

***KINARD MIDDLE SCHOOL
&
ROBERTS K-8 MIDDLE SCHOOL***



POUDRE SCHOOL DISTRICT

Kinard MS

Architect: RBB Architects
Photographer: Fred Fuhrmeister



POUDRE SCHOOL DISTRICT

Roberts K - 8



Main Entryway



Kinard & Roberts

Fast Facts

- Kinard size – 112,735 Square Feet (800 + students)
- Roberts size – 105,875 square feet (688 students)
- Designed – 2004/2005
- Constructed – Spring 2005 thru June 2006
- Occupied Fall 2006
- Kinard Construction Cost - \$17,000,000 (\$150.80/SF)
- Kinard 5th High Performance/Sustainable School in Colorado-4th in PSD



Kinard Designed to Earn The ENERGY STAR

ENERGY STAR SUPERIOR ENERGY MANAGEMENT CREATES ENVIRONMENTAL LEADERS
U.S. Environmental Protection Agency

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ENERGY STAR Building Design Profile

Kinard Junior High School
Fort Collins, CO 80528

DESIGNED TO EARN THE ENERGY STAR

Design Team

- Architect of Record: R2-B Architects, Inc., Fort Collins, CO
- Engineering Firm: ETC Engineers, Inc., Lakewood, CO
- Building Owner: Poudre School District, Fort Collins, CO
- Design Rating Year: 21/2008
- Completion Date: Opened in 2008
- Building Rating Year: 26/2007
- Space Type: K-12 School
- Floor Square: 110,000 sq ft
- Estimated Energy Use Intensity: 101.1 kWh/sq ft/yr
- Estimated Total Annual Energy Use: 2,229,400 kWh
- Estimated Annual Energy Cost: \$1,958
- Technologies Selected: GeoExchange system, Low-E operable windows, High-efficiency heat pumps
- For More Information: Stu Rave, Poudre School District, 970-490-2800, stu@psschools.org

Kinard Junior High School is the fourth high performance school built in Poudre School District. The school achieved Designed to Earn the ENERGY STAR in 2008 for superior energy design intent before construction was completed. Once the school opened in 2008 the combination of a superior building envelope, high-performance, low-E operable windows, lighting improvements, and high-efficiency heat pumps has helped Kinard become the district's most energy-efficient school. Kinard received the ENERGY STAR label shortly after its first year of opening.

The school has a closed-loop Geo-Exchange system that is a key part of the building's energy efficiency. The system uses the temperature of the Earth to heat and cool all areas of the building. The system is comprised of 100 wells that are 300 feet deep and 72 heat pumps, one for each classroom or office area.

Kinard is also one of the district's most comfortable schools. Last winter was one of the worst in more than 20 years and Kinard excelled in performance when compared to other schools in the district and received fewer heating or cooling complaints.

Chris Bergmann, a science teacher at Kinard, is the school's "energy champion." Students in the eighth grade are participating in giving tours of the school and Mr. Bergmann is working with students and staff to establish energy and environmental stewardship.

[Back to Active ABE Firms](#)

SET ENERGY USE TARGETS AND RATE YOUR DESIGN

Use Target Finder throughout the design process to help translate design intent into superior operational performance. The rating applies the same performance metric from pre-design through schematic design development and during building operation to determine how the energy use ranks against similar buildings across the nation. To use Target Finder, complete all required fields.

Pre-Design: Set Energy Use Goal

- 1. FACILITY INFORMATION**
Enter the ZIP code of the project location. Red asterisk (*) indicates required input field to calculate energy use target or rating.
- 2. FACILITY CHARACTERISTICS**
Select the space type for your project: Office, K-12 School, Hospital, Hotel, Medical Office, Residence Hall/Dormitory, Supermarket/Grocery, Warehouse (Refrigerated/Unrefrigerated), Courthouse, Bank/Financial Institution, or Retail.*
- 3. TARGET RATING**
Select a "Target Rating" or "Energy Reduction Target," and the tool provides the estimated total annual energy use. A 75 or higher rating achieves ENERGY STAR. Select "View Results" to see next page.

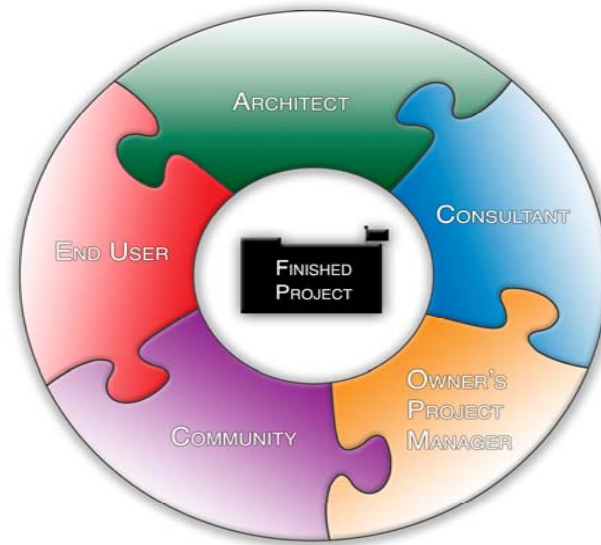
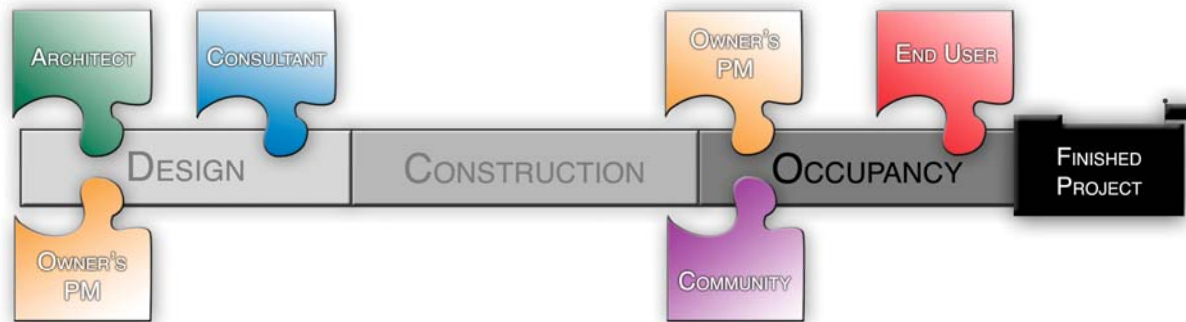
Schematic Design Development

As the design develops, enter results from energy analysis calculations to get the Design Rating.

- 4. DESIGN ENERGY**
Enter estimated energy data: source, units, annual usage, and rate. Select "View Results" to see next page.

Note: An incomplete energy use profile could result in a high but inaccurate rating. Total annual estimated energy use should include plug, process, and all non-regulated loads; equipment loads specified on drawings; and all fuel sources.*

Traditional Design vs. Integrated Design



Integrated Design:

- Involve All Stakeholders at all stages
- Buildings That Teach: Great Educational Opportunity
- Materials & Resource Consumption
- Building Components & Systems
- Impact on Natural Resources

Sustainable Design Guidelines

For the
construction of
new facilities
and the
renovation of
existing structures

June 2005

Operations



POUDRE SCHOOL DISTRICT

Kinard MS Sustainable Strategies

- “Micro-Loaded” Building
- Building Transparency
- Operable Windows
- Non-toxic Materials
- Daylighting / Controls
- Occupancy Sensors
- CO² Sensors
- Electronic Ballasts
- T-8 & T-5 Lamps
- Variable Frequency Drive Motors
- HVAC Reheat System
- Super Insulation
- Ground Source Heat Pump System
- Energy Management System



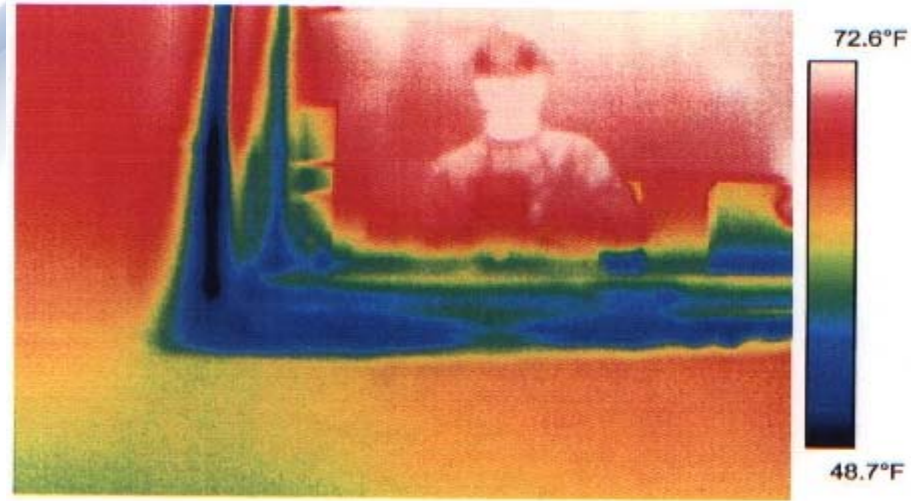


3" Sprayed-On Polyurethane Insulation



POUDRE SCHOOL DISTRICT

Infrared Camera



Kinard GSHP System

- 100 Wells (300' deep)
- 72 Heat Pumps



Roberts K-8 GSHP System

- 264 Wells (300' deep)
- 66 Heat Pumps



Lake Kinard-Summer 2005

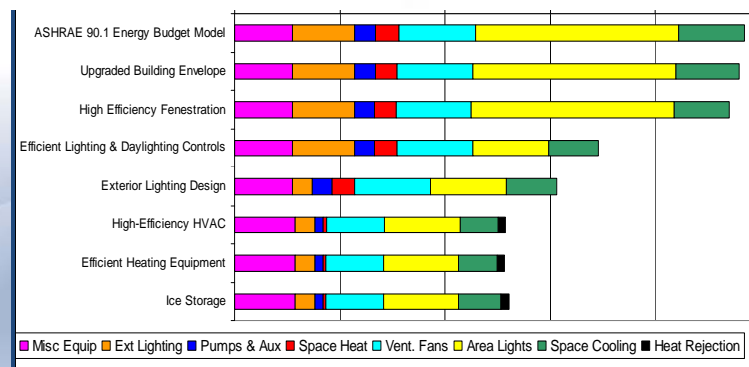


Energy Modeling for Design Decisions and Accountability

The following table shows the energy comparison of the final design building and the budget building energy use.

	ASHRAE 90.1 Energy Cost Budget	Actual Design Energy Cost
Annual Electric Energy (kWh)	725,180	535,302
Average Electric Demand (kW)	315	236
Annual Natural Gas (MBtu)	1,728	1,433
Energy Use Index (kBtu/ft ²)	36.2	28.1
Electric Energy Cost	\$13,053	\$9,635
Electric Demand Cost	\$17,258	\$12,938
Natural Gas Cost	\$11,350	\$9,415
Total Annual Energy Cost	\$41,661	\$31,988
Fraction of Energy Budget	100%	77%

As can be seen, the actual design has 77% of the energy cost of a similar building meeting the ASHRAE 90.1 Standard.



Kinard Natural Daylighting

- North / South translucent clerestory gym design
- Pyramidal ceilings around solatubes in classrooms
- LightLouver for 6 south science classrooms
- Daylighting throughout school support spaces
- Open loop control with PLC Multipoint sensors

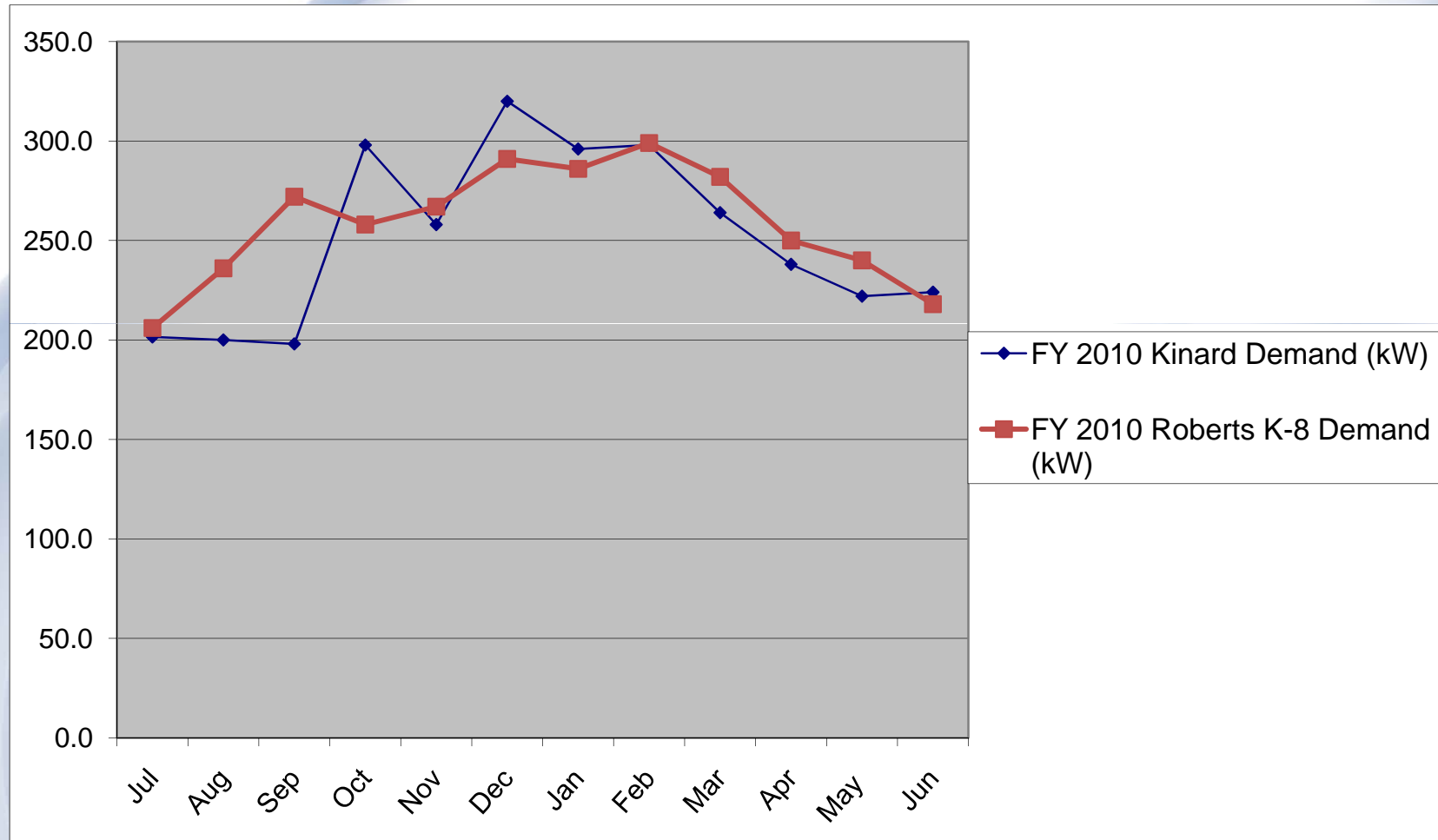


Design Impacts

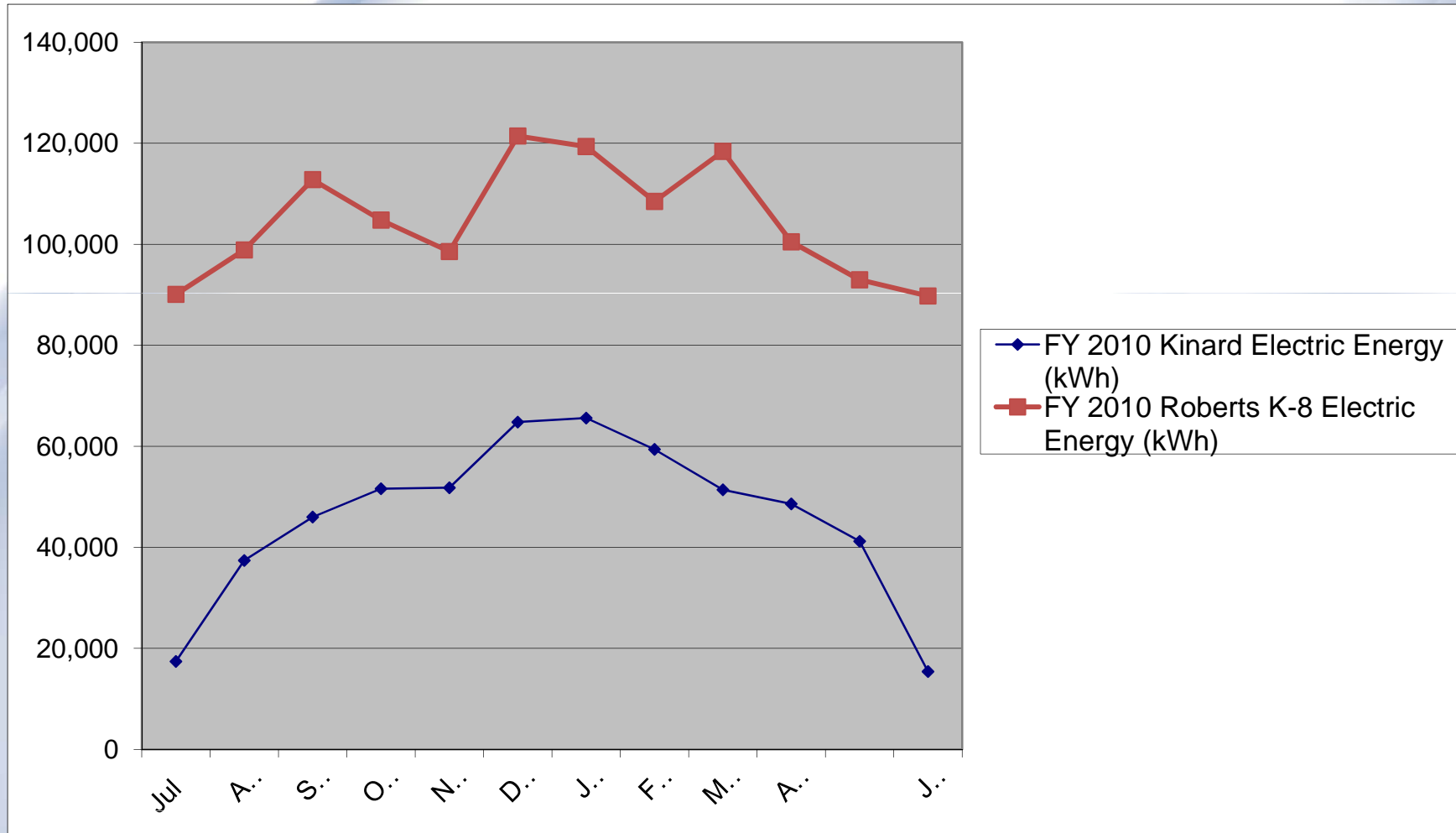
- DPS Design Standards –20 Deg. for Heating & 100 Deg. for Cooling
- PSD Design Standards-5 Deg. for Heating & 90 Deg. for Cooling
- DPS Includes Several Redundancy's
- PSD Does Not
- Overall Impact to Mechanical System Sizing & Energy Performance
- Though Cx of Building Mechanical & Electrical/Lighting Systems



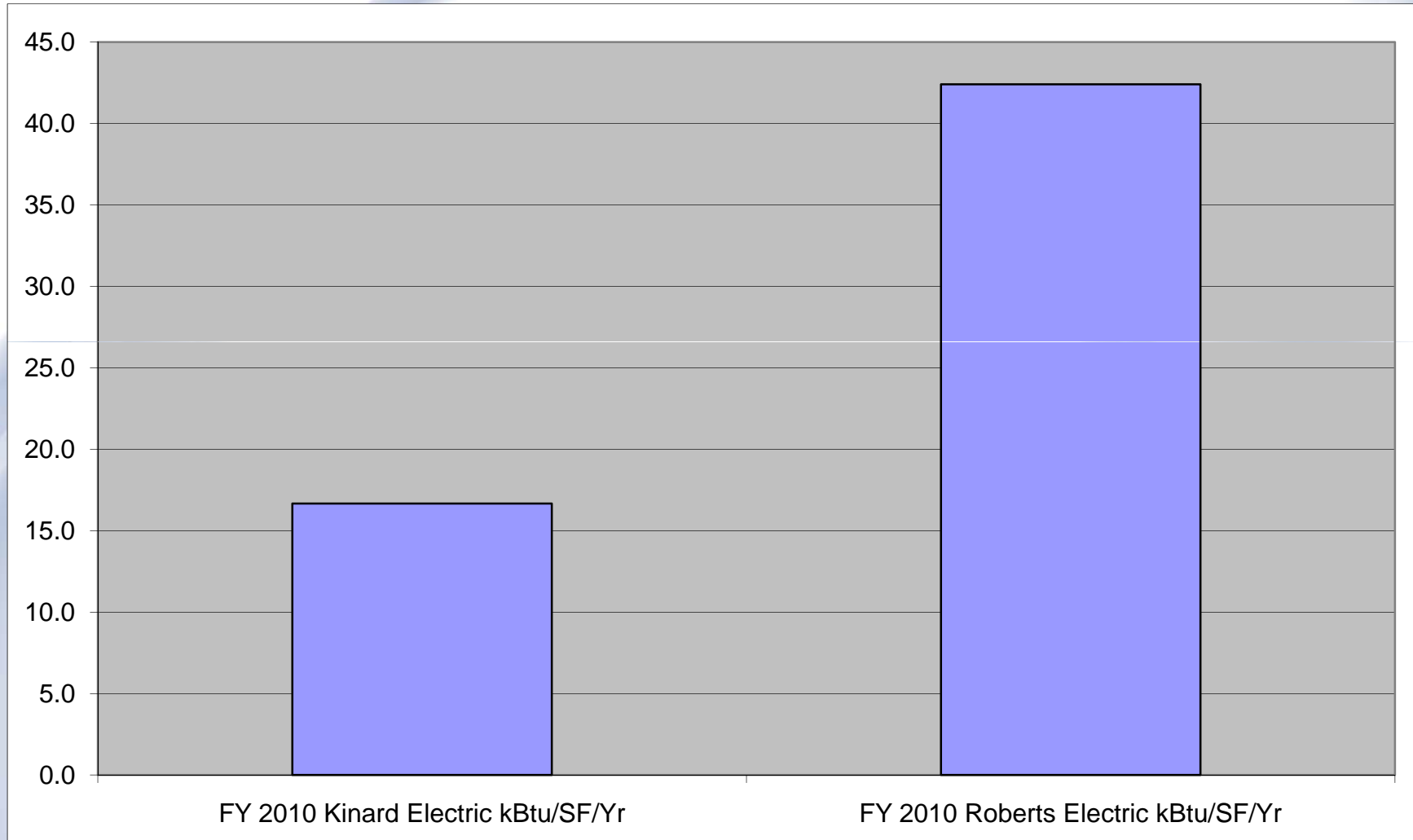
Electric Demand - KW



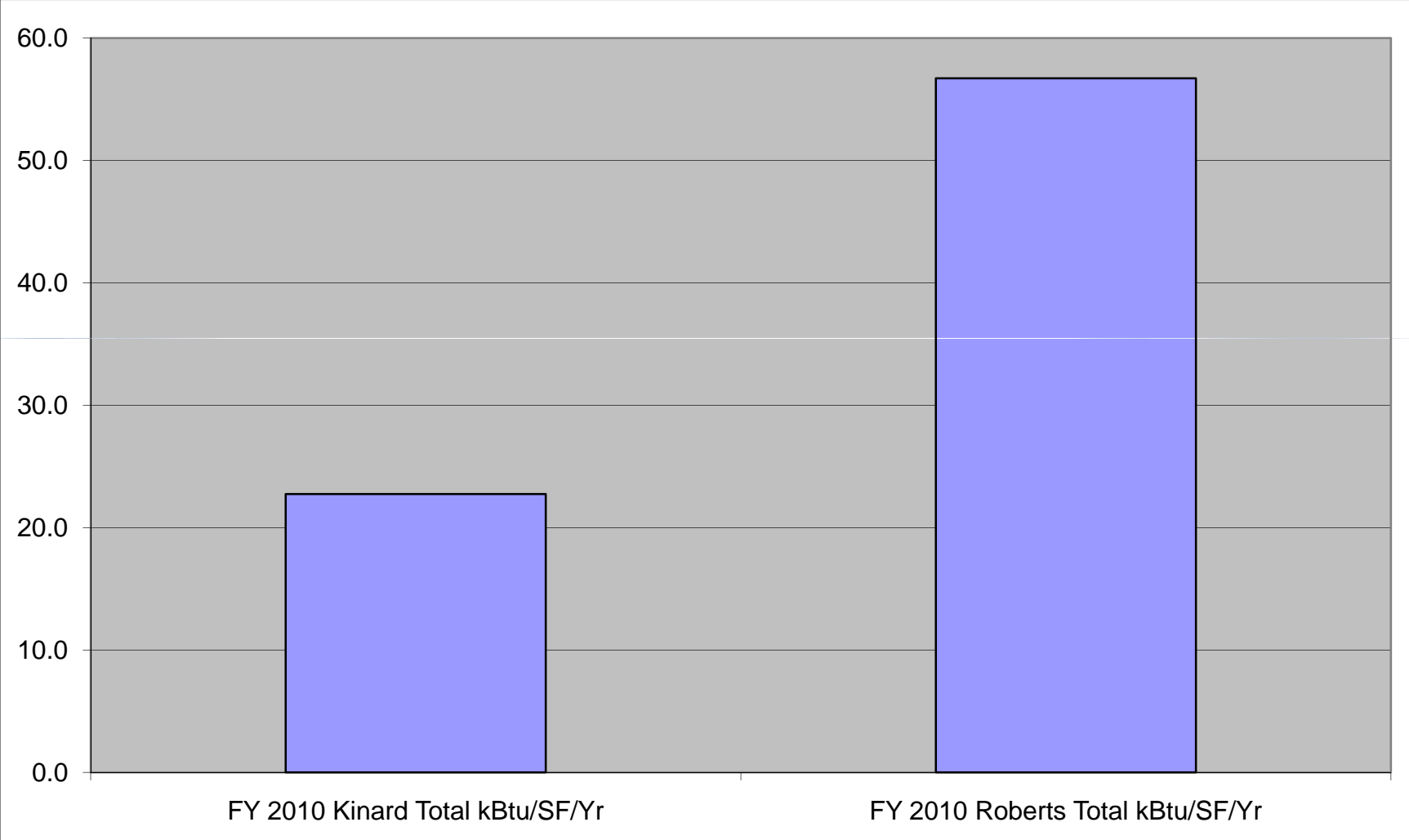
Electric Usage – KWH



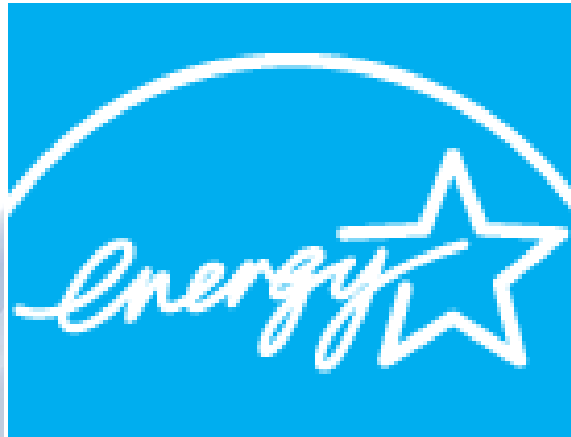
Electric kBtu/Sq.Ft./Yr.



Total kBtu/Sq.Ft./Yr.



“Got to Be Blue to Be Green”



ENERGY STAR



Copyright Fred Fuhrmeister

First ENERGY STAR labeled building that had also achieved “Designed to Earn the ENERGY STAR” for its design plans:
Kinard Junior High School, Fort Collins, CO



POUDRE SCHOOL DISTRICT



Poudre School District

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Our Mission: Educate...Every Child, Every Day

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- ★ Board of Education
- ★ Bus Information
- ★ Calendars & Schedules
- ★ E-mail Alert Sign-up
- ★ Lunch Menus
- ★ School Registration



FCHS students illuminate lights with a hand generator in AP Physics class. PSD encourages all students to take advanced classes before they graduate. More...

PSD News

Open Houses & Information Sessions

Students, parents invited to visit schools

PSD Budget Process Underway

Goal: maximize student, school resources

Early Childhood Enrollment Clinics

Find out about programs for kids under 5

Kindergarten Registration Feb. 11

Parent information meetings in Jan. & Feb.

2008-09 Graduation & Dropout

Rates announced

School Choice Deadlines Approaching

Apply online now for first consideration

Watch the Latest PSD News!

Jan. 7-14 weekly news video

Welcome to Denver Public Schools



Is your school holding a Haiti Relief? Let us know



EVENT OF THE WEEK

Bake Sales For Haiti

DPS schools to hold Bake Sales to Aid Haiti Relief. Support a participating school near you. [Read more...](#)



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POUDRE SCHOOL DISTRICT