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 11,211-mile trunk highway system and for improvement on 554 miles of connecting highways under local jurisdiction. This paper provides an overview of the structure and scope of the program, describes how it is administered within DOT, details the main program components, and describes how the program is financed.

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), 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 roads by current jurisdictional responsibility. Although state trunk highways and connecting highways together comprise only 10.2% of total road mileage, they carry 61% of the total traffic volume. Of the 11,211 miles of state trunk highways (excluding connecting highways), about 87% are outside municipal limits and 13% are within incorporated areas.

Table 1: Road Miles by Jurisdiction

Jurisdiction	Miles	% of Total
State Trunk Highways	11,211	9.7%
Connecting Highways	554	0.5
County Trunk Highways	19,754	17.2
Town Roads	61,954	53.9
Municipal Streets*	19,692	17.1
Other Roads**	1,854	1.6
Total	115,019	100.0%

*Excludes connecting highways.
**Includes park and forest roads and county roads not on the county trunk highway system.

Structure of the Program and Its Organization Within the Department

The state highway program is subdivided into four main components, plus two separate components for particular types of bridge projects. The main component programs are: (1) state highway rehabilitation; (2) major highway development; (3) southeast Wisconsin freeway megaprojects; and (4) state highway maintenance and traffic operations. The two separate bridge programs are: (1) the major interstate bridge improvement

program, for projects involving a bridge that crosses a border of the state for which the state's share of the cost is at least $100,000,000; and (2) the high-cost bridge program, for bridge improvement projects with an estimated cost of at least $150,000,000 if the bridge improvement is not a major interstate bridge or part of a southeast Wisconsin freeway megaproject.

The administration of the 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.

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

Planning, Programming, Design, and Construction in the Highway Improvement Program

The state highway program components involving construction projects (all components identified above except the state highway maintenance and traffic operations program) are sometimes collectively referred to as the highway improvement program. This program can be divided into four stages of development: planning, programming, design, and construction. This section describes these stages.

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 the Department'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.

The Department's current, long-range transportation plan, called 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 these 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, which is an update to the Corridors 2020 highway system. This system consists of 3,750 miles of the most critical highways in the state. Within the Corridors 2030 system are two subsystems: the backbone system and the connector system. The backbone system, totaling 1,450 miles, consists of the following primary segments: (a) STH 29 from I-94 west of Chippewa Falls to Green Bay; (b) USH 53 from Superior to Eau Claire; (c) USH 151 between Fond du Lac and the southwestern border of the state; (d) USH 41 from the Milwaukee area to Marinette in northeastern Wisconsin; (e) USH 10 between the Fox Cities and Stevens Point; and (f) the entire Interstate system. Corridors 2030 added USH 45 between USH 41 and USH 10 (near Oshkosh), and USH 14 between I-90 and USH 12 (between Janesville and Darien).

Most of the backbone system consists of multi-lane freeways or expressways. Only one segment, USH 14 between I-39 and I-43 in Rock and Walworth counties, remains a two-lane highway. This segment is currently under study for improvements.

The connector system consists of 2,300 miles of highway linking significant economic and tourism centers to the backbone system. Most of the system consists of high-quality, two-lane highways, although there are several segments that are multi-lane freeways or expressways.

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 the Department'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. This way, regions are not forced to exhaust their allocations on large projects, thereby neglecting more routine rehabilitation.

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, these consequences must be reported in advance of the project. In response to these expected impacts, the Department must plan to restore or create wetlands to replace those destroyed by the highway project. Environmental impact statements also forecast the effects on residential and commercial development and identify impacts on historically or archaeologically significant sites. When possible, the Department must also respond to these impacts. The impact statements and the mitigation plans must be 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 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.

The 2009-11 biennial budget act created a requirement that the Department, by July 1, 2014, and continuously thereafter, maintain an inventory of completed highway project designs in each of the highway improvement programs, for which the estimated construction cost is equal to or greater than 65% of the annual funding for each program. The 65% figure is the approximate share of total program funding allocated each year to construction costs.

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 a 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.

Major Highway Development

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 $75,000,000; or (2) has a total cost in excess of $30,000,000 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 2011 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 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. 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 $75 million cost threshold does not need to be individually enumerated in the statutes. Instead, the Department 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 is the only project that has been approved by the TPC under this provision.

The TPC may also designate an otherwise nonqualifying 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.

Enumeration gives DOT the authority to build a project, but does not establish a statutory priority or timetable or require a specific design. It also does not require DOT to actually construct 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 of each enumerated project. According to the Department's August, 2012, report, the remaining cost to complete all enumerated projects was $3,138.6 million.

Table 2 shows the list of enumerated highway projects that have not yet been completed. The final two columns show the total cost of each project and the remaining estimated cost, as of the Department's August, 2012, status report. The table shows only those projects that are not substantially complete and open to traffic. There are several enumerated projects that were substantially completed as of the end of 2012, yet have some costs remaining. Typically, these other costs involve related improvements to local roads that were included as part of the project. For instance, a project involving the construction of a USH 53 bypass freeway on the east side of Eau Claire was opened to traffic in 2006, yet the Department has several projects scheduled involving improvements to the old USH 53. In some other cases, the final decisions about auxiliary improvements have not yet been made or have not been scheduled. Rather than showing these completed projects individually, the total cost of auxiliary improvements on completed projects ($148.6 million) is shown at the bottom of the table.

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

Table 2: Enumerated Major Highway Projects Remaining to be Constructed ($ in Millions)

	Highway	County	Total Estimated Cost*	Remaining Cost*
Projects Enumerated in 1993				
Beloit Bypass	81/213	Rock	$9.7	$9.3
Projects Enumerated in 1997				
I-90/94 to Ski Hi Road	12	Sauk	206.4	111.9
La Crosse Corridor	53	La Crosse	143.2	138.2
Projects Enumerated in 1999				
STH 67 to USH 41	23	Sheboygan & Fond du Lac	140.0	120.9
Projects Enumerated in 2001				
Janesville to Watertown	26	Rock, Jefferson & Dodge	433.0	125.2
Projects Enumerated in 2003				
Viroqua to Westby	14	Vernon	68.3	43.2
Prairie du Chien to STH 60	18	Crawford	34.9	13.8
De Pere to Suamico & STH 26 to Breezewood Lane	41	Brown & Winnebago	1,400.0	765.7
Projects Enumerated in 2011				
Winnebago CTH CB to Oneida Street	10/441	Calumet & Winnebago	415.0	409.4
STH 76 to New London	15	Outagamie	125.0	121.2
Verona Road/Madison Beltline**	18/151	Dane	176.3	175.6
Racine CTH K to Oakwood Road	38	Milwaukee & Racine	125.0	124.8
Illinois State Line to USH 12/18	39/90	Dane & Rock	835.7	830.8
Other Work Associated With Projects That Are Substantially Complete				148.6
Total				$3,138.6

* Cost estimates are from DOT's August, 2012, report on the major highway program.

** This project meets the cost threshold for a major highway project, but not the capacity expansion thresholds. It was approved by the TPC in 2011.

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, all-weather surface and a better riding 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) 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 subcomponent) 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 subcomponent, bridges are divided between routine projects and "large" bridge projects (distinct from the high-cost bridge program, which funds bridges with a cost over $150,000,000). 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 components of the rehabilitation program, but these sources are combined, so regions can program any mix of bridge and highway projects.

Table 3: High-Cost Bridges Scheduled Between 2013 and 2017 ($ in Millions)

County	Highway	Bridge	Contract Year*	Estimated Cost (2012 Dollars)
Douglas	USH 2	Bong Bridge, Superior	2014	$7.3
Brown	STH 96	Fox River, Wrightstown	2015	22.9
Eau Claire	Local	Water Street, Eau Claire	2016	7.0
Juneau	STH 82	Wisconsin River, Point Bluff	2017	14.1
Winnebago	STH 116	Main Street, Winneconne	2017	20.0

* "Contract year" reflects the year that the Department expects to let at least one contract on the project, although the construction will not necessarily be completed in that year.

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 3 lists the large bridge rehabilitation projects that DOT anticipates constructing between 2013 and 2017 from the state highway rehabilitation program. The projects shown reflect the Department's schedule at the time of publication. No projects are programmed in 2013 because the Department decided to leave room in the budget for the reconstruction of the I-90 bridge over the Mississippi River in La Crosse (a backbone project) in 2012 and 2013.

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.

Southeast Wisconsin Freeway Megaprojects

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 2011 Act 32, the 2011-13 budget, the southeast Wisconsin freeway rehabilitation 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 $500,000,000 in 2011 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.

The first freeway reconstruction project initiated since the creation of a separate program for southeast Wisconsin freeway rehabilitation was

the reconstruction of the Marquette Interchange in 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.

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, although work would continue on selected interchanges, most of the remaining work on the mainline of the freeway would be delayed until 2018 or after. The 2011-13 budget provided $195.0 million for continuing interchange and frontage road projects, increasing the total that has been provided for the project since the 2005-07 biennium to $1.05 billion. The total, inflation adjusted cost of the project was estimated at $1.9 billion when work began.

The primary reason given for delaying the schedule on the I-94 North-South freeway was so the Department could shift focus to the reconstruction of the Zoo Interchange at the junction of I-94, I-894, and USH 45 in western Milwaukee County. The 2011-13 budget provided $225.0 million for design and preliminary construction work on the interchange. Most of the work on the interchange core and adjacent freeways is scheduled to occur between 2014 and 2018, but will depend upon the Legislature providing additional funding for that work. The total estimated cost of the project is $2.1 billion.

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. Both the I-94 project and the Zoo Interchange project, discussed above, have been enumerated.

Major Interstate Bridge and High-Cost Bridge Programs

A provision of the 2009-11 budget 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. In addition to creating appropriations for this program, the budget act authorized $225.0 million in transportation fund-supported bonds for such projects. Subsequent to the passage of the budget act, the Joint Committee on Finance transferred $4.6 million from the state funds appropriation for state highway rehabilitation to the corresponding appropriation for the major interstate bridge program for preparatory work related to the Stillwater Bridge project across the St. Croix River between Stillwater, Minnesota, and St. Croix County. Construction on that project, which is managed by the State of Minnesota, is scheduled to begin in 2013 and is expected to take about three years to complete. The total cost of the bridge and approaches is estimated at $571 million to $676 million, and Wisconsin's share is expected to be between $256 million and $305 million, which exceeds the amount of bonds and other funding provided for the project through the 2011-13 biennium.

The 2011-13 biennial budget created an additional, separate program for high-cost bridges, defined as a bridge with an estimated cost exceeding $150,000,000 that is not a major inter-

state 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, although the budget act authorized the Department of Transportation, 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 cost of the Hoan Bridge reconstruction is estimated at between $275 million and $350 million, and thus would qualify as a high-cost bridge project.

State Highway Maintenance and Traffic Operations

The final component of the state highway program is the state highway maintenance and traffic operations program. This program is responsible for a variety of activities related to the upkeep of state highways and highway rights-of-way. Unlike the other state highway program components, the activities performed under the maintenance and traffic operations program generally do not require extensive planning and design. The maintenance programs are divided into two program areas: (a) highway maintenance; and (b) highway traffic operations. Each is described below.

Highway Maintenance

The majority of state trunk highway maintenance activities are performed by county workforces under contract with the state. Generally, the counties perform the actual maintenance activities and DOT sets statewide maintenance policies and (primarily through the regional offices) oversees their work. This arrangement has existed in its current form since 1932, although counties were involved in some way in the maintenance of state roads prior to that time.

Two areas of general maintenance are performed primarily by private contractors: (a) vegetation management, including plantings, inventory, and the spraying of herbicides along roadsides; and (b) the maintenance of year-round rest areas by disabled citizens participating in sheltered workshops.

Highway maintenance can generally be separated into two types of activities, winter maintenance and general maintenance.

Winter maintenance involves the maintenance and upkeep of state trunk highways during the winter season. The principal activities performed under this program are snowplowing, drift control, and application of de-icers. These activities are performed almost entirely by county workforces under contract with the state. The state, however, purchases de-icing salt directly and provides it to the counties for use on state highways.

General maintenance involves the daily or periodic repair and upkeep of state trunk highways, including the following activities:

- 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;
- surface, base, and shoulder repair;
- minor bridge repair;

- plantings and landscaping in rest areas and other areas;

- emergency repairs and accident cleanup;

- drainage, culvert landscaping, erosion control measures, and guard fence repairs;

- lift bridge and ferry operation; and

- repair of damaged traffic signs.

Maintenance Costs

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. DOT uses a reimbursement formula that is based on all counties' actual machinery costs, averaged over a period of five years, and each county's employee wage rates. Due to variable county labor contracts, some counties receive a higher hourly reimbursement rate than others.

In order to exercise control over the amount of general maintenance work that is done on state highways, the contract that DOT enters into with the counties establishes a maintenance budget for each county. The budget is established based on a consideration of various factors present in each county, such as the type of state highways (for example, concrete versus asphalt or multi-lane freeway versus two-lane highway), number of lane miles of each type, condition, and amount of traffic. Once established, counties are generally expected to stay within that budget. This may mean that a county may be directed to curtail certain maintenance activities late in the year to stay within the established budget if expenditures earlier in the year were higher than expected. DOT is required to work cooperatively with county highway departments to determine an appropriate level of state work sufficient to fully utilize manpower and equipment needed for winter maintenance.

Highway Traffic Operations

Highway traffic operations involve the installation of traffic control and safety devices designed to enhance the orderly and efficient flow of vehicles on existing state trunk highways. 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.

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 funds from the state transportation fund, federal highway aid, and transportation fund-supported bonds. Since the 2003-05 biennium, however, state highway programs have also been funded with general fund-supported bonds. The use of general fund-supported bonds began as a way to partially 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 2011-13 biennium, however, general fund-supported bonds were provided even though the budget did not transfer transportation fund revenues to the general fund. The amount of bonding provided for this purpose is discussed later in this section, but for a more detailed discussion of these provisions, see the Legislative Fiscal Bureau's informational paper entitled "Transportation Finance."

State Funding

The segregated state transportation fund is the state funding source for the state trunk highway program. The transportation fund is a separate, nonlapsible trust fund 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 for the past 10 biennia. 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.

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

Biennium	State Segregated Appropriations	Change From Prior Biennium
1993-95	$707.4	
1995-97	780.8	10.4%
1997-99	849.1	8.7
1999-01	938.9	10.6
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

Adjustments have been made to the budgeted amounts to reflect various post-budget supplements and lapses. In the 2009-11 biennium, for instance, the amounts shown reflect a lapse of $64.0 million to eliminate a projected biennium-ending deficit in the transportation fund.

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. In the 2007-09 biennium, however, the additional bonding authority provided by the biennial budget act was appropriated for the major highway development program for use during the biennium to offset a portion of the lapse to the general fund and to offset reductions in transportation fund appropriations for the program to address a projected deficit in the transportation fund.

As noted earlier, general obligation bonds were also used in the state highway programs during the 2003-05 through 2011-13 biennia to replace transportation fund revenues transferred to the general fund or to supplement traditional transportation sources ($565.5 million in 2003-05, $250.0 million in 2005-07, $50.0 million in 2007-09, $204.7 million in 2009-11, and $115.4 million in 2011-13).

Separate from these general fund-supported, general obligation bonds, transportation fund-supported, general obligation bonds have been provided in recent biennia as a supplemental funding source for southeast Wisconsin freeway rehabilitation projects ($213.1 million in 2005-07, $90.2 million in 2007-09, $250.3 million in 2009-11, and $151.2 million in 2011-13).

Additionally, in the 2009-11 and 2011-13 biennia, additional transportation fund-supported, general obligation bond authorization has been provided for the state highway rehabilitation and major highway development programs, to supplement the funding in those programs. In the 2009-11 biennium, a total of $110 million of these bonds was provided for these programs, while $131 million was provided in the 2011-13 biennium.

Table 5 shows the bond usage in the state highway program for each of the last 10 biennia, by bond type. The $225.0 million in bonds authorized for the major interstate bridge construction program are not shown, since these bonds have not yet been used.

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

		General Obligation Bonds		
Biennium	Revenue Bonds	General Fund-Supported	Transportation Fund-Supported	Total
1993-95	$203.2	$0.0	$0.0	$203.2
1995-97	219.1	0.0	0.0	219.1
1997-99	221.1	0.0	0.0	221.1
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	360.3	866.4
2011-13	314.4	115.4	282.2	712.0

Federal Funding

Federal funds are distributed based on multi-year federal surface transportation authorization acts. The current federal act, Moving Ahead for Progress in the 21st Century (MAP-21), authorizes funds through federal fiscal year 2014.

Table 6 shows the amount of federal formula-based highway aid since 2003. These figures exclude discretionary grants and Congressional earmarks for specific projects, except for earmarks that are a Congressionally-directed allocation of the state's formula aid.

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

Year	Amount
2003	$554.3
2004	595.6
2005	579.1
2006	587.3
2007	670.1
2008	695.4
2009	712.9
2010	734.1
2011	716.7
2012	692.6

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.

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. In conjunction with DOT's improvement projects, 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.

Local cost sharing is required by DOT for: (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 for all improvements on connecting highways; and (d) a portion of the costs for improvements on state trunk highways, or connecting highways, that provide a substantial, direct benefit to a community or its members.

Funding Level

Table 7 shows the funding, by source, for the four principal components of the state highway program (the two programs for large bridge projects did not receive funding in the 2011-13 biennium), plus for administration and planning. 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 table.

Table 8 shows total funding (excluding local funding) for these five components of the highway program for the past ten biennia.

Table 7: State Trunk Highway Programs -- 2011-13 Biennium Funding ($ in Millions)

Program	General Obligation Bonds	Revenue Bonds	Current Revenue Funding Sources State	Current Revenue Funding Sources Federal	All Sources
Major Highway Development	$50.0	$314.4	$222.6	$156.5	$743.6
State Highway Rehabilitation	196.4	0.0	639.7	796.6	1,632.6
Southeast Wisconsin Freeway Megaprojects	151.2	0.0	78.7	190.1	420.0
State Highway Maintenance and Traffic Operations*	0.0	0.0	420.2	2.2	422.4
Administration and Planning	0.0	0.0	28.5	7.6	36.1
Total	$397.6	$314.4	$1,389.8	$1,153.0	$3,254.7

Note: Some totals do not add due to rounding.

* The state amount for state highway maintenance and traffic operations includes $4.4 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[1]	Southeast Wisc. Freeway Projects[2]	Highway Maintenance/ Traffic Operations[3]	Administration and Planning	Total
1993-95	$318.0	$767.1	---	$266.3	$34.7	$1,386.1
1995-97	327.5	833.4	---	277.2	40.3	1,481.5
1997-99	402.8	1,005.7	---	290.2	45.4	1,744.1
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	1,098.4	262.9	333.2	51.5	2,228.6
2005-07	565.6	1,202.8	473.3	370.8	42.1	2,654.6
2007-09[4]	695.9	1,560.8	494.2	436.3	42.5	3,229.8
2009-11[4]	713.6	1,583.4	643.0	418.2	38.7	3,396.9
2011-13	743.6	1,632.6	420.0	422.4	36.1	3,254.7

Note: Some totals do not add due to rounding.

[1] Includes $4.6 million for major interstate bridge construction in 2009-11.

[2] 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. Beginning in 2011-13, southeast Wisconsin freeway projects that are not megaprojects are funded under either the major highway development or state highway rehabilitation programs.

[3] Includes funding for state lift bridge operation since 2005-07.

4 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).