

---

# Chicago: World Champions in Energy Solutions

**Pit Stop: Timely Procurement Topics**

**Session 3B**

**August 7, 2006**





Urban Planning Tools for Creating a  
Cooler, Greener Community

IMPLEMENTATION IN THE COMMUNITY  
CHICAGO CASE STUDY



Richard M. Daley,  
Mayor

July 2006

# CHICAGO'S GREEN INITIATIVES: A TIMELINE



Richard M. Daley,

# GREEN PROJECTS



Chicago Center for Green  
Technology: The Country's First  
LEED Platinum Municipal Building



Building-integrated solar  
panels at CCGT

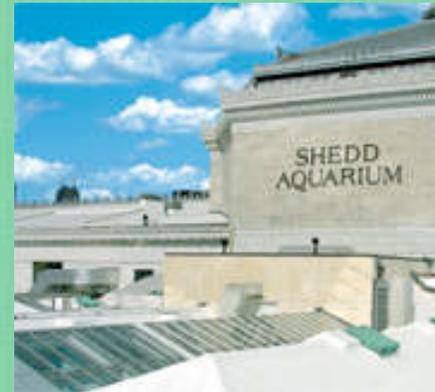


City Hall Green Roof



# URBAN HEAT ISLAND PROJECTS

- Greening / Landscape
- Reflective Roofs / Rooftop Gardens
- Urban Heat Island Mapping
- Permeable / Reflective Pavement



# REGULATORY INITIATIVES

---

## Ordinances

- Landscape Code
- Energy Conservation Code
- Reflective Roofing Code
- Rooftop Garden Code



*Richard M. Daley,*

# ENERGY EFFICIENCY AND RENEWABLE ENERGY: ACCOMPLISHMENTS

---

## Energy Efficiency

- Energy efficiency retrofits
- LED traffic lights installed
- Chicago Industrial Rebuild Program
- Residential weatherization programs



*Richard M. Daley,*

# ENERGY EFFICIENCY AND RENEWABLE ENERGY: ACCOMPLISHMENTS

---

## Renewable Energy

- Solar photovoltaic – over 1MW installed
- Solar thermal
- Wind Turbines – on 34 story downtown Daley Center



*Chicago Art Institute Roof*



# THE CHICAGO ENVIRONMENTAL ACTION AGENDA

---

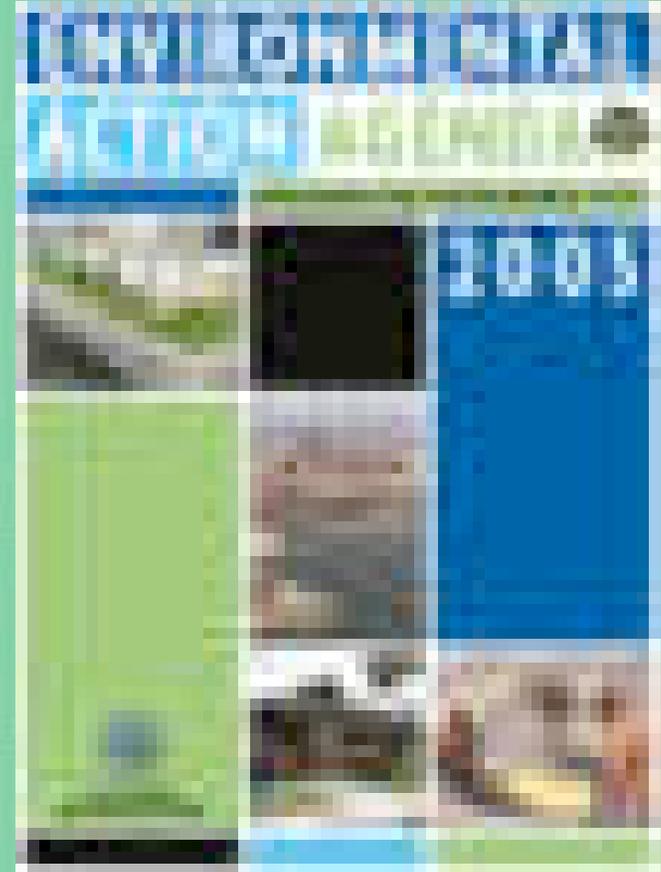
Cross departmental efforts to:

- Conserve, protect and restore natural resources
- Encourage healthy environmental practices
- Leading by example

— 16 Sub-committees

— 10 months of collaborative work

Updated in 2006



*Richard M. Daley,*



THANK YOU

Brendan Daley, Deputy Commissioner  
Chicago Department of Environment  
30 North LaSalle, Suite 2500  
Chicago, Illinois 60602  
Phone: 312-744-8901  
[bdaley@cityofchicago.org](mailto:bdaley@cityofchicago.org)



**Pit Stop:  
Timely  
Procurement  
Topics**

# Chicago: World Champions in Energy Solutions

By  
Kelly Kennoy  
City of Chicago  
August 7, 2006



# Energy Efficiency



**Pit Stop:  
Timely  
Procurement  
Topics**

- 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



**Pit Stop:  
Timely  
Procurement  
Topics**

- 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.



**Pit Stop:  
Timely  
Procurement  
Topics**

- 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



**Pit Stop:  
Timely  
Procurement  
Topics**

- 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



**Pit Stop:  
Timely  
Procurement  
Topics**

- 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)



**Pit Stop:  
Timely  
Procurement  
Topics**

- 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



**Pit Stop:  
Timely  
Procurement  
Topics**

- 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.



Pit Stop:  
Timely  
Procurement  
Topics

# Chicago: World Champions in Energy Solutions

## The Adler Planetarium

By

William Wilhelm

Director of Operations

Adler Planetarium

August 7, 2006



# The Adler Planetarium

## 2006



**Pit Stop:  
Timely  
Procurement  
Topics**





**Pit Stop:  
Timely  
Procurement  
Topics**

- 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



**Pit Stop:  
Timely  
Procurement  
Topics**





# Original 1930's Structure



**Pit Stop:  
Timely  
Procurement  
Topics**





**Pit Stop:  
Timely  
Procurement  
Topics**

- 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



**Pit Stop:  
Timely  
Procurement  
Topics**

- 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



**Pit Stop:  
Timely  
Procurement  
Topics**

- 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



**Pit Stop:  
Timely  
Procurement  
Topics**

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



**Pit Stop:  
Timely  
Procurement  
Topics**

- 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



**Pit Stop:  
Timely  
Procurement  
Topics**

- 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



**Pit Stop:  
Timely  
Procurement  
Topics**

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





**Pit Stop:  
Timely  
Procurement  
Topics**

- 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



**Pit Stop:  
Timely  
Procurement  
Topics**

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



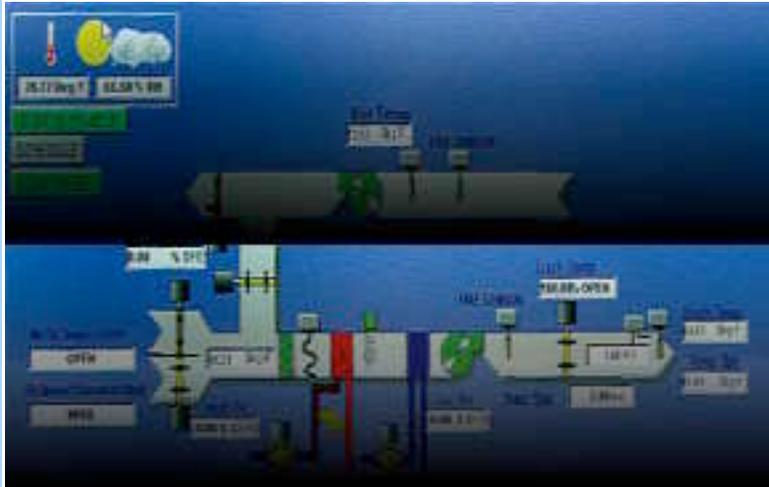


**Pit Stop:  
Timely  
Procurement  
Topics**

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



**Pit Stop:  
Timely  
Procurement  
Topics**



- Graphical display allows for easy operator Control

- Local air handler control





# 2006 Energy Results



**Pit Stop:  
Timely  
Procurement  
Topics**

- 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**

---

# Chicago: World Champions in Energy Solutions

**Joe Nelson, F&F Foods**  
**August 7, 2006**





Pit Stop:  
Timely  
Procurement  
Topics

- Who are we:
  - Confectionery Manufacturer with OTC Drug license
  - Manufacture Private label cough drops, candy and mints
  - Brand names include Smith Brothers, Daily C, Foxes & Sen Sen



DAILY-C





Pit Stop:  
Timely  
Procurement  
Topics

- F & F Foods moved into existing building in 1935
- New Owners acquired business in 1995
- Acquired with business
  - High Building Maintenance Cost
  - High Utility Cost
  - Old Culture in production department



# F & F Foods, Inc.



**Pit Stop:  
Timely  
Procurement  
Topics**

- Call Industrial Rebuild group (Dave Elsing) and request to be included in program
- Approximately 12 Engineers arrive at door
- Split up into teams and scour plant
- Engineers met after 2 - 3 days to agree on improvement suggestions sorted by greatest ROI



**Pit Stop:  
Timely  
Procurement  
Topics**

- Meet for Blue Sky meeting where all ideas are presented to F & F management
- Total process took no more that 10 days
- Final report received in both executive summary and detailed formats with each area of improvement listed along with the corresponding projected payback



**Pit Stop:  
Timely  
Procurement  
Topics**

- Industrial Rebuild program helped F & F do the following:
  - Borrow funds from City at zero interest in order to replace high cost items (A/C & Boiler)
  - Identify cost saving areas with the highest ROI
  - Present detailed information from outside Engineers that was used to transfer knowledge to new management team in plant



**Pit Stop:  
Timely  
Procurement  
Topics**

## F & F Foods, Inc. ROI on Industrial Rebuild Program

			Average Annual	Anticipated
	Loan Amt	Expenditures	Savings	Payback period
				in Years
Loan Received	500,000			
A/C		280,120	63,700	4.40
Boiler		273,445	57,510	4.75
Total	500,000	553,565	121,210	4.57

 2006  
Energy

# F & F Foods, Inc.



**Pit Stop:  
Timely  
Procurement  
Topics**





# F & F Foods, Inc.



**Pit Stop:  
Timely  
Procurement  
Topics**

