



**Pit Stop:  
Timely  
Procurement  
Topics**

# Chicago: World Champions in Energy Solutions

By  
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City of Chicago  
August 7, 2006



# Energy Efficiency



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- The city leads by example in energy efficiency.
- The city and sister agencies completed a 15 million square feet retrofit of public buildings with efficient equipment for heating and cooling, lighting and ventilation.
- Energy savings are estimated to be \$6 million annually.



Richard M. Daley  
Mayor



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- The city is in the process of implementing a Global Building Monitoring System (GBMS) to monitor and control energy use at 400 city buildings from a central location.
- Once implemented, GBMS is expected to save the city 40% of its current energy costs.



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- The city Installed energy efficient Light Emitting Diodes (LED), at 700 traffic light intersections.
- LEDs are 85% more energy efficient.
- Savings to the city are estimated at \$2.55 Million/year.
- The goal is to retrofit all 2800 city intersections within 3 years.



# Chicago Industrial Rebuild Program



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- The industrial program helps the most energy and waste intensive industries in Chicago become more energy efficient and competitive.
- An energy intensive industry is selected for participation in the program per year.
- A comprehensive assessment including energy efficiency, productivity improvements & waste reduction is granted to approximately 10 participants per industry.



# Chicago Industrial Rebuild Program



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- Participating industries include metalcasters, chemical companies, confectionary and corrugated product companies.
- Expected energy savings to the participants range from 10% to 25% of the facility's energy use.
- The City offers a no interest loan for implementation to companies that purchase 5% of their electric energy use from renewable energy.



# Chicago Industrial Rebuild Program (CIRP)



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- CIRP is an award winning program that not only provides recommendations on energy use but follows up with loans for implementation, reduces emissions and provides a renewable energy component.

# 2006 Energy Renewable Energy



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- Solargenix – Relocated company to Chicago, manufacturing solar thermal collectors.
- The city is installing over 1500 solar thermal collectors on city facilities and is granting 600 solar thermal collectors to residential and small business.
- These systems can reduce water-heating costs by up to 70% on certain applications.



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# Chicago: World Champions in Energy Solutions

## The Adler Planetarium

By

William Wilhelm  
Director of Operations  
Adler Planetarium  
August 7, 2006



# The Adler Planetarium

## 2006



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# Adler Planetarium



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- The Adler Planetarium & Astronomy Museum opened to the public May 12<sup>th</sup> 1930
- The Adler Planetarium was the first Planetarium in the Western Hemisphere
- Major renovations in 1970, 1984, 1990 and 1999



# The Adler Planetarium

## 2006



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# Original 1930's Structure



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- Loss of conditioned air due to high building pressures
- Complaints about building temperatures
- Inadequate automated building digital control system
- Unacceptable allocation of valuable engineers time to resolve issues

The logo features a stylized sun with rays in orange and yellow, positioned above the year '2006' in orange. Below '2006' is the word 'Energy' in blue, and to its right is the word 'Solution' in a larger blue font. The background of the header is a blue sky with clouds and a road curving into the distance.

# 2006 Energy Solution



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- Actively engaged the City of Chicago to pursue energy efficiency opportunities
- Commissioned ComEd to conduct an energy study
- The City of Chicago Department of Environment provided a grant to fund the Study



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- 17 opportunities identified
- 152,000 kWh of electrical savings identified
- 1,000 MMBtu of natural gas savings identified
- The need to re-commission the newly installed digital control system also identified



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- Lighting – Retrofit with newer technology
- HVAC – Improve efficiency of control sequence and optimize air flow
- Chillers – Improve sequencing for higher efficiency



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- Boilers – Improve combustion efficiency
- Steam – Eliminate the need for manual control of steam flow
- Digital Control System – Add additional controls and commission existing system



# Implementation



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- Partnered with ComEd to manage the implementation as a single project
- The city of Chicago Department of Environment provided a grant and low interest loans to fund the implementation



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- Lighting – Replace existing T12 fluorescent systems with T8 & compact fluorescent. De-lamp and utilize specular reflectors.





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- HVAC – Perform air balancing to optimize air flow & implement enthalpy economizer sequencing
- Chillers – Maximize chiller efficiency by correcting automated chiller sequencing
- Cooling Towers - Repair condenser water bypass valve & correct fan staging



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- Boilers – Reduce  $O_2$  & replace natural gas valve control linkages
- Steam – Replace undersized steam valves and eliminate manual bypass valve



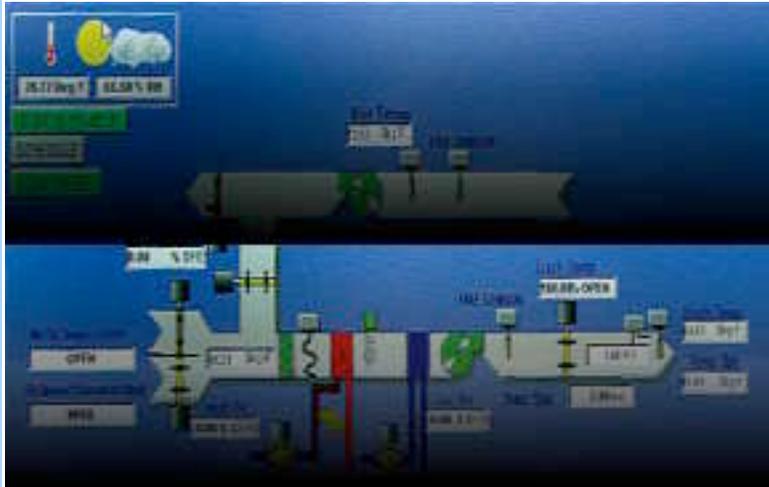


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- Digital control system – Commission the existing digital control system, add new controls to older air handlers integrate new controls with existing system



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- Graphical display allows for easy operator Control

- Local air handler control





# 2006 Energy Results



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- Decreased energy use by 7%
- Improved occupant comfort
- Increased capability to monitor and control major mechanical equipment
- Improved allocation of staff time
- Updated and accurate as-built control drawings



**Thank You**