

Department of Legislative Services
Maryland General Assembly
2020 Session

FISCAL AND POLICY NOTE
First Reader

House Bill 665
Appropriations

(Delegates Barve and Stein)

Public School Construction and State Buildings - Use of Geothermal Energy

This bill requires that geothermal energy systems be installed in newly constructed public schools and in newly constructed State buildings, including any buildings for which more than 50% of the construction cost is paid using State funds. It also requires that life-cycle analyses of projected construction projects required under current law be based on a 50-year period and incorporate the use of geothermal energy systems.

Fiscal Summary

State Effect: Assuming that geothermal energy systems are currently used for State projects when it is favorable to do so, as discussed below, a requirement to use them when projected life-cycle costs are not favorable results in State construction and/or utility costs increasing for some projects. No effect on State expenditures for school construction, as discussed below. No effect on revenues.

Local Effect: Project costs for local school construction projects likely increase, as discussed below. Local utility costs decrease for some projects, but may increase for others. No effect on local revenues. **This bill may impose a mandate on a unit of local government.**

Small Business Effect: Potential meaningful.

Analysis

Current Law:

School Construction

As enacted by Chapter 14 of 2018 (the 21st Century School Facilities Act), the Interagency Commission on School Construction (IAC) manages State review and approval of local school construction projects. Each year, local systems develop and submit to IAC a facilities master plan that includes an analysis of future school facility needs based on the current condition of school buildings and projected enrollment. The master plan must be approved by the local school board. Subsequently, each local school system submits a capital improvement plan to IAC that includes projects for which it seeks planning and/or funding approval for the upcoming fiscal year, which may include projects that the local system has forward funded. In addition to approval from the local school board, the request for the upcoming fiscal year must be approved by the county's governing body. Typically, the submission letter to IAC contains signatures of both the school board president and either the county executive and county council president or chair of the board of county commissioners.

Based on its assessment of the relative merit of all the project proposals it receives, and subject to the projected level of school construction funds available, IAC determines which projects to fund. By December 31 of each year, IAC must approve projects comprising 75% of the preliminary school construction allocation projected to be available by the Governor for the upcoming fiscal year. Local school systems may appeal these preliminary decisions by IAC. By March 1 of each year, IAC must recommend to the General Assembly projects comprising 90% of the allocation for school construction submitted in the Governor's capital budget. Following the legislative session, IAC approves projects comprising the remaining school construction funds included in the enacted capital budget, no earlier than May 1. The final allocations are not subject to appeal.

IAC establishes a range of appropriate per student, square foot allocations for elementary, middle, and high schools as well as for special education students, career and technology students, and specialized programs. IAC also establishes, on an annual basis, a *cost per square foot* that is applicable to major school construction projects. For fiscal 2021, the cost per square foot is \$329 for new construction *without* site development (up from \$318 in fiscal 2020) and \$391.50 for new construction *with* site development (up from \$378 in fiscal 2020). In general, multiplying the cost per square foot allocation by the allowable square feet (based primarily on the State-rated capacity of a building) yields the maximum allowable cost that is subject to the State/local cost-share formula.

The State pays at least 50% of eligible costs of school construction and renovation projects, based on a funding formula that takes into account numerous factors including each local school system's wealth and ability to pay. The 21st Century School Facilities Act requires that the cost-share formula be recalculated every two years (previously, statute required recalculation every three years).

IAC recently approved a requirement that proposed school construction projects include with their submissions for approval a calculation of the total cost of ownership for the project, including projected utility and maintenance costs. These projections are currently for informational purposes only and are not used in assessing project readiness.

Life-Cycle Costs

The Department of General Services (DGS), in cooperation with the Maryland Energy Administration (MEA), must establish standards and procedures, including energy conservation performance guidelines, for evaluating the efficiency of the design for any proposed State-financed or State-assisted building construction. The standards must be based, in part, on the best currently available methods of evaluating design efficiency. The standards must be updated every two years.

To determine life-cycle costs, DGS, in cooperation with MEA, must establish standards that require at least, among other factors:

- an energy consumption analysis of each major piece of equipment in the cooling, heating, hot water, lighting, and ventilation systems; and
- a comparison of possible alternative energy systems.

DGS must adopt and uniformly apply a definition of the "life of the building" and provide defining criteria for the definition adopted.

Background: DGS advises that its design process manual requires a life-cycle assessment of four different heating and cooling systems and that geothermal must be one of the types included. DGS further advises that there is no standard timeframe used for life-cycle assessments, but that 20 years is typical because most systems have to be replaced, in whole or in part, after 20 years. Thus, a 50-year life-cycle analysis would likely have to incorporate the cost of replacing a system at least once and perhaps twice.

DGS has installed geothermal systems in several recently completed construction projects for which the life-cycle assessment was favorable, including two readiness centers for the Military Department and Jefferson Patterson Park Museum in St. Leonard. For two other projects currently underway, the life-cycle assessment for geothermal systems was not favorable. For the Maryland Department of Agriculture's Animal Lab in Salisbury, the

analysis showed a cost recovery period (break-even point) of 42 years, and the net present value of the geothermal system was the highest of the five systems evaluated. Similar results were found for the Military Department's readiness center in Carroll County.

DGS further advises that soil conditions at some sites preclude the use of geothermal energy systems due the presence of rock and asbestos in the soil. In these instances, a requirement to use geothermal systems may negate a proposed project.

State/Local Expenditures: As described above, State participation in school construction is fixed based on the square foot allocations for each school and the calculated cost of construction per square foot. The cost of installing a geothermal energy systems is typically higher than for conventional systems, so the total project cost likely increases as a result of the bill. As the State funding level is fixed, any such increase is borne entirely by the local school system. However, if IAC adjusts the cost-per-square foot to reflect the use of geothermal energy systems, State expenditures may increase. This analysis assumes that no such adjustment is made.

To the extent that a geothermal energy system reduces utility costs for a new school (and therefore the total cost of ownership of the building), local school systems recognize operating savings as a result. However, as noted above, geothermal systems are not always the optimal option, so to the extent that they result in higher utility costs (and total cost of ownership), local school systems bear those costs.

For State buildings, geothermal systems are already being installed when the life-cycle analysis concludes that it is favorable to do so. Thus, requiring them to be used when the analyses are not favorable can only cause State costs (either for construction or utility bills, or both) to increase. The use of a 50-year projection instead of the current duration may alter the calculation but may also result in the use of geothermal systems when the cost recovery period (breakeven point) is far into the future (*i.e.*, more than 20 years), meaning that the State bears increased costs for a very long time.

Small Business Effect: The bill's requirement to use geothermal energy systems may increase the demand for contractors that install such systems.

Additional Information

Prior Introductions: None.

Designated Cross File: None.

Information Source(s): Maryland State Department of Education; Public School Construction Program; Department of General Services; Maryland Energy Administration; Department of Legislative Services

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