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A bill for an act

relating to transportation; amending requirements relating to pavement life-cycle cost analyses; amending Minnesota Statutes 2020, section 174.185.

BE IT ENACTED BY THE LEGISLATURE OF THE STATE OF MINNESOTA:

Section 1. Minnesota Statutes 2020, section 174.185, is amended to read:

174.185 PAVEMENT LIFE-CYCLE COST ANALYSIS.

Subdivision 1. **Definitions.** For the purposes of this section, the following definitions apply.

~~(a) "Life-cycle cost" is the sum of the cost of the initial pavement project and all anticipated costs for maintenance, repair, and resurfacing over the life of the pavement. Anticipated costs must be based on Minnesota's actual or reasonably projected maintenance, repair, and resurfacing schedules, and costs determined by the Department of Transportation district personnel based upon recently awarded local projects and experience with local material costs.~~

~~(b)~~ (a) "Life-cycle cost analysis" or "analysis" is a ~~comparison of life-cycle costs among competing paving materials using equal design lives and equal comparison periods.~~ process for evaluating the total economic worth of a usable project segment by analyzing initial costs and discounted future costs, such as maintenance, user, reconstruction, rehabilitation, restoring, and resurfacing costs, over the life of the project segment.

(b) "Minimum requirements" is a combination of pavement, base, and subbase materials that minimizes the total system cost to achieve the specified design performance requirements. Design performance requirements are based on design traffic volumes,

reliability, standard deviation, pavement structural characteristics, and various material properties for structural design.

(c) "Pavement" is any material used for paved traffic lanes, typically asphalt or concrete, including the underlying materials inherent to each pavement alternative considered.

(d) "Rounded value" means a measurement that is rounded to the nearest half inch increment.

(e) "Shoulder" is the portion of the roadway contiguous with the traveled way, outside of the edge of the pavement for accommodation of stopped vehicles, emergency use, and lateral support of base and surface courses.

(f) "Substantial plan development" is the point in time during the plan development process after which any further activities would preclude any of the feasible alternatives from being selected or constructed.

(g) "Superfluous materials" are materials that are in excess of rounded values and that are not necessary to meet the minimum requirements for a feasible alternative.

Subd. 2. **Required analysis.** (a) For ~~each project in the reconditioning, resurfacing, and road repair funding categories~~ any project with 15,000 or more square yards of paving, the commissioner ~~shall~~ must perform a life-cycle cost analysis ~~and shall document the lowest life-cycle costs and all alternatives considered. The commissioner shall document the chosen pavement strategy and, if the lowest life cycle is not selected, document the justification for the chosen strategy. A life-cycle cost analysis is required for projects to be constructed after July 1, 2011. For projects to be constructed prior to July 1, 2011, when feasible, the department will use its best efforts to perform life-cycle cost analyses.~~ and document the chosen pavement strategy as provided by this section. The commissioner must perform the life-cycle cost analysis prior to substantial plan development.

(b) When conducting a life-cycle cost analysis, the commissioner must:

(1) derive initial and future costs from historical data of roadways with similar characteristics, including but not limited to similar geographical location, rural or urban classification, traffic volumes, construction practices, staging, and vehicle classification percentages;

(2) determine the analysis period based on the longest design life of all feasible alternatives or 60 years, whichever is longer;

(3) compensate for any life added or lost due to rounding if pavement thickness is rounded up or down;

(4) ensure that each feasible alternative being considered in the analysis meets the minimum requirements for that alternative and must consider only the pavement, base, and subbase materials that are required to meet the minimum criteria for that alternative;

(5) identify all feasible alternatives, including a full range of rehabilitation strategies for both rigid and flexible pavements, which must, at a minimum, include thin asphalt overlay of less than four inches, thin concrete overlay of four inches to six inches, thick asphalt of greater than or equal to four inches, and thick concrete options greater than six inches;

(6) include agency costs, including but not limited to initial pavement, future rehabilitation and maintenance projects, overhead, design, contract administration, and routine maintenance;

(7) add the annual excess fuel consumption costs, as calculated in subdivision 2a, as an annual pavement cost;

(8) identify and use realistic timing of future maintenance and construction practices using similar characteristics, including but not limited to similar geographical location, rural or urban classification, traffic volumes, construction practices, staging, and vehicle classification percentages;

(9) include an explanation of the methodology used to produce the cost estimate and why that method was selected; and

(10) include an explanation of the timing selected of rehabilitation and maintenance and why that timing was selected.

(c) The commissioner must not include the following in a life-cycle cost analysis:

(1) elements that are the same for all alternatives;

(2) life-cycle calculations for shoulder pavement, base, or subbase; and

(3) any superfluous material that is included as part of the feasible alternative but is not required to meet the minimum requirements of the feasible alternative, including any material that may be included due to the designer's preference or recommendation in the department's Pavement Design Manual. This clause does not preclude the commissioner from selecting a pavement strategy that uses superfluous materials, but the superfluous materials must not be a factor in making the selection.

Subd. 2a. **Excess fuel consumption calculation.** (a) For purposes of this subdivision, the following terms have the meanings given:

(1) "diesel fuel price" means the Midwest nonhighway diesel fuel price effective for the date the calculation is performed as provided by the United States Energy Information Administration;

(2) "gasoline fuel price" means the Midwest regular gasoline price effective for the date that calculation is performed as provided by the United States Energy Information Administration;

(3) "heavy commercial annual average daily traffic (HCAADT)" means the heavy commercial annual average daily traffic provided by the department's data and based on the traffic forecasting and analysis system;

(4) "heavy-duty MPG" means the latest fleet average miles per gallon of heavy-duty, short-wheelbase vehicles as provided by the United States Energy Information Administration;

(5) "heavy-duty fuel savings factor" means the percentage of rigid pavement savings anticipated for heavy commercial vehicles as provided by department research, state or federal agencies, or relevant academic research projects;

(6) "light-duty fuel savings factor" is the percentage of rigid pavement savings anticipated for passenger vehicles as provided by department research, state or federal agencies, or relevant academic research projects;

(7) "light-duty MPG" means the latest fleet average for miles per gallon of light-duty, short-wheelbase vehicles as provided by the United States Energy Information Administration;

(8) "passenger annual average daily traffic (PAADT)" means the passenger annual average daily traffic provided by the department's data and based on the traffic forecasting and analysis system; and

(9) "project length" means the centerline miles for the project.

(b) The commissioner must determine the annual excess fuel consumption cost as provided in this subdivision. The commissioner must use the same HCAADT or PAADT for the duration of each analysis period.

(c) The passenger excess cost is equal to the product of PAADT, gasoline fuel price, light-duty fuel savings factor, project length, and 365 divided by light-duty MPG.

(d) The heavy commercial excess cost is equal to the product of PAADT, gasoline fuel price, heavy-duty fuel savings factor, project length, and 365 divided by heavy-duty MPG.

(e) The annual excess fuel consumption cost is the sum of passenger excess cost and heavy commercial excess cost.

Subd. 2b. **Public review and collaboration.** (a) Before finalizing a pavement selection, the commissioner must post a draft of the life-cycle cost analysis and the draft pavement selection on the department's Office of Materials and Road Research website for 21 days. During this period, the commissioner must allow the public to submit questions and comments. The commissioner must collaborate with the person who submitted the question or comment, where necessary, to ensure the commissioner fully understands the question or comment. The commissioner must respond to each comment or question in writing, which must include a description of any associated changes that will be made to the life-cycle cost analysis.

(b) After the public review period closes, the commissioner must make revisions to the life-cycle cost analysis in response to questions or comments received. If the commissioner revises the type of pavement from concrete to asphalt or from asphalt to concrete, the commissioner must post the revised life-cycle cost analysis for public review in accordance with paragraph (a).

Subd. 2c. **Selection.** (a) After the public review period required in subdivision 2b and any subsequent changes to the analysis, the commissioner must select the pavement strategy and prepare a document of justification. At a minimum, the document of justification must include:

(1) all comments and questions received during the public review and the commissioner's responses to each;

(2) an explanation of why the pavement strategy was selected;

(3) if the lowest life-cycle cost is not selected, justification for why a strategy with a higher life-cycle cost was selected;

(4) identify any superfluous materials, quantify the superfluous materials' associated costs, and provide the rationale for the superfluous materials inclusion.

(b) The commissioner must submit the analysis and document of justification to a licensed professional engineer for review. A life-cycle cost analysis is not considered final until it is certified and signed by a licensed professional engineer as provided by Minnesota Rules, part 1800.4200.

(c) For all projects that began construction on or after January 1, 2022, the commissioner must store all life-cycle cost analyses and documents of justification on the department's website in a manner that allows the public to easily access the documents.

(d) After completing the certification and signature requirements of paragraph (b) and the posting requirements of paragraph (c), the commissioner may advance the project to substantial plan development.

Subd. 3. **Report.** The commissioner ~~shall~~ must report annually to the chairs and ranking minority members of the senate and house of representatives committees with jurisdiction over transportation finance beginning on January 1, 2012, the results of the analyses required in subdivision 2, the public review required by subdivision 2b, and the final selection and document of justification required by subdivision 2c.

EFFECTIVE DATE. This section is effective July 1, 2022, and applies to life-cycle cost analyses that are started on or after that date, except that subdivision 2b and any references to subdivision 2b are not effective until July 1, 2023.