

*IPRO 338*

*The Effects of Green  
Technology on  
Electrical Contractors*



# *Mission Statement*

**To provide a resource in helping Chicago land electrical contractors meet Leadership in Energy and Environmental Design (LEED) and United States Green Building Council (USGBC) standards.**



# *Problem Background*

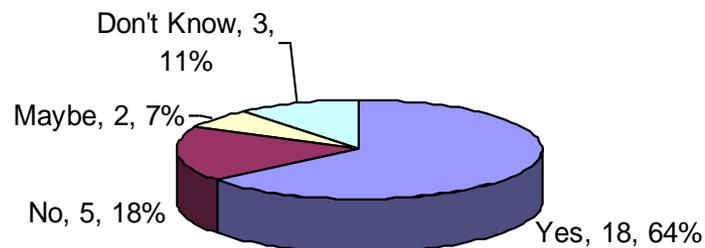
- **Green technology has become a major aspect of the design of buildings**
- **More developers demand these products and building techniques be used in construction.**
- **Information on these products is often confusing and incomplete.**



# *More on Problem Background*

- There is high demand for a tool that can help assist in bringing about a well informed transition from industry standard building practices and products, to green alternatives, as well as cut down on miscommunication between architects and contractors

ECA poll on Contractors Need for Web Based Information on LEED



■ Yes ■ No ■ Maybe ■ Don't Know



# *Our Goals*

- **Develop a website to host a user-friendly online database of green technology information for the Electrical Contractors' Association (ECA) of the City of Chicago.**
- **Developing a template for the website was the primary focus for the first semester, due to the time constraint.**
- **Provide data on green electrical products with cut sheets, pricing and distributor information, return on investment projections, and Leadership in Energy and Environmental Design (LEED) certification facts.**
- **Set the ground work in research and industry contacts to facilitate completion in future semesters**



# *Methodology*

- Establish Timetable
- Establish Goals
- Organize Teams
- Compile Information
- Develop Website



# LEED CERTIFICATION

## What is LEED?

- United States Green Building Council
- Non Profit organization working to make green buildings accessible to everyone
- Leadership in Energy and Environmental Design
- Encourage adoption of sustainable green building development practices
- Different Levels of certification based on points earned through various building practices
  - Certified 26-32 points
  - Silver 33-38 points
  - Gold 39-51 points
  - Platinum 52-69 points



# *Facts and Figures*

- **High levels of certification can be achieved at little additional cost**
- **US buildings account for 136 million tons of annual construction and demolition waste**
- **US buildings use 65% of total electricity consumption**
- **LEED and USGBC work to greatly reduce these numbers by every certified building**



# *Benefits*

- **Improve the health and productivity of occupants**
- **Reduce life-cycle energy and operating costs**
- **Set example in community**
- **Meet growing demands of tenants**



# *Lighting*

- Adaptive lighting controls
- Task Lights
- Alternatives to Incandescent
- Daylight dimming



# *Power Distribution*

## **Example Products and How they Help**

- APOGEE Unit Conditioner Controller, this improves building rating by having efficiency maximization
- APOGEE Insight Report Scheduling Option, Insight Base Software; aids in the organization of materials which ultimately lead to more efficiency



# Waste Management



# *Waste Management*

- Credits 2: Construction Waste Management
- Credit 3: Material Reuse
- Credit 4: Recycled Content

**50-75% of all waste must be diverted from waste landfills**



# *HVAC Requirements*

The systems used must meet the standards as established by the ASHRAE/IESNA Standards 90.1-2004 or the local energy code, which ever is more stringent



Refrigerant must not be CFC based

Indoor air quality (IAQ) must meet standards set by ASHRAE Standard 62-2004



# *HVAC LEED points*

- × Energy and Atmosphere
  - × 15% more efficient ASHRAE 90.1-2004 (1 point)
  - × 30% more efficient (2 points)
- × Indoor Environmental Quality
  - × IAQ 30% higher ventilation rates than those set by ASHRAE 62.1-2004 (1 points)
  - × IAQ management plan
    - × during construction (1 point)
    - × Before occupancy (1 point)
  - × High level of thermal and ventilation control (point 1)
  - × Thermal comfort
    - × Meet ASHRAE standard 55-2004 (1 point)
    - × Permanent monitoring system and process for corrective action (1 point)



# *Obstacles*

- Determining Scope of Work
- Lack of Computer Science Background
- Pricing and ROI
- IPRO Deliverables vs. Project Progress



# *Ethics*

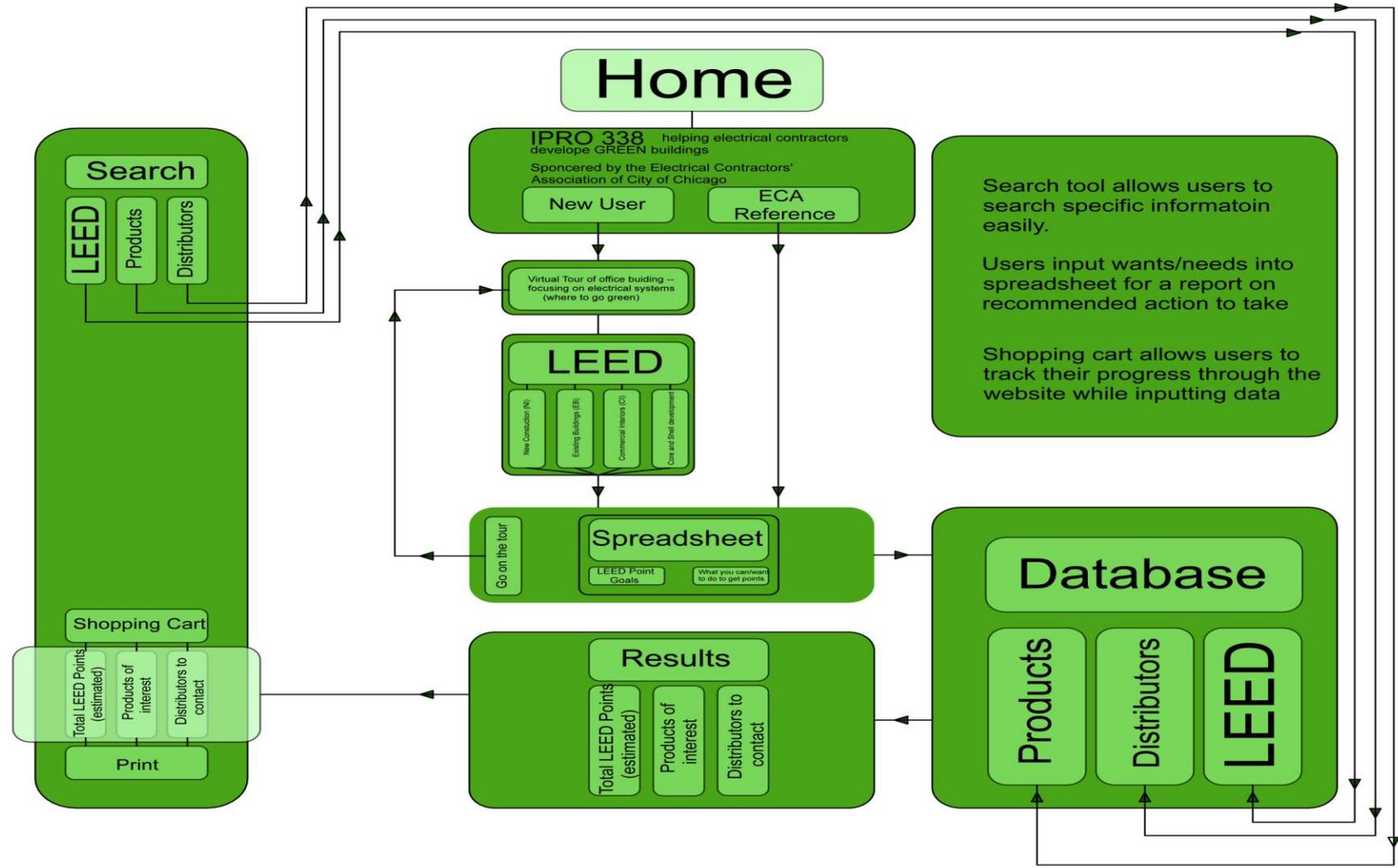
- × To facilitate environmental stewardship by providing a resource to help Chicagoland electrical contractors meet Leadership in Energy and Environmental Design (LEED) and United States Green Building Council (USGBC) standards.
- × Seven Ethical Layers were estimated under Academic and Corporate Training.



# *Results*

- Flow Chart
- LEED research
- Product Research
- Vendor Contact
- Industry contacts





Search tool allows users to search specific information easily.

Users input wants/needs into spreadsheet for a report on recommended action to take

Shopping cart allows users to track their progress through the website while inputting data

# *Recommendations for Future Work*

- Extend to other Construction Industry Players.
- Create team with Computer Abilities.
- Add Log-in Feature.
- Gain further help from USGBC to establish LEED accreditation points for products.



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*Thank you & Questions*

