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# Reducing Emissions for the Cobb County School District

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## Introduction

Sope Creek Elementary School is located in East Cobb County and services 1,200 total students kindergarten through fifth grade. After contacting the school's administration, the school elected to participate in the Carbon Reduction Challenge for the Summer of 2018. This project will propose a design solution to reduce carbon emissions by minimizing water and energy consumption, food waste, and a STEM learning guide for faculty and students. The school will experience cost savings within the first year of use. Additionally, the conservation habits and lessons taught to students through the STEM manual will reduce the personal emissions of each student for the foreseeable future. Even beyond these basic savings, there exists the added co-benefit of increased interest in STEM fields for youth.

## Site Overview

## Goals & Initiatives

**Project Goal**

To design a management plan for Sope Creek Elementary School to reduce carbon emissions through water and energy consumption, food waste, and create new STEM learning opportunities for students.


**Design Objectives**

1. To reduce carbon emissions by at least 200,000 lbs/year.
2. To save the school at least $8,000 in operational costs annually.
3. To achieve a payback period of 2 years or less on all design implementations.

## Cost Analysis

| Item | Quantity | Cost per Unit | Total Cost |
|---|---|---|---|
| LED Lighting | 215 | $4.95 | $1,064.25 |
| Blinds | N/A | $ 0.00 | $0.00 |
| Low Flow Aerators | 125 | $2.40 | $300.00 |
| Insulating Covers | 3 | $26.99 | $80.97 |
| Compost Bins | 2 | $235.99 | $471.98 |
| Digital Manual | 90 | $0.00 | $0.00 |
| TOTAL PRICE | | | $1,917.20 |

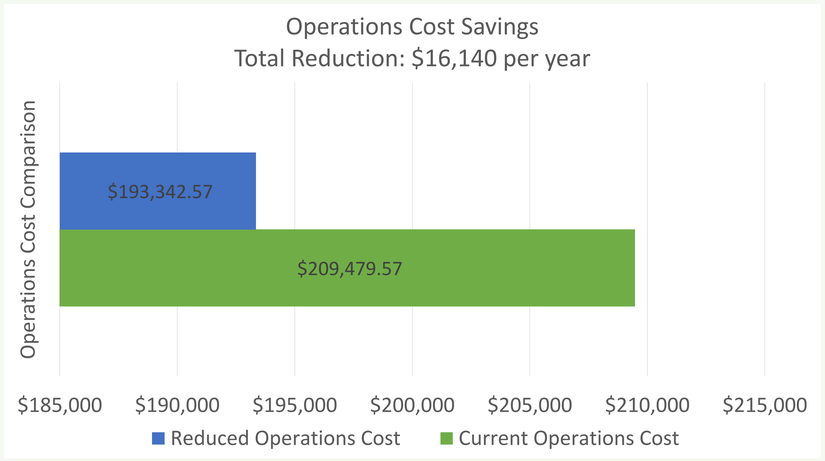
## Design Initiatives

1. <u>Energy</u> (lighting, blinds): All building lighting will be gradually replaced over the next three years with LED light bulbs. Faculty and staff will also be supplied with instructions to effectively utilize blinds and reduce heat gain.


2. <u>Water</u> (aerators, heater covers): 125 faucets will be fitted with 1.5 gallons/minute aerators. The hot water heaters will be covered with insulated covers to reduce energy demands from heat loss.

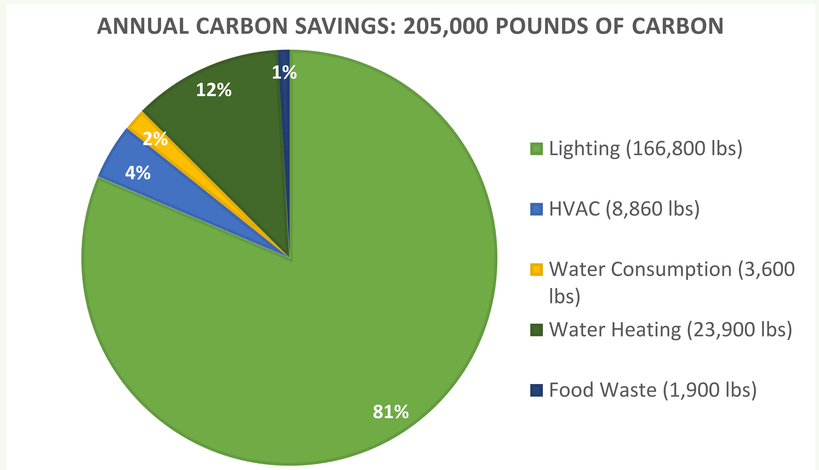
3. <u>Food Waste</u>: Two 267-gallon closed system compost bins will be placed outside the school to reduce emissions and act as a learning opportunity.
4. <u>STEM Learning</u>: The faculty and students will be provided with a technical manual created by the design team containing plan information and student learning activities.

## Cost Savings




## Outcomes

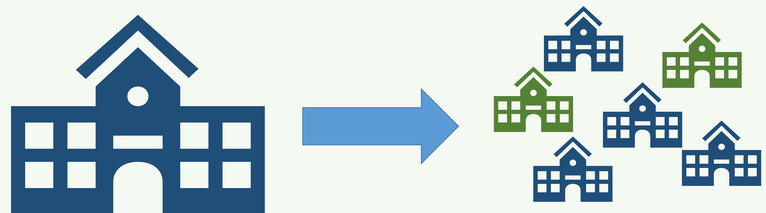
The proposed plan saves $16,140 in annual operating cost. Requiring $1,917 in implementation cost, the plan's payback period is less than one year.




In addition to the proposal's immediate cost and carbon emissions savings, there are many co-benefits of implementation. The plan provides new and improved STEM learning opportunities to students. This promotes long-term interest in STEM fields and teaches students and their families energy and water saving habits.

## Next Steps

The Cobb County School District is comprised of 68 total elementary schools. The proposed plan can be used by all Cobb County elementary schools with minor alterations depending on school size and goals.



Savings for Sope Creek: 205,000 lbs/yr

Savings for all Cobb District Schools: 13,900,000 lbs/yr

## Acknowledgements

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Photo Source: http://sopecreeklibrary.typepad.com/blogs/2015/06/welcome-dr-daugherty.html