



POUDRE SCHOOL DISTRICT

# **Energy Management in Poudre School District**

Kentucky High Performance School Buildings Workshop  
Frankfort, Kentucky  
May 10-11, 2005



Make Commitment



Assess Performance and Set Goals

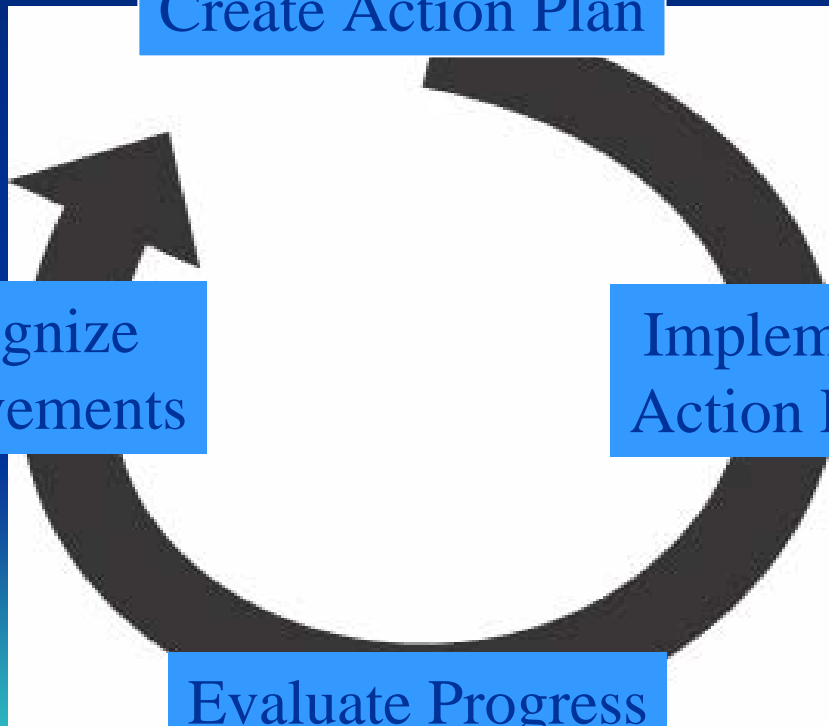


Create Action Plan

Recognize  
Achievements

Implement  
Action Plan

Evaluate Progress



Make Commitment



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# Make a Commitment!

## ✓ Catalyst

- 1 Million Square Feet
- Budget Constraints
- Opportunity
- Conservation and Stewardship

## ✓ Board of Education Policy ECF-Energy Conservation

<http://www.psdschools.org/psdinfo/policies.aspx?policyid=139>

“The Board of Education shall ensure that the district conserves energy and natural resources while exercising sound financial management. The Board believes that public education should provide leadership in developing a realistic energy use ethic and awareness of energy needs and their associated costs.”



June 2000

Poudre School District is committed to being a responsible steward of our natural resources and believes that public education is an ethic of sustainability in all of its programs. Energy Conservation and Waste Management policies are making environmental stewardship an integral part of the physical plan of the district. The purpose of the *Sustainable Design* is to apply these policies to the construction of new schools.

As we move forward, we invite the community to help us build a better, more integrated approach, we can build a better learning environment, while reducing our impact on natural resources.

We recognize that sustainable design is a new aspect of conventional design and construction. We are confident it will be a success for the district and the community. Poudre School District is committed to this mission. We look forward to working with you to achieve our goals of energy conservation, and learning from sustainable schools.

Sincerely,

Don Unger, Ph.D.

Superintendent of Schools

*“Poudre School District is committed to being a responsible steward of our natural resources , ... we have both Energy Conservation and Waste Management policies, ... making environmental stewardship an integral part of the physical plan of the district.”*

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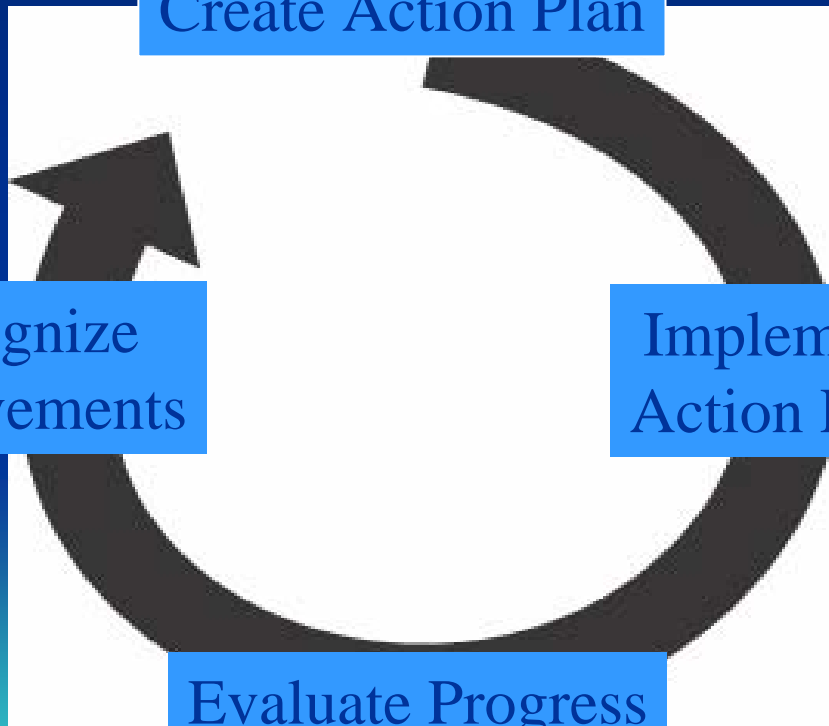


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# Assess Performance and Set Goals

- ✓ Research funding for energy savings/sustainable design projects
- ✓ Improve district wide benchmarking scores
- ✓ Certify all eligible sites as Energy Star Buildings
- ✓ Increase awareness and support district wide
- ✓ Reduce electric usage district wide by 15% using benchmark
- ✓ Secure a long term source of funding for energy efficiency projects
- ✓ Develop document to track and report district wide energy savings
- ✓ Establish and sustain partnerships with utility providers and others



# Energy Modeling

## 1990 vs. 2002 Prototype

- **1990 Prototype**

- 51,384 square feet
- No Air Conditioning
- Daylighting provided by “light monitors”
- “Energy Star” Award Winner...



- **2002 Prototype**

- 63,000 square feet
- Fully Air Conditioned
- “Cool Daylighting” provided by “clerestories”.
- “Micro-Loaded”

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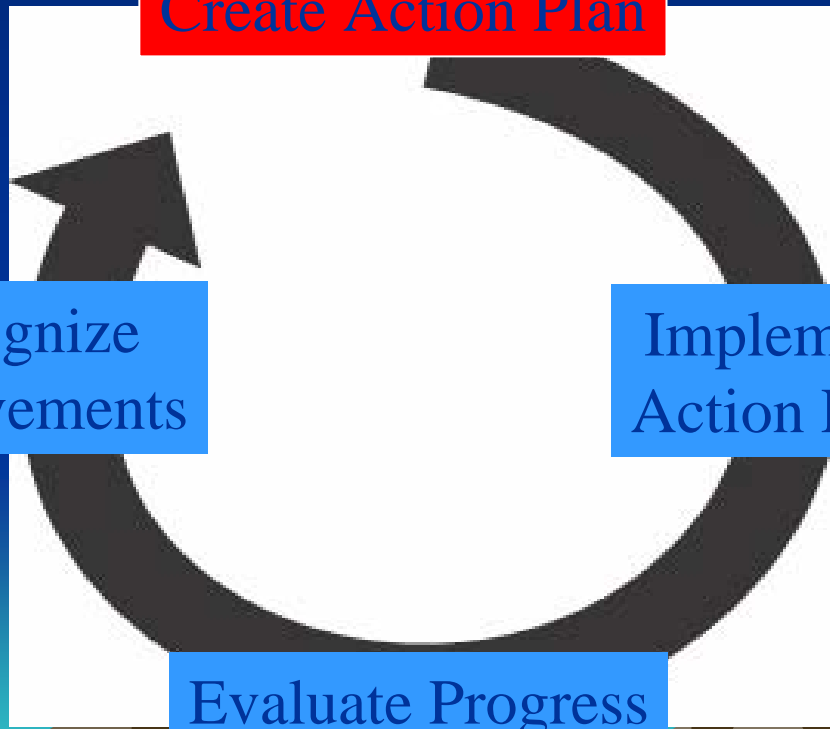


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# Create Action Plan

- ✓ Energy Manager Position and Energy Efficiency Team
  - ✓ Create Measurement Tools and Monitoring Process
  - ✓ Establish Procedures for Implementation of Energy Policy
  - ✓ Efficiency Project Goals
    - Rule of 72
  - ✓ Secure Funding and/or Process
    - Performance Contracts
    - Energy Service Companies – ESCo
    - Internal Funding
    - Grants
    - Demand Side Management Opportunities – DSM
  - ✓ Specialized Contracts with Utility Provider
    - Rate Structure
- 

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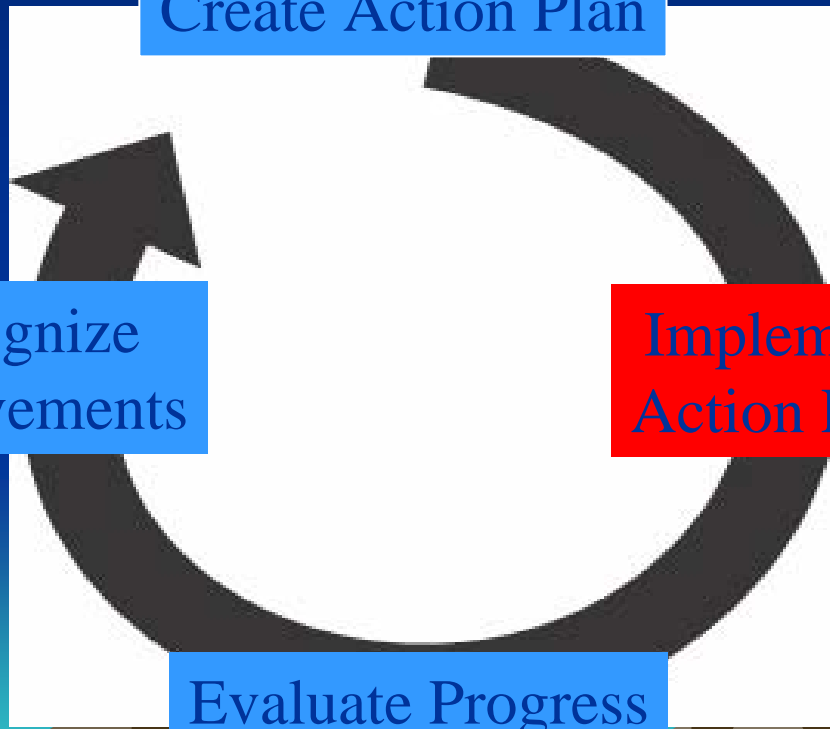


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# Implement Action Plan

- ✓ Energy Efficiency Coordinator per Site
  - ✓ Judicious Use of Energy Systems at each Site
    - Joint responsibility for Principal, Custodian, Coordinator & Energy Manager
  - ✓ Curriculum Developed to Ensure Student Participation
  - ✓ Energy Conservation Groups
    - Energy Rebates
  - ✓ Maintenance of Equipment
    - Reroute Percentage of Energy Savings into Maintenance
  - ✓ Energy Efficiency Design in New and Remodel Construction
  - ✓ Priorities to Purchasing Department for Acquisition of Materials
    - Reusable
    - Returnable for reuse
    - Recyclable
    - Disposable
- 

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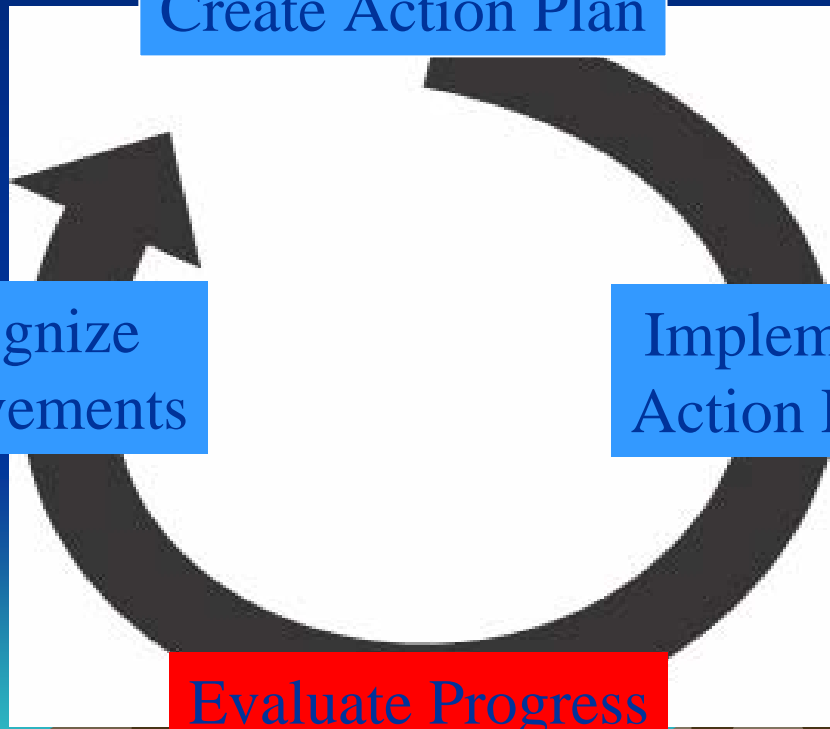


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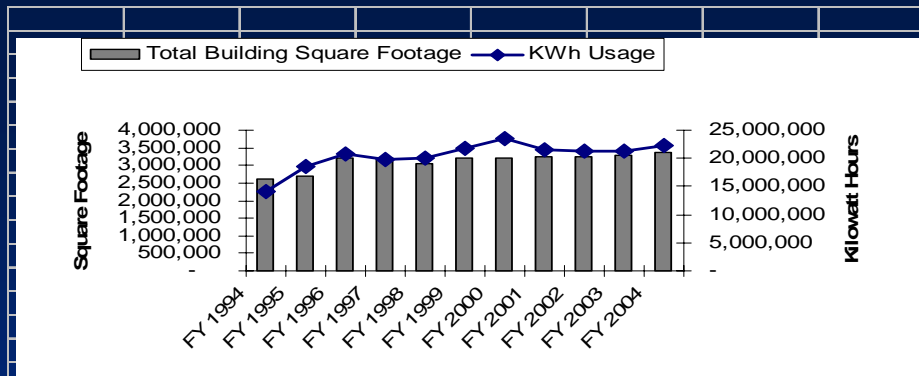
Evaluate Progress



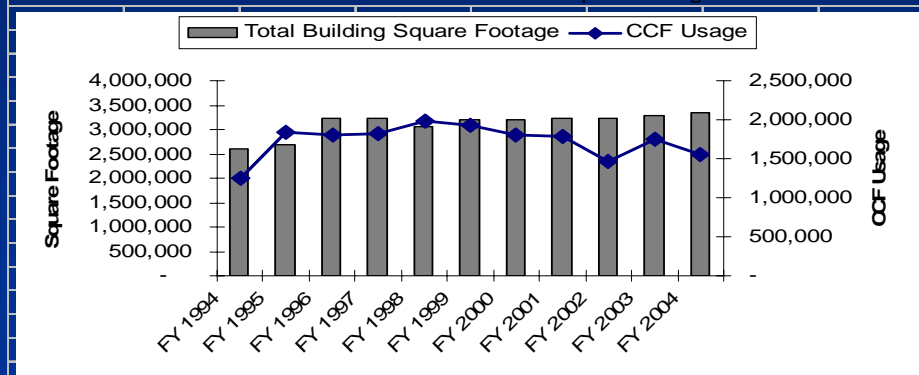
# Evaluate Progress

- ✓ Review the Costs
- ✓ Compare to the Goals
- ✓ Make Adjustments when Necessary

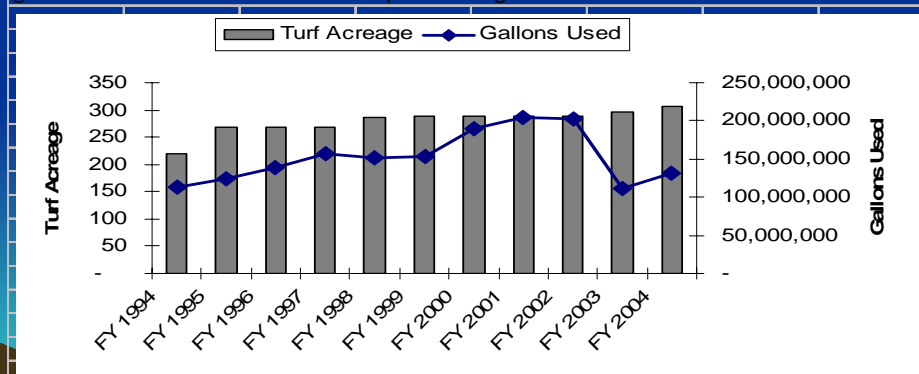




Continuous efforts by both the schools and the Energy Efficiency Team, continues to stabilize electrical use even with added schools and square footage.

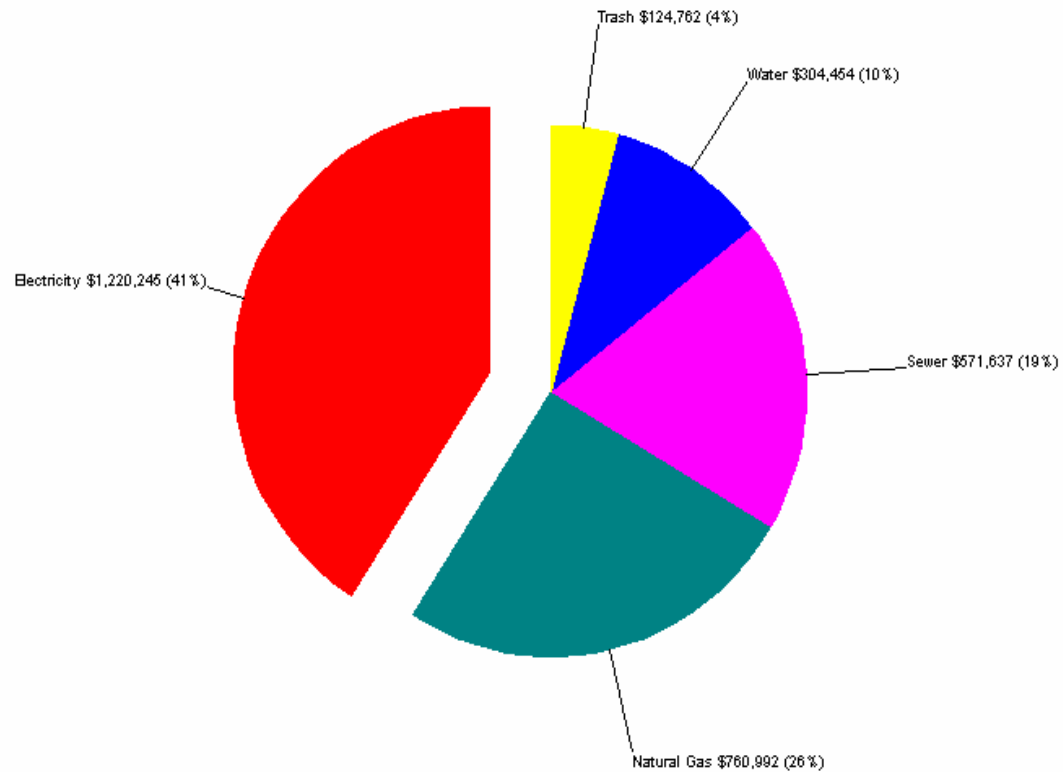


PSD's HVAC procedures and conservation efforts continue to stabilize the use of natural gas even with added schools and square footage.



Through Outdoor Service's improved irrigation procedures, we were able to reduce our water usage substantially from previous years.

## Annual Total Utility Cost Breakdown Poudre School District



**\$2,982,090 --- Total Utility Bill for  
Year Ending September, 2003**

Start



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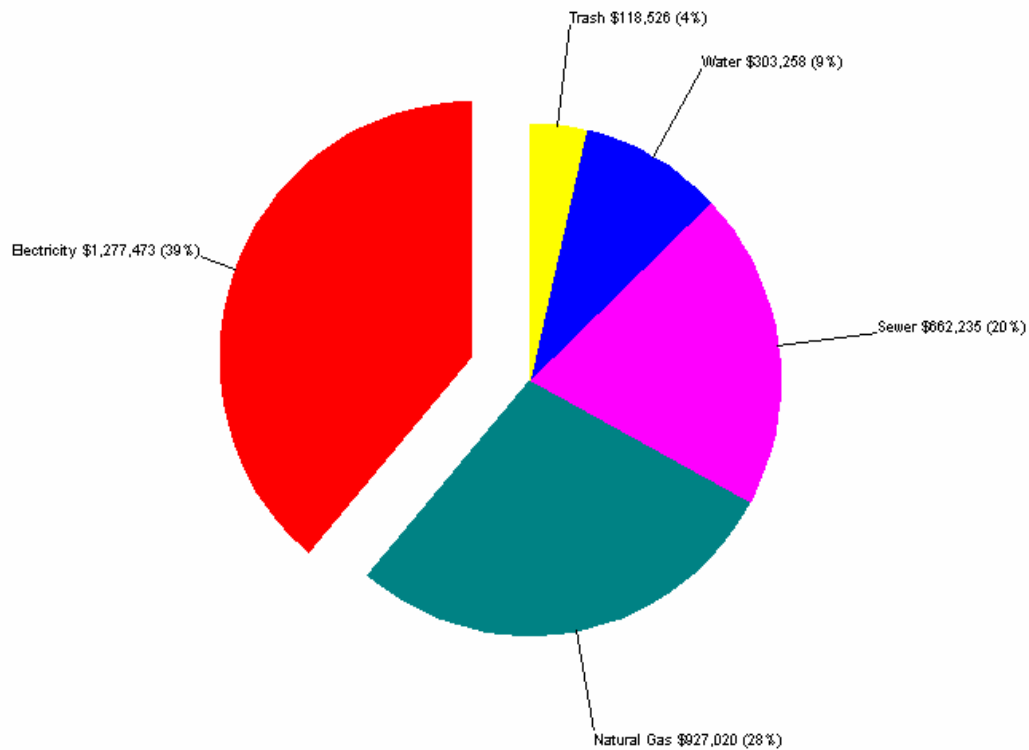
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## Annual Total Utility Cost Breakdown Poudre School District



**\$3,288,511 --- Total Utility Bill for  
Year Ending September, 2004**

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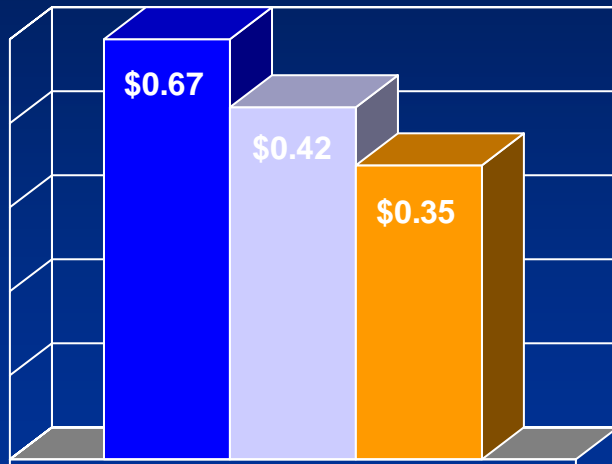
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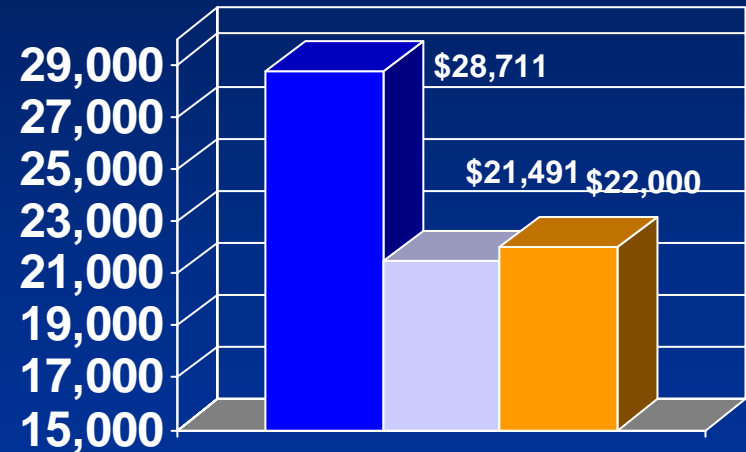
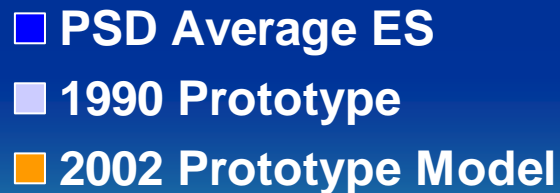
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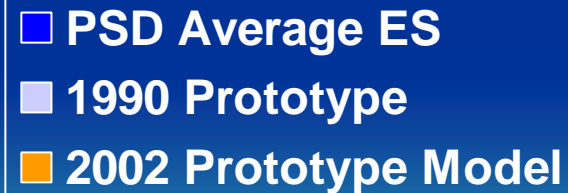
# Elementary Energy Costs



Cost per SF

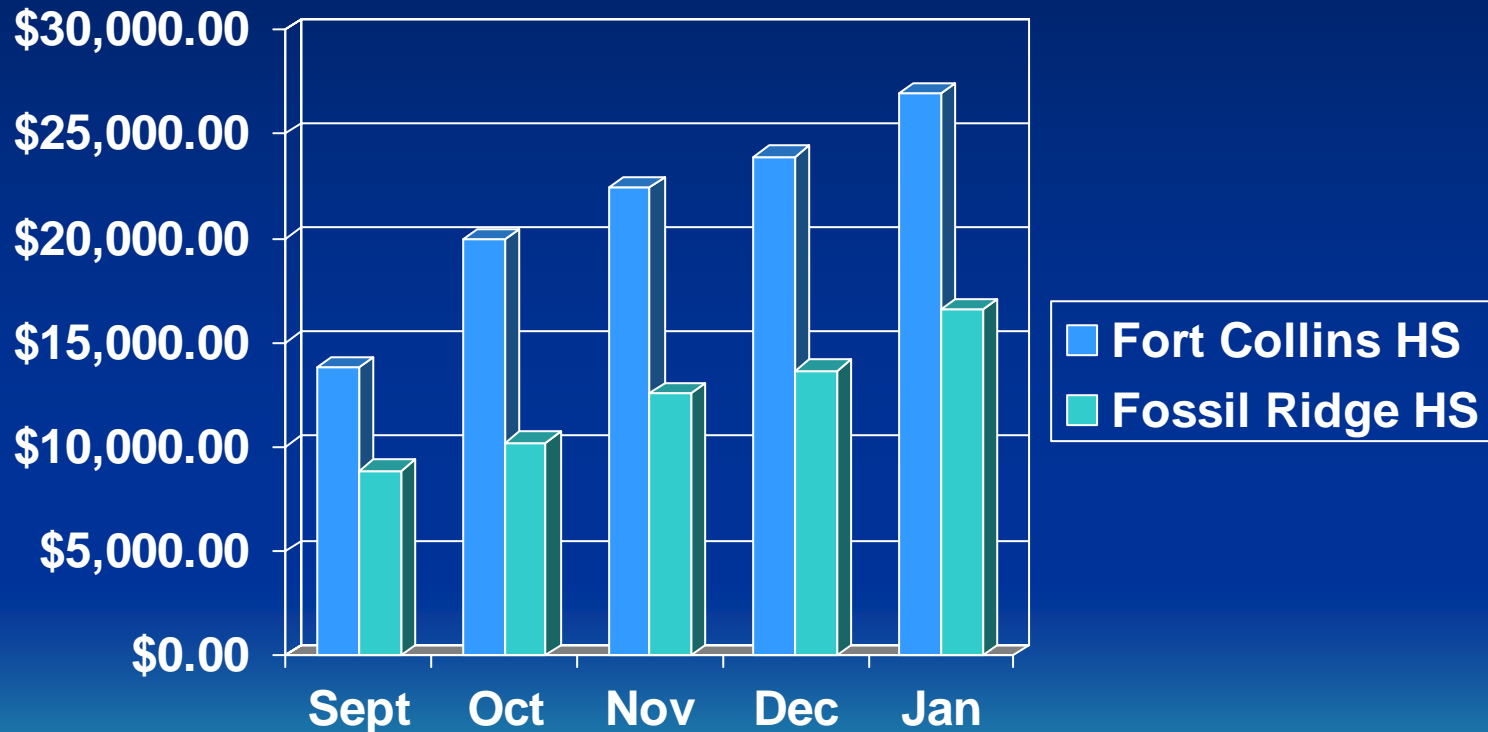


Utility Cost per year

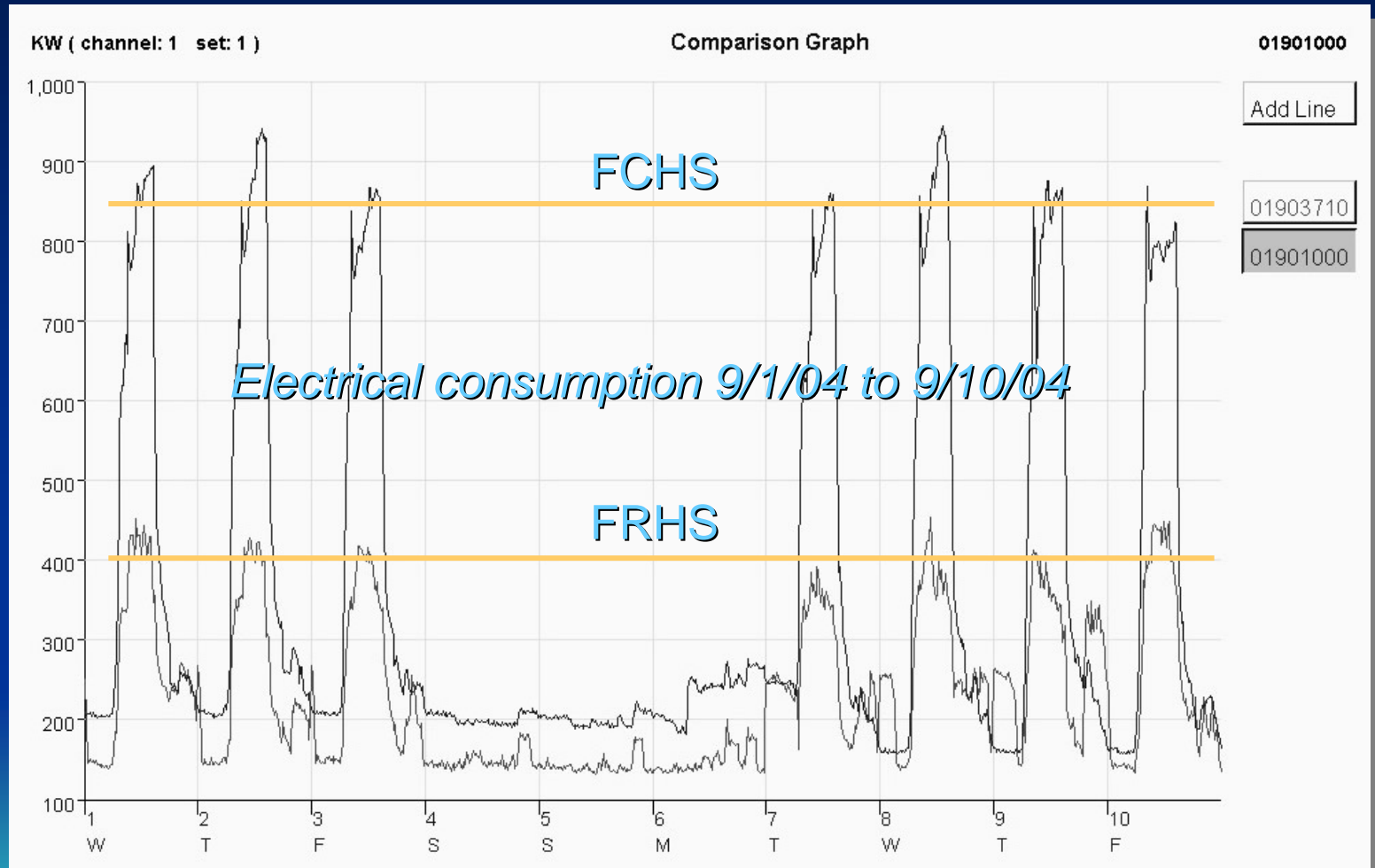


# Total Utility Cost

(Sept. 2004 – Jan. 2005)



# FRHS vs FCHS



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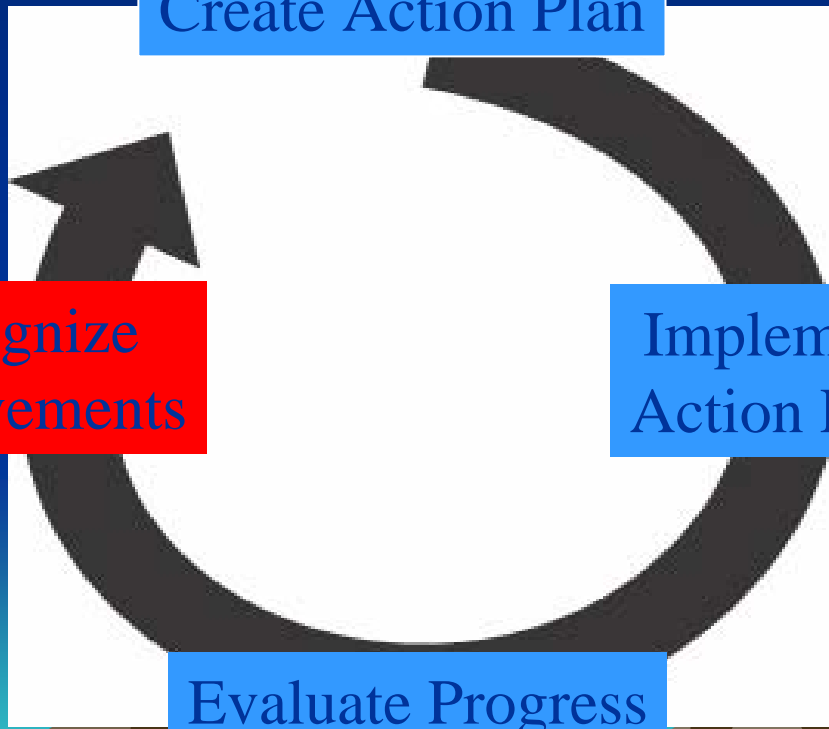


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# Recognize Achievements

“Awards not only recognize and draw attention to excellence, they are a proven way to encourage and inspire thinking beyond convention and exploration of new ways and means.”

*Holcim Foundation Awards for Sustainable Design Competition*

## School Running on Wind

“Students help to power Rocky on wind energy for a month.”

Fort Collins Coloradoan - April 11, 2005

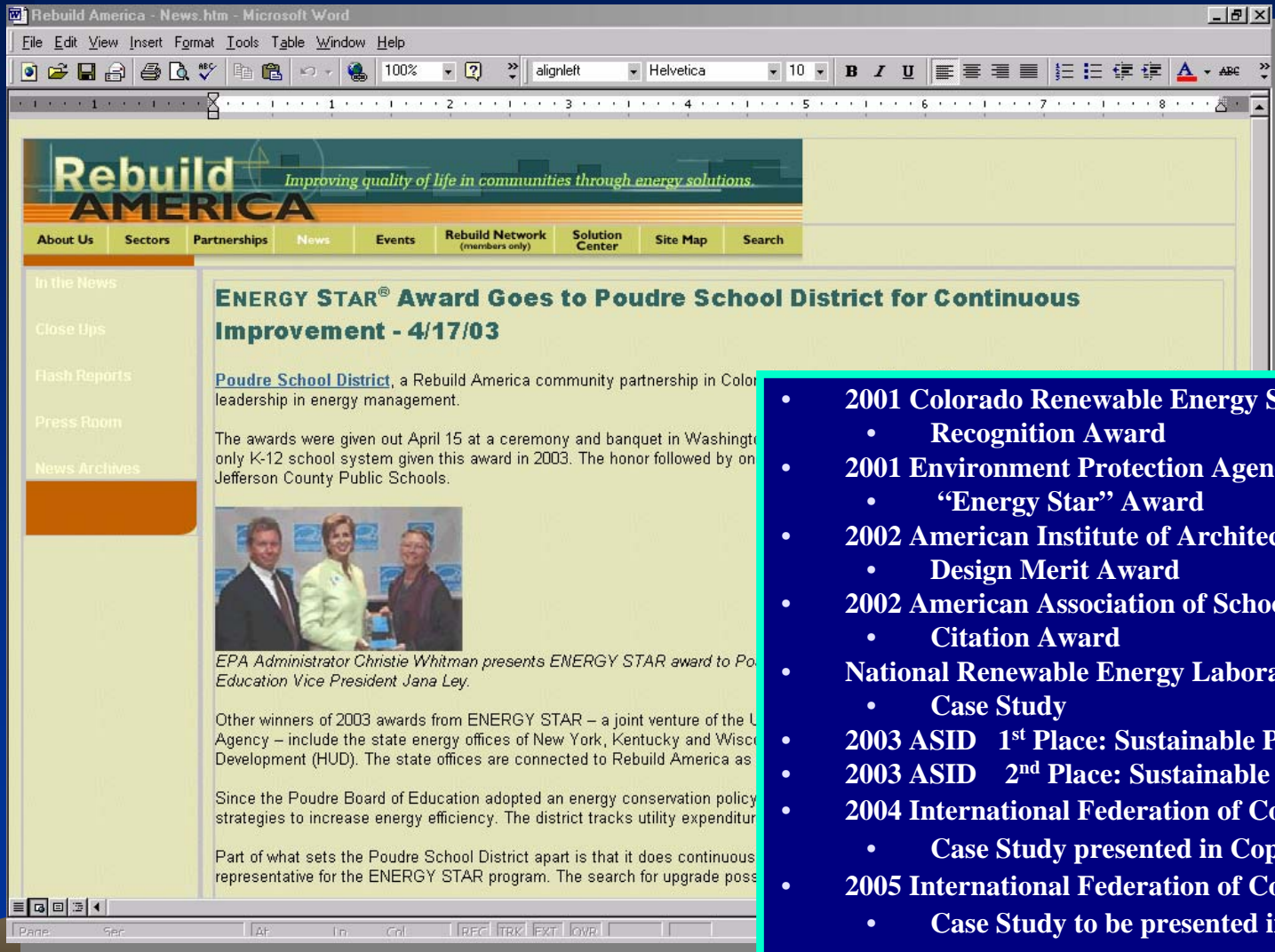
## RMHS Students Buy Wind Energy

PSD Web Site – News & Events

***Rocky Mountain High School's Environmental Club students and teacher saved about \$1,000 in electric utilities last year by championing their school's 'Energy Rules' energy rebate program, and decided to use the rebate along with matching funds from PSD to purchase wind power to operate their school in April in celebration of the 35<sup>th</sup> anniversary of Earth Day 2005. RMHS received a district-wide award for energy conservation in both the Spring of 2003 (\$3000) and Spring of 2004.***

***“The money we will spend for the wind power is from 2003, and the students decided to direct this money to wind power, which is just outstanding,” says Dave Swartz, RMHS science teacher.***

*plus a little National Recognition  
doesn't hurt either...*



- 2001 Colorado Renewable Energy Society
  - Recognition Award
- 2001 Environment Protection Agency
  - “Energy Star” Award
- 2002 American Institute of Architects
  - Design Merit Award
- 2002 American Association of School Administrators
  - Citation Award
- National Renewable Energy Laboratory
  - Case Study
- 2003 ASID 1<sup>st</sup> Place: Sustainable Project
- 2003 ASID 2<sup>nd</sup> Place: Sustainable Space
- 2004 International Federation of Consulting Engineers
  - Case Study presented in Copenhagen, Denmark
- 2005 International Federation of Consulting Engineers
  - Case Study to be presented in Beijing, China

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