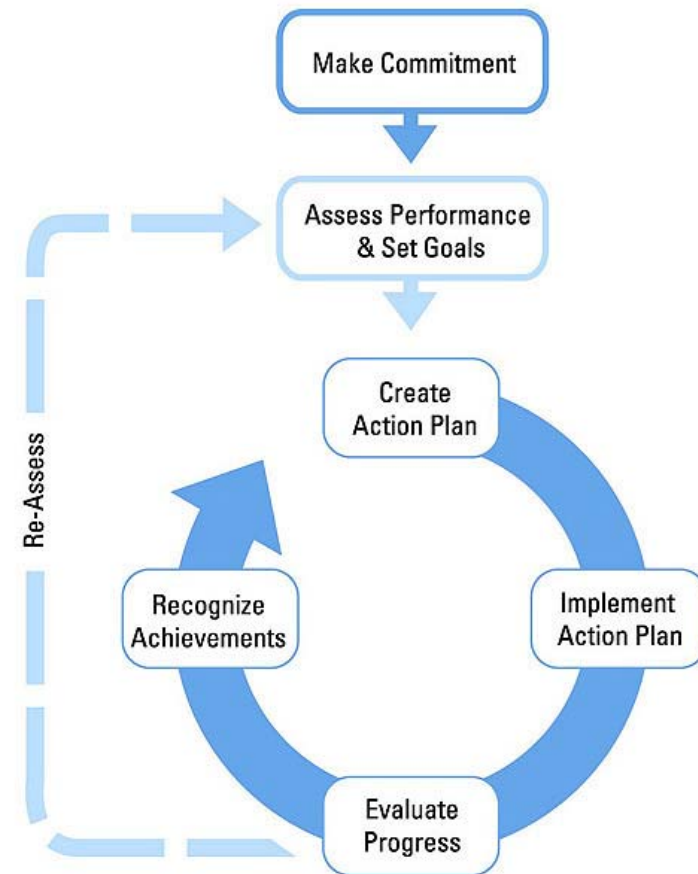


**From 40 to 75:**  
**How did you do it?**  
*Improving building performance*  
**July 21, 2004**

# About The Web Conferences



- **Monthly**
- **Topics are structured on a strategic approach to energy management**
- **Help you continually improve energy performance**
- **Opportunity to share ideas with others**
- **Slides are a starting point for discussion**
- **Open & Interactive**



# Web Conference Tips



- Mute phone when listening! Improves sound quality for everyone.
- If slides are not advancing, hit refresh or close presentation window and press the re-launch button again.

# Today's Web Conference



- Background
- Gary Thompson – St. Francis Hospital
- Bob Heimkes - Hines
- Questions & Discussion
- Announcements

# From 40 to 75



## 1900 K Street

- **Built in 1995 with efficiency in mind:**
  - Efficient lighting; lamps & ballasts
  - VFDs on all AHU's and Cooling Towers
  - Thermal glazing windows
  - Lighting controls incorporated into EMS
  - EMS
- **Benchmarked in 1999 - 32**

# From 40 to 75



- **Bought by Hines in Fall 2000**
- **Hines applies its operating standards and other efficient practices**
- **Benchmark scores improve dramatically**
  - 1999 32
  - January 2002 70
  - September 2002 75
- **Improvements achieved largely without new technology and capital investments**

# **ENERGY STAR**

## **Web Conference**

Gary Thompson

*St. Francis Hospital & Health Services*

Maryville, Missouri



# Hospital History

- Founded in 1894
- At present location since 1970
- Full service, fully accredited
- 81 licensed beds
- Member of  
SSM Health Care





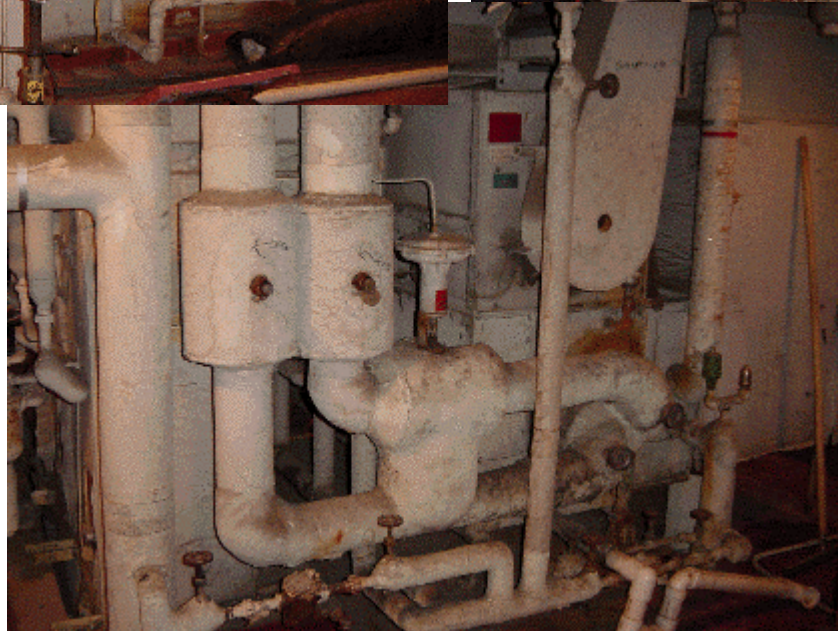
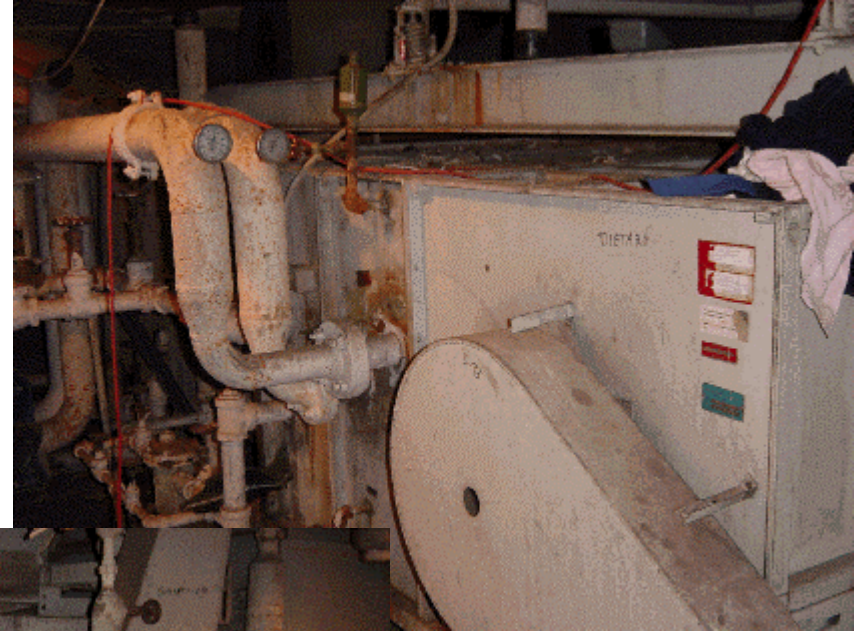
# Hospital Structure

- In 2002, 150,000 square feet
- In 2003–04, added 40,000 square feet
  - Private Rooms
  - Physician Office
- Current project will increase square footage to over 200,000
  - Operating Rooms & Ambulatory Surgery Suite

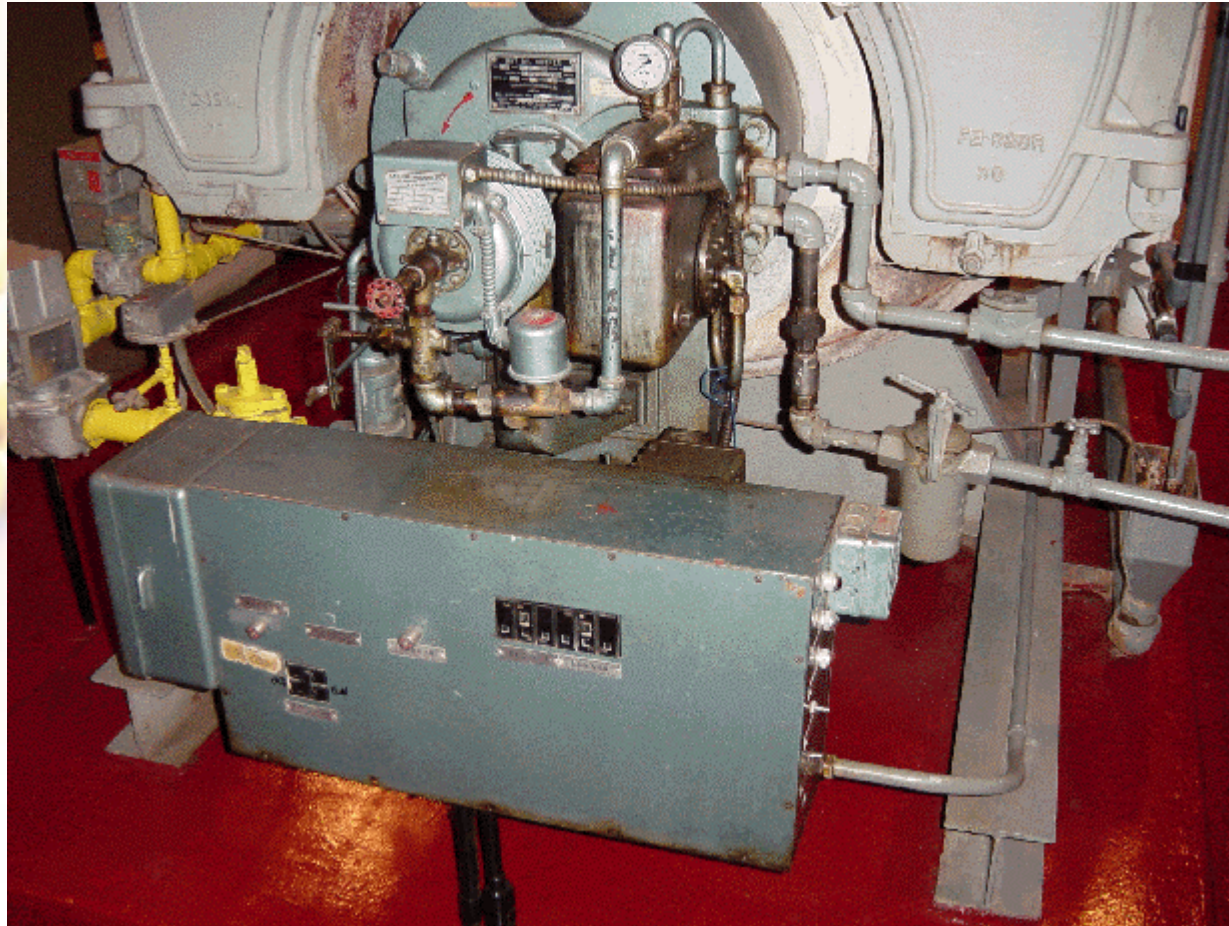
# **ENERGY STAR Involvement**

- 2001 – Attended ENERGY STAR Conference
- 2002 – Implemented improvements
  - Saved 41% on gas bill and 17% on electric bill
  - Slashed electricity consumption by 50% 2003
- 2003 – 1<sup>st</sup> Hospital in State of Missouri to receive ENERGY STAR Label

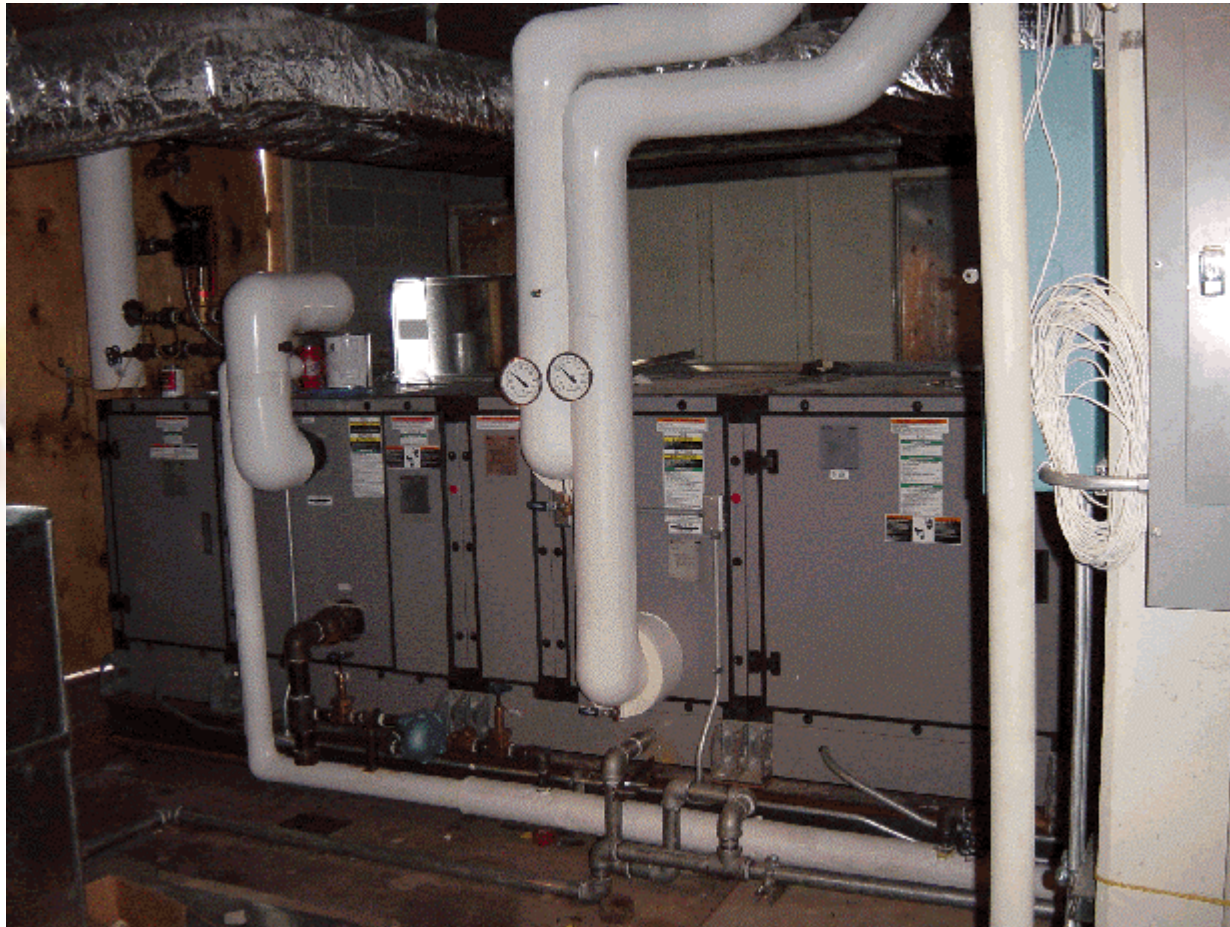
# OLD Air Handling



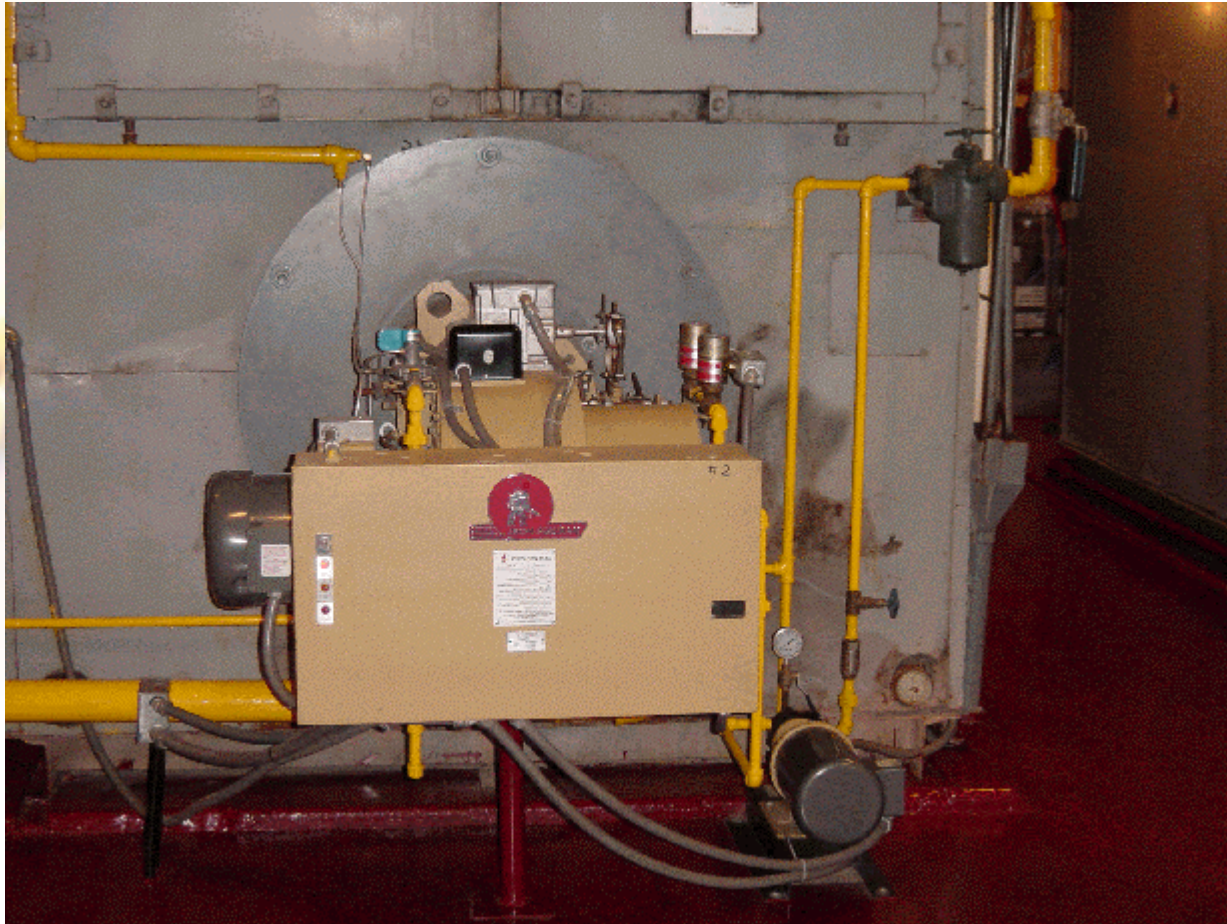
# OLD Burners



# NEW Air Handling



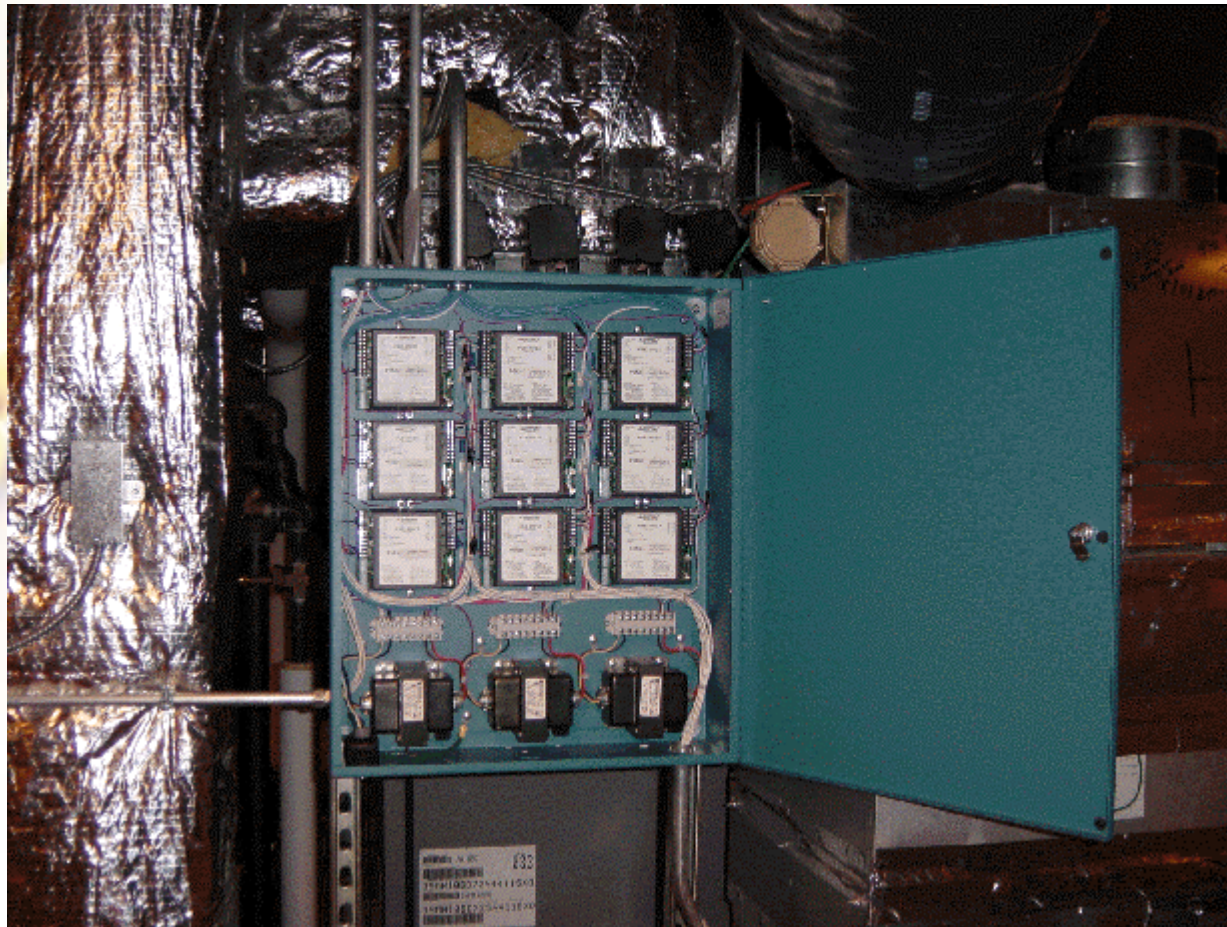
# NEW Burners



# NEW Heat Exchangers



# NEW DDC Controls

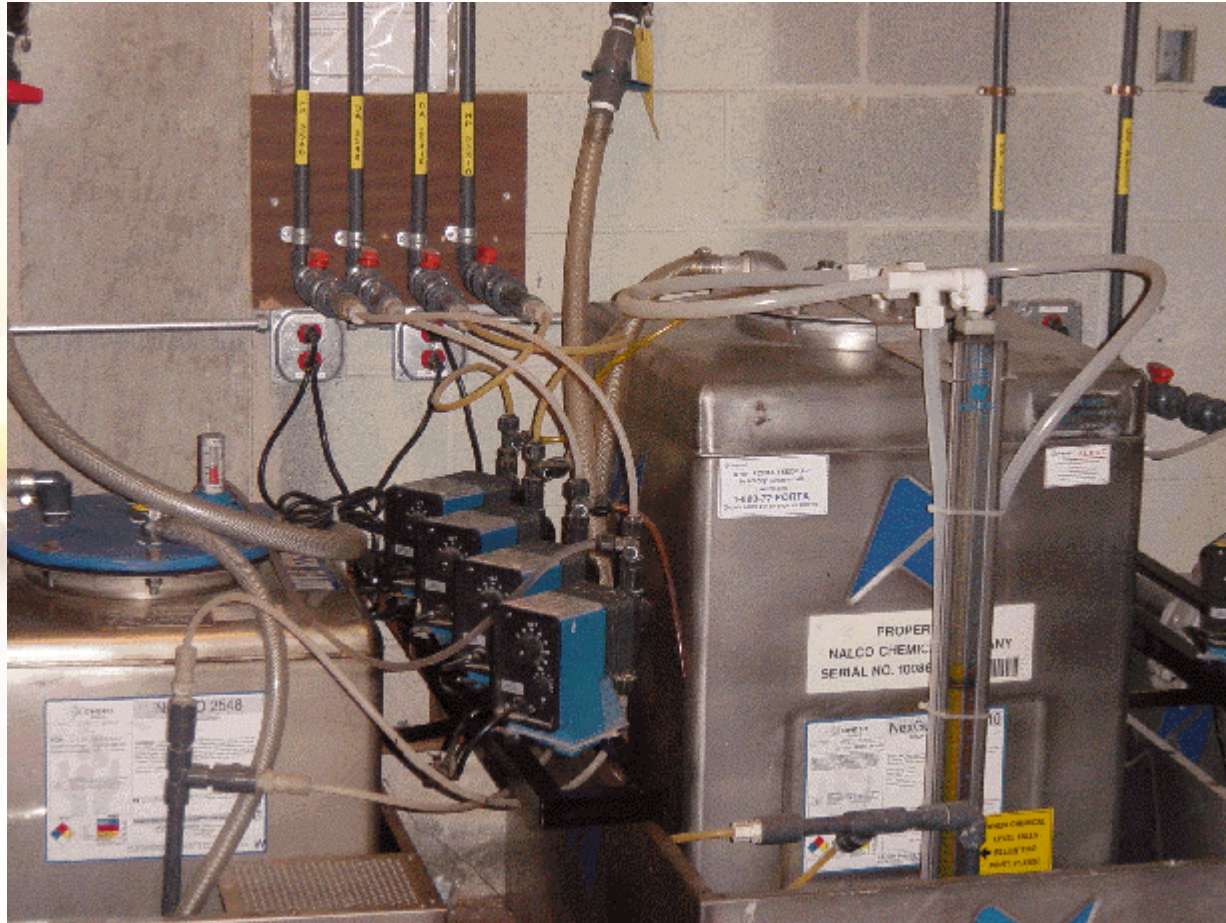




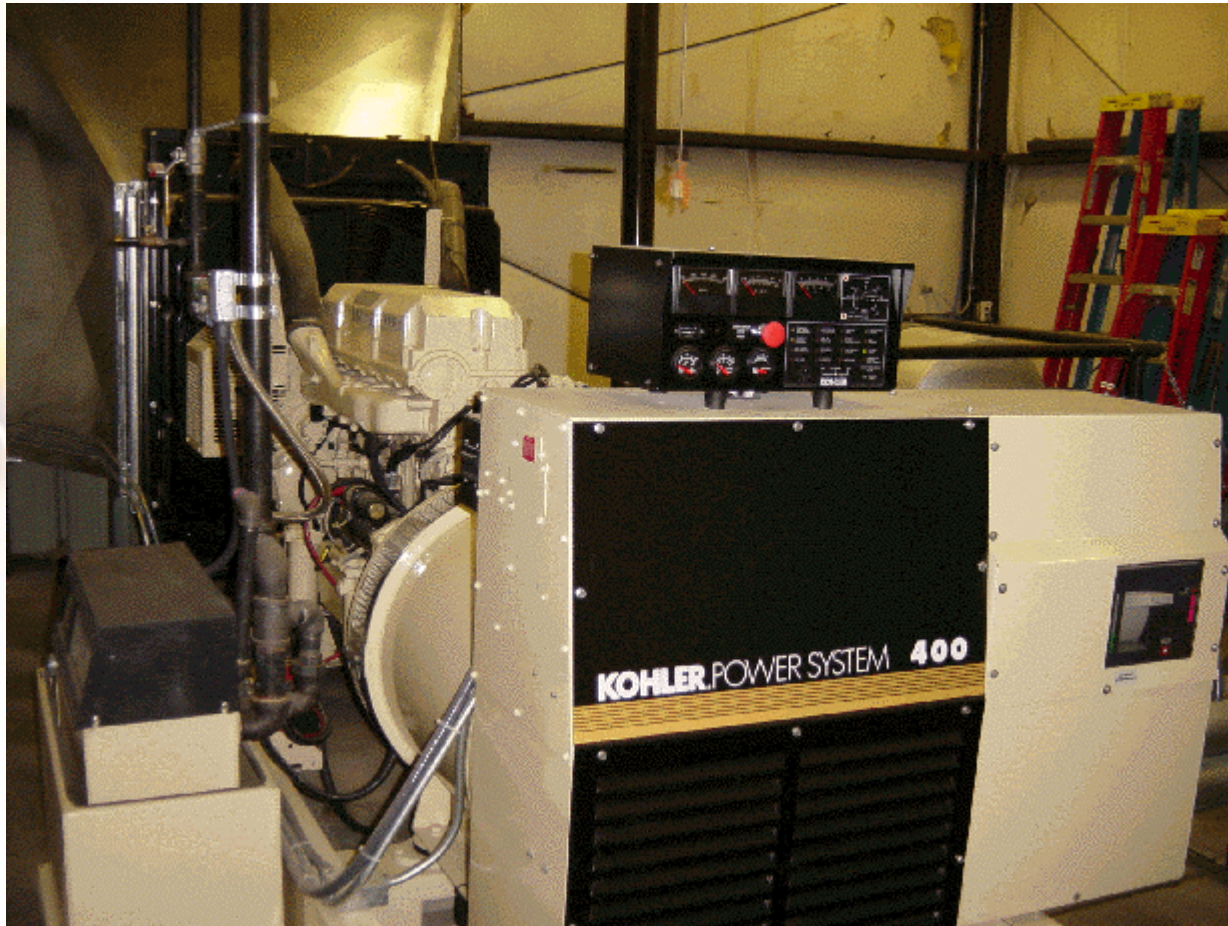
# NEW DDC Water Controls



# NEW Water Treatment System



# NEW 415 Kw Generator



# NEW Cooling Tower Controls



# NEW Marley Cooling Tower



# Getting A Business Attitude About Energy Management And Maintenance

July 21, 2004

Robert Heimkes

**Hines**



# History

- Hines is a privately owned real estate firm involved in developing, acquiring, leasing and managing real estate, as well as providing global investment management and advisory services.
- The Hines portfolio of projects completed and under way includes 700 properties representing 244 million square feet of office, mixed-use, industrial, hotel, sports facilities and residential properties, as well as large, master-planned communities and land developments.
- With offices in 69 U.S. cities and 12 foreign countries, and controlled assets valued in excess of \$14 billion, Hines is one of the largest real estate organizations in the world.



Something To Ponder...



# Energy Optimization

**Energy Conservation** - Reducing Energy But Impacting Tenants

**Energy Efficiency** - Reducing Energy Without Negatively Impacting Tenants

# Hines Operational Standards

1. Personnel Development (Development Of Skill-sets)
2. Physical Facilities (Presentation, Organization, Safety)
3. Preventive Maintenance (Functional, Protect Asset)
4. Energy Management (Core-competence, Reputation)
5. Equipment Efficiency Testing (Cost Control)
6. Water Treatment (Health/Safety, Protection Of Asset)
7. Environmental Management (Health/Safety)

# Energy Management Strategy

*Improvement Upgrades That Meet  
The Business Objective Of The Asset*

Amortization (Together With Reasonable Actual Or Imputed Financing Charges) Of Capital Improvements Made To The Building That (i) Are Reasonably Designed To Improve The Quality Or (ii) Operating Efficiency Of The Building

# Energy Management Strategy

*Accountability And Recognition For  
Energy Management Results*

# How Hines Manages Energy

Energy Efficiency Starts And Continues When **Capable And Caring Engineering Managers** Operate Their Building In An Efficient Manner.

This Requires Training And Experience To Build The Knowledge To Develop **(6) General Skill-sets.**

# Engineering Manager Skill-sets

1. Understand Basic Energy Management Concepts
2. Understand The Operating Dynamics Of Their Building
3. Aware Of New Technologies
4. The Vision And Willingness To Think Outside The Box To See How The Operation Could Be Changed
5. The Skill To Calculate Payback
6. The Leadership To Incorporate Change

# How Hines Manages Energy

*To Apply Those Skills...Engineering  
Managers Must Have  
Good Operating Data*

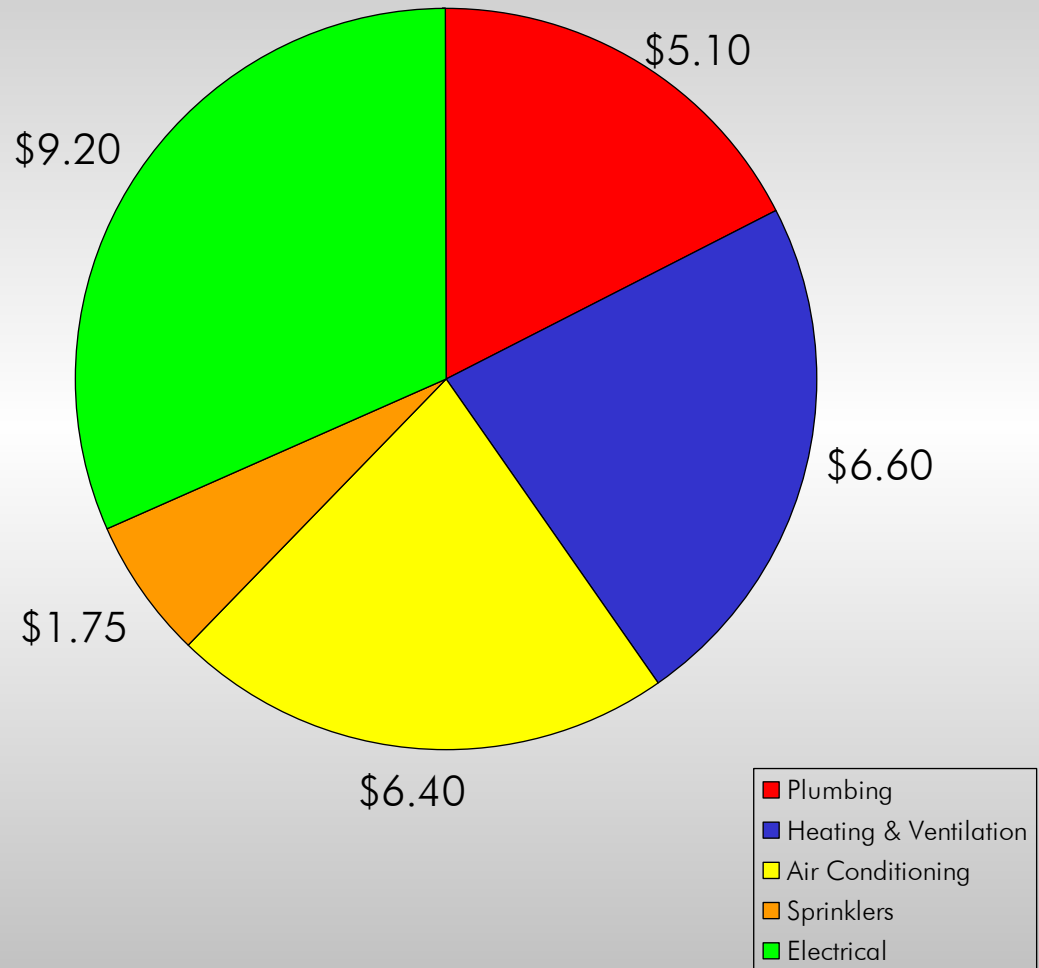
# BOMA Experience Exchange Report

Expense Category	2000 BOMA Figures	Hines
Repair & Maintenance	\$1.36	\$0.91
Utilities	\$1.83	\$1.10



# Mechanical

- Hines Midwest:  
38 million sq. ft.
- Current  
replacement MEP  
System  
\$986,080,000



# Energy Management

*How Does Hines  
Manage Energy Retrofits?*

# Common Retrofits at a Hines Building

Description of Retrofit	Annual KWH Change
Phase I of the lighting retrofit consisted of changing out 15,000 light fixtures relamped with T-8 32 watt bulbs and electronic ballasts. Total cost of the project was \$630,000. A rebate of \$200,000 was received from NSP and the remaining amount was financed over 3 years. The projected savings of 500 kW in demand charges and 120,000 kWh per month were met.	1,140,000
Phase II of the lighting retrofit consisted of changing all 100 watt incandescent bulbs to 15 watt compact fluorescent bulbs on US Bank floors. The savings was 480,000 kWh per year with a rebate of \$25,000 from NSP and a payback of 1.3 years.	480,000
Phase III of the lighting retrofit consisted of changing all 90 watt flood lights to 23 watt compact fluorescent bulbs in the common areas. The savings was 125,000 kWh per year with a rebate of \$3,800 from NSP and a payback of 1.6 years.	125,000
A new 30 Hp air compressor was installed to replace the existing air compressor stations that consisted of a combined total of 90 Hp. The savings was 200,000 kWh per year with a rebate of \$3,000 from NSP and a payback of 10 months.	200,000
The building automation system was replaced. The new system has better DDC control for the air handling units and more options available for program scheduling. The control and programming of air handling units, chillers, cooling towers, and heat exchangers have resulted in a savings of \$30,000 per year in steam and electric energy. A turn key cost of this project would have been \$900,000; the engineering staff installed the system in 10 months at a cost of \$200,000.	
Variable Frequency Drives totaling 76 units were installed on all air handling units. The total cost of the project was \$183,000 with a rebate of \$88,900 from NSP and a payback of less than 8 months. This project is saving 450 kW in demand charges and 2,250,000 kWh per year.	2,250,000
The Winter Garden lighting, which consists of 500 watt bulbs, were changed to 100 watt metal halide bulb. This metal halide bulb has more lumen output and longer life expectancy. This project is saving 68,000 kWh per year and has a payback of 2 years.	68,000
The replacement of 70 water heaters sized at 50 gallons with 3000 watt heating elements to 20 gallons with 2000 watt elements will result in 170,000 kWh electrical savings and a cost savings of \$12,000 per year. NSP gave a rebate of \$14,000 and has a payback of 1.6 years.	170,000
Winter Garden, ground and lobby common area lighting out on light sensor. Will now independently control several zones based on exterior ambient light and schedules.	11,300
TCMs installed on elevator machine room AC units, antenna farm and engineering AC units. Installing these devices allows us to reset temps for occupied and unoccupied times. This results in less compressor run time.	15,450

Energy Star Scores: 81 in 1999, 88 in 2001, 80 in 2002, 90 in 2003

# How Hines Views Preventative Maintenance

# What Is The Relationship Between Preventative Maintenance And The Return On Such Activities?

- Equipment Will Perform Better
- Equipment Life Will Be Extended
- Repair Cost Will Fall
- Downtime Will Be Reduced
- Tenant Satisfaction Will Be Increased
- Manufacturer Recommends It

# How Hines Manages Energy

*Determine When, Where And How  
Energy Is Being Used*

# How Hines Manages Energy

*Develop An Action Plan*

# How Hines Manages Energy

*Exercise The Leadership To Affect  
Change*



# How Hines Manages Energy

## *Implement the Action Plan*

- ⇒ Partnering With Experts
- ⇒ Monitoring And Documentation
- ⇒ Management

# How Hines Manages Energy

## *Proven “Result” Drivers*

- ⇒ Accountability Through Long-term Monitoring And Documentation
- ⇒ Recognition!

# Hines Process With Energy Efficiency Measures

*It Varies - Client To Client*

- ⇒ Mission Of The Owner
- ⇒ Changing Priorities
- ⇒ Long-term And Short-term Objectives
- ⇒ Financial Considerations

# Hines Process with Energy Efficiency Measures

*But Almost All EMs Involve The Same 5-Step Process. . .*

1. Determining When, Where, How Energy Is Used
2. Developing An Action Plan
3. Accomplishing Change Through Leadership
4. Implementing The Plan
5. Monitoring The Long-term Results

# Energy Management

*How Does Hines See Energy Efficiency As Beneficial To Its Tenants?*

# Tenant Benefits of Energy Efficiency

## Lower Operating Expense

(Competitive Costs)

## Accurate, Timely Information

(Energy Profiling, Flexibility To Meet Needs)

## Better Responsiveness

(Close Monitoring Of Usage Patterns/Trends)

## Preservation of Utility Infrastructure

(Reduced Loads On Building Risers, Avoided Upgrade Costs)

## Lower Absenteeism, Higher Productivity

(Correlation Between Energy Efficiency-IEQ)

# Hines Benefits of Energy Efficiency

Improves the Value of the Asset

(Viable Long-term Value)

More Attractive Renewal Rates

(Business Initiative)

Retention of Tenants

(Tenant Satisfaction)

# Labeled Building Profiles



Home : ENERGY STAR - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Address: http://www.energystar.gov

## ENERGY STAR®

THE QUALITY OF OUR ENVIRONMENT IS EVERYONE'S RESPONSIBILITY

PRODUCTS	HOME IMPROVEMENT	NEW HOMES	BUSINESS IMPROVEMENT	PARTNER RESOURCES
<a href="#">Appliances, Lighting, Heating and Cooling &amp; more</a>	<a href="#">Solutions to common problems</a>	<a href="#">Make your next home ENERGY STAR</a>	<a href="#">Reduce building and facility energy use in your organization</a>	<a href="#">Join ENERGY STAR Who Has Joined?</a>
<a href="#">Find a Store</a>	<a href="#">Home Energy Analysis</a>	<a href="#">Find Local Homebuilders and other partners</a>	<a href="#">Guidelines for Energy Management</a>	<a href="#">For Manufacturers &amp; Retailers</a>
<a href="#">Special Offers in certain regions</a>	<a href="#">Home Sealing Seal &amp; Insulate</a>		<a href="#">Find Labeled Buildings</a>	<a href="#">For Utilities/Efficiency Program Sp</a>
			<a href="#">Education &amp; Govt</a>	<a href="#">For Home Builders, Lenders, Rate</a>
				<a href="#">For Energy Service &amp; Product Pro</a>

[5 Steps You Can Take To Reduce Air Pollution](#)

### WHAT'S NEW?

- [New Campaign Encourages Consumers to Take 5 Steps at Home](#)
- [Room Air Cleaners Now Can Earn the ENERGY STAR](#)
- [2005 ENERGY STAR Award Applications Now Available](#)
- [Beat the Heat and Lower Your Energy Bills This Summer](#)

ENERGY STAR is a government-business partnership that encourages, supports and recognizes the superior energy efficiency of products, buildings and services.

[EPA Home](#) | [EPA Search](#) | [DOE](#) | [DOE](#)

[Privacy](#) | [Contact Us](#) | [Site Index](#)

[ENERGY STAR Home](#) | [Products](#) | [Home](#) | [New Homes](#) | [Business Improvement](#)

1900 K Street : ENERGY STAR - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Address: http://www.energystar.gov/index.cfm?fuseaction=labeled\_buildings.showProfile&profile\_id=1000466


## ENERGY STAR®

ENVIRONMENTAL LEADERSHIP ADDS VALUE TO YOUR BOTTOM LINE AND CORPORATE REPUTATION

PRODUCTS	HOME IMPROVEMENT	NEW HOMES	BUSINESS IMPROVEMENT	PARTNER RESOURCES	WHAT IS ENERGY STAR?	NEWS ROOM
----------	------------------	-----------	----------------------	-------------------	----------------------	-----------

### ENERGY STAR Labeled Building Profile

1900 K Street  
1900 K St., NW  
Washington, DC 20006



Owned and managed by Hines, 1900 K Street is a distinctive 13-story, 337,000 square foot Class-A office building in the heart of downtown Washington's central business district. Designed by the acclaimed firm of Cesar Pelli & Associates, 1900 K Street features a distinctive curtain wall system, utilizing contrasting bands of glass and raised mullions. The property is further distinguished by a semicircular corner entrance that leads to a glass-walled rotunda and a breathtaking three-story lobby atrium. Tenant amenities include 6,000 square feet of on-site retail, a rooftop terrace and a location near numerous fine-dining restaurants and convenient access to the Washington Metro.

ENERGY STAR certification for 1900 K Street resulted from retrofits to building systems and improvements to building energy management made possible by the use of the existing building automation system to its fullest potential. The major retrofit performed was the installation of variable frequency drives (VFDs) on building chillers, allowing them to operate at speeds commensurate with actual demand. In addition, building management plans to install a VFD on the tenant

**Building Owner:**  
1900 K Street Limited Partnership

**Property Manager:**  
Hines

**Year Labeled:** 2002, 2004  
**Score (by years):** 75, 75

**Space Type:** Office (General)

**Total Floorspace:** 406864 sf  
**Year Constructed:** 1996  
**Energy Intensity:** 75.2 kBtu/sf/yr

**Contract Type:** None

**Technologies Used:**  
Stage 2-Lighting  
+ Occupancy Sensors  
Stage 4-Fan Systems  
+ Cooling Tower VFD's





ENERGY STAR

# Questions & Discussion

# Upcoming Web Conferences



August 18 – Avoiding the O & M Rollercoaster

September 15 – All about the ENERGY STAR Awards

September 9\* – ENERGY STAR Leaders

[www.energystar.gov/networking](http://www.energystar.gov/networking)



ENERGY STAR

**Thank You!**