet. Table 2 lists the large bridge rehabilitation projects that DOT anticipates constructing between 2019 and 2029 from the state highway rehabilitation program.

Bridge deficiencies may include: (a) structurally deficient bridges; (b) functionally obsolete bridges, characterized by narrow roadways, restricted clearances, or poor alignment; and (c) bridges that have load capacity restrictions. To monitor bridge conditions and to assist in assessing deficiencies, DOT maintains a bridge appraisal system. This system is developed from bridge field inspections and central office appraisal of the inspection results.

Major Highway Development

In 2017-19, a total of \$563.7 million (\$73.6 million in state funds, \$114.8 million in transportation revenue bonds, and \$375.3 million in

federal funds) was provided for the major highway development program.

The major highway development program provides for the development and construction of new or significantly altered highway projects. Throughout the program's history, a major highway project has typically been defined in relation to certain cost and capacity expansion thresholds. The 2011-13 biennial budget, however, expanded the definition to include certain rehabilitation projects that do not meet those thresholds, but that do exceed a separate cost threshold. Consequently, a major highway project is any improvement project (with certain exclusions, described below) that either: (1) has a total cost in excess of \$91,100,000; or (2) has a total cost in excess of \$36,400,000 and that expands capacity in at least one of the following ways: (a) construction of a new highway of 2.5 miles or more in length; (b) relocation of 2.5 miles or more of existing roadway; (c) the addition of one or more lanes at least five miles in length; or (d) the improvement of 10 miles or more of an existing divided highway to freeway standards. The cost thresholds are in 2018 dollars and are annually indexed to the cost of construction inflation.

Projects that meet either of these definitions are, nevertheless, excluded from the definition of a major highway project if: (1) the project meets the definition of a southeast Wisconsin freeway megaproject; (2) the project involves an approach to a bridge over a river that forms a boundary of the state; or (3) the project meets the statutory

definition of a high-cost bridge project or of a major interstate (across state lines) bridge project. The criteria for southeast Wisconsin freeway megaprojects and projects in the two bridge programs are described in separate sections later in this paper.

Major Highway Project Selection Process

The process for selecting projects for the major highway development program involves the Legislature to a greater extent than other highway projects, although this process differs for different types of major highway projects. In order to assist in this process, the Transportation Projects Commission (TPC) was created to review proposals for major projects and make recommendations to the Governor and Legislature as to which ones should be enumerated. The TPC includes the Governor, who acts as the chairperson, five senators, five representatives, three public members appointed by the Governor, and the Secretary of Transportation (a nonvoting member).

A project that meets the capacity expansion threshold in the major highway project definition must be individually enumerated in the statutes before the Department can proceed with construction. Although enumeration is accomplished through an enactment of the Legislature, a statutory provision prohibits the enumeration of a project unless the TPC has recommended the project for approval. In addition, TPC approval is required before DOT can start an environmental impact statement (EIS) or environmental assessment (EA) on a project.

The Department is required to assist the TPC in the performance of its duties. Under 2017 Act 247, whenever DOT produces a project cost estimate in assisting the TPC, it must include all costs associated with that project, including the costs before enumeration, design engineering and construction engineering costs, the costs of environmental studies, and costs of the project that are paid by another program of the Department. Such

estimates must also include the expected date of completion and an estimate of the effects of construction cost inflation and unexpected costs on the cost of the project.

The statutes set the procedure for the review and recommendation of capacity expansion projects by the TPC, as follows:

1. By October 15 of odd-numbered years, DOT presents a list of potential capacity expansion projects to the TPC that are considered to be good candidates for proceeding with an environmental impact statement or an environmental assessment, and a list of projects for which an EIS or EA is complete or nearly complete that may be considered at a later date for recommendation for enumeration.
2. By March 15 of the following year (even-numbered year), DOT makes a recommendation to the TPC as to which projects should be allowed to proceed to the EIS or EA stage.
3. By April 15 of even-numbered years, the TPC approves a list of projects that may proceed to the EIS or EA stage. Because of the time needed to complete an environmental study, the projects approved for a study at this stage will be considered for enumeration in future biennial cycles.
4. By September 15 of even-numbered years, DOT submits to the TPC a recommendation of projects to be enumerated. The environmental study must be completed and approved by the Federal Highway Administration prior to recommendation. In some cycles, the TPC has held public hearings on a list of potential projects prior to the submission of the Department's recommendations, although the statutes do not require this.
5. By December 15 of even-numbered years, the TPC submits its recommended list of projects to be enumerated to the Governor and Legislature. The TPC may or may not include the projects recommended by DOT and may add additional

projects. Typically, the Governor has included such projects in the biennial budget submission during the following legislative session.

In developing a list of recommended projects, DOT assigns a score to each project using a system outlined in an administrative rule. The system assigns each project a score between zero and 100 for each of five criteria. Each of these scores is multiplied by a weighting factor to determine a final score. The criteria and their weights are, as follows: (a) enhances Wisconsin's economy (40%); (b) improves highway safety (20%); (c) improves traffic flow (20%); (d) minimizes undesirable environmental impacts (10%); and (e) serves community objectives (10%). According to the administrative rule, a project must be worse than the average highway of the same type in terms of either traffic congestion or highway safety to be recommended to the TPC.

There are two statutory restrictions on the TPC's recommendations for capacity expansion projects. First, the TPC is prohibited from recommending a project for enumeration unless the project, along with all other enumerated projects, can be started within six years following the project's enumeration, assuming a constant, real-dollar program size throughout the period. [The Commission, however, may recommend a project that could not otherwise be started within the six-year time period if it also recommends a funding proposal for the major highway development program that would allow the project to be started in six years.] No projects were recommended for enumeration between 2002 and 2008 in part because of this restriction, although four projects were enumerated in the 2003-05 biennial budget without being recommended by the TPC.

Second, the TPC is prohibited from recommending a project for enumeration unless a final EIS or EA has been approved by the Federal Highway Administration (FHWA). This requirement is intended to ensure that potential projects can be completed within a reasonable time of

enumeration and that the TPC has reasonably complete information on the cost and impacts of the project.

A highway improvement project that does not meet the major highway project capacity expansion thresholds, but is considered a major highway project because it exceeds the \$91.1 million cost threshold does not need to be individually enumerated in the statutes. Instead, DOT may proceed with construction on this type of project once the TPC has approved the project, upon request of the Department. The USH 18/151 Verona Road/Madison Beltline project in Dane County and the STH 50 project from I-94 to 43rd Avenue in Kenosha County are the only projects that have been approved by the TPC under this provision.

The TPC may also designate an otherwise non-qualifying project if it receives a petition for such designation from a city or village for a project that is within its corporate limits and is estimated to cost \$2 million or more, provided that the project is not a freeway. No projects have been approved by the TPC under this provision.

The TPC last met in December, 2014. At that time the TPC approved the STH 50 project in Kenosha County under the related, high-cost statutory threshold for major highway projects discussed above. At the Department's request, the TPC also recommended two additional major highway projects for enumeration, which have yet to be enumerated: (a) the I-43 project between Silver Spring Drive and STH 60 in Milwaukee and Ozaukee counties, which, at that time, had an estimated cost of \$448 million; and (b) the I-94 project between USH 12 and 130th Street in St. Croix County, which, at that time, had an estimated cost of \$129 million. The Legislature enumerated the I-94 project in St. Croix County, but the project was partially vetoed under the 2017-19 biennial budget act. Table 3 shows the list of enumerated or TPC-approved highway projects that have not yet been completed. The final two columns show the total cost of each project and the remaining

Table 3: Enumerated/Approved Major Highway Development Projects Remaining to be Constructed (\$ in Millions)

	<u>Highway</u>	<u>County</u>	<u>Nominal Cost</u>	<u>Inflation-Adjusted Cost</u> ¹	<u>Scheduled Remaining Costs</u> ¹
<u>Enumerated in 1997</u>					
La Crosse Corridor	53	La Crosse	\$143.2	\$162.8	\$156.1
<u>Enumerated in 1999</u>					
STH 67 to USH 41	23	Sheboygan & Fond du Lac	150.5	153.1	96.2
<u>Enumerated/Approved in 2011</u>					
Winnebago CTH CB to Oneida Street	10/441	Calumet & Winnebago	390.0	390.1	3.8
STH 76 to New London	15	Outagamie	137.7	143.8	117.8
Verona Road/Madison Beltline ²	18/151	Dane	269.8	269.8	2.9
Illinois State Line to USH 12/18 ³	39/90	Dane and Rock	1,186.7	1,193.7	334.4
<u>Approved in 2014</u>					
I-94 to 43rd Avenue ²	50	Kenosha	<u>100.0</u>	<u>104.5</u>	<u>91.9</u>
Total			\$2,377.9	\$2,417.8	\$803.1

¹Cost estimates in these columns are inflation-adjusted thru DOT's August, 2018, report on the major highway program. Remaining costs reflect the estimated, scheduled costs for 2019-20 and beyond.

²These projects meet the cost threshold for a major highway project, but not the capacity expansion thresholds. The TPC approved the Verona Road/Madison Beltline project in 2011 and the STH 50 project in 2014.

³Project cost estimate may include the beltline interchange component of the I-39/90 project, which was a part of that project's enumerated scope, but which may be completed separately from the remainder of this project, depending on the availability of funding and the outcome of a related environmental impact study. DOT plans to finalize this study in March, 2019.

estimated cost, as of the Department's August, 2018, status report.

As shown in Table 3, the largest amount of remaining project costs in the major highway development program are associated with the I-39/90 project in Dane and Rock Counties. This project includes the reconstruction of I-39/90 from the Illinois state line to Beltline Interchange (southeast of the City of Madison). The project has an estimated total cost of \$1,193.7 million, with an estimated remaining cost of \$334.4 million beyond the 2017-19 biennium.

The remaining amount includes DOT's current cost estimates for the Beltline Interchange component of this project, which is the reconstruction of the interchange of I-39/90 and USH 12/18. Past, preliminary designs for this project component included three lanes of travel in each direction and

significant, safety-related geometric modifications to the footprint of the interchange. Cost estimates associated with this design concept were in the range of \$550 million. The Department subsequently decided to reduce to the scope of this project component to lower its costs. DOT is currently considering two, reduced scope alternatives with costs in the range of \$100 million. Rather than redevelop the interchange with consideration for the adjacent highway system, these alternatives would use the existing footprint and structures of the interchange. Both alternatives would provide three through lanes of travel in the southbound direction. However, under one of the alternatives, the through lanes of travel in the northbound direction would be maintained at two lanes in the core of the interchange (dropping the farthest left, third lane of travel, which is being included throughout the remainder of the project). Currently, DOT intends to select an alternative by March, 2019.

While statutory enumeration provides DOT the authority to build a project, it does not establish a statutory priority or timetable or require a specific design. It also does not require DOT to actually construct or complete the project. Consequently, DOT has the authority to begin an enumerated project either before or after the date indicated in TPC or legislative discussions.

The Department is required to publish a report twice each year providing an update on the estimated cost and schedule of each enumerated project, as well an explanation of any changes to these measures. The Department is also required to provide copies of this report to: (a) the TPC; (b) the Joint Committee on Finance; (c) the Joint Legislative Audit Committee; and (d) the standing committees of the Legislature with jurisdiction over transportation matters.

According to the Department's August, 2018, report, the remaining cost to complete all enumerated major highway projects was \$1,048.2 million. Of this total, \$803.1 million in estimated costs remained in years beyond the 2017-19 biennium. However, no new major highway development projects have been enumerated or approved since 2014. Consequently, future, scheduled costs of the program beyond the 2019-21 biennium (during which most of these remaining costs are scheduled) will diminish significantly if new projects are not added.

Southeast Wisconsin Freeway Megaprojects

A total of \$535.6 million was provided for southeast Wisconsin freeway megaprojects in the 2017-19 biennium. This amount was comprised of \$18.1 million in state funds, \$252.4 million in general fund-supported, general obligation bonds, and \$265.1 million of federal funds. Of the total amount, \$487.4 million was allocated for the I-94 North-South freeway project, while the remaining

\$48.2 million was allocated to the core of the Zoo Interchange project.

Since the 2001-03 biennium, most capacity expansion and rehabilitation projects on the southeast Wisconsin freeway system (freeways in Kenosha, Milwaukee, Ozaukee, Racine, Walworth, Washington, or Waukesha counties) have been funded separately from the major highway development and state highway rehabilitation programs. Between 2001 and 2011, all southeast freeway highway improvement projects were the responsibility of the southeast Wisconsin freeway rehabilitation program. With the enactment of 2011 Act 32, the 2011-13 budget, the southeast Wisconsin freeway rehabilitation program was replaced with the southeast Wisconsin freeway megaprojects program. A southeast Wisconsin freeway megaproject is defined as an improvement project with an estimated cost exceeding \$609,500,000, in 2018 dollars (indexed annually to the cost of construction inflation). Any rehabilitation or capacity expansion project on those freeways with a cost below that threshold is the responsibility of the state highway rehabilitation or major highway development programs, as applicable.

Marquette Interchange Project. The first southeast Wisconsin freeway reconstruction project begun since the initial creation of a separate program for the rehabilitation of these freeways was the reconstruction of the Marquette Interchange in the City of Milwaukee. Construction on the project began in 2004 and the reconstructed interchange was fully opened to traffic in 2008. The final cost of the project was \$784 million. Although this project would have qualified as a "megaproject" under the current statutory program, it was enumerated under the former southeast Wisconsin freeway rehabilitation program.

I-94 North-South Freeway Project. With the completion of the Marquette Interchange project, the Department began work on the reconstruction of I-94 between the Mitchell Interchange in

Milwaukee County and the Illinois state line, known as the I-94 North-South freeway. The project involves the complete reconstruction of the roadway and interchanges, as well as capacity expansion, adding a fourth lane in each direction. Construction began in 2009, and was initially scheduled for completion in 2016. However, in 2011, DOT announced that most of the remaining work on the mainline of the freeway would be delayed due to the Department's shift in focus toward the reconstruction of the Zoo Interchange in Milwaukee County. Because of this shift, and due to funding constraints, relatively limited work occurred on this project until the 2017-19 biennium.

During 2017-19 biennial budget deliberations, the I-94 North-South project's completion again became a priority, in large part, due to the planned Foxconn development project in Racine County, which is adjacent to the central segment of the project corridor. As a result, \$487.4 million was allocated to this project in 2017-19 comprised of the following funding sources: (a) \$252.4 million in general fund-supported, general obligation bonds provided under 2017 Act 58 (the Foxconn legislation); (b) \$59.7 million under the 2017-19 biennial budget act (2017 Act 59); (c) \$15.3 million under a June, 2018, s. 13.10 action of the Joint Committee on Finance; and (d) \$160.0 million from a federal ("INFRA") grant intended to accelerate the project's completion schedule. Total project costs are estimated as \$1,624.7 million, with 2021-22 as the estimated year of completion. In August, 2018, remaining project costs were estimated as \$359.3 million, of which \$35.4 million were scheduled to occur in 2019-20 and beyond.

Zoo Interchange Project. From 2011-13 through 2015-17, the primary focus of the southeast Wisconsin freeway megaprojects program was the reconstruction of the Zoo Interchange at the junction of I-94, I-894, and USH 45 in western Milwaukee County. Funding provided during this period allowed for the completion of the bulk of the project (nearly \$1.2 billion), with the exception of some minor elements of the central core of the

interchange and the north leg of the project (from Swan Boulevard to Burleigh Street). In 2017-19, DOT allocated \$48.2 million to this project, composed of the following funding sources: (a) \$41.5 million under 2017 Act 59; and (b) \$6.7 million under a June, 2018, s. 13.10 action of the Joint Committee on Finance.

A provision of 2017 Act 59 prohibited DOT from funding any work on the project's north leg in the 2017-19 biennium. Therefore, construction on the north leg of the project did not proceed in 2017-19. In August, 2018, DOT estimated the project's total cost as \$1,541.3 million, with remaining costs of \$239.6 million, of which \$232.6 million were scheduled to occur in 2019-20 and beyond. This remaining cost is associated with the project's north leg (with a projected completion year of 2022-23).

Megaproject Enumeration. Any southeast Wisconsin freeway megaproject must be enumerated in the statutes prior to the start of construction. Unlike major highway development projects, however, southeast Wisconsin freeway expansion projects do not have to be reviewed and recommended for enumeration by the Transportation Projects Commission. However, both the I-94 North-South and the Zoo Interchange projects, discussed above, have been enumerated.

The I-94 East-West corridor portion of the I-94 freeway (between 70th Street and 16th Street in Milwaukee County) is another major component of the southeast Wisconsin freeway system. The related DOT project study began in 2012 concluded with federal project approval in September 2016. This 3.5 mile project would reconstruct I-94 between the project boundaries, expanding the existing roadway from six to eight lanes (four in each direction). In addition, related interchange and local road construction would be completed as a part of the project. In the project's federal approval documentation (September, 2016), DOT provided an estimated, inflation adjusted project cost of \$1.1 billion.

The Department requested enumeration of the I-94 East-West corridor project in 2015-17 and 2017-19. However, the project was not enumerated or funded in either biennium. Subsequently, in fall, 2017, the Department requested that FHWA rescind the project's federal approval. Therefore, in addition to enumeration in state statute, the Department would need to request the reinstatement of this approval for the project's construction to proceed.

Major Interstate Bridge and High-Cost Bridge Programs

A provision of 2009 Act 28, the 2009-11 budget act, created the major interstate bridge program, for projects involving the construction or reconstruction of a bridge crossing a river that forms the boundary of the state, for which the state's share of costs is estimated to exceed \$100 million. The St. Croix Crossing project, which replaced the Stillwater Bridge connecting Stillwater, Minnesota, with Houlton, Wisconsin, is the only project that has met these criteria. In addition to creating appropriations for this program, Act 28 authorized \$225.0 million in transportation fund-supported bonds for this project. Other, sources of funding provided to the project have included \$10.0 million in state funds and \$14.6 million in federal funds. In 2015-17, an additional \$20.0 million in transportation fund-supported, general obligation bonds were provided to fund completion of the main components of the project, which opened to traffic in the fall of 2017. Subsequently, 2017 Act 59 also provided \$8.0 million in state funds to complete a related pedestrian and bicycle trail loop, which was required as part of the project's federal approval. The total cost of the project is estimated at \$646.8 million, of which Wisconsin's share is estimated at \$278.0 million.

The 2011-13 biennial budget created an addi-

tional, separate program for high-cost bridges, defined as a bridge with an estimated cost exceeding \$150,000,000 that is not a major interstate bridge or part of a southeast Wisconsin freeway megaproject. Construction work on a bridge (including approaches) that qualifies as a high-cost bridge may not be funded from other highway improvement programs. In spite of this provision, the budget act authorized DOT, during the 2011-13 fiscal biennium only, to use funds from the major highway development, state highway rehabilitation, or southeast Wisconsin freeway megaprojects programs for preliminary costs associated with the reconstruction of the Hoan Bridge and approaches to the east bank of the Milwaukee River on I-794 in Milwaukee County. The 2015-17 budget act provided \$16.8 million in transportation fund-supported general obligation bonds for the project. The project, which was completed in late 2015, had a total cost of \$242.8 million.

State Highway Maintenance, System Management, and Traffic Operations

The final component of the state trunk highway program is the maintenance, system management, and traffic operations program. This program funds a variety of activities related to the upkeep of state highways and highway right-of-way through contracts with counties and private contractors, as well as with DOT staff. The activities performed under these programs generally require less extensive planning and design than other state highway program components.

For the purpose of funding this program, the Legislature has established two subcomponents, each with its own set of appropriations. Those subcomponents, routine maintenance and highway system management and operations, are described in this section.

The Department further subdivides maintenance functions into three categories: routine maintenance, corrective maintenance, and preventative maintenance. Of these three maintenance types, most routine and corrective maintenance activities are state funded from the routine maintenance appropriation. Certain pavement and bridge preventative maintenance are eligible for federal funding and are funded primarily from the federal appropriation for state highway rehabilitation. The highway system management and operations subcomponent pays for various highway operations and maintenance costs and supports safety-related highway infrastructure.

The 2017-19 biennial budget act provided funding to both program subcomponents as follows: (a) \$373.7 million for routine maintenance activities; and (b) \$201.4 million for highway management and operations.

Types of Maintenance Functions

As opposed to constructing new or replacement infrastructure, state trunk highway maintenance is intended to return the existing highway system to a renewed condition. Categories of service delivery for the maintenance program were established in August, 2013, as part of a set of maintenance operating guidelines for DOT, county highway departments, and private contractors.

Routine Maintenance. Most routine state trunk highway maintenance is performed by county workforces under contract with the state, except in instances where sufficient county resources are not available. One notable exception is rest area and wayside maintenance, where people with disabilities provide the day-to-day maintenance and DOT contracts with local community rehabilitation programs to coordinate their employment.

Routine maintenance activities are frequent, of limited scope, and carried out on a day-to-day basis. In addition to the work performed by counties,

there is also a limited range of centrally administered, routine maintenance activities carried out by state staff or private contractors. Routine maintenance may include the following:

- winter maintenance, such as snowplowing, drift control, and application of de-icers;
- mowing and weed control, brush and tree removal, trash pickup, and recycling;
- maintenance of rest areas, tourist information centers, waysides, scenic overlooks, and historical markers, including parking, picnic, and toilet facility improvements;
- plantings and landscaping in rest areas and other areas;
- minor surface and base repair;
- shoulder grading and repair;
- minor bridge repair;
- debris and accident cleanup;
- drainage, culvert landscaping, erosion control measures, and guard fence repairs;
- lift bridge and ferry maintenance and operation; and
- repair of damaged traffic signs.

Corrective Maintenance. Corrective maintenance is performed to fix urgent, time-sensitive problems caused by unforeseen conditions, and is frequently safety-related. When conditions permit, the state solicits bids for corrective maintenance from private contractors. Culvert repair and road washouts as a result of weather and age-related damage typify the work performed under this maintenance category. Counties often provide interim support for highway safety reasons until a private contractor has been secured to complete

these repairs. For instance, a county work crew might close a section of highway until a private contractor takes over the repair work.

Both private contractors and counties provide corrective maintenance on the state trunk highway system. DOT contracts with counties for these maintenance types when: (a) the maintenance project is small (less than \$100,000); (b) a contractor is unavailable; or (c) the project is an emergency requiring a timely response. Otherwise, a private contractor is more typically employed.

Preventative Maintenance. Preventative maintenance encompasses more substantial repairs than routine maintenance, and is planned and programmed in advance of project implementation. The primary goal of preventative maintenance is extending pavement or bridge life. Examples of preventative maintenance include concrete joint repair, resurfacing, and diamond grinding.

Only pavement and bridge activities categorized as preventative maintenance are typically eligible for federal highway aid reimbursement and therefore are performed by private contractors. [Projects using federal highway aid are subject to federal requirements for competitive bidding.]

Maintenance Costs

DOT funds the state highway maintenance functions described above from the routine maintenance appropriation, the highway system management and operations appropriation, and the appropriations for state highway rehabilitation.

Most maintenance activities, whether in the routine, corrective, or preventative categories are generally funded from the routine maintenance appropriation; although in some instances, maintenance costs are funded from the highway system management and operations appropriation.

Preventative maintenance related to pavements and bridges only, however, is typically funded

through the federal rehabilitation appropriation, with state matching funds, as dictated by federal rules and DOT's budgetary needs in a given year.

Because counties provide the majority of state trunk highway maintenance, further detail regarding their contractual relationship with DOT follows. Counties are reimbursed for state maintenance work based on three criteria: (a) county labor costs; (b) county machinery costs; and (c) materials supplied by the county, with the exception of deicing salt. [The Department attempts to reduce materials costs through large-scale purchases of deicing salt, which it then provides to the counties for use on state highways.] DOT uses an actual cost reimbursement method, which is based on statewide average equipment rates averaged over a period of five years, and each county's employee wage rates. Due to individual county labor contracts, hourly wage reimbursement rates vary between counties.

In order to exercise control over the amount of routine maintenance work done on state highways, the contract that DOT enters into with the counties establishes an annual maintenance budget for each county. County budgets are established based on each county's highway maintenance-related characteristics, such as number of lane miles, pavement types and conditions, and traffic volume. Once established, counties are expected to stay within their budget and may be directed to curtail certain maintenance activities late in the year, if expenditures earlier in the year were higher than expected. DOT works cooperatively with county highway departments to determine an appropriate level of state work sufficient to retain the manpower and equipment needed for winter maintenance.

Because winter maintenance costs are highly dependent upon the weather conditions, which are difficult to predict in advance, the Department budgets for winter based on the average of the past five seasons' costs. Whenever necessary, the Department directs counties to respond to weather

conditions and related transportation needs, even if that means exceeding the amount budgeted for winter maintenance. Consequently, during years in which weather conditions are more severe than average, winter costs may exceed the amount budgeted. If the amount of the excess cost is minor, the Department makes adjustments to spring maintenance activities to stay within the fiscal year budget. Nonetheless, occasionally the costs are significantly higher, making such adjustments impractical without negatively affecting roadway maintenance.

In several instances during the past decade, the Department has requested additional funding for the program, either as separate legislation or under s. 13.10 of the statutes. Most recently, winter conditions during the 2011-13 and 2013-15 biennia led to additional funding to reimburse counties for maintenance and traffic operations costs in excess of budgeted appropriations.

The 2013-15 biennial budget act authorized another method through which DOT may contract with counties (and municipalities) for state trunk highway maintenance. According to this provision, DOT and the county or municipality may agree to a payment method and terms other than the actual cost reimbursement method described above, including payment according to a negotiated contract price for maintenance services. Under this provision, DOT has been working with counties in certain instances on performance and regionally-based approaches to highway maintenance contracts.

Highway System Management and Operations

The highway system management and operations appropriation funds traffic operations and system management activities, including bridge maintenance. Highway traffic operation functions include: (a) pavement marking activities, such as centerline and edge line painting, channelization

lines, stop lines, curb and crosswalk lines, or the installation of raised centerline reflectors; (b) highway signing activities; (c) traffic signalization activities; and (d) highway lighting activities.

Also included under the highway system management and operations program is the state traffic operations center support, bridge maintenance and operation, roadside facilities operations, program staff costs, and purchase of deicing salt used for winter maintenance. Although winter maintenance is categorized as routine, the material cost of the deicing salt is paid from the highway system management and operations appropriation.

A provision of 2013 Act 20, the 2013-15 biennial budget act, created a new appropriation to support traffic signal and intelligent transportation system installation, replacement, and rehabilitation. The statutes define an intelligent transportation system as a specialized computer system or other electronic, information processing, communication, or technical system, including roadway detector loops, closed circuit television, permanent variable message signs, or ramp meters, which is used to improve the efficiency or safety of a surface transportation system.

In accordance with Act 20, stand-alone installation of these devices or systems may only be funded through this newly created appropriation or the highway system management and operations appropriation. The Act provided \$10 million annually for this purpose in the 2013-15 biennium by transferring state-supported funding from the state highway rehabilitation appropriation. As modified by 2017 Act 59, no funds may be expended from this new appropriation after June 30, 2021. [Previously, this appropriation had a sunset date of June 30, 2019.] The Department must prepare an annual report on expenditures from this appropriation and on any other pertinent information related to traffic signals and intelligent transportation systems.

State Trunk Highway Program Finance

The state trunk highway program is funded through several sources. Traditionally, funding for the highway programs has been provided with "cash" funds from the state transportation fund, federal highway aid, and transportation fund-supported, revenue and general obligation bonds. From the 2003-05 through the 2017-19 biennium, however, state highway programs have also been funded with general fund-supported, general obligation bonds. The use of general fund-supported bonds began as a way to replace transportation fund revenues that have been used as part of a strategy to balance the state's general fund budget. In short, general obligation bonds were used to replace transportation fund revenues so that, in turn, transportation fund revenues could be used to assist general fund programs. In the each of the last four biennia, however, general fund-supported bonds (as well as general fund revenue) were provided even though those budgets did not transfer transportation fund revenues to the general fund. For a more detailed discussion of these bonding and transfer provisions, see the Legislative Fiscal Bureau's informational paper entitled, "Transportation Finance."

State Funding

The segregated state transportation fund is the state's "cash" funding source for the state trunk highway program. The transportation fund is a separate, nonlapsible trust fund, which is required by the state's constitution and administered by DOT. The primary revenue sources for the transportation fund include a motor fuel tax, motor vehicle and driver's license fees, railroad taxes, aeronautical taxes and fees, and, beginning in 2012-13, an annual transfer of 0.25% of general fund taxes. Table 4 shows total state transportation fund revenues appropriated for the state highway program, including state highway maintenance and program administration, for the past 10 biennia.

Table 4: State Trunk Highway Programs - State Transportation Fund Appropriations (\$ in Millions)

Biennium	State Segregated Appropriations	Change From Prior Biennium
1999-01	\$938.9	
2001-03	1,032.3	9.9%
2003-05	457.3	-55.7
2005-07	828.5	81.2
2007-09	1,244.0	50.2
2009-11	1,260.1	1.3
2011-13	1,389.8	10.3
2013-15	1,604.4	15.4
2015-17	1,358.1	-15.4
2017-19	1,467.5	8.1

Transportation fund appropriations fell sharply in 2003-05 to allow transportation fund revenues to be used to balance the general fund budget. The use of transportation fund revenues for the general fund also affected appropriations for highway programs in the following two biennia, although the reductions were not as severe. The table does not reflect the general obligation bonds that were used to partially replace state transportation fund appropriations in those biennia. Adjustments have been made to the budgeted amounts to reflect various post-budget supplements and lapses.

Bonding

Revenue bonding authority has been used as an ongoing state funding source for the highway program since the early 1980s. Revenue bonds, as opposed to general obligation bonds, are repaid solely from a dedicated revenue source. In the case of transportation revenue bonds, the dedicated revenue source is the motor vehicle registration fee and related vehicle fees. To ensure the stability of the bonds for investors, bond repayment receives first priority on those revenues.

Revenue bond proceeds are used to fund the construction of major highway development projects and administrative facilities. Bonding

authority is typically provided with each biennial budget act. Generally, enough bonding is authorized for anticipated use during the biennium, plus an additional amount to allow projects begun in that biennium to be completed in subsequent years in the event that additional funds or bonds are not provided in a timely fashion for those years.

Transportation fund-supported, general obligation bonds have also been provided in recent biennia as a supplemental funding source for state highway programs. Separate from these bonds, as noted earlier, general fund-supported, general obligation bonds were also used during the 2003-05 through 2017-19 biennia in the state highway programs, either to replace transportation fund revenues transferred to the general fund or to supplement traditional transportation sources.

Table 5 shows the bond authorization in the state highway program for each of the last 10 biennia, by bond type. The amounts reflect the biennium in which the bonds were authorized. In some cases, the bonding authority may not have all been used in the biennium shown. As an example, although authorized in the 2009-11 biennium, the bonds for the major interstate bridge program did

Table 5: State Trunk Highway Programs - Bond Financing (\$ in Millions)

Biennium	Revenue Bonds	General Obligation Bonds		Total
		General Fund-Supported	Transportation Fund-Supported	
1999-01	\$239.5	\$0.0	\$0.0	\$239.5
2001-03	257.2	0.0	0.0	257.2
2003-05	273.0	565.5	0.0	838.5
2005-07	297.6	250.0	213.1	760.7
2007-09	400.1	50.0	90.2	540.3
2009-11	301.4	204.7	585.3	1,091.4
2011-13	314.4	115.4	282.2	712.0
2013-15	404.6	200.0	307.0	911.6
2015-17	169.0	175.0	467.0	811.0
2017-19	114.8	252.4*	0.0	367.2

*These bonds were authorized under 2017 Act 58 (the Foxconn legislation and may only be used for the I-94 North-South freeway project.

not start being used until the 2013-15 biennium.

Federal Funding

Federal funds are distributed based on multi-year federal surface transportation authorization acts. Table 6 shows the basic amount of federal formula-based highway aid since 2009. These figures exclude redistribution funds, which are allocated in August or September of each year, discretionary grants, sequestration amounts, Congressional earmarks for specific projects, except for earmarks that are a congressionally-directed allocation of the state's formula aid, and other supplemental appropriations for transportation purposes.

In federal fiscal year 2018, the state's total obligation authority of \$844.2 million is composed of the following: (a) \$715.5 million in base obligation authority; (b) \$90.8 million in federal redistribution funds; and (c) supplementary highway funding of \$37.9 million (from the federal general fund). In addition, DOT received a federal INFRA grant of \$160.0 million in federal fiscal year 2018 to specifically help fund the ongoing I-94 North-South freeway project in Milwaukee, Racine, and Kenosha counties.

Table 6: Federal Formula-Based Highway Aid History (\$ in Millions)

Year	Amount
2009	\$642.8
2010	679.0
2011	691.7
2012	658.8
2013	683.5
2014	677.0
2015	672.7
2016	712.6
2017	707.1
2018	715.5

In 2008-09 and 2009-10, the state also received federal economic stimulus funds for highways under the American Recovery and Reinvestment Act of 2009. The state received a total of \$529.1

million under the highway formula component of that act. Of that amount, the state allocated \$318.7 million to state highway programs (\$180.0 million to state highway rehabilitation projects, \$103.9 million to southeast Wisconsin freeway rehabilitation projects, and \$34.8 million to major highway development projects).

Federal highway funds are spent both in the state highway program and in other DOT programs, such as: (a) the local transportation facility improvement assistance program, which funds rehabilitation projects on principal streets and highways under local jurisdiction; (b) the local bridge improvement assistance program; (c) the congestion mitigation and air quality improvement program, which provides funds for projects designed to reduce traffic congestion and pollution caused by vehicles; (d) the transportation alternatives program, which provides grants for bicycle and pedestrian facilities and the rehabilitation of historic transportation facilities and other similar projects (encompassing activities formerly eligible under the transportation enhancements program); and (e) the railroad crossing improvement program, for the installation of crossing warning signals and gates.

In the state highway program, federal appropriations are estimates of funding to be received and do not control the amount that may be spent. DOT can spend all funds received from federal sources, not just the amounts specifically estimated by the Legislature in budgetary schedules.

DOT is required, however, to submit a plan for making adjustments to its appropriations to the Joint Committee on Finance for the Committee's approval if the amount of federal aid received in a given year differs by more than 5% from the amount estimated. The last such adjustment plan was submitted to the Committee in June, 2018. This plan, as modified under a s. 13.10 action by the Committee, appropriated additional federal aid of \$67.4 million to the following DOT programs in 2017-18: (a) \$36.8 million to the state highway

rehabilitation program; (b) \$8.6 million to the local bridge assistance program; and (c) \$22.0 million to the southeast Wisconsin freeway megaprojects program.

As noted above, federal highway aid is provided through the federal highway trust fund under federal authorization or reauthorization acts. The current federal authorization act is the Fixing America's Surface Transportation Act (the FAST Act), which replaced the former act, Moving Ahead for Progress in the 21st Century (MAP-21). The FAST Act is set to expire on September 30, 2020.

In addition, 2017 Act 368 requires that when DOT expends any federal funding on major highway development projects, southeast Wisconsin freeway megaprojects, or projects in the state highway rehabilitation program with a total cost of less than \$10.0 million, at least 70% of the aggregate, federally eligible project components must be funded using federal moneys in each fiscal year. If DOT determines that it cannot meet this requirement, or that it could make a more effective or efficient use of federal moneys, the Department may submit an alternative funding plan to the Joint Committee on Finance under a passive review process. These provisions were enacted as part of the December, 2018, extraordinary session.

Local Funding

Local funds for the improvement of state trunk highways are provided principally to fund portions of a project that are a local priority. Local funds can include both monies from local governments and private businesses. Local communities fund certain project components that are not eligible for state or federal funding. These local initiatives may include sidewalks, curbs, gutters, special access traffic lanes for local traffic, lighting, and other traffic control features. Other examples of costs not covered by the state include: (a) the cost of items not directly associated with the transportation services provided by the highway project,

such as parking lanes; (b) costs incurred at state and local road interchanges and intersections, with local units paying for the costs on the local road and sharing in the costs of the interchange bridges; (c) 25% of the cost of preliminary engineering costs for improvements on connecting highways; and (d) a portion of the costs for improvements on state trunk or connecting highways, that provide a substantial, direct benefit to a community

Funding Level

Table 7 shows the funding, by source, for the four principal components of the state highway program, the high-cost and major interstate bridge programs, and for administration and planning. Table 8 shows total funding for these six components of the highway program for the past ten biennia. Since local funding is not used for programming purposes and the actual amounts used are not reflected in budget appropriations, this funding source is not included in the tables.

Table 7: State Trunk Highway Programs -- 2017-19 Biennium Funding (\$ in Millions)

Program	General		Current Revenue		All
	Obligation	Revenue	Funding Sources		
	Bonds	Bonds	State	Federal	Sources
Major Highway Development	\$0.0	\$114.8	\$73.5	\$375.4	\$563.7
State Highway Rehabilitation	0.0	0.0	740.6	885.6	1,626.2
High-Cost Bridge/Major Interstate Bridge Programs ¹	0.0	0.0	8.0	0.0	8.0
Southeast Wisconsin Freeway Megaprojects	252.4	0.0	18.1	265.1	535.6
Routine Maintenance and Traffic Operations ²	0.0	0.0	597.7	2.2	599.9
Administration and Planning	0.0	0.0	29.6	7.0	36.6
Total	\$252.4	\$114.8	\$1,467.5	\$1,535.3	\$3,370.0

¹ The amount shown reflects funding provided to the St. Croix Crossing/Stillwater Bridge under the major interstate bridge program.

² The state amount for routine maintenance and traffic operations includes \$4.8 million in a separate appropriation for the operating costs of state-owned lift bridges.

Table 8: State Trunk Highway Program Funding History -- All Funds (\$ in Millions)

	Major Highway Development	State Highway Rehabilitation	Major Interstate and High-Cost Bridge Programs	Southeast Wisconsin Freeway Projects ¹	Highway Maintenance/Traffic Operations ²	Administration and Planning	Total
1999-01	\$439.5	\$1,107.8	---	---	\$319.9	\$50.5	\$1,917.7
2001-03	473.5	1,142.1	---	\$203.9	363.3	49.0	2,231.8
2003-05	482.6	1,082.9	---	262.9	348.7	51.5	2,228.6
2005-07	565.6	1,202.8	---	473.3	370.8	42.1	2,654.6
2007-09 ³	695.9	1,560.8	--	494.2	436.3	42.5	3,229.7
2009-11 ³	713.6	1,545.8	\$229.6	643.0	451.2	38.7	3,621.9
2011-13	743.6	1,607.6	---	420.0	447.4	36.1	3,254.7
2013-15	728.4	1,640.3	226.0	517.0	528.1	35.9	3,675.7
2015-17	641.1	1,698.0	36.8	414.6	539.8	36.6	3,366.9
2017-19	563.7	1,626.2	8.0	535.6	599.9	36.6	3,370.0

¹ Shows funding provided for projects through the southeast Wisconsin freeway rehabilitation or megaprojects programs. Southeast Wisconsin freeway projects were funded as part of the state highway rehabilitation program prior to the 2001-03 biennium.

² Includes funding for state lift bridge operation since 2005-07. Also includes the highway system management and operations, routine maintenance, and intelligent transportation systems and traffic control signals appropriations (created in 2013 Act 20).

³ Amounts shown in 2007-09 and 2009-11 include federal economic stimulus funds (\$275.0 million in 2007-09 and \$43.6 million in 2009-11).