



Salamanca City School District Energy Reduction

Report of Examination

Period Covered:

July 1, 2004 — October 21, 2011

2011M-259



Thomas P. DiNapoli

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State of New York Office of the State Comptroller

Division of Local Government and School Accountability

February 2012

Dear School District Officials:

A top priority of the Office of the State Comptroller is to help school district officials manage their districts efficiently and effectively and, by so doing, provide accountability for tax dollars spent to support district operations. The Comptroller oversees the fiscal affairs of districts statewide, as well as districts' compliance with relevant statutes and observance of good business practices. This fiscal oversight is accomplished, in part, through our audits, which identify opportunities for improving district operations and Board of Education governance. Audits also can identify strategies to reduce district costs and to strengthen controls intended to safeguard district assets.

Following is a report of our audit of the Salamanca City School District, entitled Energy Reduction. This audit was conducted pursuant to Article V, Section 1 of the State Constitution and the State Comptroller's authority as set forth in Article 3 of the General Municipal Law.

This audit's results and recommendations are resources for district officials to use in effectively managing operations and in meeting the expectations of their constituents. If you have questions about this report, please feel free to contact the local regional office for your county, as listed at the end of this report.

Respectfully submitted,

*Office of the State Comptroller
Division of Local Government
and School Accountability*

Introduction

Background

The Salamanca City School District (District) is located in the City of Salamanca and the Towns of Carrollton, Great Valley, Little Valley, Napoli and Salamanca, all of which are in Cattaraugus County. The District is governed by the Board of Education (Board) which comprises seven elected members. The Board is responsible for the general management and control of the District's financial and educational affairs. The Superintendent of Schools is the chief executive officer of the District and is responsible, along with other administrative staff, for the day-to-day management of the District under the direction of the Board.

There are four schools in operation within the District, with approximately 1,400 students and 350 employees. The District's budgeted expenditures for the 2011-12 fiscal year are approximately \$25 million, funded primarily with State aid, real property taxes and grants.

In 2004 District officials began planning for a \$60 million capital improvement project to improve the District's educational environment and reduce energy costs. The project was completed during 2009.

Objective

The objective of our audit was to determine if recently completed capital projects for the middle school/high school complex included steps to reduce overall energy consumption, and if energy consumption was indeed reduced. To accomplish this objective our audit addressed the following related question:

- Did capital project plans for the middle school/high school complex include specific initiatives intended to reduce energy consumption and did they reduce energy use?

Scope and Methodology

We examined specific upgrades included in the capital project directly related to energy use reduction and analyzed electric and natural gas consumption for the middle school/high school complex for the periods July 2004 through June 2006 (pre-project) and July 2009 through June 2011 (post-project). We also interviewed local officials to gain a better understanding of decisions made relative to the project.

We conducted our audit in accordance with generally accepted government auditing standards (GAGAS). More information on such standards and the methodology used in performing this audit is included in Appendix B of this report.

**Comments of District
Officials**

The results of our audit have been discussed with District officials and their comments, which appear in Appendix A, have been considered in preparing this report. District officials generally agreed with our findings.

Energy Reduction

Districts often invest considerable time and financial resources improving their educational facilities through capital projects. Although the District is primarily responsible for planning capital projects, it must submit construction specifications for the erection, repair, enlargement, or remodeling of its facilities to the New York State Education Department (SED) for approval, prior to construction. The SED, along with District officials, is responsible for ensuring that projects are planned in accordance with school building construction standards to ensure a healthy, comfortable, and safe environment for students attending public schools. Among the general construction provisions, according to the Manual of Planning Standards for School Buildings, is that “schools should serve as role models for environmentally responsible behavior” and that “school buildings, when designed or renovated, shall use design principles and construction materials which further the goals of conserving energy.”

Our audit revealed that District officials did plan for and include specific items targeted at reducing energy consumption in the project. This effort resulted in net annual savings of approximately \$17,000 per year at the middle school/high school complex. The project also included the addition of 34,900 square feet to the middle school/high school complex. This additional space, in effect, reduced the savings from approximately \$42,000 annually that would have been realized had existing district facilities not been expanded. The District was able to further save local taxpayers money with State building aid funding of \$5.7 million to offset the energy upgrade cost.

Geothermal HVAC System — District officials researched several options when planning for the capital project, each of which included energy saving initiatives such as upgrades to heating, ventilation, and air conditioning (HVAC) systems, window and blind replacements, lighting upgrades, room occupancy sensors, and upgrades to the pool area. District officials reviewed three different options when deciding on the HVAC system. The first was a geothermal system relying on ground temperature and supplemental electricity to heat and cool facilities with an estimated cost of approximately \$4.5 million. A second option was a hot water heating system that relied on a mix of natural gas and electric heat pumps with an estimated cost of approximately \$4 million. The third option was a replacement/upgrade of the District’s existing steam system with an estimated cost of approximately \$3 million.

The installation of a geothermal HVAC system was expected to be a major contributor to overall energy savings and, according to District officials, would be the most cost efficient to operate of the three options.¹ After considering recommendations from architects and engineers, the District’s planning committee, which was established by the Board to review project needs, recommended the geothermal HVAC system to replace the District’s existing conventional steam boiler system.

Other Energy Reducing Projects — It can be difficult, in many cases, to precisely compute cost savings or energy consumption reductions that result from particular components of a project when multiple energy savings initiatives are implemented within the same time period, as was the case for the District’s capital improvement project. However, we concur with the District that each of its components played a role in reducing the amount of energy consumed by the District, to offset expected rising utility rates. While reviewing capital project construction plans, we noted several other initiatives that were incorporated into project plans with the primary focus of reducing energy use:

- Replacing all existing windows in the high school with aluminum insulated units
- Replacing all existing window blinds in the high school with two inch horizontal blinds
- Installation of a more efficient, roof-mounted pool dehumidification air handling unit
- Replacing all remaining less efficient T-12 lighting fixtures in the high school with T-8 models
- Replacing standard exit signs in the middle and high school buildings with more efficient Light Emitting Diode (LED) models
- Replacing standard light switches in offices and classrooms with motion activated sensor models.

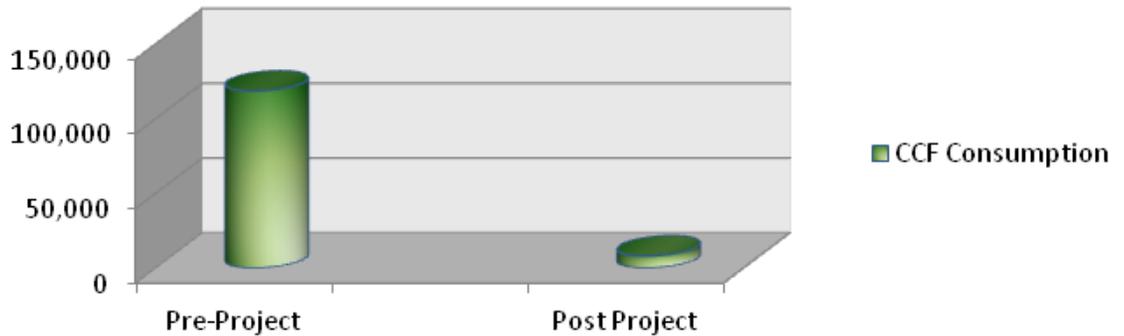
The overall project, with a budget of approximately \$60 million, included approximately \$6 million in energy saving initiatives.

Energy Use Reduction — To determine if the District’s initiatives toward energy use reductions were accomplished, we analyzed and reviewed natural gas and electricity consumption before and after the

¹ According to District officials, their engineers estimated the average yearly savings from the geothermal system to be approximately \$65,000.

capital project. As the chart below illustrates, initiatives to reduce natural gas consumption resulted in a substantial decrease in the use of this commodity.

Chart 1: Average Annual District Natural Gas Consumption



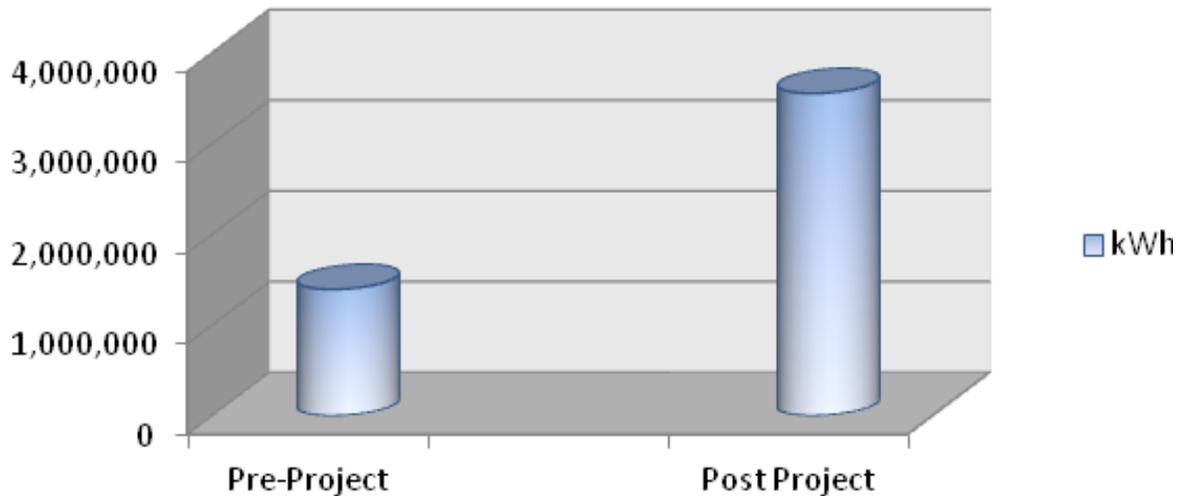
Prior to the project, the District consumed approximately 118,000 CCFs² per year at an annual average cost of approximately \$140,000. After the completion of the upgrades, the District consumed an annual average of 8,000 CCFs, a reduction of approximately 110,000 CCFs resulting in an annual savings of approximately \$99,000.³

Although the new system substantially reduced the amount of natural gas consumed by the District, it also, as illustrated by the chart below, resulted in significant increases in electricity consumption.

² Centum cubic feet (ccf) equals 100 cubic feet of natural gas

³ Current average price of \$.90 per CCF was used for this comparison

Chart 2: Average Annual District Electricity Consumption



Prior to the project, the District consumed approximately 1.4 million kilowatt hours (kWh) per year of electricity at an annual average cost of approximately \$53,000. After the completion of the upgrades, the District consumed an annual average of 3.6 million kWh. This increase of approximately 2.2 million kWh resulted in an annual cost increase of approximately \$82,000.⁴

According to the former Superintendent of Buildings and Grounds,⁵ with the installation of the new geothermal system, the addition of 34,900 square feet of facility space, and the ability to now provide air conditioning campus wide,⁶ the increase in electricity usage was expected. He further explained that the additional cost⁷ of electricity was expected to be less than the amount saved from reduced natural gas consumption.

The average yearly combined cost of electricity and gas was reduced by approximately \$17,000. In addition, since the project increased the building size by 34,900 square feet, if we reduce the post project cost of energy consumption by the average cost of energy consumption

⁴ Current average price of \$.038 per kWh was used for this comparison

⁵ This individual served as the Clerk of the Works for the project and was responsible for overseeing construction.

⁶ Prior to the installation of the geothermal system, air conditioning was only available in office spaces.

⁷ Primarily a result of the District receiving its low-cost power from the City of Salamanca, which operates a utility, with electricity purchased from the New York Power Authority (NYPA)

for the addition,⁸ savings based on pre-project square footage totals approximately \$42,000 per year.

State Aid — Further enhancing the District’s achieved annual savings was State building aid for the project. The SED provides local school districts with substantial financial assistance for the construction and improvements to school facilities. As the table below illustrates, a substantial amount of the estimated costs for energy reduction upgrades will be funded by building aid:

Improvement	Estimated Cost	Approximate State Aid	Net Cost to Local Taxpayers
HVAC	\$4,735,000	\$4,569,275	\$165,725
Window Upgrades	\$996,000	\$961,140	\$34,860
Electrical Upgrades	\$210,000	\$202,650	\$7,350
TOTAL	\$5,941,000	\$5,733,065	\$207,935

Only approximately \$208,000 of the \$5.9 million in energy upgrades will be directly borne by local taxpayers. Given the approximate \$17,000 per year in savings resulting from decreased energy consumption, we estimate that the District’s portion of energy upgrade costs will pay for themselves in approximately 12 years, well below the expected useful life of many of these upgrades, allowing continued savings to further reduce other project costs for District taxpayers.

We applaud the District for both the large and small initiatives it has undertaken to help reduce energy costs.

⁸ Average square foot energy consumption cost of \$0.72 multiplied by 34,900 square feet or approximately \$25,000

APPENDIX A

RESPONSE FROM DISTRICT OFFICIALS

The District officials' response to this audit can be found on the following page.



SALAMANCA CITY CENTRAL SCHOOL DISTRICT
50 Iroquois Drive
Salamanca, New York 14779
www.salamancany.org

District Office	716-945-2403	Prospect Elementary	945-5170	Curriculum & Instruction	945-5182
High School	716-945-2404	Seneca Elementary	945-5140	Pupil Services	945-5142
Middle School	716-945-2405	Alternative Education Program	945-6922		

February 2, 2012

Mr. Robert E. Meller
Chief Examiner of Local Government
and School Accountability
State of New York
Office of the Comptroller
110 State Street
Albany, New York 12236

Dear Mr. Meller,

I write to acknowledge the receipt of the completed Salamanca City Central School District Energy Reduction Audit completed by the staff of the Office of the Comptroller for the State of New York. I have had an opportunity to review the document and its findings and offer the following comments officially for the record:

- The District would like to thank the auditors and representatives of the Office of the Comptroller for conducting this audit in a thoroughly professional manner while still allowing District staff to fulfill their daily responsibilities. Additionally, the auditors were courteous, respectful and a pleasure to have on site. We commend their performance.
- The District agrees with the content and findings of the audit report and will continue to maximize energy savings, reductions and efficiencies for the betterment of our community and taxpayers.
- The District continues to pursue additional energy efficiencies such as participation in a BOCES-wide NYSERDA funding consortium initiative.
- Furthermore, we sincerely appreciate the acknowledgment of the Office of the Comptroller that the Salamanca City Central School District has been a good steward of the trust, faith and finances provided by our community and the State of New York.

Sincerely,



Robert J. Breidenstein
Superintendent

Cc: BOE Members
CA BOCES District Superintendent, Dr. Olczak



APPENDIX B

AUDIT METHODOLOGY AND STANDARDS

Our overall goal was to assess whether officials were using District resources in the most economic and efficient manner to provide District services. To accomplish this, we performed an initial assessment of District procedures so that we could design our audit to focus on those areas most at risk. Our initial assessment included evaluations of the following areas: financial oversight, cash receipts and disbursements, purchasing, payroll and personal services and information technology.

During the initial assessment, we interviewed appropriate District officials, performed limited tests of transactions and reviewed pertinent documents, such as District policies and procedures manuals, Board minutes, and financial records and reports.

After reviewing the information gathered during our initial assessment, we determined where weaknesses existed, and evaluated those weaknesses for the risk of potential fraud, theft and/or professional misconduct. Based on our evaluation, we determined that controls appeared to be adequate and limited risk existed in the financial areas we reviewed. We then decided upon the reported objective and scope by selecting for audit the planning for and reduction of energy consumption and associated costs. To accomplish our objective and to obtain appropriate audit evidence, we performed the following steps:

- We interviewed local officials to gain an understanding of the decision making process.
- We reviewed project plans for the two stage capital project to determine planned energy reducing projects and associated estimated costs.
- We established average energy usage prior to construction by analyzing consumption during the 2004-05 and 2005-06 fiscal years, then compared this against consumption during the 2009-10 and 2010-11 fiscal years.
- We reviewed State Education Department building project planning guidance for energy reduction standards.

We conducted this performance audit in accordance with generally accepted government auditing standards (GAGAS). Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objective.

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