

# Pearson's Candy Company Energy Conservation

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**UNIVERSITY OF MINNESOTA**  
**Driven to Discover<sup>SM</sup>**



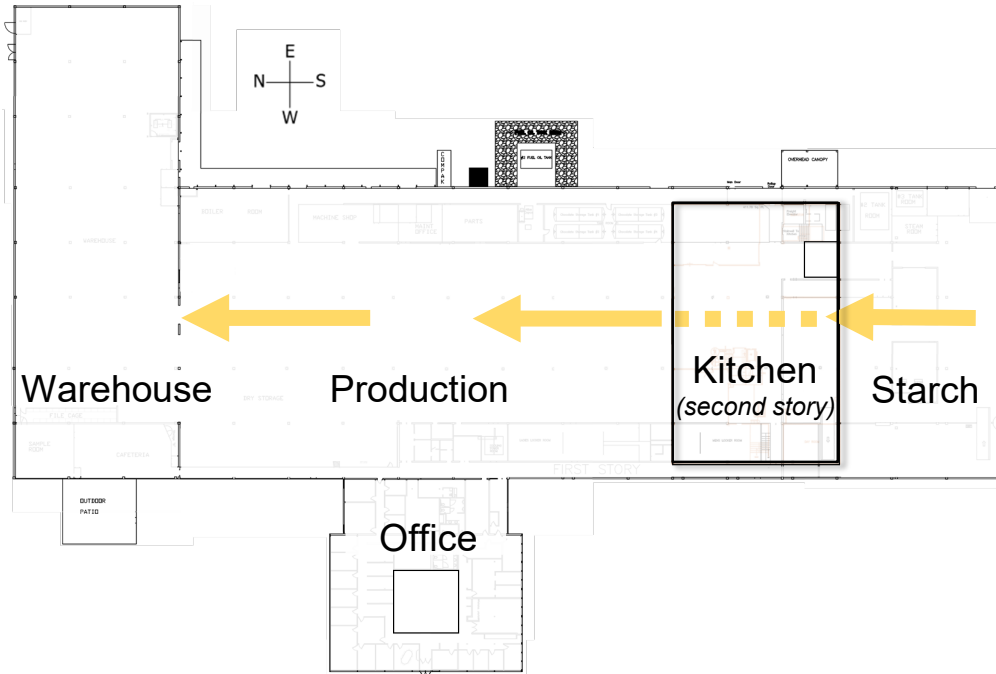
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# Pearson's Candy Company

- St. Paul, Minnesota
- Founded 1909
- Current building since 1959
- Salted Nut Roll, Bit-O-Honey, Nut Goodie, Mint Patties, and BUN candies.



# Process Overview



- **Kitchen:**

- Candy cooked and mixed

- **Starch:**

- Centers formed

- **Production**

- Centers and coatings combined
- Finished candy packaged

- **Warehouse:**

- Packaged candy shipped out

# Project Overview

- **Lighting**

- LED
- Occupancy sensors
- Weekend shutdown

- **HVAC**

- RFP
- System upgrade/redesign

- **Compressed Air**

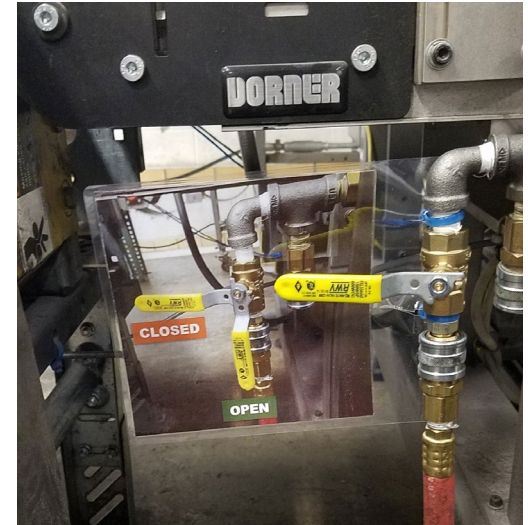
- Find, tag and record leaks
- Recheck fixed leaks
- Install valves at exhaust points

- **Insulation**

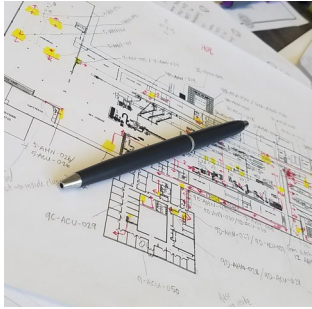
- Thermal insulating paint

- **Air Scrubber**

- Design wastewater reuse



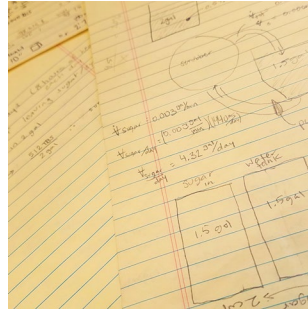
# Approach



# Mapping



# Testing



## Analysis

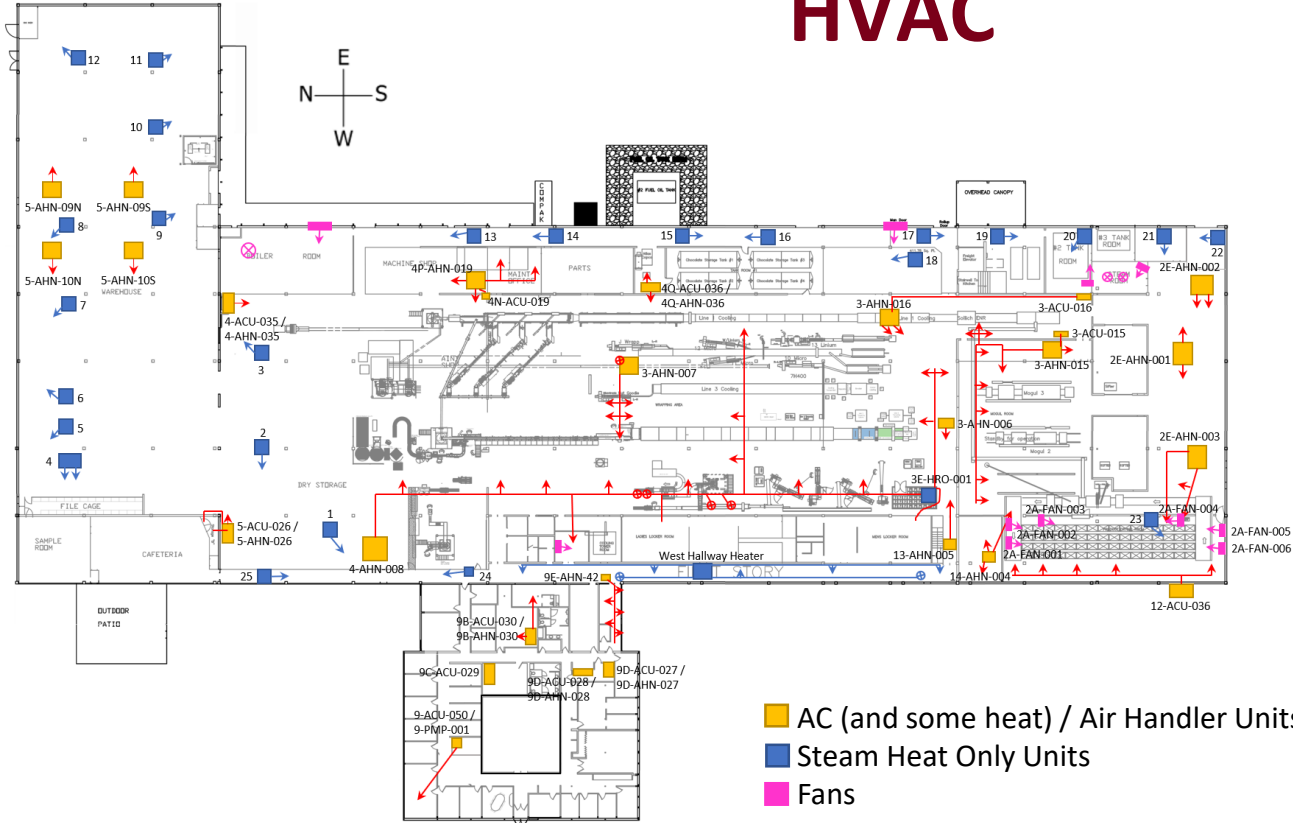


## Consulting

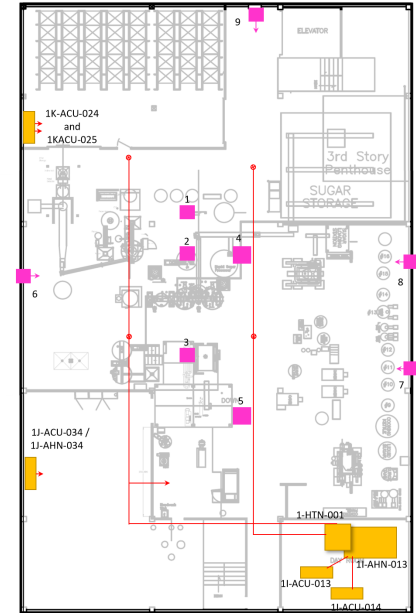


## Data Collection

# HVAC



## SECOND STORY





# Motivation



- Increase efficiency
- Modernize equipment
- Xcel Energy assessment
- Energy savings with rebates
  - Rebates offered on energy conservation projects
  - Additional Turn Key rebates on projects completed within a year
  - St. Paul Port Authority Trillion BTU program

# Primary Recommendation: Lighting

## Equipment Change

- Install occupancy sensor switches
- Re-lamp full plant with LEDs
- Upgrade fixtures and lamps in office



## Benefits

### •LEDs

- 180,000 kWh saved annually
- \$16,000 saved annually
- 4 month payback

### •Occupancy sensors (before LED upgrade)

- 13,000 kWh saved annually
- \$1,400 saved annually
- 8 month payback



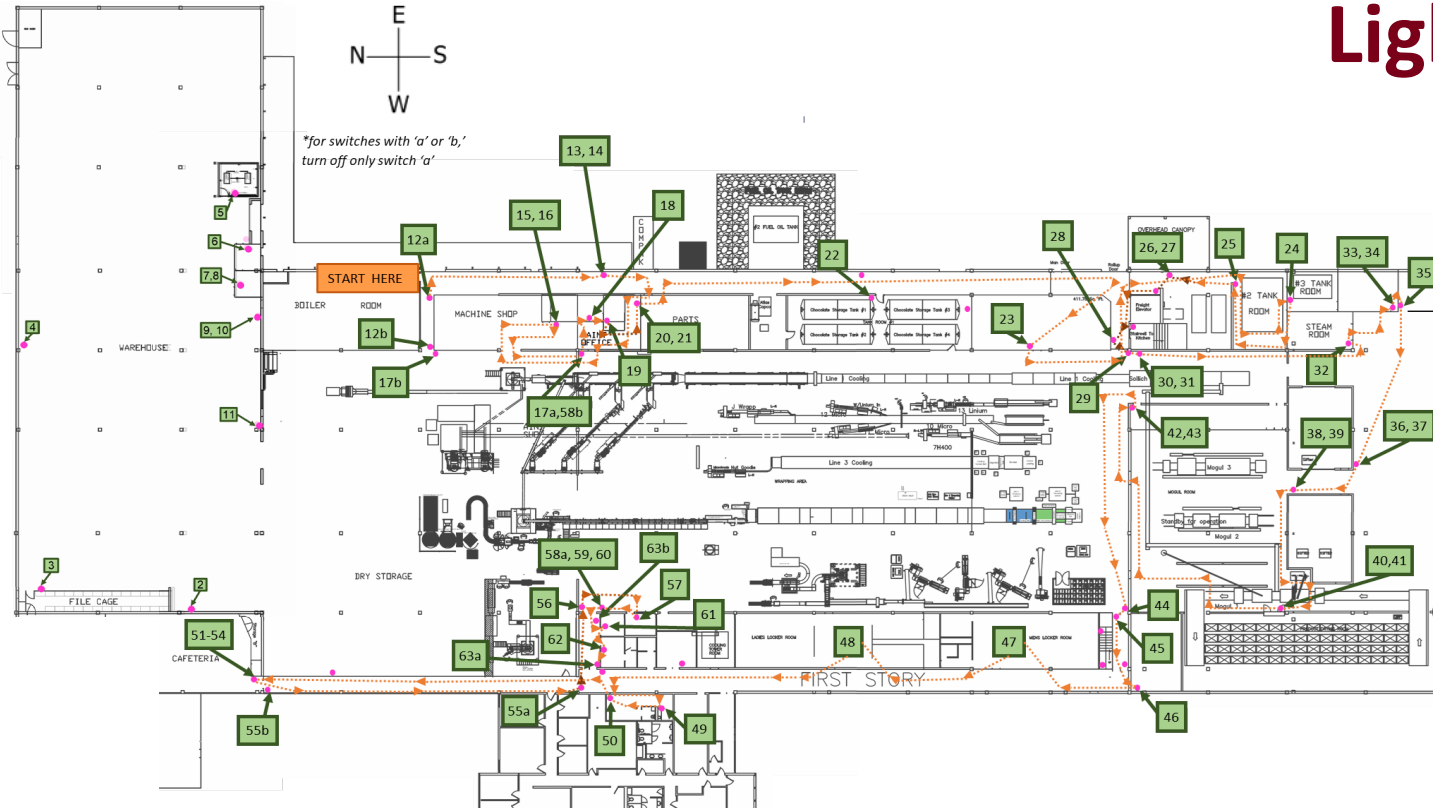
# Primary Recommendation: Lighting



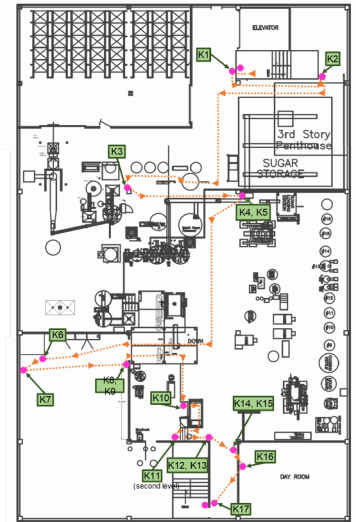
## Procedure Change

- Turn off warehouse lights nightly
- Turn off kitchen and main plant lights Friday nights
- Annual Savings:
  - 86,000 kWh
  - \$9,000

# Light Switches



## SECOND STORY

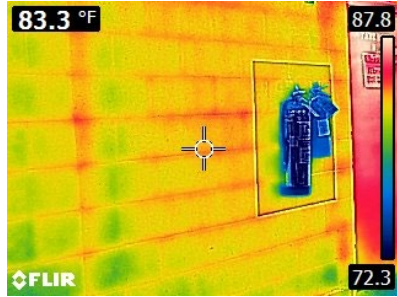


# Solutions

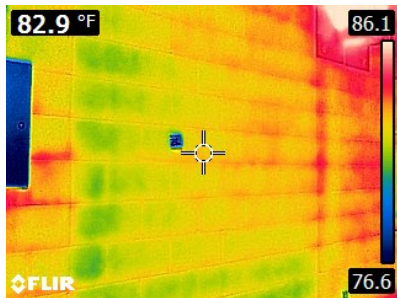
| Recommendation                                | Annual reduction  | Total cost | Annual savings | Payback period | Status                |
|---|-------------------|------------|----------------|----------------|-----------------------|
| Shut off lights on weekends                   | 86,000 kWh        | -none-     | \$9,000        | Immediate      | Implemented<br>8/7/20 |
| Upgrade plant and office lighting to LEDs     | 180,000 kWh       | \$5,000    | \$16,000       | 4 months       | Recommended           |
| Install occupancy sensors for office lighting | 13,000 kWh        | \$900      | \$1,400        | 8 months       | Recommended           |
| Reduce compressed air leakage                 | 220,000 kWh       | -none-     | \$24,000       | Immediate      | Implementing          |
| Upgrade HVAC system                           | 120,000 kWh       | Pending    | \$13,000       | Pending        | Recommended           |
| Reuse air scrubber wastewater                 | 47,000 gal. water | \$500*     | \$1,500        | 4 months       | Recommended           |
| Thermal insulating paint                      | N/A               | N/A        | N/A            | N/A            | Not<br>Recommended    |

\*assuming preexisting food grade piping

# Personal Experience



*Cool side, unpainted*



*Cool side, painted*

## Insulating Paint

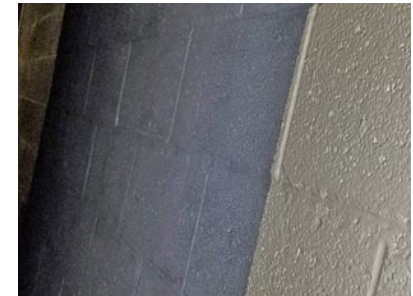
- Paint claimed to improve the insulating properties of a wall
- No significant difference was detected



*Cool side*



*Hot side, thermal*



*Hot side*