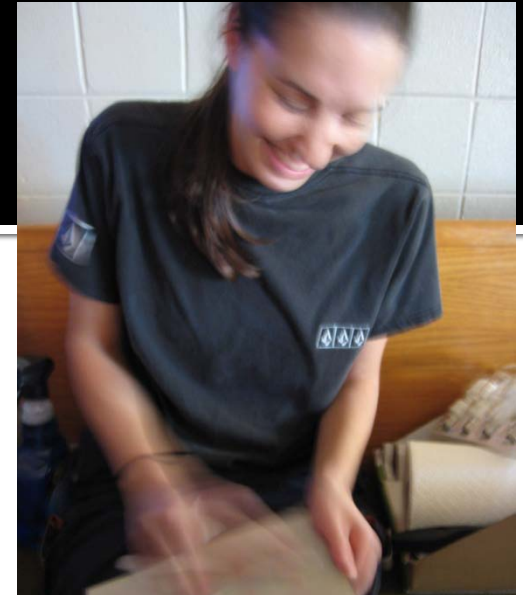


IPRO 328

Continuation from Spring 2009

# Church Energy Efficiency Program

# Introductions



# The Problem

- Many churches within Bronzeville area
  - Energy inefficient older buildings
  - Lacking in resources to correct the problems
- Impact
  - Financial burden
  - Environmental impact

# Our Mission

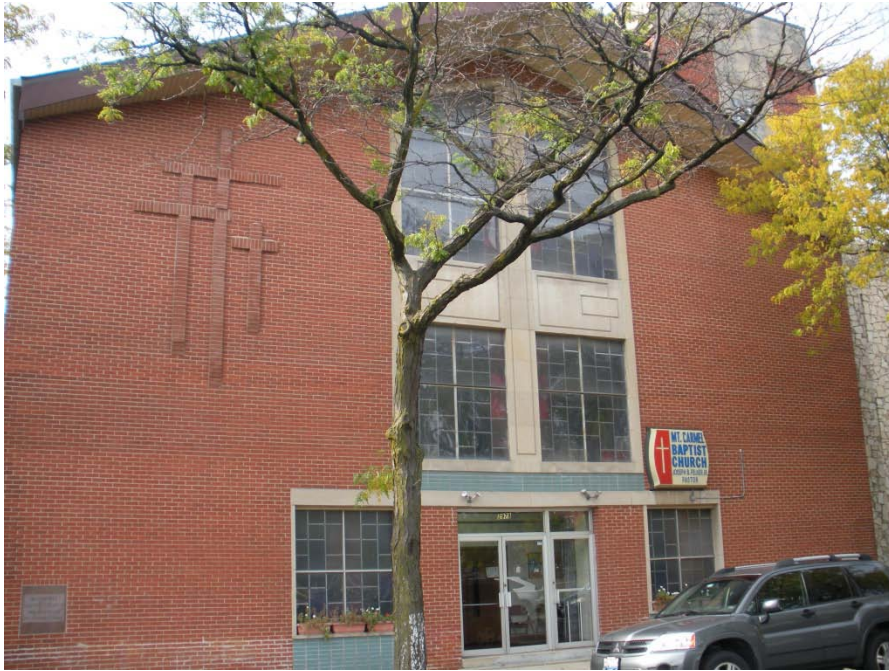
- Develop a program to improve energy efficiency in local churches
- Establish a volunteer service organization to implement improvements
- Offer an interactive website to unite churches and volunteers

# Selection and Analysis

- Screen candidates and select sites
- Perform energy audit
- Plan tasks for service day work
- Analyze results

# Site Selection

- Mount Carmel Baptist Church



- Morningstar Baptist Church of Chicago



# Energy Audits

- Identify problem areas
- Catalogue lamp type, wattage, and count for all fixtures
- Determine solutions for service day work
- Identify larger problems
  - assisted by Vince Cushing of Clean Urban Energy



# Energy Audits



Deteriorating window sill  
allows air infiltration



Unnecessary 300 Watt  
incandescent lamps



# Service Days

- Many simple fixes done at each site
  - Caulking of windows
  - Changing incandescent lamps to compact fluorescents
  - Adding insulation to pipes and windows
  - Weatherstripping
  - Redirection of heat vents
  - Replacement of air filters

# Service Days



Installation of window film



Weatherstripping operable window



Changing out light fixtures



Insulating hole in steeple

# Results and Analysis

|                              | Morningstar Church     |                                |
|------------------------------|------------------------|--------------------------------|
|                              |                        |                                |
| <b>Number of bulbs</b>       | <b>Initial wattage</b> | <b>New Wattage</b>             |
| 88                           | 9399                   | 1232                           |
|                              |                        |                                |
| <b>Watts Saved</b>           |                        | <b>Dollars Saved</b>           |
| 8168                         |                        | \$1020/year                    |
|                              |                        |                                |
| <b>Cost of Materials</b>     |                        | <b>Estimated Cost of Labor</b> |
| \$500                        |                        | \$750                          |
|                              |                        |                                |
| <b>Net Savings</b>           |                        |                                |
| <b>\$1250</b>                |                        |                                |
| Based on 1000 hours per year |                        |                                |

|                              | Mt. Carmel Church      |                                |
|------------------------------|------------------------|--------------------------------|
|                              |                        |                                |
| <b>Number of bulbs</b>       | <b>Initial Wattage</b> | <b>New Wattage</b>             |
| 69                           | 4674                   | 966                            |
|                              |                        |                                |
| <b>Watts Saved</b>           |                        | <b>Dollars Saved</b>           |
| 3708                         |                        | \$1200/year                    |
|                              |                        |                                |
| <b>Cost of Materials</b>     |                        | <b>Estimated Cost of Labor</b> |
| \$300                        |                        | \$810                          |
|                              |                        |                                |
| <b>Net Savings</b>           |                        |                                |
| <b>\$1700</b>                |                        |                                |
| Based on 2500 hours per year |                        |                                |

# Energy Corps Development

- Recruit students to join Corps
- Team with Service Learning
- Provide training to volunteers
- Prepare organization for the future

# Recruiting

- Members of the energy corps subteam set out to recruit members for service days
  - Member's friends
  - Greek organizations
  - IIT Service Learning
- Interested students were then contacted with what they were comfortable doing and which service days they could attend



Energy Corps from Mt. Carmel service day

# Training

- Training session conducted with potential volunteer students at Farr Hall.
- Students educated on basics of work to be done and practiced sample work
  - Caulking joints
  - Insulating pipes
  - Weather stripping doors

# Training



Practicing caulking



Teaching to caulk



# Positioning the Organization

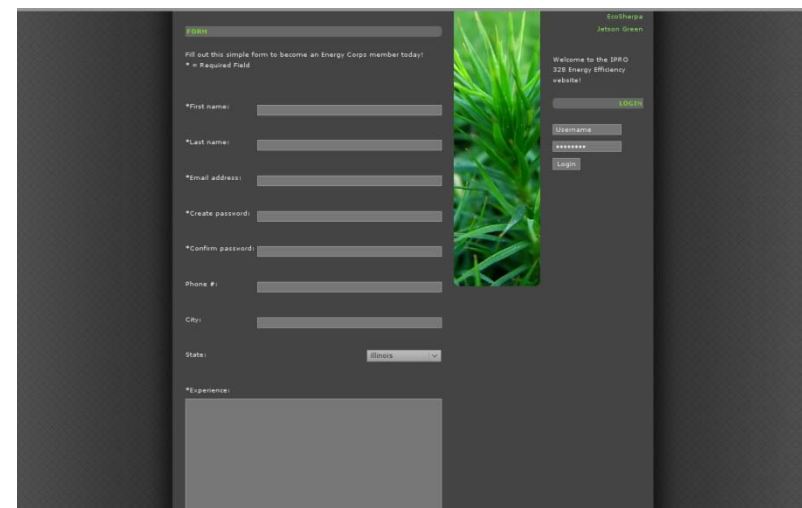
- Team presented at a recent Wanger Institute for Sustainable Energy Research meeting to generate interest from WISER board
- Met with Kent Law student to discuss legal aspects of moving toward either an official organization through IIT or a non-profit organization through the State of Illinois.

# Website

- Previous website needed improvement
  - Too specific to previous work
  - Lacked interaction among users
- Redesigned to reflect current Energy Corps vision

# Website as HQ for Energy Corps

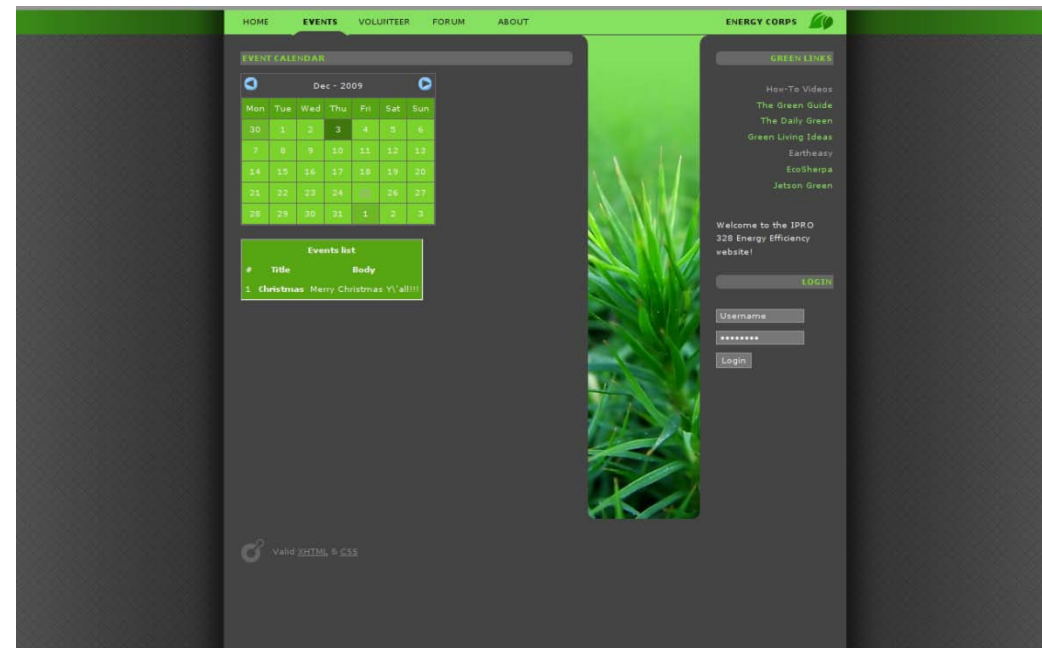
- See past work
  - Information on the Energy Corps and its mission
  - Projects that have been accomplished
- Sign up as a volunteer
  - Receive notifications on upcoming events
  - Talk to other volunteers and energy-conscious individuals



The screenshot shows a registration form on a dark-themed website. The form is titled "JOIN" and includes a sub-header "Fill out this simple form to become an Energy Corps member today!". A note indicates that fields with an asterisk are required. The form contains the following fields: First name, Last name, Email address, Create password, Confirm password, Phone #, City, State (a dropdown menu with "Illinois" selected), and Experience (a text area). To the right of the form is a vertical image of green grass. Further right is a login section with the text "Welcome to the DFO 228 Energy Efficiency website!" and a "LOGIN" button. Below the login button are fields for Username and Password, and a "Login" button. The top right corner of the page displays the user's name "Eusthappa Jeyson Green".

# Website – Calendar

- Details on upcoming events
  - Training Days
  - Audits
  - Other outreach events



The screenshot shows a website interface with a green header and navigation menu. The main content area features an event calendar for December 2009. The calendar is a grid with days of the week as columns and dates as rows. A single event is listed for December 1st. To the right of the calendar is a vertical image of green grass. Further right is a sidebar with a 'GREEN LINKS' section containing several links, a 'LOGIN' section with input fields for 'Username' and 'Password', and a 'Login' button. At the bottom of the page, there is a small logo and the text 'Valid XHTML, © CSS'.

HOME EVENTS VOLUNTEER FORUM ABOUT ENERGY CORPS

EVENT CALENDAR

Dec - 2009

| Mon | Tue | Wed | Thu | Fri | Sat | Sun |
|-----|-----|-----|-----|-----|-----|-----|
| 30  | 1   | 2   | 3   | 4   | 5   | 6   |
| 7   | 8   | 9   | 10  | 11  | 12  | 13  |
| 14  | 15  | 16  | 17  | 18  | 19  | 20  |
| 21  | 22  | 23  | 24  | 25  | 26  | 27  |
| 28  | 29  | 30  | 31  | 1   | 2   | 3   |

Events list

| # | Title     | Body                      |
|---|-----------|---------------------------|
| 1 | Christmas | Merry Christmas Y'all!!!! |

GREEN LINKS

- How-To Videos
- The Green Guide
- The Daily Green
- Green Living Ideas
- Eartheasy
- EcoShepa
- Jetson Green

Welcome to the IPRQ 328 Energy Efficiency website!

LOGIN

Username:

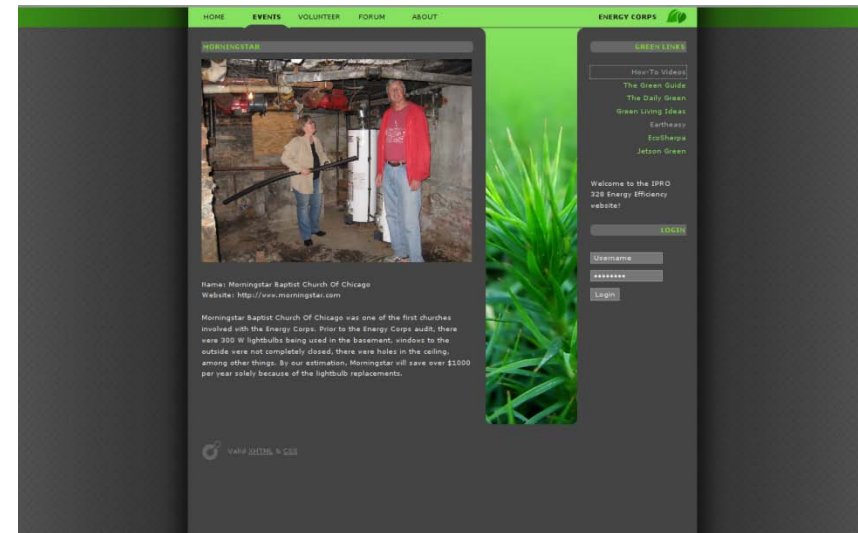
Password:

Login

Valid XHTML, © CSS

# Website – Church Pages

- View list of involved churches
- Detailed church information
  - Testimonials
  - Money saved
- Information and pictures about the audit process



# Website – Tips & Videos

- Easy money-saving tips
  - Changing light bulbs
  - Sealing windows
- How-to videos



# Conclusions

- A Learning Experience
  - We learned from many fields at IIT involved with the building field
  - About 50% of volunteers showed up
  - Mt. Carmel hands off, Morningstar hands on
- How we would do things differently
  - How can we get church members involved?
  - More time between audit and service days
  - Additional promotional avenues for recruitment

# The Future of IPRO 328

- Consider forming a Not-For-Profit Organization or an IIT student organization
- Track energy use at churches where work was completed
- Assist interested churches in pursuing large scale projects
- Reorganize and promote volunteer program through multiple avenues



# Testimonials



- “Hi! Just a short note to thank you and your crew not only for your labor and expenses but, for the beautiful attitude evidenced by all. I speak for Pastor Hardaway and the entire church body when I say ‘thank you’ with profound sincerity. Also, I will continue to be your point of contact person as we pursue Com-Ed to upgrade the ceiling lights in the second floor main dining hall. Again, thank you and God bless you, the young people and your program.”
  - Deacon Charles Posey, Morningstar Baptist Church

# Acknowledgements

- Prof. James Braband
- Prof. Nancy Hamill-Governale
- Vince Cushing – Clean Urban Energy
- Lisa Montgomery – IIT Office of Community Affairs
- Patrick Warton – Kent Law student
- Fabio Buffa and Lory Mishra – IIT Service Learning (Office of Student Life)
- Pastor Dr. Robert C. Jones, Jr. – Mt. Carmel Baptist Church
- Pastor Gregory Sean Hardaway, Chester Mitchell – Morning Star Baptist Church