

Written Testimony to the Little Hoover Commission

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Members of the Commission,

What follows below is a slightly updated version of a report that I was involved with as a member and later as the Chair of the Sacramento Unified School District (SCUSD) Bond Oversight Committee. I believe that the issues that it brings to light are as acute now as they were then. In this first section is a slightly updated version of that report, which is a good primer on many of the factors that result in government contracting processes in general being significantly more expensive than private contracting processes. In the second section, I reflect on the current state of Bond Oversight, and ways that it could be improved.

Section 1: A Case Study

Bond Oversight Committees (BOCs) have a general mandate to insure that bond funds are spent reasonably, and only on approved expenditures. To fill this mandate, the Sacramento Unified School District Bond Oversight Committee (SCUSD) BOC decided to review the amount of money being spent by the district on a specific work item and compare it to a comparable package of work performed in the private sector. The Value Assessment (VA) subcommittee was established for this purpose.

Because of the work history and professional experience of two of the BOC members, it was decided to focus on the area of HVAC replacement and/or retrofit for review. The VA subcommittee was thus directed to review HVAC costs. The subcommittee chair, Michael Day, had over 15 years experience working in different areas within the HVAC industry. The subcommittee vice chair, Jon Martin, is a licensed civil engineer with over 10 years experience in a structural engineering firm located in Sacramento at the time of the work.

The average cost of HVAC systems is computed many different ways. When estimating an entire project, general contractors in the private sector will seek estimates on the cost from design/build mechanical firms. HVAC breakout costs are usually quoted in one of two methods: cost per square foot of conditioned space, or cost per ton of HVAC cooling capacity. For this review we used the "cost per ton of cooling capacity" method. The final installed cost per ton for the type of equipment used in SCUSD projects was compared to similar equipment used in light commercial buildings in the private sector. The Committee found that the cost for this type of equipment typically runs from \$900 to \$2,000 per ton in the private sector, but that SCUSD was spending from \$7,500 per ton to over \$10,000 per ton. Cost per ton data for private sector was based on information gathered from three industry sources, the experience of the VA subcommittee members, and the RS Means Facilities Maintenance Estimating Guide for Sacramento. Cost per ton data for SCUSD projects was based on information gathered from a review of five completed projects.

The VA subcommittee decided to examine the reasons why these costs were so high compared to equivalent equipment in the private sector. What was found was that there is no single reason why the cost of HVAC is so much higher in the than it is in the private sector. The Value Assessment subcommittee found at least seven areas where the method of doing business is significantly different than in the private sector, leading to potential cost increases.

I Design fees

Under the Business and Professions code of California, licensed mechanical contractors are allowed to draw up plans for the work they will perform themselves. In order to draw up those plans, they must perform load calculations and design duct systems so that the amount of cooling and heating capacity matches the demand of the space at peak load. For simple projects in the private sector, these design costs are quite minimal, and are included in the price of the bid by the mechanical contractor performing the work.

School rooms are almost always single, large, un-partitioned rooms. The number of people per room is known, and building characteristics (the amount of wall surface, size and number of windows, etc.) are also relatively easy to determine from the blueprints, as is the orientation of the building with respect to the sun. Knowing these factors, designers are able to calculate the size and design of a system.

Current school procurement policies dictate that a professional engineer design a set of drawings for each individual classroom. Additionally, the costs associated with the mechanical engineer are compounded by the fact that these design fees are passed through an architect on district projects who in turn marks up the cost. These higher fees are in contrast to a service that is included for very little cost in the private sector in a design-build type project. In many cases, the design fees paid by SCUSD could have covered or nearly covered the entire cost of the project at private rates.

The alternative mentioned above is called design-build. Under design-build, the performance characteristics that the district wants are listed, and individual teams of builders and mechanical contractors try to meet the standards. If the district wants a system to maintain 78 degrees in the summer and 70 degrees in the winter, they set that as a specification, and the Designer/contractor teams are responsible to design a system that meets that standard. If they fail to meet that standard, they're required to repair the system until it does meet the standard. If they are still unable to meet the standard, a performance bond is activated, and a second firm is brought in to complete the work that the first team was unable to do.

Another factor that caught the attention of the Value Assessment Subcommittee was the potential for cost savings when plans are developed for schools with substantially similar floor plans. Many schools in the Sacramento City Unified School District were built to a common set of plans. For example, there were eight schools that were built to the exact same plan as Bear Flag Elementary School. Our initial thought was that there would be reduced design fees for the duplicate schools assuming that no remodeling had been performed. However, our research found that the design fees paid on the Bear Flag school project were exactly the same as they were on the other seven identical schools.

Another observation that stood out was the correlation between design fees and contracting prices. Design fees increase as a function of contract prices, and there is no incentive for the designer or the Architect to reduce the cost of the project. In fact, the designers of these projects receive **more** money as the price increases, and are thus inadvertently incentivized to increase project costs.

Lastly, there is considerable question as to why each individual school needs to be custom designed. There are pre-designed school plans available from the State, but they are effectively never used. A Bill was introduced by Senator Dave Cox that would have directed the Office of the State Architect to procure designs for several "model school plans" that could be used free of charge by any District, and that would have further withheld state matching funds for the design costs to any District that chose to procure its own original plans, but it was withdrawn in the face of heavy pressure from

architects. The question remains though: why pay for custom plans when an off the shelf plan would cost a fraction of the price? Estimates for overall cost reduction ran 20-25%.

RECOMMENDATION

The BOC recommended that the district consider a flat fee based system which could save money and promote greater competition. Flat fee design costs are inherent in design-build contracting. Alternatively, the District could consider cost savings fee structures where designers are paid bonuses for value engineering methods that save the school money on the overall construction.

SCUSD ended up adopting a process similar to this on some projects. Specifically it used a competitive "Lease/Lease-Back" process to choose a low cost guaranteed maximum price contract for both design and construction. What made it particularly effective was that the contract had a provision whereby if the design-build team found a method of reducing the cost through use of innovative materials, equipment or techniques, any savings below the GMP would be split between the design-build team and SCUSD. Any proposed changes needed to receive approval by the District, but the designers now had a positive incentive to reduce costs.

II Equipment selection

The equipment that was selected for many of the reviewed projects is priced at the upper end of the equipment market. There are several factors which affect price, particularly the manufacturer. The district has a standard that requires use of Aeon rooftop package equipment. Typical standard efficiency mass produced rooftop HVAC equipment runs on order of \$400 to \$500 per ton of capacity. Aeon equipment typically runs \$1200-\$2200 per ton of capacity for the equipment alone, and is custom made to user specifications. The following reasons were given to the BOC as to the selection of this equipment:

First, The District staff claimed that *this equipment was the only equipment that qualified for a SMUD rebate*. This, according to SMUD, is not true. Typical SMUD rebates are also on the order of a few hundred dollars per ton of capacity and would not cover the additional (or "marginal") cost of this equipment.

Second, District staff claimed that *use of this particular equipment made it easier to work on*. However, no analysis was performed that showed an estimate of the time saved per unit, and there was no effort to show that any annual time savings compensated for the marginal cost of the equipment and the interest on that marginal money spent. Put bluntly, the District staff could not show that the purported savings were greater than the annual debt service on the extra money they spent because no calculations had been performed to evaluate the claim.

Third, District staff claimed that the energy efficiency of the equipment would pay for the marginal extra cost over time. This contention was interesting in several respects. First, there was higher efficiency equipment on the market that cost less than what was being spent on the Aeon equipment. Second, claims of energy savings over time from the use of the extremely high efficiency HVAC was not actually confirmed by the District or its consulting engineers. They did not feel the need, nor was there a requirement, that the additional marginal cost needed to prove itself cost effective. It is fortunate indeed that this analysis never occurred, because it would probably have proven embarrassing to both the District and its consultants. It is very difficult to have your HVAC electric bill recover thousands of dollars in extra cost, and thousands more in additional interest costs when the AC shuts down at 3pm (missing peak demand costs), the school is closed all summer (missing peak demand months), and the servicing utility has very little in the way of price differentiation for on peak pricing.

RECOMMENDATION

We recommended that the District assess any expenditure above baseline (including rebates) against the additional costs and the probability of recovering those costs in added efficiency. The Value Assessment Subcommittee wanted the district to demonstrate the advantage of selecting the higher priced Aeon units over comparable units that were less expensive taking the rebate value into consideration. The Value Assessment Subcommittee also asked to view the district's accounting records for the SMUD rebates received from the HVAC units to prove that the rebate money went back to the bond fund and not to general operating expenses. It turned out that we were right to ask.

III Prevailing Wage

During our analysis the subcommittee noticed that prevailing wage could be another factor leading to higher overall construction prices. The subcommittee estimates that HVAC labor on district projects is \$31.05/hour, which is about 46% higher than the mean wage for similar work performed in the Sacramento area. While this is clearly outside the control of local officials, it is also a cost that they could bring up to State officials if they so chose, because it is State law that determines what the prevailing wage methodology is.

RECOMMENDATION

Recognizing that this is exclusively a political question at the State level, the BOC did not offer a recommendation. It should be recognized by those who can influence the decisions however that it does impose a substantially higher base cost on school construction, a cost which is then increased by all the other "multiplier" factors (Construction Management fees, Architect/Engineering fees, Mechanical Contractor and General Contractor mark-ups, and finance costs involved with use of bond funds) involved in school construction.

IV Controls

Broadly speaking, there are two types of building automation systems: open-source, and proprietary. Open-source can be purchased and worked on by any mechanical contractor, or by the district's own personnel. Proprietary systems are often restricted to a single mechanical contractor in any geographic region.

While the up front cost of proprietary systems is often lower than that of open source systems, the lifetime costs are typically substantially higher. Individual unit controllers, head ends, boards, and other system components can only be purchased from the proprietary controls company, and this monopoly is reflected in the component pricing. Further, the restriction on potential repair vendors similarly restricts choice and increases cost.

Additionally, SCUSD showed a fondness in its specifications for very expensive Direct Digital Control (DDC) type building systems over very inexpensive wall mounted thermostats. These DDC systems, which typically add \$30-\$50k to the cost of a project, are of dubious value to a facility that is closed by 3 in the afternoon and is closed all summer. What is perhaps more indicative of the dysfunctionality of the entire School District contracting system is that, as with equipment purchases, no cost benefit analysis of any type is performed to verify that the additional cost of this equipment is reflected in an equal or greater level of savings.

RECOMMENDATION

Based on much of the information reviewed by the BOC, the District should consider limiting all future bids to open-source controls, and require that any expenditures above baseline be supported by independent cost benefit analysis.

V Time of year

Construction and modernization work at all school sites is typically performed during summer break. This compression, which is compounded by the limited number of union contractors, leads to increased subcontractor and contractor costs, especially when the additional cost associated with regular overtime are factored in.

RECOMMENDATION

The District should review whether all work must be completed in such a compressed time schedule. There may be significant cost savings in making some modification of this requirement.

VI Life Cycle Cost benefit analysis

As noted above, at several junctures the VA subcommittee looked at expenditures that were above the norm for similar equipment in the private sector but was unable to find justification for these increased marginal costs. It made sense for the architects and engineers, because as the cost of the project went up their fee went up, usually for no additional work. The concept of paying more for a piece of equipment because it will save money in the long run is often valid, but it **must** be tied to a rigorous analysis of both hard and soft costs as well as the time cost of money.

One example will prove the concept. The HVAC units specified by SCUSD had a pull-out pan on rollers to facilitate the replacement of blower assemblies on HVAC units. This pull out pan certainly saved several hours of labor on blower replacements. Unfortunately for taxpayers though this was a terrible decision. First, the pull-out pan option added between \$500-\$1000 dollars to the cost of the unit. This cost goes up with taxes, mechanical contractor mark-up, (20-25% typically) and general contractor mark-up (typically an additional 20-25%). To this is added ~5-10% for the architect and engineer, and then to that amount is added an additional 10% for the construction management firm. Compounded, these factors roughly double the cost of the option to \$1,000-\$2000 per classroom. To this must also be added the time cost of money, the interest that must be paid by property owners on this bond.

On the other side of the ledger is the savings in labor. According to the RS Means estimating guide, replacing the blower and all bearings should take less than 4 hours and occur once every 10 years. Even if the cost of an HVAC repairman is \$100/hour and the time was ELIMINATED, it would only save \$400. Most likely it would save \$100-\$200 every 10 years... on a piece of equipment that has an expected useful life of 15 years.

Most disturbingly, the Subcommittee found that practices like this are far from uncommon. The phrase we came up with to describe it is "School District Math". Under normal circumstances, increase in price (both original marginal price increase and its cost in interest) must be offset with greater total savings to make sense, but not under School District Math. This is due to the fact that *property owners* pay back the bond, while operating costs come out of the School District's own budget. Under "School District Math", *any* savings look good. Whether it pays for itself over time is immaterial, because from the perspective of the School District, the bond money is "free" and "endless" especially when compared to the constrained budget of the District.

The other phrase we came up with is “Parasite Welfare” to describe the group of Engineers, Architects, Contractors and Equipment Sales representatives that are involved in this. They know that there is too much money being spent on this, and they know that it doesn’t pan out, because they can’t pull this kind of stunt anywhere else in the market.

RECOMMENDATION

Any expenditure over baseline should be justified by savings over the lifetime of the loan, and should have documentary support for that decision.

VII Specifications

SCUSD often used sole source specifications for equipment. This raised the cost of equipment procurement, usually without compensating savings. It is difficult to know whether or not there were compensating savings though because, as noted in VI above, life cycle cost analysis is essentially never performed. When queried on this, SCUSD staff stated that they relied upon their engineers to perform Value Engineering. When we asked the engineers of record, they replied that they did perform Value Engineering, but that they excluded anything in the District Specifications from review. In essence, no one reviews the specifications, and opportunities for the appearance of conflicts of interest are rampant.

RECOMMENDATION

Any sole source specification should be rare and subject to a public hearing. Reasons for the specification should be fully explained and the excluded providers should be encouraged to rebut the arguments made in favor of the sole source designation.

CONCLUSION

The Value Assessment subcommittee found that the district’s HVAC equipment and installation expenditures cost seven to ten times more than the average private sector cost of similar equipment. In school bond construction in particular, those in charge are usually long term District employees. Because of the infrequent nature of large capital expenditures, District employees that are placed in charge have no or nearly no experience in administering large and complex public construction contracts. Because of this lack of experience, they are forced to rely almost completely upon the advice given to them by consultants. It is human nature to choose what is easy over what is difficult, especially when there is no benefit or incentive for doing what is hard, and no downside for doing what is expedient.

Those consultants who work for the public entities are placed in a position where avarice is almost unavoidable. Without any effective oversight, they give advice to a management team that, with few exceptions, they are unable to independently verify. The difficulty of this position is compounded because the unchecked influence consultants wield is so easily turned to increasing their own profit. Making matters even more difficult, any attempt to reduce costs will hurt the profitability of their peers on the design team-not the best way to gain future business. Finally, they reside in an industry that has become so inured to overcharging the public that they call their lobbying group C.A.S.H.

While recognizing that there are rules and regulations that public construction must adhere to that those in the private are not subject to, there is still a yawning gap between the prices paid in the public and private sectors for the same product or service. The fundamental problem is that anyone who is familiar enough with the process to really know what is going on (engineers, architects,

contractors, construction managers) makes more money by the cost of projects going up. There is little point in seeing that the money only goes to capital improvements when those costs are 5-10 times what they should be. At this time there is no actor in the process with market knowledge who is incentivized to reduce costs; all biases are towards increasing costs. If there is going to be any change in this process it must start with the goal of introducing incentives for reducing costs.

Section 2: The State of Local Bond Oversight

The California League of Bond Oversight Committees (CALBOC) was formed this year to address issues of interest to BOC members around the state. We currently have 3 chapters in Northern California (Greater Sacramento, Silicon Valley and Napa Valley) and several more that are in the formative stage. While we do not have a formal position paper that has been adopted by the membership, the following issues are always topics of discussion.

- 1. Lack of training of BOC members:** They don't know what they are supposed to do, what they may do, what they may not do. Largely, they receive their instructions from the organization they are supposed to oversee, not conducive to good oversight.
Solution: Mandatory *independent* training for potential BOC members. We take the California Grand Jurors Association as a model of what a training organization can be.
- 2. Toothless members:** When BOC members are chosen by the entity they are supposed to oversee, they are *much* more likely to see their job as being a "Fig leaf" to cover the entity than to be an independent oversight force.
Solution: *Independent nomination* of members by civic groups. This maintains civic involvement in the process, while the overseen entity has yes/no veto power.
- 3. Restriction of Communication IN:** Overseen entities usually work to prevent members of the public from contacting BOC members by refusing to pass information, often citing confidentiality concerns.
Solution: Mandatory communication link ("e-mail us link") on the home page of the overseen entity's web site that would go to an e-dress designated by each BOC member.
- 4. Restriction of Communication OUT:** BOCs have a hard time getting their findings, good or bad, out to the public that they serve.
Solution: Mandatory space on newsletters and websites. If a District with a BOC is communicating with the public via a newsletter or web site, the BOC should be allowed sufficient space to post a message that, if adopted by the BOC, cannot be altered or suppressed by the District.
- 5. No/restricted ability to Voice Concerns:** BOCs are often told that "Process prevents us from getting you on our agenda unless you submit what you are going to say x weeks in advance" (4-6 is the norm).
Solution: So long as they meet the deadlines imposed by the Brown Act to be on an agenda, a BOC requesting to speak at a meeting of its supervised entity should be able to get on the agenda and speak within the first 60 minutes of the meeting.