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## Cooler classrooms not just about installing AC

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Quotes from elected officials and a recent Star-Advertiser editorial have expressed surprise and even anger at the prices of the bids received by the state Department of Education to undertake heat-abatement work at schools across the state.

Many of the statements made in articles and comments refer to contractors overcharging for air conditioning installations, perhaps in the mistaken belief that the work primarily involves simply retrofitting schools with cooling appliances.

In fact, the bids reflect the requirements of two bills enacted this session: Senate Bill 3126, enacted as Act 47 (2016), and House Bill 2569, enacted as Act 176 (2016).

These measures call for much more than adding air conditioning to schools. They also require modifications to school facilities to accommodate a range of energy efficiency features and the use of renewable energy to move public schools toward netzero energy use (i.e., a school's energy needs must be completely satisfied by renewable power sources).

Because the majority of Hawaii's schools are more than 50 years old and their construction and electrical systems reflect a different time, retrofitting them with modern features and systems, which they weren't designed to support, often requires electrical and construction upgrades.

Older school buildings also were not designed to be airtight and relied on natural ventilation for cooling. Because of climate change, tradewinds are decreasing and average ocean and air temperatures are higher, making air conditioning and other heat-abatement measures necessary to ensure school environments suitable for teaching and learning.

And when it comes to ensuring new air conditioning systems function effectively, the building envelope needs to be sealed, which requires replacing windows and doors, and installing insulation.

Add to this the requirements that renewable energy systems must also be installed to reduce the electricity costs at our schools, and it's clear the scope of work involved in addressing the requirements of the recently passed legislation goes far beyond the purchase and installation of air conditioning units.

For instance, the plans for some projects necessitated more than 350 pages of specifications and drawings, which in a typical school could include the installation of a hybrid AC system, electrical upgrades, PV (photovoltaic) systems with inverters, battery backup for the PV system, along with HVAC (heating, ventilation and air conditioning) insulation and roofing, ceiling fans, painting, window replacement, structural reinforcement, sunshades and awnings.

Also required are site preparation, cast-in -place concrete, aluminum fabrications, finish carpentry, thermal and moisture protection, liquid applied roofing system, mechanical and electrical upgrades, landscaping and other improvements.

Because of the scope and diversity of project components, a number of building trades — including electrical, air conditioning, roofing, solar and other contractors — are involved, which requires project management and oversight by a general contractor, who also takes all the risks associated with the subcontractors' work.

The DOE wisely pre-qualified the general contractors who could bid on this work to ensure the companies supervising projects at our schools had satisfactory safety records and experience working in occupied buildings, such as schools where student and staff activities are taking place.

It is important to appreciate that the DOE, while doing its best to expedite these projects, was not rushing to install air conditioning units before the next school year but is undertaking long-term improvements that will not only provide more comfortable classrooms for students and teachers, but also curtail the cost of electricity over the long term, significantly reduce the DOE's carbon footprint, and move Hawaii closer to its goal of 100 percent renewable energy by the year 2045.

These goals are worthwhile and visionary, but cannot be achieved without the significant investment the Legislature has required the DOE to make.

Hawaii's general contractors are proud to be part of this effort but must follow the bid specifications set forth by the DOE in submitting responsible bids that ensure all work is done to high standards the members of the General Contractors Association of Hawaii are committed to uphold.