To View Report 17-2

State Highway Program

January 2017

Report Highlights

The condition of Wisconsin's state highways deteriorated in recent years.

DOT budgeted to complete more major highway project work than could be completed with its available funding because it did not sufficiently take into account the effects of inflation and unexpected cost increases.

DOT took steps to control its state highway engineering, construction, and maintenance costs, but it could take additional steps.

DOT is not consistently using its performance measures to manage and improve its operations.

The Department of Transportation (DOT) is responsible for planning, designing, constructing, and maintaining the 11,758 miles of Wisconsin's state highways. DOT's expenditures for state highways increased from $739.7 million in fiscal year (FY) 1996-97 to $2.1 billion in FY 2015-16, or by 190.2 percent. A total of 1,647.1 full-time equivalent (FTE) staff positions were allocated to DOT's state highway program as of July 1, 2016. The state highway program includes major highway projects and Southeast Wisconsin freeway megaprojects that must be enumerated in statutes before DOT can begin to construct them, rehabilitation projects that range from resurfacing to reconstructing existing highways, and maintenance work that includes removing snow and filling potholes.

To complete this audit of DOT's state highway program, we analyzed:

- trends in program expenditures and state highway conditions;
- DOT's management of the planning, engineering, and construction phases of state highway projects, as well as its maintenance of state highways; and
- DOT's use of performance measures to help manage and improve its operations.

2015 Wisconsin Act 55, the 2015-17 Biennial Budget Act, appropriated $1.0 million to DOT to study and report on transportation funding issues by January 1, 2017. Therefore, our audit did not analyze funding issues. In December 2016, DOT reported on current transportation funding sources and trends, as well as options for future funding sources.

State Highway Conditions

The proportion of state highways rated in good condition decreased steadily from 53.5 percent in 2010 to 41.0 percent in 2015, according to DOT's pavement condition index, which is used to determine pavement deterioration. The condition of state highways can be measured in multiple ways. According to the international roughness index, which measures highway smoothness, the proportion of state highways in good condition in Wisconsin was considerably lower than in six other midwestern states in 2014.

Planning

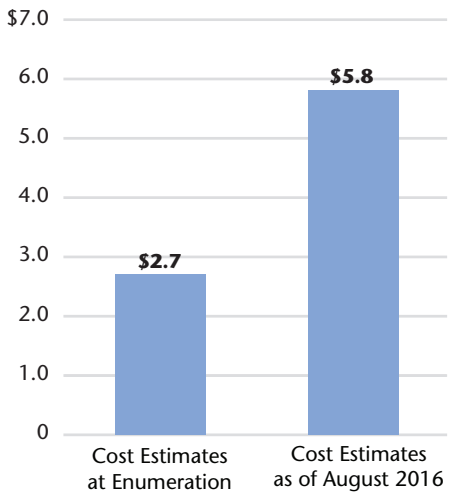
DOT provides the Governor and the Legislature with an estimate of total project costs when a major highway project is considered for enumeration. The Governor and the Legislature use these cost estimates to help determine whether to enumerate a project. We found that DOT's cost estimates were incomplete, in part, because they did not take into account that inflation would increase project expenditures over time. The estimated expenditures for 19 major highway projects completed from January 2006 through December 2015 were $1.5 billion, which was $772.5 million higher than DOT's cost estimates at enumeration.

We also analyzed 16 major highway projects ongoing in August 2016. The cost estimates reported by DOT in August 2016 for these 16 projects had increased by an estimated $3.1 billion since DOT had provided the cost estimates at enumeration.

We found that DOT budgeted to complete more major highway project work than could be completed with its available funding. It did so because it did not sufficiently take into account the effects of inflation and unexpected cost increases on project expenditures. DOT indicated that unexpected cost increases caused delays in project work that it had planned to complete.

DOT determines which rehabilitation projects to construct. DOT's data indicate that these projects typically do not expand existing highways. We found that DOT has not changed the proportions of funds allocated among its

Change in the Cost Estimates of 16 Major Highway Projects Ongoing in August 2016
(in billions)



Key Facts and Findings

DOT spent $2.1 billion on state highways in FY 2015-16.

In 2014, the proportion of state highways in good condition in Wisconsin was considerably lower than in six other midwestern states.

From enumeration to August 2016, the cost estimates DOT reported for 16 ongoing major highway projects increased by an estimated $3.1 billion.

Work completed by DOT staff declined from 46.4 percent of total design engineering expenditures in FY 2006-07 to 33.4 percent in FY 2014-15.

DOT potentially could have saved more in recent years if it had met its performance measure goals and certain other goals.

From January 2006 through December 2015, DOT awarded 2,247 construction contracts totaling $9.6 billion.

five regions to complete certain rehabilitation projects since 2006, did not fully comply with administrative rules for selecting projects, and did not document why it selected particular projects to construct over other potential projects.

Engineering

Design engineers create design plans for state highway projects, and construction engineers oversee the work of construction contractors that build projects. After assigning all of its engineering staff to projects, DOT hires consultants to work on other projects that must be completed. From FY 2006-07 through FY 2014-15, work completed by DOT staff declined from 46.4 percent to 33.4 percent of total design engineering expenditures and from 37.6 percent to 32.4 percent of total construction engineering expenditures. The proportion of engineering work that consultants can complete without hindering DOT's ability to effectively oversee consultants is unknown.

We found that DOT saved $26.9 million by controlling engineering costs from FY 2005-06 through FY 2014-15. However, it potentially could have saved an additional $6.6 million, or an average of $660,000 per year, if each region had kept engineering costs at no more than the thresholds indicated by DOT's "engineering delivery cost index" performance measure.

Construction

Statutes generally require DOT to solicit bids for state highway construction contracts and award the contracts to the lowest bidders. From January 2006 through December 2015, DOT awarded 2,247 construction contracts totaling $9.6 billion.

We found that DOT generally had effective oversight of the processes for soliciting bids and awarding construction contracts and took steps to control construction costs. However, DOT could have potentially achieved considerable additional savings if it had met its performance measure goals and certain other goals it established. We found that DOT potentially could have saved:

- $53.1 million, or an average of $5.9 million per year, if it had met its quarterly goals for soliciting bids on construction contracts from FY 2006-07 through FY 2014-15;

- $44.7 million, or an average of $4.5 million per year, if it had received two bids on each of the 363 construction contracts that had actually received only one bid from January 2006 through December 2015; and

- $191.9 million, or an average of $32.0 million per year, if its total costs during the construction phase of state highway projects had not exceeded its annual performance measure goals from FY 2009-10 through FY 2014-15.

Maintenance

DOT is responsible for maintaining state highways, but counties perform most maintenance work under contract with DOT, as is statutorily permitted. Maintenance work is intended to preserve state highways and includes removing snow and applying salt in the winter, sealing cracks, and filling potholes. We found that DOT generally had effective oversight of its maintenance program and took steps to control maintenance costs.

Performance Measures

We found that DOT is not consistently using its performance measures to manage and improve its operations. For example, DOT's "program effectiveness" performance measure annually assesses the extent to which certain rehabilitation projects selected by the regions aligned with the location, scope, and timing of projects identified by a model that DOT developed. DOT intends that its regions use the performance measure results to improve future project selection decisions. However, four of the five regions indicated that they do not use the results to improve future project selection.

Recommendations

We include recommendations that will help DOT use its funds more effectively *(pp. 34, 47, 50, 68, 72, 82, 85, 87, and 90).*

We include recommendations for DOT to improve how it manages:

- ☑ the planning phase of state highway projects *(pp. 36, 38, 39, 44, 49, 53,* and *55);*
- ☑ the engineering phase of state highway projects (*pp. 69, 74,* and *75);* and
- ☑ the maintenance of state highways (*pp. 97, 98, 99,* and *103).*

We include recommendations for DOT to report to the Joint Legislative Audit Committee by June 30, 2017, on the status of its efforts to implement all of these recommendations.

We include a recommendation for DOT to report to the Joint Legislative Audit Committee by March 30, 2018, on the results of its pilot program for performance-based maintenance contracts *(p. 102).*

The Legislature could consider modifying statutes to:

- require DOT to include in its semiannual reports to the Transportation Projects Commission the cost estimates DOT provided at enumeration *(p. 38);*
- require DOT to provide it with cost estimates that include all costs associated with potential major highway projects, including the effects of inflation *(p. 44);*
- require DOT to regularly report information to it about the ongoing costs of each major highway project *(p. 45)* and to report this information about each project as it is defined in statutes *(p. 45);*
- require DOT to take the results of cost-benefit analyses into account when deciding whether DOT staff or consultants will complete engineering work *(p. 70);* and
- allow DOT to use the "construction manager-general contractor" method of completing a limited number of state highway projects *(p. 91).*

Legislative Audit Bureau | State Auditor: Joe Chrisman

Address questions regarding this report to the State Auditor at (608) 266-2818 or at *AskLAB@legis.wisconsin.gov*.