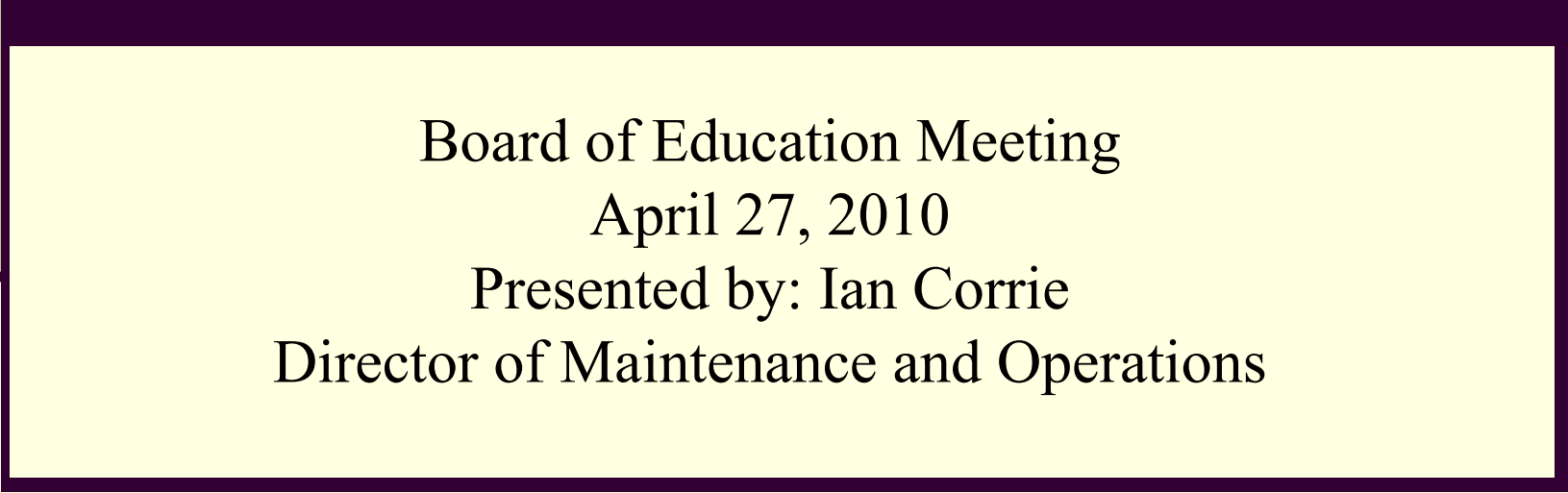


# San Marino Unified School District Maintenance & Operations Utility Usage Efficiencies



Board of Education Meeting  
April 27, 2010  
Presented by: Ian Corrie  
Director of Maintenance and Operations

# Overview

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1. **Progress** –New and Modernized classrooms and facilities, efficient energy management systems
2. **Short-Term Plan** - To reduce energy consumption and increase energy efficiency.
3. **Long-Term Goal** - To further enhance energy efficiencies by replacing older equipment, utilizing new technologies and increase EMS controls

# District Modernization

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During the District-wide modernization care was taken to incorporate energy efficient technologies and infrastructure. From new electrical data systems and cable wiring to insulation and roofing design. Recently our efforts have been refocused through the prism of “**Green Schools**” initiatives to maximize the benefits of and exploit growing energy conservation awareness.

**We have already achieved an enviable low rate of \$1.16 sq ft power usage for all serviced areas.**

# Energy Efficient Improvements

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- Installed T8 fluorescent lamps
- Installed motion/occupancy sensors to control lights
- Installed timers on exterior lighting
- Installed EMS controls for central HVAC systems
- Upgraded HVAC equipment to meet more stringent AQMD codes
- Installed irrigation controls for fields and grounds
- Installed heat reflective and insulated roofing materials
- Installed weatherized doors and windows
- Installed water efficient faucets in restrooms
- Installed waterless urinals
- Explored alternate energy sources/resources

# Alternative Energy

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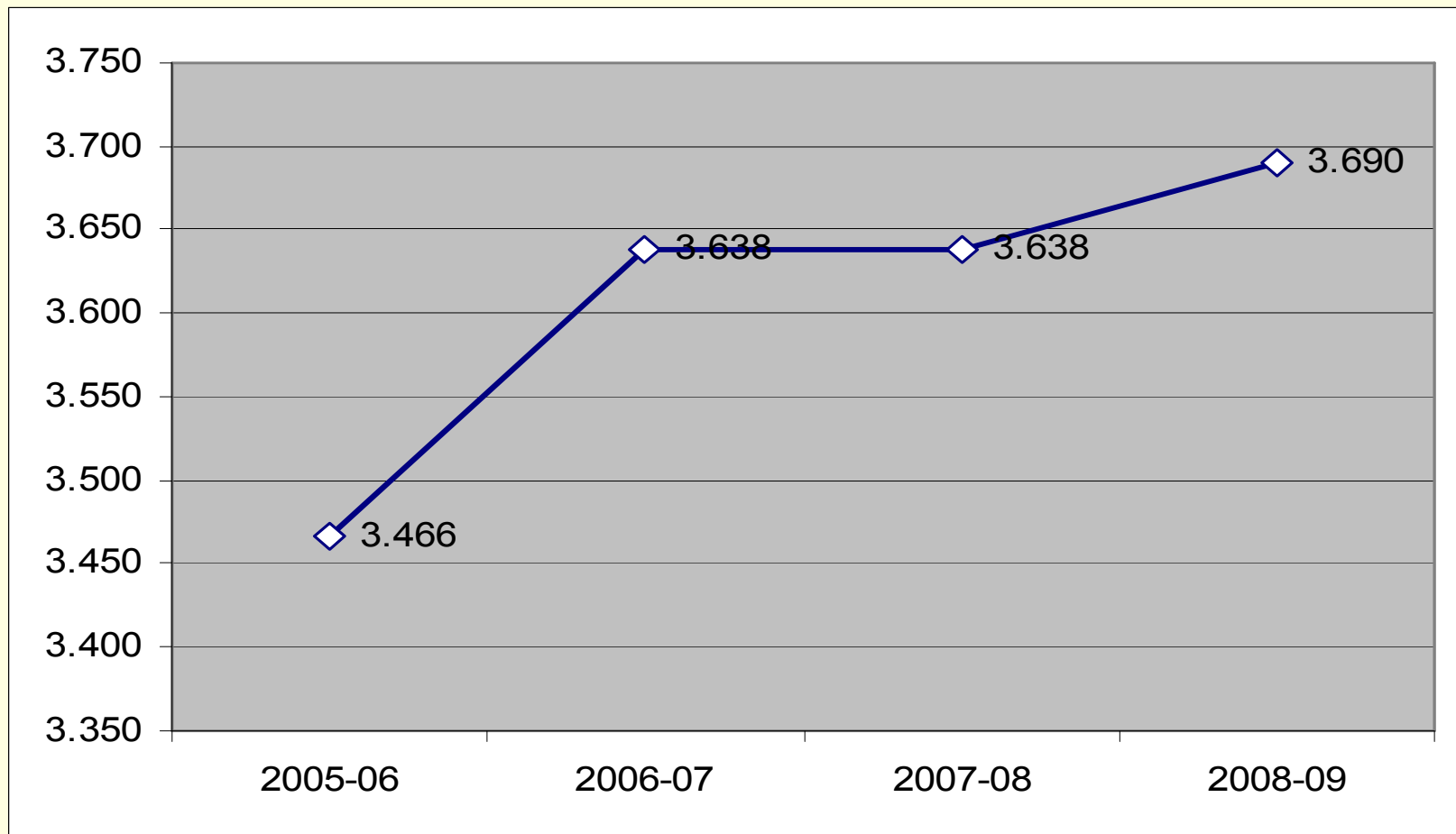
## ➤ 2008 Solar Energy Analysis

- Required installation of solar panels on existing available District roof surfaces including gyms and the water districts' reservoirs to gain 25% electricity credits with a 25 year power purchase agreement (PPA).
- Costs outweighed the benefits unless solar was part of a larger capital project (i.e. bond projects). Opportunities for smaller projects in specific areas.
- Further evaluation and study as solar technology advances and costs come down.

## ➤ Alternative Technologies

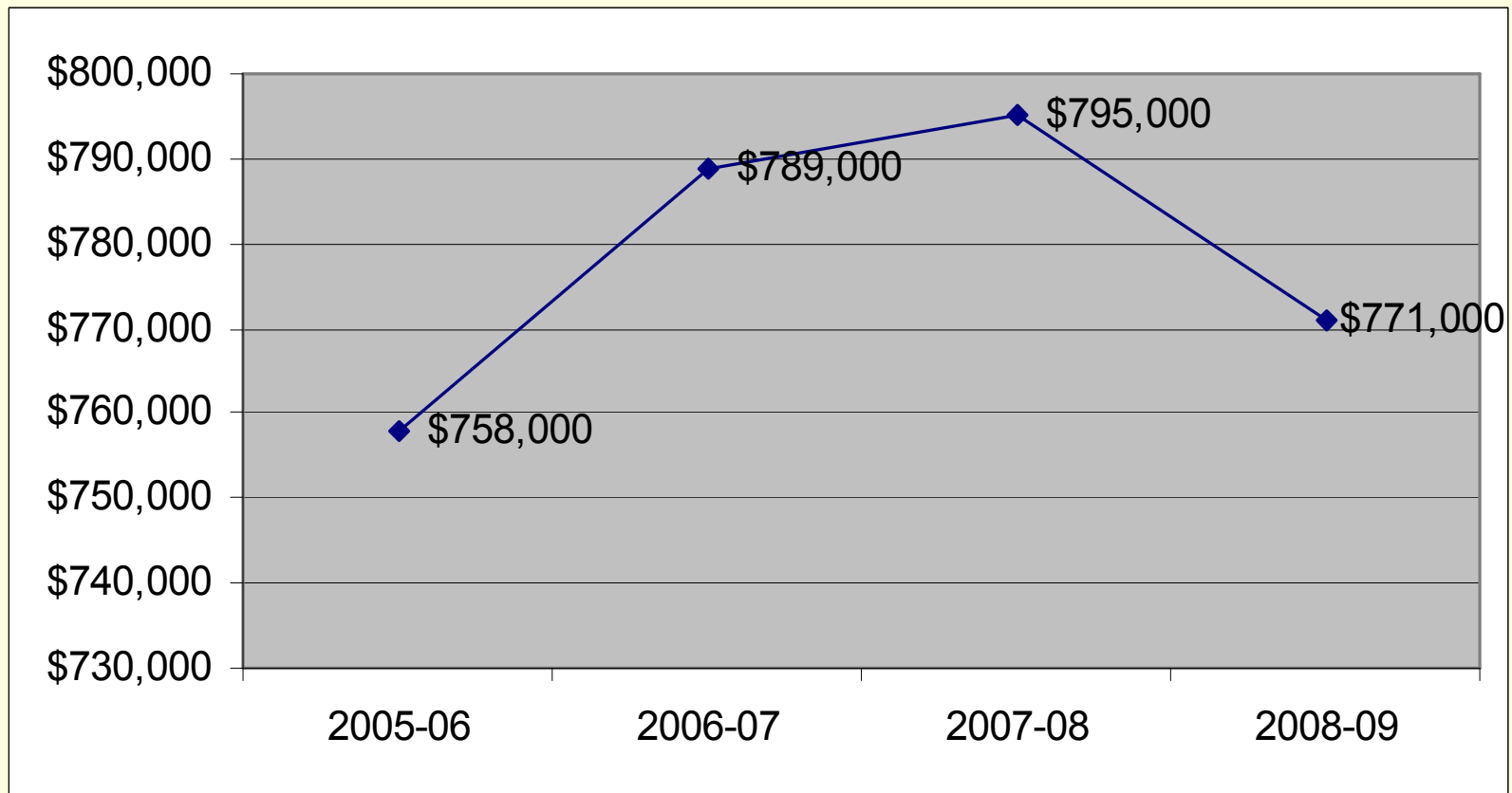
- Evaluate practical applications of alternative energy sources.

# Electricity Usage

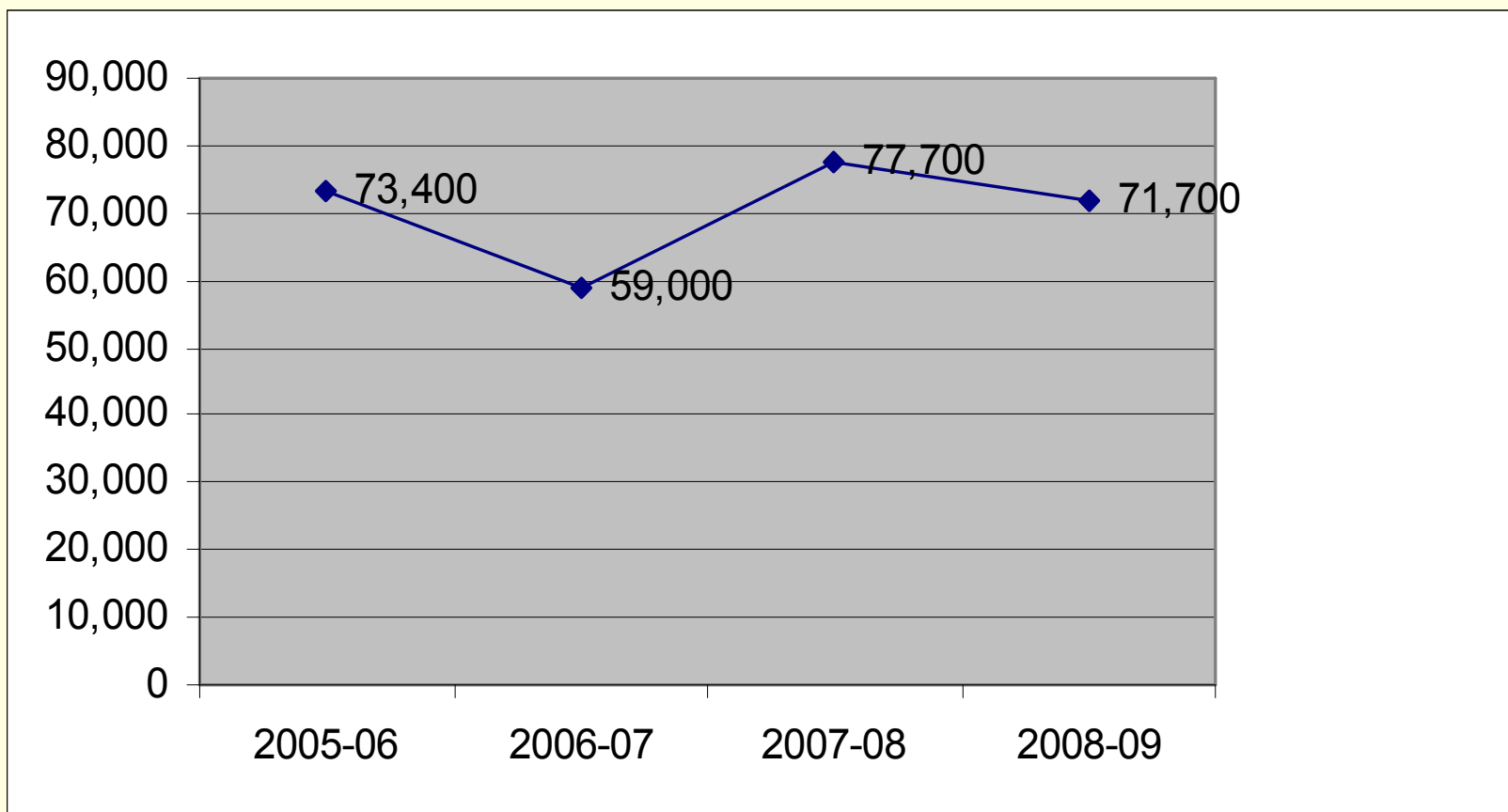


kWh in millions

# Electricity Costs



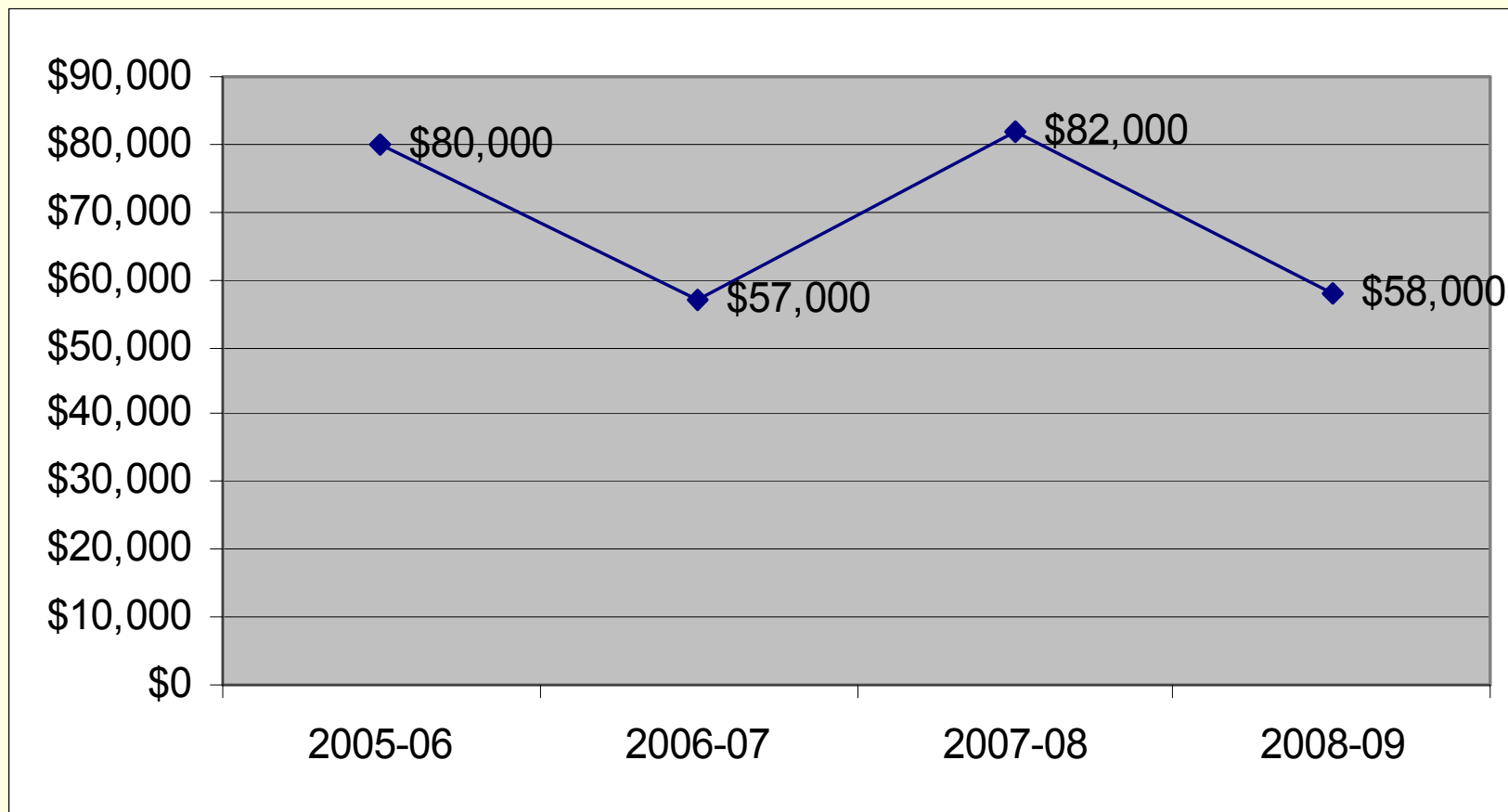
# Gas Usage



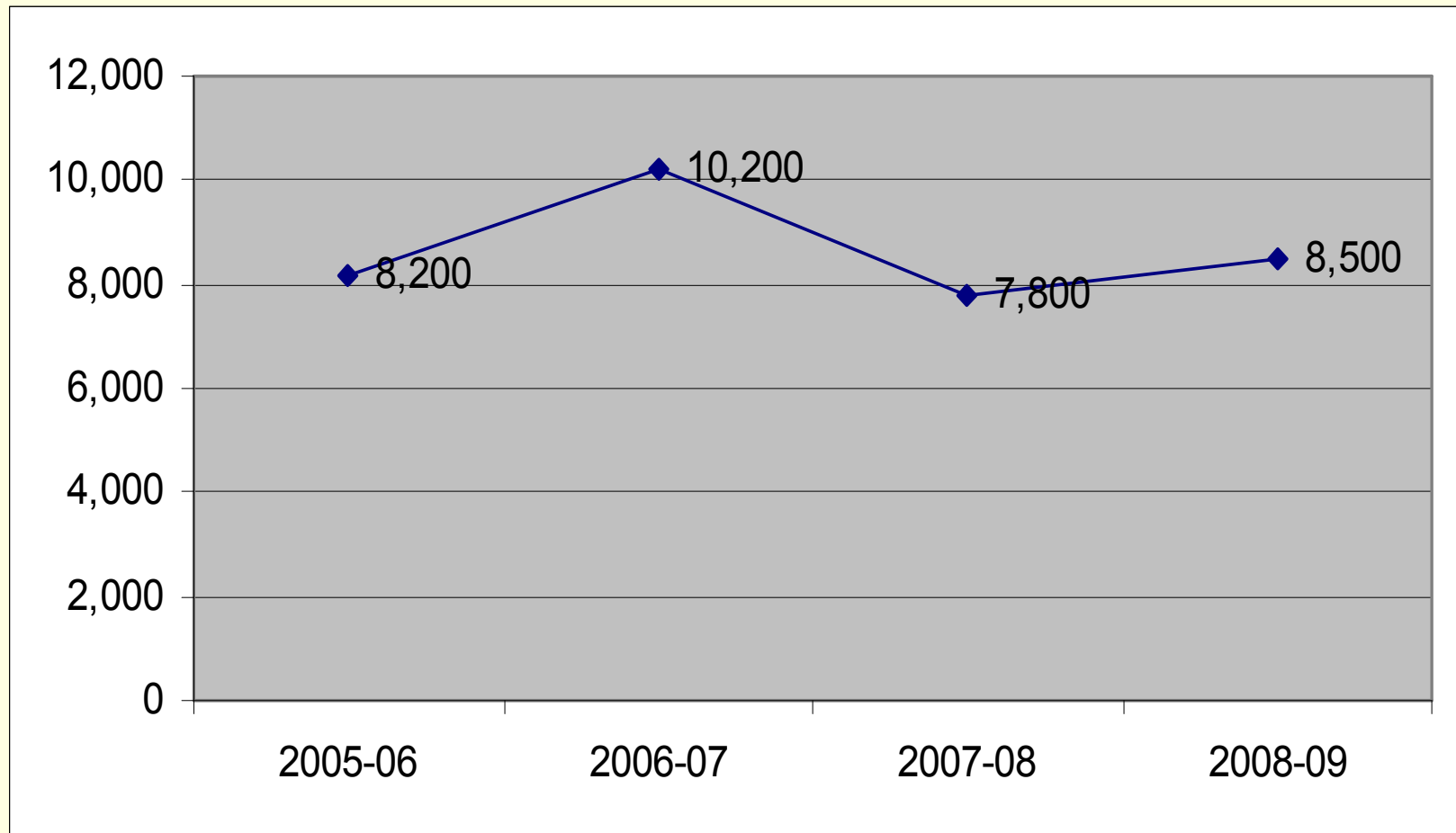
\* In Therms



# Gas Costs

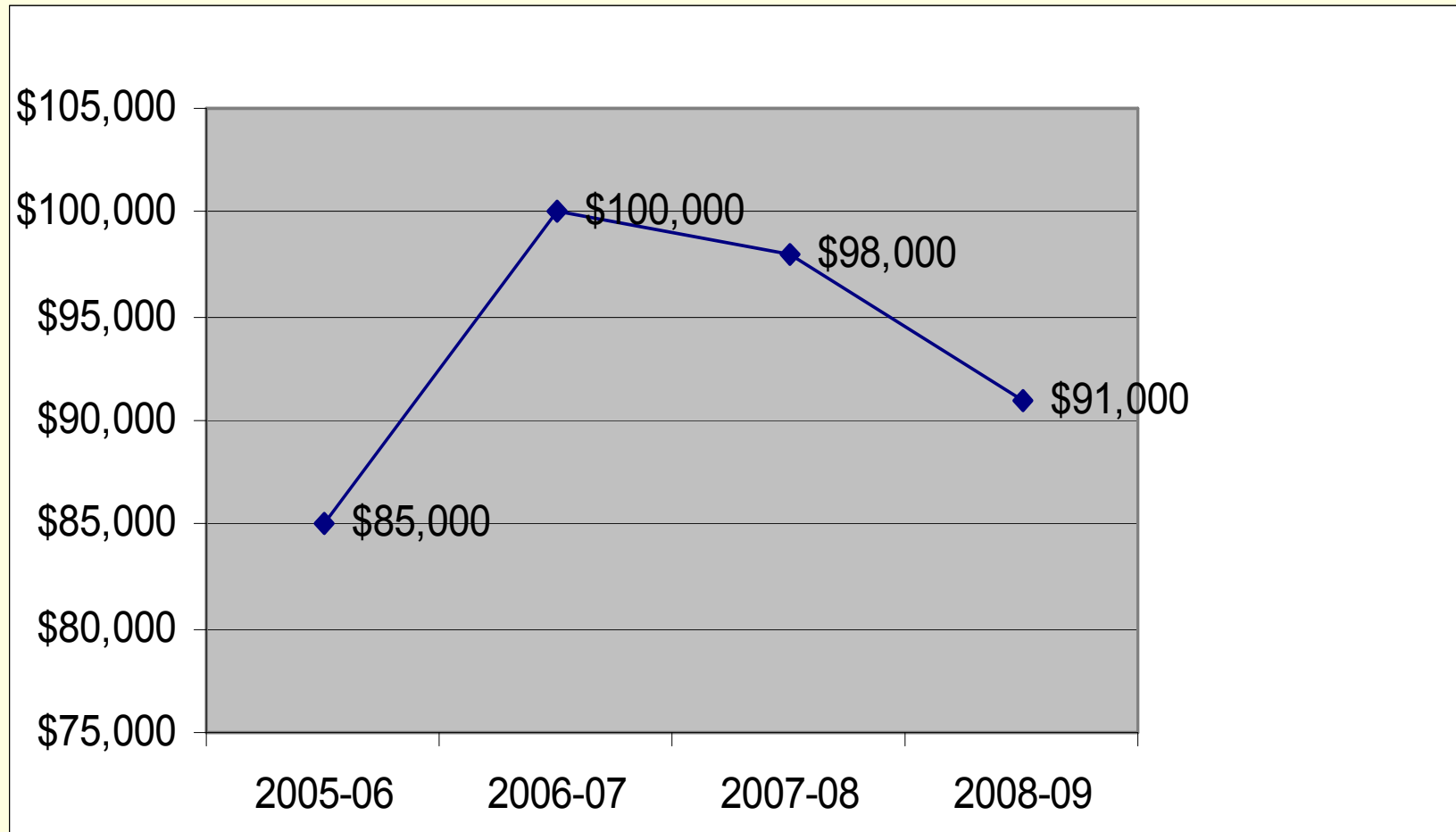


# Water Usage



In Cubic Feet (CF)

# Water Costs



# Energy Costs

## (estimated per hour of usage)

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Area	Est. Cost Per Hour
Classroom Lights	.60
Classroom HVAC Unit	.75
Central Chiller Systems	30.00 – 100.00
Gym Lights	5.00
Football Stadium Lights (backlights for Baseball Field)	22.00
Tennis Court Lights	10.00
Pool Heating (Gas)	1.00
Pool Pumps etc,	3.00

\* Numbers reflect usage and parts replacement.  
Labor cost and filter replacement costs are not included

# 2010-11 Utilities Efficiency Goals

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1. Reduce Gas, Water, and Electricity Consumption and Costs
2. Collaborate with School Site Administrators on:
  1. Keeping classroom doors closed
  2. Utilizing drapes and shades in rooms
  3. Reducing/eliminating the use of refrigerators, microwaves coffee-makers, space heaters, etc.
  4. Ensuring that power save modes are on all computers and office copiers
  5. Cover the pool when not in use to maintain proper heating
  6. Reduce/limit water usage for field and playgrounds
3. Calculate costs of providing school facilities for Community User Groups
4. Maintain strict set points on HVAC units and restrict usage
5. Improve maintenance and custodial procedures to enhance energy conservation
6. Expand irrigation controls to reduce water usage
7. Monitor utility consumption to adjust rate tiers

# Long Term Goals

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1. Renew Central HVAC Chillers and expand service
2. Phase in LED lighting
3. Expand energy management system (EMS) to include stand-alone A/C units, lighting, irrigation controls, etc.
4. Change out older window AC units (compliant with new anti-ozone depleting refrigerant codes)
5. Install variable speed drives on major mechanical equipment
6. Expand replacement of urinals with waterless units
7. Research new energy sources and alternatives

# Questions & Answers

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