

RESEARCH SPOTLIGHT

Project Information

REPORT NAME: Bonding vs. Pay-Go

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Weighing bonding versus pay-go for Michigan's transportation projects

To keep the state's roads safe and in good condition, the Michigan Department of Transportation (MDOT) must decide how best to pay for transportation projects: borrow funds through bonds, which enables faster construction but adds long-term debt, or pay with revenue on hand, which avoids interest but often delays critical work. This research examined practices used by other states and analyzed three Michigan projects funded with bonds to illustrate the estimated costs if they had been funded up front. The research culminated in a calculator tool to help MDOT better weigh the advantages and disadvantages of each option for a given project.

PROBLEM

Michigan's road infrastructure requires continual maintenance and improvements. Two primary approaches to funding MDOT projects are bonding, where the requisite funds are borrowed and repaid over time; and pay-as-you-go, or pay-go, where projects are financed up front with revenue from sources such as fuel taxes, tolls and vehicle registration fees.

While bonding gives MDOT the funding it needs to begin a transportation project, it also comes with long-term interest payments, increasing the overall project cost over time. The pay-go option avoids debt since projects are paid in full before they begin. But saving the funds required for a project takes time, leading to construction delays that may increase



MDOT weighs the trade-offs between bonding and pay-go to choose the most cost-effective financing approach for delivering timely road improvements.

overall costs due to inflation and other factors.

The Rebuilding Michigan Program, approved by the State Transportation Commission in 2020, authorized MDOT to issue \$3.5 billion in bonds to finance road projects. As construction costs continue to climb and critical routine maintenance such

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"This research has given us information and tools to better analyze the advantages and disadvantages of using bonding or pay-go to fund a given project, helping us to make more informed decisions in the future."

Kelsey Adams

Financial Manager

as snow removal and guardrail replacement consume larger portions of the budget, MDOT needed to better understand the trade-offs between bonding and pay-go to make informed decisions about issuing the remaining bonds and funding future projects.

RESEARCH

The research began with a comparative analysis of 10 states with populations and debt characteristics similar to Michigan's to determine how peer states manage their transportation funding and debt. Researchers looked at the differences in funding practices and interest rates over an 11-year period and calculated states' debt coverage ratios, which measure whether the state brings in sufficient funds through tolls, fees and other sources to cover its debt payments.

Then researchers analyzed three real-world Michigan reconstruction projects funded by bonds, with costs ranging from \$41.5 million to \$143.1 million. Inflation, congestion costs, construction delays, and other factors were examined to calculate the cost of these projects if a pay-go funding approach had been used. Both a five- and 10-year delay were considered, representing the estimated time MDOT would need to

accumulate the funds necessary to pay for these projects under a pay-go scenario.

Using the findings from these efforts, the research team developed a calculator tool to highlight the trade-offs between bonding and pay-go for a given project.

RESULTS

The review of peer states found that Michigan's current debt levels are in line with similar states. The state ranked fifth for the most outstanding debt and had the fifth highest debt per capita.

The study provided valuable insights:

- Delaying projects by five to 10 years – the time it might take to accumulate sufficient funding under pay-go – can significantly increase the total cost of a project.
- Inflation alone drives up the price of materials, labor and equipment while road conditions worsen during the wait, adding to reconstruction costs. The estimated additional cost of the \$143.1 million project from inflation was \$69.5 million for a five-year delay and \$172.6 million for a 10-year delay.
- Added costs due to congestion – such as vehicle wear and tear, increased drive time, and environmental impact – could total more than \$26 per hour for drivers over a five-year delay and more than \$58 per hour over a 10-year delay.

The research showed that the state's available funds may have more purchasing power when bonds are introduced. For example, bonding larger projects frees up funding to pay for smaller projects, minimizing the cost of maintaining Michigan's roads over time. The research team created an interactive calculator that weighs the trade-offs of these approaches.

IMPLEMENTATION

MDOT will use this research and the pay-go versus bonding calculator to inform future funding strategies, particularly as the

agency considers issuing the remaining Rebuilding Michigan bonds. The findings give MDOT a clearer view of when bonding makes strategic and economic sense and when a pay-go approach might be more appropriate. MDOT can now make better-informed, data-driven decisions that support smart investment in the state's roads and bridges.

Research Administration

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The final report is available online at

MDOTjboss.state.mi.us/TSSD/tssdResearchAdminDetails.htm?keyword=SPR-1754.

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