Senate Fiscal Agency
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BILL ANALYSIS

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Senate Bill 379 (as reported without amendment)
Sponsor: Senator Roger Victory
Committee: Transportation and Infrastructure

Date Completed: 9-30-19

RATIONALE

During the winter months, the Michigan Department of Transportation (MDOT) and local road authorities use certain substances to prevent the accumulation of ice on roads (anti-icing), and to remove ice from the roads (deicing), to ensure safe travels for motorists. Anti-icing consists of applying liquids to the roadway before, or at the onset of, a winter storm; deicing consists of applying liquid or other substances during or after a winter storm. Anti-icing and deicing agents in Michigan currently consist mostly of brine or salt. According to reports from the United States Department of Transportation (USDOT), these materials have a negative impact on transportation infrastructure, motor vehicles, and the surrounding natural environment.

A few communities throughout Michigan, such as Farmington Hills and Frankenmuth, use organic additives in their anti-icing and deicing practices, which allows these communities to use less salt on roadways. Specifically, these communities use sugar beet byproducts from farms in Michigan. Some believe that incorporating these organic additives into current anti-icing and deicing practices could have benefits for transportation infrastructure, vehicles, and the environment. Accordingly, it has been suggested that MDOT implement a pilot program on the use of organic additives to control ice on roads throughout the State.

CONTENT

The bill would amend Public Act 51 of 1951, the Michigan Transportation Fund law, to do the following:

- **Require the Department of Transportation to implement a pilot program on the use of organic additives to control ice on certain roads in the State.**
- **Require the Department to submit a report on the pilot program to members of the House of Representatives and the Senate committees with jurisdiction over transportation by December 31, 2022.**

Specifically, the bill would require the Department to implement a pilot program on the use of organic additives to control ice on public roads, highways, and bridges in the State to reduce application of salt and chemicals that contributed to the deterioration of roads and to chloride pollution in lakes, rivers, and groundwater in the State.

At a minimum, the pilot program would have to do the following:

-- Identify and use methods to reduce the application of salt and chemicals through expanded use of organic additives, including liquid sugar beet byproducts that promoted surface adhering and reduced the freezing point of applied substances.
-- Examine results from expanded use of organic additives, including potential environmental and fiscal impacts.
-- Develop best practices and technical guidelines to expand the use of organic additives.

-- Convey program information and guidance to local road agencies.
-- Use organic additives in at least five test locations, each containing public roads, highways, and bridges that could experience deterioration from application of salt and chemicals and a body of water at high risk of chloride pollution.
-- Include collaboration with at least one local road agency.

By December 31, 2022, the Department would have to submit a report on the pilot program to the members of the House of Representatives and Senate committees with jurisdiction over transportation. At a minimum, the report would have to summarize all of the following: a) pilot program activity, b) review results, and c) steps for increasing statewide use of organic additives.

Proposed MCL 247.661a

ARGUMENTS

(Please note: The arguments contained in this analysis originate from sources outside the Senate Fiscal Agency. The Senate Fiscal Agency neither supports nor opposes legislation.)

Supporting Argument
According to research supported by the USDOT, the United States spends $2.3 billion annually on anti-icing and de-icing measures, and the corrosion and environmental impacts associated with these strategies increase the cost of road maintenance and repair by approximately $5.0 billion. In addition, information from the North Dakota Department of Transportation indicates that anti-icing measures are the most effective and efficient way to prevent ice from affecting the drivability of roads in winter months. Anti-icing measures prevent ice and snow from adhering to the road, which makes the snow and ice easier to remove. The proactive approach also ensures that more of the salt-based, ice prevention substance stays on the road, saving money and preventing the externalities that result from salt run-off.

Organic additives, such as sugar beet byproducts, would assist in the efficacy and efficiency of this proactive approach because they are used most effectively in anti-icing measures. The organic additives help the anti-icing substances adhere better to the road. The improved adherence ensures more of the substance remains on the road and improves the effect of the anti-icing agents. By studying the effects of organic additives in anti-icing methods in Michigan, the State could find ways to save money and improve road conditions in a safe and effective manner.

Supporting Argument
Anti-icing and deicing measures on roadways in the State rely heavily on salt, which often have negative effects on surrounding vegetation and water supplies from run-off. According to a Rutgers University study on the effects of road salt on surrounding vegetation, road salt run-off can affect the soil profile, which changes the viability of growth for vegetation in the area. In other words, if a large amount of salt run-off concentrates within the soil, vegetation tends to absorb these substances, instead of nutrients and minerals needed for growth, such as potassium and phosphorus. This process can lead to depressed growth and yield as the soil becomes less viable for plants to grow.

The run-off from current deicing agents also affects the surrounding groundwater and surface water. The run-off often enters the soil with precipitation and, in large quantities, can contaminate these sources of water. Contaminated ground water can lead to contaminated drinking water as it is pulled out of the ground for use from wells or regional water systems. This effect is worse in smaller streams and other bodies of water, and can lead to changes in the biological and chemical make-up of those ecosystems.

According to studies from the USDOT and other transportation departments, the implementation of organic additives can reduce the amount of salt products needed to maintain safe roads. For example, the public works department in Farmington Hills reported that the implementation of organic additives into anti-icing and deicing measures decreases the amount of salt used annually

by 30%. A pilot program on the use of organic additives in Michigan could produce similar results, leading to a larger scale effort to reduce the amount of salt run-off during the winter months.

Legislative Analyst: Tyler VanHuyse

FISCAL IMPACT

The bill would have a minor, negative fiscal impact on the State and no fiscal impact on local units of government. Depending upon the results of the program, the bill could have a substantial, long-term, positive fiscal impact on the State and local units of government.

The bill would require the Department to test the use of organic additives in the salt mixture it uses to control ice on the roads during the winter months. Organic additives, such as GeoMelt©, could reduce the amount of salt needed to combat icy road conditions, reduce salt corrosion on the roadways and on maintenance equipment, and reduce man-hours spent salting roads. Studies have shown that organic additives added to traditional salt mixtures can be extremely efficient and cost-effective at temperatures that are slightly below freezing, but are less efficient and cost-effective in extreme cold, i.e., zero degrees Fahrenheit and below. Any overall cost savings would depend on the severity of the winter months during which it was applied.

There would be some upfront costs. Organic additives are relatively inexpensive, between $12 to $15 dollars per ton. Much of the cost in using an organic additive comes from the process of mixing it with salt. Correct application of an organic additive generally includes the addition of several gallons of the mixture per ton of salt and the mixing of the two substances with a special machine that evenly distributes the additive. Organically treated salt should be stored separately from untreated salt. The mixture also should be applied to roads as a preventative measure, before the temperature drops below freezing, in addition to treatment during snow storms and while plowing. Depending upon the number of road miles used for the pilot program, total upfront costs could range between $25,000 and $50,000.

Fiscal Analyst: Michael Siracuse

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