SPECIAL STUDY

ENERGY-SAVING DEVICES AND SERVICES BUDGETED FOR BY SCHOOL DISTRICTS

Report to the Arizona Legislature
By the Auditor General
August 1994

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August 1, 1994

Members of the Joint Legislative Committee
on Energy-Saving Devices and Services

Members of the Joint Legislative Audit Committee

Transmitted herewith is a report of the Auditor General, A Special Study of Energy-Saving Devices and Services Budgeted for by School Districts. This study was conducted in response to a request by the Joint Legislative Audit Committee pursuant to Laws 1994, Chapter 254.

The recommendations contained in this report were made notwithstanding the recent Arizona Supreme Court ruling which declared the State's school capital funding method unconstitutional and ordered the Legislature to devise a new method of funding schools.

We found districts that budgeted for energy-saving devices and services under the provisions of Arizona Revised Statute §15-910 most likely did not realize budgeted savings. Further, budgeted amounts contained various errors and were not always adequately supported. Consequently, these errors resulted in overstatements of districts' general budget limits. We also examined district procurement practices for obtaining energy-saving devices and services and found that control over these practices needs to be strengthened.

My staff and I will be pleased to discuss or clarify items in the report.

This report will be released to the public on August 8, 1994.

Sincerely,

Douglas R. Norton
Auditor General

DRN/DLM/tms

Enclosure

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SUMMARY

The Office of the Auditor General has conducted a special study of energy-saving devices and services budgeted for by school districts, pursuant to Laws 1994, Chapter 254.

Arizona Revised Statute (A.R.S.) §15-910 governed school district (district) budgeting for energy-saving devices and services for the period we reviewed. The statute provided districts with additional expenditure authority to procure energy-saving devices and services that promote energy conservation and reduce utility costs. Effective April 24, 1994, Laws 1994, Chapter 254, §2 governs these budgeting practices.

Our study revealed districts most likely did not achieve budgeted savings as noted in Finding I, page 6; however, we found at least one district that realized significant savings under the provisions of A.R.S. §15-910. Furthermore, this district realistically evaluated their "reduction in utility expenditures" (RUE) based on historical data and achievable projections. Energy savings can be accomplished when districts:

- Select the most efficient energy-saving devices and services from a full range of energy-saving options;
- Exercise more accountability, project ownership, and governing board involvement; and
- Develop realistic RUE projections.

In addition to the above, an improved procurement process and a thorough understanding of the budgeting provisions of Laws 1994, Chapter 254, §2 by the districts will better serve the taxpayers and more closely meet the intent of the law. This cannot be accomplished without the changes in the law recommended in our report.

Districts Most Likely Did Not Realize Budgeted Savings (see pages 6 through 12)

Districts that budgeted for energy-saving devices and services under the provisions of A.R.S. §15-910 most likely did not realize budgeted savings because of their reliance on aggressive contractor savings projections. In addition, we found that the size and cost of a project did not necessarily make a difference in how much energy is ultimately saved. Laws 1994, Chapter 254, §2 should be amended to make RUE dependent on actual utility reductions. Further, districts should independently calculate and monitor RUE, and consider a full range of energy-saving options.

District Budgeting Practices Overstate General Budget Limits (see pages 13 through 14)

District budgeting practices for energy-saving devices and services are overstating general budget limits, which could increase districts' tax levies. For the districts we tested, budgeted amounts for energy-saving devices were calculated incorrectly and were not always adequately supported by detailed schedules and worksheets. Districts utilizing the budgeting provisions of Laws 1994, Chapter 254, §2 must attain a thorough understanding of the law's requirements and exercise due care when calculating the budget add-ons for energy-saving devices and services. This will help to reduce budgeting errors and the overstatement of districts' general budget limits.

Contractor Practices and Lack of District Oversight Undermine Effectiveness of Procurement Process (see pages 15 through 19)

District procurement decisions for purchasing energy-saving devices and services are heavily influenced by contractor marketing strategies. These strategies include the representation that projects will pay for themselves, the presentation of proposals containing all-inclusive cost estimates (i.e., bundling), and the promotion of costly service contracts. Further, districts have generally not been using competitive sealed bidding practices. Effective fiscal year 1994-95, Laws 1994, Chapter 254, §2 requires the use of competitive sealed bids in purchasing energy-saving devices budgeted for under the provisions of this law. However, competitive sealed bids will not be sufficient to guarantee greater effectiveness until districts request itemized savings estimates by component, consider a full range of service contracts, and maintain project ownership and accountability.

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INTRODUCTION AND BACKGROUND

The Office of the Auditor General has conducted a special study of school district energy-saving devices and services budgeted for by school districts (districts), pursuant to Laws 1994, Chapter 254, as directed by the Joint Legislative Audit Committee.

Arizona Revised Statute (A.R.S.) §15-910 governed district budgeting for energy-saving devices and services for the period we reviewed. The statute provided districts with additional expenditure authority to procure energy-saving devices and services that promote energy conservation and reduce utility costs. The statutory budgeting provisions became effective for devices in fiscal year 1988-89, when the Legislature amended A.R.S. §15-910 to provide that a district governing board may budget for energy-saving devices. The Legislature amended A.R.S. §15-910 again, to provide that the cost of energy-saving services may also be budgeted, effective during fiscal year 1992-93. Effective April 24, 1994, Laws 1994, Chapter 254, §2 governs these budgeting practices.

The amounts budgeted for energy-saving devices and services under A.R.S. §15-910 increased a district's general budget limit and were termed "add-ons." An increase in the general budget limit provides a district with additional expenditure authority, which could increase the district's tax levy. For fiscal year 1993-94, A.R.S. §15-910 provided that a district may increase its general budget limit for the cost of energy-saving devices and services by the lesser of two amounts, either project savings or cost. The add-ons for energy-saving devices and services represented only 2 of the 19 possible add-ons available to districts for fiscal year 1993-94. See Figure 1, page 2, for district budgeting practices.

Typical energy-saving devices and services purchased by districts include the following.

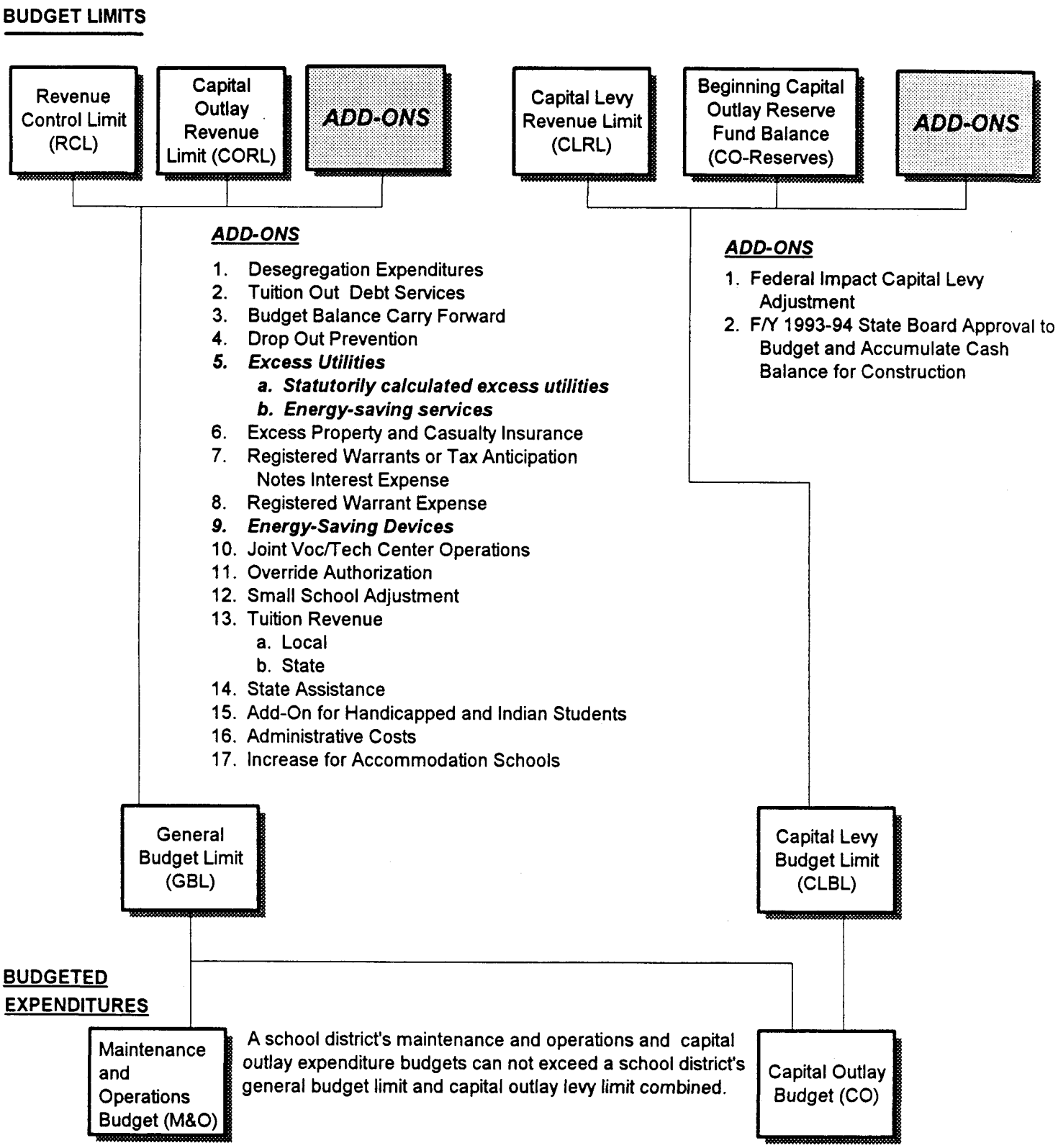
- High-efficiency heating, ventilation, and air conditioning units (HVAC)
- Energy-efficient heating systems
- Lighting system retrofits
- Energy management systems (EMS)
- Detection sensors for lighting and temperature controls
- Light fixtures cleaning and relamps
- Replacement and lowering of ceilings
- Maintenance and service contracts for equipment
- Monitoring services
- Energy audits

Increasing Purchases of Energy-Saving Devices and Services

From fiscal years 1991-92 through 1993-94, the number of districts that budgeted for energy-saving devices increased from 2 to 17. After final budget revisions for fiscal year 1993-94, the total amount budgeted for energy-saving devices in these 17 districts totaled $1,424,153 (see Figure 2, page 3), with total project costs of approximately $19 million.

FIGURE 1

SCHOOL DISTRICT BUDGETING



SOURCE: Office of the Auditor General

While there were only 17 districts that actually budgeted for energy-saving devices using the provisions of A.R.S. §15-910, there were an additional 12 districts that entered into contracts, had contracts in progress, or had completed projects for energy-saving devices and services during fiscal year 1993-94, with total project costs of approximately $11 million. The districts not utilizing this statutory provision were funding the projects through bond proceeds, capital outlay, maintenance and operation funds, or a combination of these methods.

The 17 districts that budgeted for energy-saving devices in fiscal year 1993-94 awarded the contracts to 7 different contractors, with 3 contractors receiving 95 percent of the total contract dollars. Also, 3 districts performed projects with in-house resources. Of the districts that used outside contractors, 7 districts used the request for proposal (RFP) process, 6 districts used a regional purchasing cooperative, and 1 district used competitive sealed bidding procedures. See Finding III, page 15, for a description of the different procurement methods.

Scope and Methodology

The purpose of our study was directed as follows by Laws 1994, Chapter 254.

- Select a sample of districts that have budgeted for the costs of energy-saving devices under the provisions of A.R.S. §15-910.
- Determine whether energy-saving devices or services budgeted for by districts resulted in documented reductions in utility expenditures.
- Review district budgeting practices for energy-saving devices and services.
- Make any related recommendations.

Subsequent to passage of the legislation, the Joint Legislative Audit Committee directed the Auditor General's Office to select three districts for detailed analysis. The three districts were selected because they had budgeted for energy-saving devices in fiscal year 1993-94 under the provisions of A.R.S. §15-910 and had projects that were operational for at least six months. Also, the districts had projects that varied in scope and expense and represented diverse geographic areas and climates around the state. Further, each district used a different contractor. The following summarizes the average daily membership (ADM), project description, and project cost for each district selected along with an identification of the county where the district resides.

District	County	Fiscal Year 1993-94 ADM	Project Description	Project Cost
A	Maricopa	9,943	New HVAC's, EMS, and service contract	$4,423,560
B	Gila	2,008	New heating and cooling systems, retrofit lighting, EMS, clean and replace lamps, and service contract	523,098
C	Yavapai	169	Change from electric to evaporative coolers and radiant gas heaters, and retrofit lighting	213,332

We identified problems related to the procurement of energy-saving devices and services during the course of our study and, therefore, we included corresponding recommendations in the report. The report also presents other pertinent information as follows.

- Increased public use of facilities
- Lack of budgetary relief for new construction
- District financing of energy-saving devices with long-term lease agreements

To analyze whether projects had a reduction in utility expenditures, we collected information on types and costs of devices and services acquired and the dates the projects were completed and operational. We then compared pre- and post-project utility billings to determine the realized savings. To analyze budgeting practices, we interviewed district personnel and reviewed budget documentation. In addition, from all the districts that budgeted for energy-saving devices during fiscal years 1991-92 through 1993-94, we collected the following information by phone surveys with district personnel.

- Types and costs of devices and services acquired
- Associated contractors
- Scope of the projects
- Dates that the projects were completed and operational
- Parties responsible for the calculation of cost savings and budget amounts
- Parties responsible for monitoring
- Sources of project funding
- Methods of acquisition (i.e., lump sum purchase or long-term lease agreement)
- Bid processes used

FINDING I

DISTRICTS MOST LIKELY DID NOT REALIZE BUDGETED SAVINGS

A.R.S. §15-910 permitted districts to budget as add-ons the lesser of cost or savings ("reduction in utility expenditures" - RUE) associated with the purchase of energy-saving devices and services. Districts that budgeted under these provisions most likely did not realize budgeted savings. This was primarily due to the districts' reliance on contractors' aggressive savings projections when budgeting RUE. For the purposes of our analysis, we defined RUE to mean the reduction in actual utility usage from periods prior to the installation of energy-saving devices and services. Further, we noted that smaller projects appeared to have as much an impact on RUE as larger, more expensive projects.

RUE Did Not Meet or Exceed Budgeted Amounts

We analyzed RUE by examining utility bills (electric and gas) by meter for the three districts tested for the last five fiscal years (for a full discussion of the methodology, see Appendix). In Figure 3, page 7, we report the results of our comparison for the three districts. Figure 3 reveals that only one district achieved any notable reduction (District C) while the other two districts achieved only modest savings. Although District C experienced an increase in gas usage, this was more than offset by a reduction in electricity usage that resulted in a RUE of approximately $27,000.

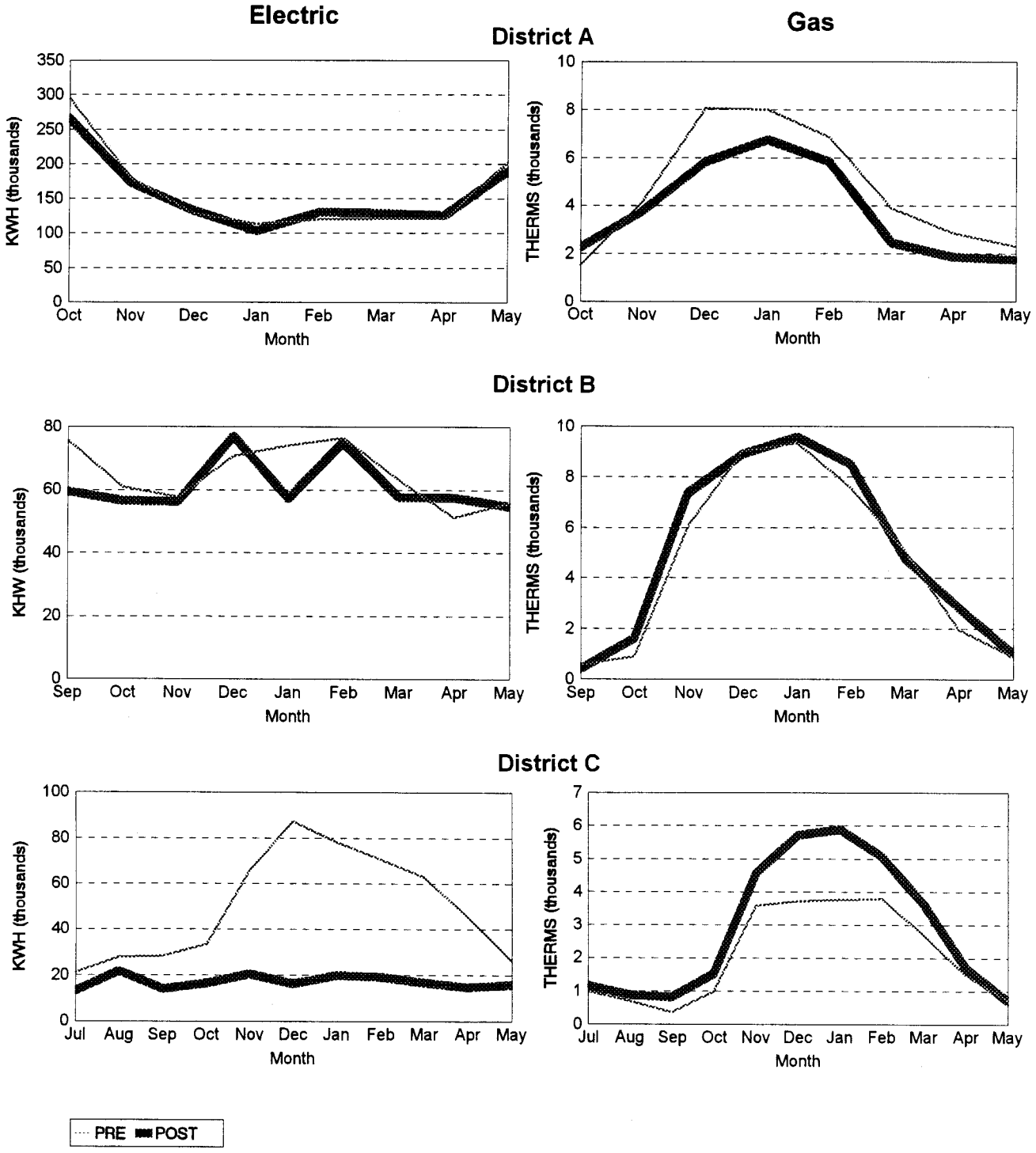
Moreover, as demonstrated by Table 1, page 8, we found the modest savings achieved will not meet or exceed the amount of budgeted RUE for the projects as was required by A.R.S.§15-910. Based on Auditor General analysis and calculations, District A and District B will experience significant budget shortfalls. Only District C is likely to achieve sufficient RUE to match its budgeted amount. Overall, District A and District B will likely realize only 12 and 22 percent, respectively, of budgeted savings. Consequently, these districts are not meeting the statutory requirement that RUE meet the budgeted savings.

Districts Relied on Contractors' Aggressive Projections

Our study showed that districts frequently rely entirely on contractor projections of savings for budgeting. Contractor projections of savings are often based on hypothetical baselines and other questionable practices. Because these projected savings are not associated with actual reductions in utility usage, districts are unable to achieve budgeted savings.

Figure 3

Three-District Comparison of Pre-Project Energy Usage with Post-Project Energy Usage



Source: Auditor General analysis and District utility bills.

Table 1
Shortfall of District Budgeted Reductions in Utility Expenditures
Fiscal Year 1993-94
(Unaudited)

District	Total Annual Project Cost[a] ($)	Contractor-Projected RUE ($)	District-Budgeted RUE ($)	Auditor General Range of RUE[b] ($)			Shortfall Between Auditor General RUE and District-Budgeted RUE ($)		
District A									
5 School Total[c]	160,652	100,337	100,337	9,805	to	18,232	-82,105	to	-90,532
District Total[d]	421,872	245,452	263,483	35,460	to	65,466	-198,017	to	-228,023
District B	56,810	52,508	48,000	1,242	to	3,366	-44,634	to	-46,758
District C	35,555	47,750	37,000	29,778	to	48,552	-7,222	to	11,552

Source: Total Annual Project Cost and Contractor-Projected RUE - Contractor proposals, lease agreements, and Auditor General analysis;
District-Budgeted RUE - District expenditure budgets and Auditor General analysis;
Auditor General Range of RUE - District utility bills and Auditor General analysis.

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a. Total Annual Project Cost includes the annual lease payment, principal and interest, and service contract costs.

b. Auditor General Range of RUE is presented in a range because the price per unit varies with usage. See Appendix for further explanation of range amounts.

c. Amounts for Total Annual Project Cost, Contractor-Projected RUE, and District-Budgeted RUE were projected based on the total number and size of HVAC units installed at these schools. See Appendix for further detail on these projections.

d. Auditor General Range of RUE was projected to all the District's schools based on actual data gathered at the five schools. See Appendix for further detail of projection amounts.

Contractors often use hypothetical baselines - We found that contractors often develop baselines from hypothetical situations, especially when a district is replacing one type of system with another. For example, one district that replaced evaporative coolers with high-efficiency heating, ventilation, and air conditioning units (HVAC) budgeted $246,000 during fiscal year 1993-94 for RUE. The district had relied on the contractor's projection of savings when budgeting this amount. The contractor's baseline used for determining the projection was calculated by assuming that the district had 15-year-old air conditioning units which ran 24 hours per day. When we asked the business manager how upgrading from evaporative coolers to air conditioning would actually reduce the district's utility bills, he responded, "the lights and water," indicating that the retrofitted lights and reduced water usage would offset the cost of the upgrades. No real savings resulted from this change, although the district showed energy savings of $246,000.

Other questionable practices - In addition to the hypothetical baselines described above, contractors use a variety of methods to project savings. Other practices noted in our study included the following.

- Projecting an entire year's worth of savings from one month of data
- Developing a baseline founded on budgeted amounts instead of actual expenditures from a prior year or prior years

RUE should be associated with actual utility usage - In order to achieve a consistent and meaningful measurement of savings, the phrase in Laws 1994, Chapter 254, §2, "reduction in utility expenditures," should be restricted to make RUE dependent on actual utility usage reductions, rather than the methods currently used to project savings. Further, districts should independently calculate RUE using their own baselines from at least one full year's utility bills, and not rely solely on the contractor's projections. In cases where there are no comparable prior-year utility bills, or in an upgrade from evaporative coolers to HVAC, the district should estimate savings as the difference between a more efficient HVAC to a less efficient HVAC using comparable run times. In addition, districts should independently track and monitor RUE from monthly utility bills.

Project Size, Scope, or Expense Had Little Impact on RUE

The size, scope, or expense of a project did not appear to be a factor in the amount of RUE achieved by the districts. On the other hand, designing projects based on straightforward energy-conservation principles can result in significant energy savings.

Size, scope, or expense of a project is not a factor in the amount of RUE - We analyzed RUE on a project basis for the three districts tested plus an additional three districts. We found that districts that made extensive changes and purchased expensive new devices did not realize more savings than districts where only minor, less expensive changes were made. Figure 4, page 11 compares average monthly pre-installation kilowatt-hour (KWH) usage with actual post-installation KWH usage, project by project. Projects that fell above the 45-degree line demonstrated decreased KWH usage, while projects below the 45-degree line showed increased KWH usage. Projects that are exactly on the 45-degree line had no change in KWH usage.

Most projects fall within a relatively narrow margin of gain or loss (approximately 20,000 KWH above the 45-degree line and 20,000 KWH below the 45-degree line). Whether the district was at the low end of the scale in terms of total KWH consumed or the high end, the savings margin remains relatively constant. Consumers of large amounts of KWH should not expect to achieve greater savings than consumers using less might achieve, as shown in Figure 4. Districts considering large-scale projects should question the overall benefit of investing large sums of money when less expensive actions may save just as much energy.

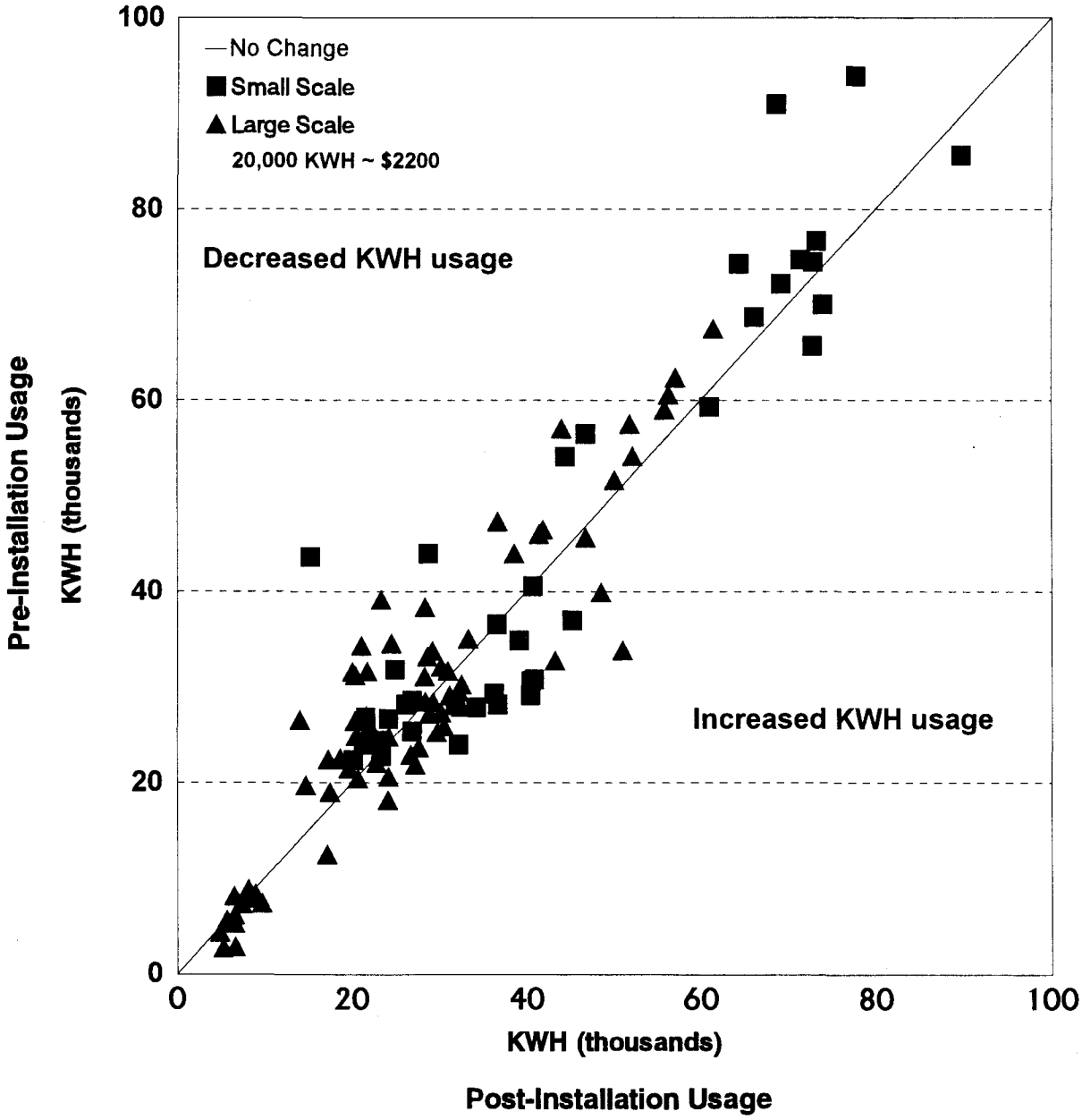
Straightforward energy-saving techniques - Energy savings were achieved by districts when projects were based on sound judgment and common sense. Some of the best examples of energy savings we found are enumerated as follows.

- Restricting air conditioning run time
- Restricting temperature to a limited range
- Changing from electric heat to gas
- Retrofitting with energy-efficient lights
- Installing run time and thermostat controllers
- Installing lighting control sensors
- Consolidating summer classes into one building
- Maintaining equipment in good condition
- Training employees in energy-saving practices

Consider a full range of options - Districts should consider a full range of energy-saving options such as those described above, prior to selecting large, expensive projects that may not necessarily produce greater savings.

Figure 4

Comparison of Large-Scale and Small-Scale Utility Expenditure Reduction Projects



Source: Auditor General analysis and District utility bills.

Recommendations

1. The Legislature should consider revising Laws 1994, Chapter 254, §2 to better define "reduction in utility expenditures" (RUE). In particular, the definition of RUE should be associated with actual utility usage reductions, rather than projected savings.

2. Districts should independently calculate RUE using their own baselines from at least one full year's utility bills, and not rely solely on the contractor's projections. In cases where there are no comparable prior-year utility bills, or in an upgrade from evaporative coolers to high-efficiency heating, ventilation, and air conditioning units (HVAC), the district should estimate savings as the difference between a more efficient HVAC to a less efficient HVAC using comparable run times. In addition, districts should independently track and monitor RUE from monthly utility bills.

3. Districts should consider a full range of energy-saving options prior to selecting a large, expensive project.

FINDING II

DISTRICT BUDGETING PRACTICES OVERSTATE GENERAL BUDGET LIMITS

For the districts we tested, budgeted amounts for energy-saving devices and services add-ons were calculated incorrectly and were not always supported by detailed schedules and worksheets. Although it did not appear that these errors were intentional, they resulted in overstatements of the add-ons and corresponding overstatements in the general budget limits, which could ultimately increase the districts' tax levies. For an overview of district budgeting practices, see Figure 1, page 2.

Amounts Budgeted for Add-ons Were Incorrectly Calculated and Were Not Always Supported

For the districts tested, we found the following problems in the calculation of amounts budgeted for energy-saving devices and services add-ons:

- Budgeted savings attributable to energy-saving devices and services were not prorated, when appropriate;
- Budgeted savings for energy-saving devices and services were not adequately supported by detailed schedules and worksheets; and
- Budgeted savings for energy-saving devices and services were budgeted twice.

Savings not prorated - For two of the districts, we found that their energy-saving projects became operational two to three months into the fiscal year. However, budgeted savings for the energy-saving devices add-on were not prorated, but instead represented an entire year's worth of anticipated savings. By not prorating annualized savings, these districts overstated their energy-saving devices add-ons by $66,000 and $8,000. Districts should prorate annual savings when appropriate.

Budgeted add-ons not supported and savings budgeted twice - For one district, the amount of budgeted savings for the energy-saving devices add-on was not supported by detailed schedules and worksheets. The amount was based upon a preliminary project proposal, which was $18,000 higher than the final proposal and resulted in an overstatement of this add-on by that amount. Also, this district budgeted the savings twice for the same project by budgeting savings attributable to energy-saving devices again for the energy-saving services add-on. This resulted in an overstatement of the energy-saving services add-on of $263,000. A.R.S. §15-910 required that savings attributable to energy-saving devices and energy-saving services be budgeted for separately under each respective add-on. Districts must maintain adequate documentation to support budgeted amounts, including detailed schedules and worksheets.

Recommendation

Districts utilizing the budgeting provisions of Laws 1994, Chapter 254, §2 must attain a thorough understanding of the law's requirements and exercise due care when calculating the budget add-ons for energy-saving devices and services, including:

a. Prorating annualized savings amounts, when applicable;

b. Maintaining adequate documentation to support budgeted amounts, including detailed schedules and worksheets; and

c. Budgeting savings from energy-saving devices and savings from energy-saving services separately for each add-on.

FINDING III

CONTRACTOR PRACTICES AND LACK OF DISTRICT OVERSIGHT UNDERMINE EFFECTIVENESS OF PROCUREMENT PROCESS

Districts acquire energy-saving devices and services using various procurement methods. Procurement decisions for purchasing energy-saving devices and services are heavily influenced by contractors' marketing strategies, such as contractors' representations that projects pay for themselves. Contractors also market the energy-saving devices and services as a single "bundle," thus precluding an itemized accounting of the cost and the related energy savings. Furthermore, contractors recommend excessive service contracts, adding to the project's cost. By retaining appropriate oversight of the project, districts can make the procurement of energy-saving devices and services more effective and efficient.

Districts Acquire Energy-Saving Devices and Services Using Various Procurement Methods

We found that districts used three methods to acquire energy-saving devices and services: competitive sealed bids, competitive sealed proposals (usually referred to as request for proposals - RFP), and a regional purchasing cooperative. The following descriptions summarize the three procurement methods.

- A competitive sealed bid must be used for all construction projects and for goods and services exceeding $10,000. Competitive sealed bids must contain detailed purchase descriptions, specifications, delivery and performance schedules, and inspection and performance requirements. The contract must be awarded to the lowest responsible and responsive bidder.

- A RFP is used when competitive sealed bidding is not practical or advantageous to the district, except it may not be used for construction. A RFP requests project proposals based upon a general description of the goods and services required and the work involved. A RFP bid evaluation is based upon price and other evaluation factors contained in the proposal.

- When using a regional purchasing cooperative, districts select a vendor from the approved cooperative vendor listing. The vendor listing is comprised of contractors who have responded to a RFP issued by the cooperative. RFPs and competitive sealed bids for specific projects are not obtained by the district.

Most districts that acquired energy-saving devices or services interpreted the procurement code to mean that they were not required to use competitive sealed bids. Generally, they used a regional purchasing cooperative or RFP process. Laws 1994, Chapter 254, §2 requires that districts budgeting for energy-saving devices use competitive sealed bids in the procurement process. However, there is still some question as to whether districts that do not utilize the provisions of Laws 1994, Chapter 254, §2 may continue to use a regional purchasing cooperative or RFP instead of competitive sealed bids.

Contractors Represent That Projects Will Pay for Themselves

Contractors profess the energy-saving projects will pay for themselves through energy savings and other paper savings. Districts evaluate proposals based on the total cost of the project less the contractor-developed savings. As contractor-projected energy savings may not be realistic and paper savings may never be realized, districts may not be accepting proposals with the actual lowest cost.

Contractor-projected energy savings and "paper" savings - As discussed in Finding I, page 9, we found that contractors projected energy savings using hypothetical baselines. Also, contractors adjusted baselines to represent that districts will achieve even greater savings with greater use. However, this assumption does not consider that any potential savings will be offset by increased utility usage.

Paper savings include bond interest avoidance, reduced maintenance cost and replacement parts, and personnel reductions. For example, paper savings created by personnel reductions may be nullified by new service contracts and new employees hired to manage the energy management system (EMS). In addition, districts are hesitant to utilize the installation of a new EMS as a reason to downsize the district staff or terminate employees, since these employees often perform a variety of tasks other than maintenance of operating equipment.

Paper savings are usually presented in contractor proposals and marketed as a benefit in addition to energy savings. During our study, we noted that the paper savings were correctly excluded from the amounts budgeted for energy-saving devices and services add-ons.

Bid proposal evaluation - When evaluating proposals, districts consider the total project cost less projected energy and paper savings. However, the cost of the project calculated in this manner may be unrealistic, as energy savings developed from hypothetical baselines and paper savings projections artificially reduce such costs. These unrealistically low "net" costs make it difficult, if not impossible, for the districts to accurately evaluate the project proposals.

"Bundling" Limits Districts' Abilities to Determine Cost or Savings

Currently, most contractors provide a single project estimate that does not itemize cost or savings. This practice of "bundling" precludes districts from selecting the changes that will have the greatest impact on savings and from knowing if they are paying excessive amounts for individual items or making unnecessary purchases. Also, some contractors will not guarantee savings unless the entire bundle is purchased.

Itemized cost and savings components - Procurement through a competitive sealed bid process should limit the practice of bundling and force contractors to itemize key components to the EMS. However, the competitive sealed bid process can only be effective if districts request itemized cost estimates by component and by school, as well as itemized estimates of the impact each component will have on savings at each school. The RFP process could be just as effective as competitive sealed bidding if districts were required to develop detailed bid specifications and to request itemized cost and savings estimates.

Guaranteed savings - Some contractors will not guarantee their projected savings unless the entire bundle is purchased intact. However, we found that guarantees matter little in determining savings and that ultimately the district ends up realizing no more savings than non-guaranteed districts. Moreover, guarantees do not protect the districts if they choose to override the EMS, increase run time, utilize schools in summer, add portable classrooms, etc.

Service Contracts Costly, Unjustified

Contractors promote service contracts as a method of protecting a district's investment in energy-saving devices. However, contractors do not itemize the cost of potential repairs nor do they identify service needs for the energy-saving devices. Consequently, districts should identify and specify service needs separately.

Contractors often promote the need for a service contract - Service contracts are promoted under the premise of "protecting" the district's initial investment. In some instances, contractors will not guarantee savings without a service contract. We found that districts routinely sign service contracts that vary from relatively minor oversight of equipment to full-time, on-site supervision. For one project we examined, the service contract accounted for approximately 55 percent of the project's total cost.

Service requirements not itemized - In the three districts we analyzed, no contractor itemized the cost of potential repairs nor did they itemize service needs (maintenance and repairs). For example, contractors did not offer districts information on how many times the equipment would be likely to fail each year, what the most likely repairs would be, or what equipment would be covered under the manufacturer's warranty. In addition, even though most equipment is covered under manufacturers' warranties for one to five years and the cost of defective parts is fully refundable, this information is not routinely offered to districts when they are making a service agreement purchase decision. In one case, the manufacturer fully refunded the replacement and paid $10 to the contractor for the replacement of the defective part. Districts not purchasing service contracts accept some risk should the equipment fail. However, absorbing the costs of equipment failure may be less expensive than paying for the service contracts, especially considering manufacturers' warranties.

Districts should identify and specify service needs - When districts are provided with accurate, comprehensive information on equipment failures, warranties, etc., they can make informed choices regarding service contracts, which can provide useful insurance against breakdowns. Districts should also consider a full range of service contracts, including ones where they accept more risk for equipment failure. Further, districts should identify specific service needs and bid the service contract component separately from the rest of the project.

Greater Oversight of Projects Needed

District accountability, project ownership, and governing board involvement in the decision-making process may be more important than a contractor's projected savings, a service contract, or a "guarantee." When a district is willing to invest the time, energy, and financial resources necessary to achieve energy savings, positive results are more likely. Most districts abdicate their responsibility for management oversight to the contractor. However, we found one district that retained its oversight responsibilities. This district hired an independent engineering firm; developed their own specifications for the project; bid the specifications through competitive sealed bidding; requested cost and savings impact information on each component of the project; developed detailed service contract specifications; and bid the service contract separately from the EMS. As a result, the district not only obtained the best price, but set a standard for contractor performance.

Recommendations

Districts should consider the following whether they use the competitive sealed bid process or RFP.

1. Request unbundled component cost and savings estimates by component and by school from contractors.

2. Request detailed information on manufacturers' warranties and equipment failures and cost-of-service details.

3. Consider a full range of service contracts when implementing energy-saving devices and evaluate the relative risk versus cost.

4. Bid service contracts separately from the other project components, when applicable.

5. Develop service specifications independent of the contractor and monitor the contractor's service of the equipment, when applicable.

6. Maintain project ownership and accountability, with or without a contractor's guarantee.

OTHER PERTINENT INFORMATION

During our study, we obtained other pertinent information relating to energy-saving devices and services.

Increased Public Use of Facilities

We noted that districts expected an increase in the use of school facilities by the public. This is primarily due to upgrading the usability of the school facilities. As a result, districts should ensure that the amount charged to the public for such use is sufficient to recover utility costs.

Lack of Budgetary Relief for New Construction

We identified instances where districts were planning to upgrade the efficiency of the heating, ventilation, and air conditioning (HVAC) systems for schools that were only two or three years old. Since Laws 1994, Chapter 254, §2 does not apply to new construction, districts have little incentive to install energy-saving equipment when a facility is first constructed. Thus, not allowing budgetary relief for installing energy-saving devices during new construction may be conducive to waste. The Legislature should consider expanding the provisions of Laws 1994, Chapter 254, §2 to include new construction. Although this budgetary relief could increase the cost of new construction, it would ultimately result in more savings than a subsequent upgrade of equipment after the facility is constructed.

District Financing of Energy-Saving Devices with Long-Term Lease Agreements

We found that all of the districts tested were financing the cost of energy-saving devices through long-term lease agreements. The lease terms ranged from five to ten years. A.R.S. §15-910 provided that a district may budget the lesser of two amounts for the energy-saving devices add-on, cost or savings. One district used the total cost of the devices in the calculation of the add-on and the other two districts used the amount of the annual lease payment, including principal and interest. This resulted in an inconsistent calculation of the energy-saving devices add-on among these districts. Consequently, the Legislature should consider clarifying the phrase "cost of energy-saving devices" to be the districts' annual cost of energy-saving devices, which could include the principal and interest components of the annual lease payments.

APPENDIX

METHODOLOGY

The Joint Legislative Audit Committee requested that we select three school districts (districts) that had budgeted for the cost of energy-saving devices for detailed analysis. Our population consisted of the 20 districts that had budgeted for the cost of energy-saving devices in any one of the fiscal years from 1991-92 through 1993-94. The three districts we selected represent diverse geographic areas and climates around the state. They include a variety of contractors and reflect projects that were small in scope and relatively inexpensive, as well as projects that were large in scope and expensive to complete. The districts we chose had operational projects a minimum of six months by June 1994 and the average was nine months.

For the three districts, we collected monthly utility bills from fiscal year 1989-90 through May 1994, except for one district, where data were only available back to fiscal year 1990-91. At the time of the audit, utility bills were only available through May 1994. One district selected, District A, had 18 schools that had undergone energy-saving renovations; we selected 5 schools in the district for detailed analysis.

In order to assess reduction in utility expenditures (RUE), we first determined the project completion date for each district. We then compared the utility bills from the period before the project was completed to utility bills after its completion. For consistency, we compared only equivalent months so that we were not comparing summer to winter. For example, if a district installed devices by November 1, 1993, we compared the period after the project was completed (November 1993 to May 1994) with the period before the devices were installed (November 1989 to May 1990; November 1990 to May 1991; November 1991 to May 1992; November 1992 to May 1993). We relied on kilowatt-hours (KWH) and therms instead of monthly cost to control for rate variations among the districts and utility rate changes over time.

The data reported in Figure 3, page 7 represent a four-year average of the KWH and therms used in the period prior to project completion as compared with the single year of KWH and therm data after project completion. The averaging of the utility bills controls for weather variations and utility rate changes that have occurred over the period.

To develop the Auditor General Range of RUE presented in Table 1, page 8, we estimated RUE separately for electric and gas in each district by multiplying the KWH (therms) by a range of electric (gas) rates. The range of rates was developed by analyzing the past five years of rate data. For electric, the range extended from 8 to 15 cents per KWH. For gas, the range extended from 55 to 90 cents per therm. Instead of reporting an average RUE, we present a range to give the reader a sense of the high and low ends of potential savings.

Because the budgeted amounts for a project change over the life of the lease, we present only the first-year cost figures in Table 1, page 8. Auditor General Range of RUE are annualized estimates derived for each district by estimating savings school by school from existing data. In most cases, we were missing only two or three months of data. Most missing data were for June, July, or August, months when school is either not in session at all or is in session for only part of the month. To calculate Auditor General Range of RUE we estimated KWH by calculating the percentage change from an average of the four prior years' usage to the current year's usage, month by month. For those months with missing data, such as July, we calculated the amount by averaging the prior four years' KWH and therm usage to create the data.

For District A, Total Annual Project Cost, Contractor-Projected RUE, and District-Budgeted RUE were only available for the district in total. In order to develop the five school estimates for these amounts, we first determined the heating, ventilation, and air conditioning (HVAC) tonnage for each of the 18 schools. We then allocated cost based on total tonnage. Since tonnage is not the total cost of the project, we then distributed the remainder of the cost evenly over all the schools in the district. We added HVAC tonnage-related cost plus the five-school portion of the remaining cost to determine the Total Annual Project Cost for the five schools selected. Auditor General Range of RUE was projected to the district based on the average savings of the five schools.

The Shortfall Between Auditor General Range of RUE and District-Budgeted RUE was obtained by subtracting District-Budgeted RUE from Auditor General Range of RUE.