

State Trunk Highway Program

Wisconsin Legislative Fiscal Bureau

January, 2009

State Trunk Highway Program

Prepared by

Jon Dyck

Wisconsin Legislative Fiscal Bureau
One East Main, Suite 301
Madison, WI 53703

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 11,199-mile trunk highway system and for improvement on 570 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 four 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. 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 10.3% of total road mileage, they carry 60% of the total traffic volume. Of the 11,199 miles of state trunk highways (excluding connecting highways), about 87% are rural and 13% are in urban areas.

Table 1: Road Miles by Jurisdiction

Jurisdiction	Miles	% of Total
State Trunk Highways	11,199	9.8%
Connecting Highways	570	0.5
County Trunk Highways	19,764	17.2
Town Roads	62,141	54.2
Municipal Streets*	19,184	16.7
Other Roads**	<u>1,847</u>	<u>1.6</u>
Total	114,705	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

Prior to the 2001 legislative session, the state highway program had three main components: (1) state highway rehabilitation; (2) major highway development; and (3) highway maintenance and traffic operations. The 2001-03 budget act (2001 Act 16) added a fourth component for the rehabilitation or expansion of freeways in southeast Wisconsin, which had previously been the responsibility of the state highway rehabilitation component or, in the case of highway expansion, the major highway development component. The southeast Wisconsin freeway rehabilitation appropriations will sunset at the end of fiscal year 2010-11. If not extended, any outstanding balances and encumbrances in these appropriations, as well as the program responsibilities, would be transferred to the appropriations for state highway rehabilitation.

The administration of the highway program is shared between two divisions within the Department of Transportation: the Division of Transportation System Development and the 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, 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.

Current Five-Region Structure

Region	Counties
North Central	Adams, Florence, Forest, Green Lake, Iron, Langlade, Lincoln, Marathon, Marquette, Menominee, Oneida, Portage, Price, Shawano, Vilas, Waupaca, Waushara, and Wood
Northeast	Brown, Calumet, Door, Fond du Lac, Kewaunee, Manitowoc, Marinette, Oconto, Outagamie, Sheboygan, and Winnebago
Northwest	Ashland, Barron, Bayfield, Buffalo, Burnett, Chippewa, Clark, Douglas, Dunn, Eau Claire, Jackson, Pepin, Pierce, Polk, Rusk, St. Croix, Sawyer, Taylor, Trempealeau, and Washburn

Southeast	Kenosha, Milwaukee, Ozaukee, Racine, Walworth, Washington, and Waukesha
Southwest	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 highway rehabilitation, major highway development, and southeast Wisconsin freeway rehabilitation components of the highway 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. 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.

At the time of publication, the Department was in the process of completing a new long-range transportation plan, called Connections 2030, addressing all transportation modes, including state highways. Although the final plan has not been completed, the draft plan has been published for public review and comment. In addition to providing an overview of the extent and condition of the various transportation modal systems, the report proposes 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 draft plan makes a number of policy recommendations, particularly under the themes related to system preservation and economic growth.

One aspect of the draft plan is an update to the Corridors 2020 highway system. This system, now called Corridors 2030, consists of 3,750 miles of the most critical highways in the state. Within the Cor-

ridors 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 would also add 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 two segments, a section of USH 41 in Oconto and Marinette counties and the newly-designated portion of USH 14 remain two lane freeways. However, the expansion of USH 41 to four lanes is nearing completion and USH 14 is under study.

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. Connections 2030 proposes several new segments for the connector system, totaling 250 miles.

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 major highway development and rehabilitation 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 also 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 most 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 do (or to contract for) 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 state-

ments 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.

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 review the completed project design to ensure that all of its elements are consistent with state standards and then, from the design, develop 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.

Major Highway Development

The major highway development program provides for the development and construction of new or significantly altered highway projects. Major highway projects are defined as projects that have an estimated cost exceeding \$5,000,000 in current dollars and consist of at least one of the following: (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. Projects providing an approach to a bridge over a river that forms a boundary of the state are excluded from this definition. Also excluded, since 2001, are any

highway expansion projects on the freeways of southeast Wisconsin. These projects are done under the southeast Wisconsin freeway rehabilitation program.

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 since all major highway projects must be enumerated in the statutes prior to beginning construction. 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). In a change adopted in the 2003 legislative session, the statutes specify that a project may not be enumerated unless the TPC has recommended the project for approval.

In addition to making recommendations for project enumeration, TPC approval is also required before DOT can start an environmental impact statement (EIS) or environmental assessment (EA) on a project. Since a potential project must first receive TPC approval prior to the start of an EIS or EA and then must be recommended by the TPC for enumeration (after the environmental documents are completed), the approval of a project by the Commission proceeds in a two-phase process that takes at least two biennial cycles. The typical approval process proceeds as follows.

1. DOT selects potential projects for preliminary consideration based on its analysis of congestion, safety, and public interest.

2. DOT presents a list of potential projects that are considered to be good candidates for proceeding with an EIS or EA to the TPC. The statutes specify that DOT is to present this list by October

15 of odd-numbered years.

3. 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.

4. By the next April 15, the TPC approves a list of projects that may proceed to the EIS or EA stage.

5. Upon completion of the environmental documentation, DOT again presents the project to the TPC for consideration. Typically, a list of these projects are presented in the spring of even-numbered years, but given the time needed to complete the environmental documentation, this may be two years following the approval of the project by the TPC that allowed DOT to proceed with the EIS or EA. For more complex or controversial projects, this stage may be delayed by more than one two-year cycle. The TPC holds public hearings at different locations in the state on the candidate projects.

6. DOT reports its recommendation for projects to be enumerated in the next biennial budget to the TPC by September 15 (even-numbered years). 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.

7. By the following December 15, 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. The TPC may 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 \$2,000,000 or more, provided that the project is not a freeway.

In another change adopted in the 2003 legislative session, the TPC is prohibited from recommending a project for enumeration unless a final EIS or EA has been approved by the Federal Highway Administration. Previously, projects were enumerated prior to the completion and final approval of the environmental documentation, which could result in lengthening the time between enumeration and construction if the EIS had not been completed. Under the change, projects should be closer to construction at the time of enumeration. It should be noted, however, that this will not necessarily shorten the overall time between the start of the environmental process and completion of the project, but instead will result in the enumeration of the project at a later stage.

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.

In part because of the prohibition against recommending a project for enumeration before a final environmental document is completed, and the financial constraint provisions, the TPC did not meet in 2004, 2006, or 2008 to consider new projects for enumeration. The TPC met in 2002, but, due to financial constraints, voted to not recommend four projects that had been under consideration. How-

ever, those four projects were enumerated in the 2003-05 biennial budget without TPC recommendation. Since then, no additional projects have been enumerated (through the 2007-09 legislative session).

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. With a few exceptions, however, the Department has typically undertaken projects in the same order that they were enumerated.

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, 2008, report, the remaining cost to complete all enumerated projects was \$2,478.3 million. This amount was \$221.0 million higher than the previous report, published in February, 2008, and \$121.4 million higher than the cost to complete all projects in the Department's report from three years earlier (August, 2005). Since no new projects have been added to the list since 2003, these increases in costs are due primarily to increases in the cost of construction and real estate (changes in the scope of existing projects and refinements to estimates account for the rest). Furthermore, the cost to complete the existing projects has increased over these three years despite the fact that the Department has spent \$790.5 million on them during that time. In other words, the aggregate increase in project costs has exceeded the total funding for the program, an illustration of the extent to which high rates of construction inflation have affected this and other highway improvement programs over that time period.

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

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

	State Trunk Highway	County	Total Est. Cost*	Remaining Cost*
<u>Projects Enumerated in 1989</u>				
Stevens Point to Marshfield	10	Portage & Wood	\$274.4	\$229.3
<u>Projects Enumerated in 1993</u>				
Beloit Bypass	81/213	Rock	9.7	9.6
<u>Projects Enumerated in 1997</u>				
Burlington Bypass	11	Walworth & Racine	147.3	74.1
I-90/94 to Ski Hi Road	12	Sauk	206.4	183.9
La Crosse Corridor	53	La Crosse	143.2	138.5
<u>Projects Enumerated in 1999</u>				
Oconto to Peshtigo	41	Oconto & Marinette	179.6	141.5
STH 67 to USH 41	23	Sheboygan & Fond du Lac	130.0	125.6
<u>Projects Enumerated in 2001</u>				
Janesville to Watertown	26	Rock, Jefferson & Dodge	428.6	396.4
Wausau Beltline	39/51	Marathon	290.7	36.1
<u>Projects Enumerated in 2003</u>				
Viroqua to Westby	14	Vernon	68.3	66.1
Prairie du Chien to STH 60	18	Crawford	29.5	27.2
De Pere to Suamico	41	Brown	545.4	531.9
STH 26 to Breezewood Lane	41	Winnebago	442.9	414.1
Other Work Associated With Substantially Complete Projects				104.0
Total				\$2,478.3

* Cost estimates are from DOT's August, 2008, report on the major highway program.

Department's latest status report. The table shows only those projects that are not substantially complete and open to traffic. There are several enumerated projects that have been substantially completed, 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 involving improvements to the old USH 53 scheduled through 2013. Rather than showing these completed projects individually, the total cost of auxiliary improvements on completed projects (\$104.0 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 highways and backbone rehabilita-

tion 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 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, as of 2001, is the responsibility of the southeast Wisconsin freeway rehabilitation program instead 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 Bridge Improvement Program

The state bridge improvement program provides funding for the replacement or rehabilitation of deficient bridges on the state trunk highway system. 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.

Most bridge projects 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, as needed.

High-cost bridge rehabilitation projects, however, are programmed by the central office in order to avoid reducing the efforts by the regional offices to improve lower-cost, deteriorating bridges. High-cost bridges are bridges with a deck area greater than 40,000 square feet. Table 3 lists the high-cost bridge rehabilitation projects that DOT anticipates constructing between 2009 and 2014. The projects shown reflect the Department's schedule at the

time of publication. The Department anticipates that other projects will be added to this schedule later. In addition, the amounts shown for the projects in the table may represent only a portion of the total project costs, since other costs may be added to these scheduled projects when the Department updates the schedule.

Southeast Wisconsin Freeway Rehabilitation

The 2001-03 biennial budget, 2001 Act 16, created a separate program for the rehabilitation and expansion of southeast Wisconsin freeways. Under this program, southeast Wisconsin freeways are considered to be any state trunk highways within Kenosha, Milwaukee, Ozaukee, Racine, Walworth, Washington, or Waukesha counties that have four or more lanes of traffic physically separated by a median barrier and that give preference to through traffic by limiting traffic access to interchanges only. 2001 Wisconsin Act 109 modified the program by prohibiting the Department of Transportation from performing any rehabilitation, which includes, for the purposes of this provision, the addition of any lanes to existing southeast Wisconsin freeways, using the appropriations for state highway rehabilitation or major highway development.

The first freeway reconstruction project initiated since the creation of a separate program for

Table 3: High-Cost Bridges Scheduled Between 2009 and 2014 (\$ in Millions)

County	Highway	Bridge	Contract Year	Estimated Cost (2008 Dollars)
Marathon	STH 153	Main Street, Mosinee	2009	\$0.5
Door	Local	Michigan Street, Sturgeon Bay	2009	11.7
Iowa & Sauk	USH 14	Wisconsin River, Spring Green	2009	11.8
Buffalo	STH 25	Mississippi River, Nelson	2010	10.9
Brown	STH 96	Fox River, Wrightstown	2012	12.9
Lincoln	Local	Wisconsin River, Tomahawk	2012	5.6
Douglas	USH 2	Bong Bridge, Superior	2014	7.3

* "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.

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. Some auxiliary work was ongoing at the time of the publication of this paper, but it was expected that the total cost of the project will remain somewhat below the \$810 million that had been budgeted.

With the completion of the Marquette Interchange project, the Department began work on two other large reconstruction projects in the 2007-09 biennium. Limited construction work was started on the reconstruction of selected interchanges, frontage roads, and cross streets as part of a project to reconstruct I-94 between the Mitchell Interchange, in southern Milwaukee County, and the Illinois state line. Reconstruction of the mainline freeway, including modernization and adding a lane in each direction, is tentatively scheduled to begin in 2011 and be completed in 2016, at a total cost of \$1.9 billion. The 2007-09 budget provided a total of \$181.6 million for the project.

In addition, the Department began an environmental assessment and preliminary engineering on the reconstruction of the Zoo Interchange at the junction of I-94, I-894, and USH 45 in western Milwaukee County. The Department has tentatively proposed that the Zoo Interchange be reconstructed between 2012 and 2016, but has not yet developed an estimate of the cost of the project. The 2007-09 budget provided \$24.0 million for preliminary activities.

The preliminary construction schedules for both of these projects will depend upon whether the Governor and Legislature can provide the necessary funding, particularly since the Department has proposed to construct both at the same time.

Any construction project on southeast Wisconsin freeways that adds lanes to a freeway five or more miles in length would be done under the southeast Wisconsin freeway rehabilitation pro-

gram instead of the major highway development program. Like capacity expansion projects done under the major highway development program, southeast Wisconsin capacity expansion projects 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, allowing the Department to proceed with capacity expansion.

As noted earlier, the appropriations for the southeast Wisconsin freeway rehabilitation program are due to sunset at the end of 2010-11, although the statutory provisions related to the southeast Wisconsin freeway rehabilitation program, including the prohibition against funding such projects from the state highway rehabilitation or major highway development programs, do not sunset.

Maintenance, Repair, and Traffic Operations

The final component of the state highway program is the maintenance, repair, 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 work-

forces 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.

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 transportation fund dollars have been used as part of a strategy to balance the state's general fund budget, which resulted in a different mix of funding for the highway programs. In short, general obligation bonds were used in the past three biennia to replace transportation fund revenues in the highway improvement programs so that, in turn, transportation fund revenues could be used to assist general fund programs. 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, and aeronautical taxes and fees.

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

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

Biennium	State Segregated Appropriations	Change From Prior Biennium
1989-91	\$622.1	
1991-93	632.6	1.7%
1993-95	707.4	11.8
1995-97	765.8	8.3
1997-99	846.2	10.5
1999-01	930.4	10.0
2001-03	1,032.3	10.9
2003-05	457.3	-55.7
2005-07	828.5	81.2
2007-09	1,250.2	50.9

general obligation bonds that were used to partially replace state transportation fund appropriations in those biennia.

In the 2005-07 biennium, the amounts shown are adjusted to reflect a lapse of \$38.1 million to eliminate a projected biennium-ending deficit in the transportation fund. In the 2007-09 biennium, the figures have been adjusted to reflect the lapse of \$153.0 million to the general 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 generally 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 2007-09 biennia to replace transportation fund revenues. In the 2003-05 biennium, a total of \$565.5 million was authorized for highway improvements, while \$250.0 million was authorized in the 2005-07 biennium, and \$50.0 million was authorized in the 2007-09 biennium. Debt service on these bonds is paid from the general fund.

Separate from these general fund-supported, general obligation bonds, transportation fund-supported, general obligation bonds were provided in the 2005-07 and 2007-09 biennia as a supplemental funding source for southeast Wisconsin freeway rehabilitation projects. The 2005-07 budget provided \$213.1 million in general obligation bonds for the Marquette Interchange reconstruction project as a key part of financing that project, while the 2007-09 budget provided \$90.2 million for the I-94 North-South freeway project. Debt service on these bonds is paid from a transportation fund appropriation.

Table 5 shows the bond usage in the state highway program for each of the last ten biennia, by bond type.

Federal Funding

Federal funds are distributed based on multi-year federal surface transportation authorization acts. As of the publication of this paper, the current act is entitled "Safe, Accountable, Flexible, Efficient,

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

Biennium	Revenue Bonds	General Obligation Bonds		
		General Fund-Supported	Transportation Fund-Supported	Total
1989-91	\$123.7	\$0.0	\$0.0	\$123.7
1991-93	199.0	0.0	0.0	199.0
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

Transportation Equity Act: A Legacy for Users" or SAFETEA-LU. SAFETEA-LU expires at the end of federal fiscal year 2009, so a new authorization act will have to be passed to extend the federal program.

Table 6 shows the amount of federal formula-based highway aid since 1997. 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
1998	\$401.4
1999	464.0
2000	498.1
2001	530.9
2002	548.5
2003	554.3
2004	595.6
2005	579.1
2006	587.3
2007	670.1
2008	695.4

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 re-

habilitation 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 enhancements program, which provides grants for bicycle and pedestrian facilities and the rehabilitation of historic transportation facilities; and (e) the railroad crossing improvement program, which mainly funds 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 components of the state highway program, plus for administration and planning. The amounts shown in the table (and Table 8 below) reflect two adjustments that are not reflected in the statutory appropriations for the programs. First, the 2007-09 biennial budget act and subsequent budget adjustment act resulted in lapses of \$153.0 million from highway improvement programs (\$101.0 million from state highway rehabilitation and \$52.0 million from major highway development). These lapses have been subtracted from the state funding totals for these programs. Second, to partially replace the lapsed funds, DOT was directed to issue an additional \$39.0 million in authorized revenue bonds for the major highway development program. This amount has been added to the total for that program. 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 the five components of the highway program for the past ten biennia.

Table 7: State Trunk Highway Programs -- 2007-09 Biennium Funding (\$ in Millions)

Program	Gen. Ob. Bonds	Revenue Bonds	Current Revenue Funding Sources		All Sources
			State	Federal	
Major Highway Development	\$0.0	\$400.1	\$66.1	\$178.0	\$644.2
State Highway Rehabilitation	50.0	0.0	563.0	751.2	1,364.2
Southeast Wisconsin Freeway Rehabilitation	90.2	0.0	151.9	152.6	394.7
Highway Maintenance, Repair, and Traffic Operations*	0.0	0.0	434.1	2.2	436.3
Administration and Planning	<u>0.0</u>	<u>0.0</u>	<u>35.2</u>	<u>7.4</u>	<u>42.5</u>
Total	\$140.2	\$400.1	\$1,250.2	\$1,091.3	\$2,881.8

Note: Some totals do not add due to rounding.

* Includes an 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	Southeast Wisc. Freeway Rehabilitation*	Highway Maintenance/Traffic Operations	Administration and Planning	Total
1989-91	\$218.7	\$598.7	---	\$224.3	\$28.7	\$1,070.4
1991-93	296.7	695.5	---	238.1	31.6	1,261.9
1993-95	318.0	767.1	---	266.3	34.7	1,386.1
1995-97	338.8	853.4	---	277.2	40.3	1,509.7
1997-99	402.8	1,002.8	---	290.2	45.4	1,741.2
1999-01	439.5	1,107.8	---	311.4	50.5	1,909.2
2001-03	473.6	1,142.0	\$203.9	363.3	49.0	2,231.8
2003-05	482.6	1,098.4	262.9	333.2	50.8	2,227.9
2005-07	542.7	1,205.8	471.3	354.8	42.1	2,616.7
2007-09	644.2	1,364.2	394.7	436.3	42.5	2,881.8

Note: Some totals do not add due to rounding.

*This program component was part of the state highway rehabilitation component prior to the 2001-03 biennium.