Partnering with the EPA

FOOD LION, LLC

Wayne Rosa
Importance of Energy Management

- Grocery Stores – Low Margin
- Hyper competitive grocery store environment
- Second largest operating cost for a store
- Grocery stores are twice as energy intensive as any other commercial/retail customer
U.S. EPA’s ENERGY STAR

- Energy Star Partner since 1998
- Portfolio Manager
- Benchmark Energy Performance (0-100)
- Initial Score: Less than 80%
Food Lion’s Energy Management Program

- GOALS:
  - Reduce energy consumption
  - Reduce energy costs
  - Design energy efficient stores
  - Implementing new energy efficient technologies
## U.S. EPA’s Energy Star Tool

### Food Lion’s Average Store Scores

<table>
<thead>
<tr>
<th>Year</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>2004</td>
<td>81.3</td>
</tr>
<tr>
<td>2005</td>
<td>85.6</td>
</tr>
<tr>
<td>2006</td>
<td>87.0</td>
</tr>
<tr>
<td>2007</td>
<td>87.0</td>
</tr>
<tr>
<td>2008</td>
<td>90.0</td>
</tr>
</tbody>
</table>

### Leverage benchmarking for better business decisions for Prototypes
Food Lion Current Energy Star Scores


50 Thru 74
75 Thru 100
Food Lion
Energy Use Index Trend

Energy Use Index

- 2002
- 2003
- 2004
- 2005
- 2006
- 2007

Periods

KBtu/ft^2

P1 P2 P3 P4 P5 P6 P7 P8 P9 P10 P11 P12
U.S. EPA’s ENERGY STAR

- Lead supermarket industry for “Energy Star” qualified stores – 724 stores

- Performance goal for all new stores: New Store Average score for 2008 is 90

- Supports our Corporate Energy Mission
How do we do it?

- **BENCHMARKING**...is the key!
  - EPA’s Energy Star Portfolio Manager
  - Third Party Benchmarking thru Bill Paying Service
  - In-House Benchmarking through Sub-Metering

- **Value of Benchmarking**
  - History, Consistent Format, On-line, exceptions based reporting, trends, reporting capabilities, budgets and forecasts.
GreenChill

- Food Lion was one of the Founding Members
- Establish base year for refrigerant stock & emissions reporting
- Develop corporate Refrigerant Management Plan
- Commit to using non-ODP Refrigerants
- Advanced Refrigeration Systems
  - Glycol Secondary Loop (Dinwiddie, VA)
  - CO2 Secondary Loop (Montpelier, VA)
  - CO2 & Glycol Secondary Loop (Portsmouth, VA)
Secondary Loop CO2
Food Lion Case Study
Montpelier, VA

Pros:

- Over half refrigerant charge reductions (approx. 60% reduction)
- Primary refrigerant (R-507) side leak detection much easier and less time consuming
- Obvious environmental impacts
- Energy is comparable, electric defrost doesn’t seem to impact utility bill
- Case lineups can be set with one inlet and outlet per circuit instead of per case.
- Copper tubing size reduction = substantial material savings and storage.
- No issues with oil or orifices in the cases.
- CO₂ is super efficient - with as little as 5° TD in cases.
- Learning curve with new refrigerants (R-502, R-22, R-507, R-744)
Lessons Learned:

- Industrial grade insulation expensive material and labor cost (next generation will utilize conventional DX insulation)
- Remote store location requires CO₂ to be stored in machine room
- CO₂ leak detectors have slower response time making it difficult to pinpoint leaks
- Could not implement defrost skipping strategy due to ice on evaporators during high load season
- Identified the need for a detailed start up guide
- A modified loop system was used in this store (next generation will use a full loop piping configuration)
Store Installation Cost:

The CO$_2$ secondary loop installation in this store was equivalent to the cost of a conventional DX installation.
Secondary Loop CO$_2$
Food Lion Case Study
Montpelier, VA

- Energy Comparison
  CO$_2$ Secondary Store vs DX Stores

- Graph showing energy comparison between CO$_2$ Secondary Store and DX Stores.
Innovative Refrigeration Systems
Medium Temp Glycol / Low Temp CO₂
Portsmouth, VA

- Opening Date April 16, 2008
- Over 60% reduction in refrigeration charge
- Competitive installation cost compared to traditional Dx System
- CO₂ charge cost less than $400
Summary

- Energy Star: First Benchmarking Tool
- GreenChill:
  - Manage/Understand Refrigeration Compliance
  - Advanced Refrigeration Systems
- Food Lion first Corporate Responsibility Report
- EPA’s programs “Sustain” performance