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# Funding Energy Efficiency

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Jonathan Tan  
September 12, 2016

# Agenda

- **US Supermarket Fast Facts**
- **US Energy Trends**
- **Typical Energy Saving Opportunities**
- **Tools to fund energy efficient and be MORE PROFITABLE**



# U.S. Supermarket Facts

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## Supermarket Fast Facts (U.S.)

- \$638 B revenue 2014
- 1.5% average Net Profit
- ~4% US GDP
- ~2% Total US Commercial Building Space
- ~6% Total US Commercial Building Consumption

Sources: Food Marketing Institute. <http://fmi.org> & EIA

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# U.S. Energy Trends

as it relates to Supermarkets

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**United Nations**  
Framework Convention on  
Climate Change



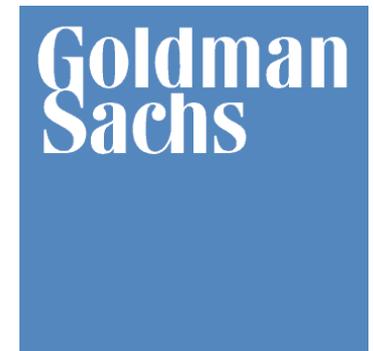
**PARIS2015**  
UN CLIMATE CHANGE CONFERENCE  
COP21·CMP11



**Bank of America**



**\$90T**  
by 2030



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# U.S. Energy Trends



## Green Growth

A U.S. Program for Controlling Climate Change and Expanding Job Opportunities

Robert Pollin, Heidi Garrett-Peltier, James Heintz, and Bracken Hendricks September 2014

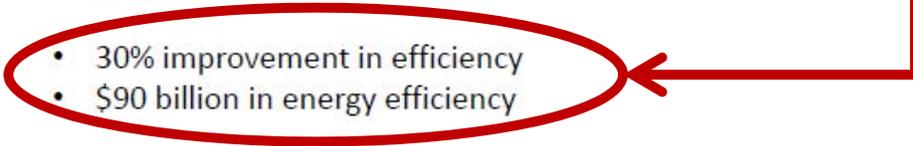
WWW.AMERICANPROGRESS.ORG

## What it takes to Stabilize the Climate

Cutting US GHG Emissions 40% by 2035

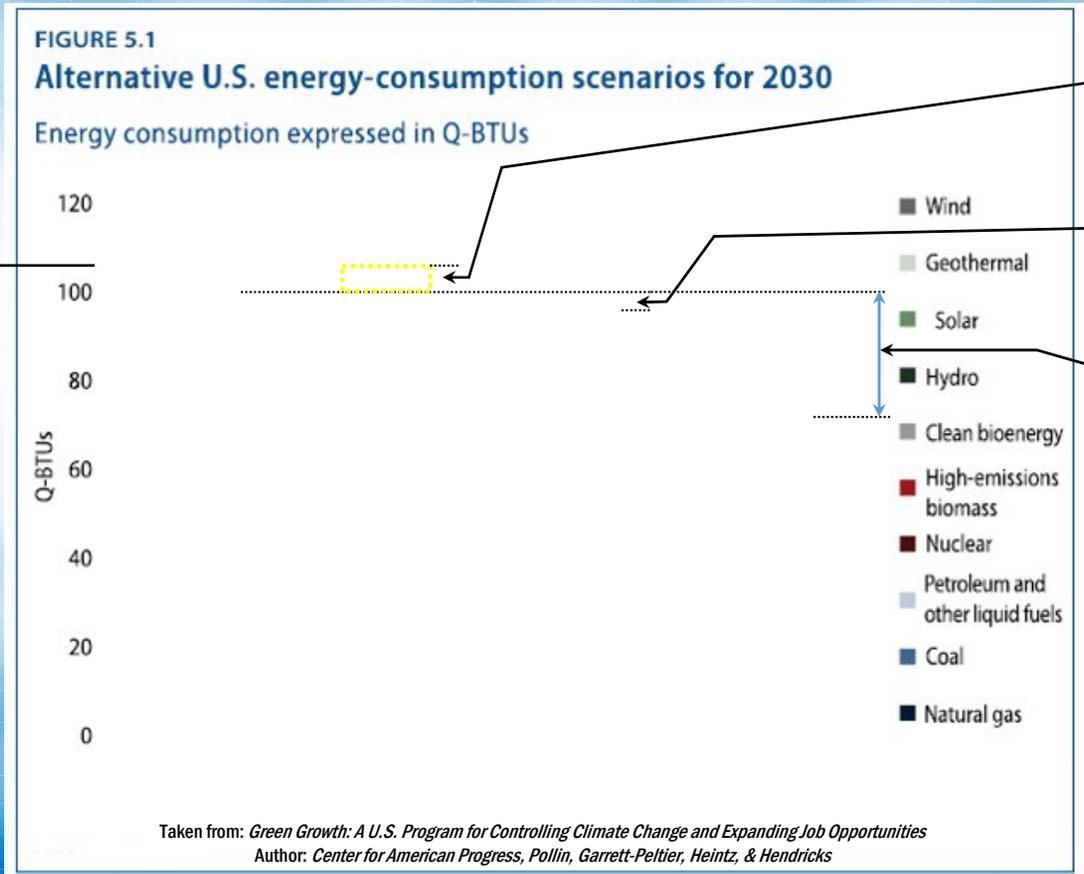
- 2.7 million net new jobs
- \$200 billion annual investment
- 30% improvement in efficiency
- \$90 billion in energy efficiency
- 4 fold increase in renewable energy
- \$110 billion invested in renewables
- Absolute reductions in fossil fuel use
- Declines range from 30-60% by fuel

*EE Opportunities for Grocery & C-stores*



# Why Energy Efficiency Is Now Top of Mind

**2010  
Fuel Consumption**



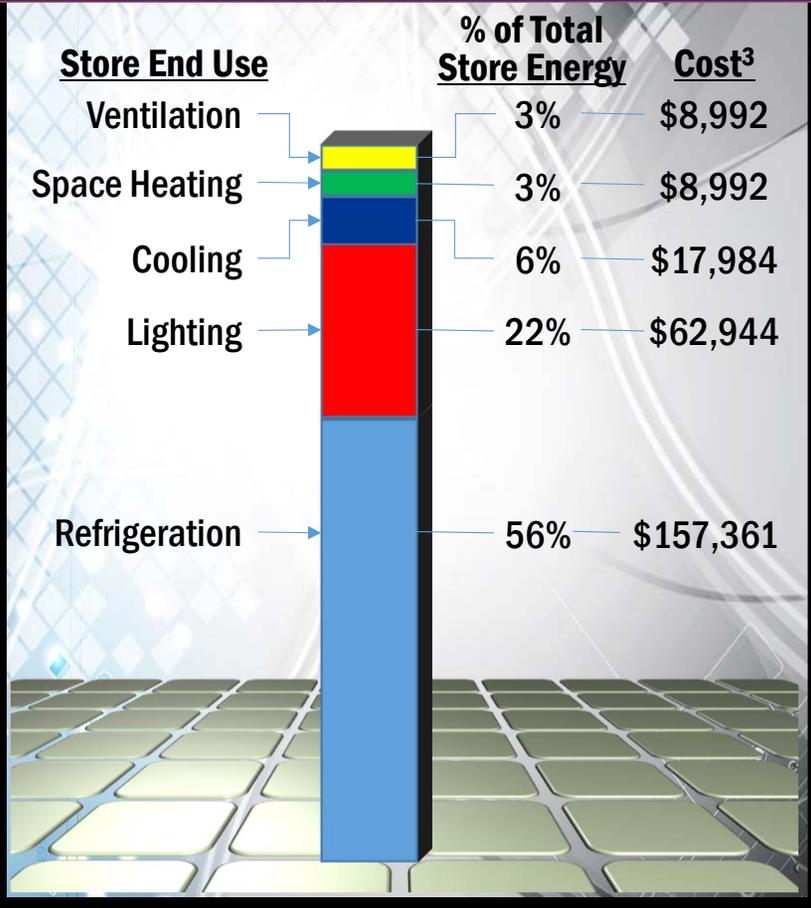
**Estimated Fuel  
Consumption (2030)**

**Aggressive Fuel  
Consumption (2030)**

**Energy Efficiency!**

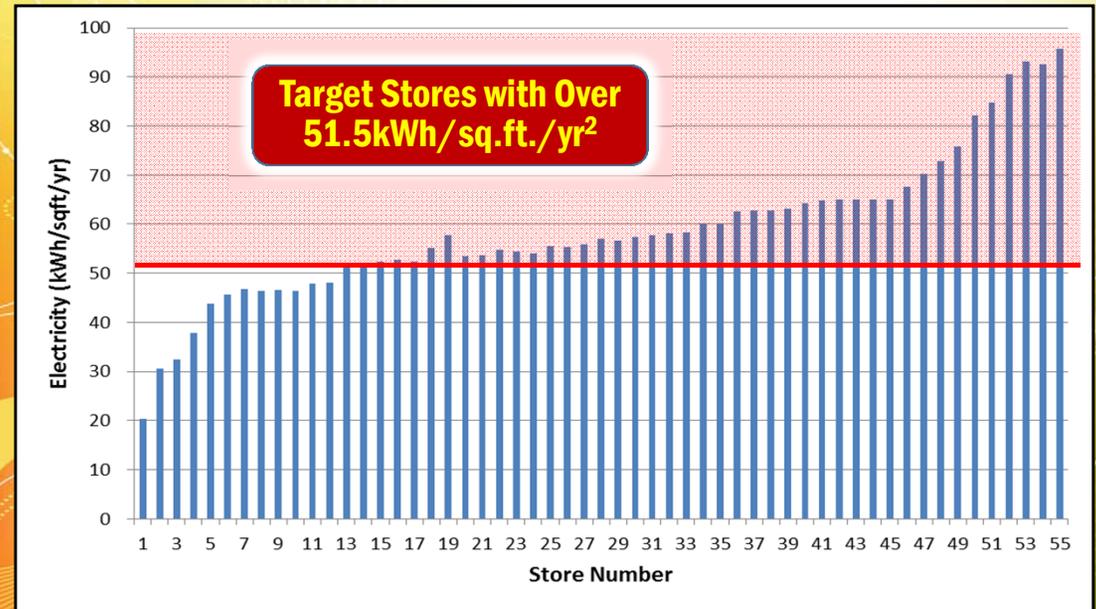
# Supermarket Electricity Consumption Presents Opportunities

## ~90% of Supermarket<sup>1</sup> Energy Cost Driven by These End Uses



## Opportunity Further Driven by Wide Efficiency Variation within a Chain

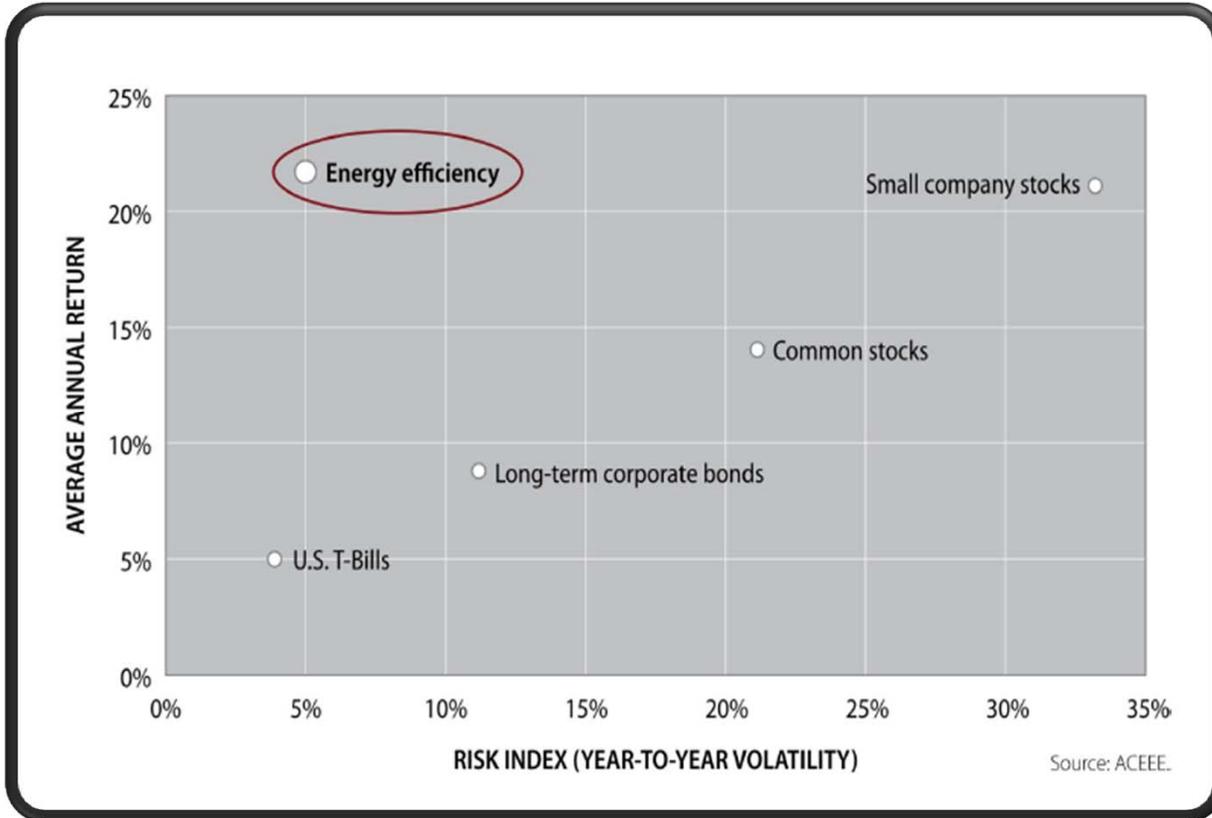
### Average Electricity Consumption of Stores within a Supermarket Chain in the Southwest



**Notes:**

1. Based on 50,000 sq. ft.
2. DOE reported 51.5 kWh/sq. ft.
3. \$0.11/kWh power cost

# U.S. Energy Trends



- Low risk index
- High rate of return



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# EE Opportunities Supermarkets

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# Refrigeration Electricity Consumption



**Notes:**

1. Based on 50,000 sq. ft.
2. DOE reported 51.5 kWh/sq. ft.
3. \$0.12/kWh power cost
4. Based on 100 doors

Source: [www.eia.gov](http://www.eia.gov)

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# Refrigeration Electricity Consumption

**\$157,361**

**\$83,748**



**Notes:**

1. Based on 50,000 sq. ft.
2. DOE reported 51.5 kWh/sq. ft.
3. \$0.12/kWh power cost

Source: [www.eia.gov](http://www.eia.gov)

**≈47%  
SAVINGS  
\$73,613**

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# Putting It All in Perspective

To make the same

**\$73,613**

You would have to sell

**\$1,325,025**

Of Product



Or, you would have to add **383** new, single-household shoppers who would shop at your store 52 weeks per year!!!



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Sources:  
Food Marketing Institute, U.S. Grocery Shopper Trends, 2014  
Weekly Household Grocery Expenses 2014 (\$66.46/week, Single Household)  
Key Industry Facts – Prepared by FMI Information Service, June 2014

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# Tools for FUNDING efficiency and *Profitability*

# Tools: Utility Incentives



- Available most utilities
- Reduces capital required for projects
- Often multitude of measures covered



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# Tools: Financing

# Tools: On-Bill Financing

- Very low interest or 0%
- Loan paid back through energy savings
- Provides positive or net even cash flow
- Typically only eligible energy efficiency measures may be financed
- Limited availability
- May require capital funding for initial cash outlay



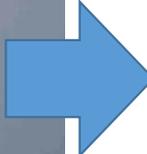
# Tools: On-Bill Financing

Examples of Small Business and Commercial Customers that have Benefited from SBEA	
PROJECT:	Independently Owned Grocery Store
PROJECT DESCRIPTION:	Energy Efficient Lighting, Occupancy Sensors, Cooler Night Covers, Motors, and Controls
TOTAL COST:	\$218,597
CONNECTICUT ENERGY EFFICIENCY FUND INCENTIVE:	\$69,945
MONTHLY LOAN PAYMENT (ZERO PERCENT INTEREST):	\$5,946/25 months
NET MONTHLY ELECTRIC SAVINGS (DURING LOAN PERIOD):	\$127
NET MONTHLY ELECTRIC SAVINGS (AFTER THE LOAN IS PAID OFF):	\$6,073

Source: [www.energizect.com](http://www.energizect.com)

## Tools: Traditional Financing

- Flexible
- Readily available
- Provide positive cash flow
- May improve Return On Invested Capital



financial  
Bliss

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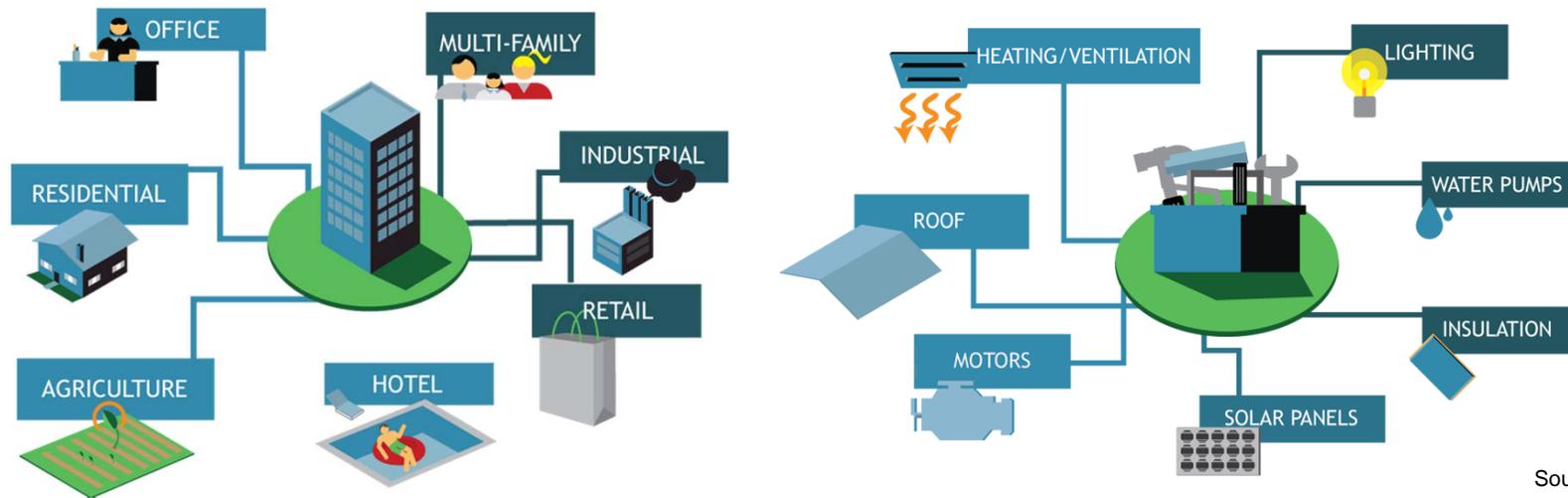
# Tools: Traditional Financing

<b>Project Cost</b>	\$392,459					<b>Annual Interest Rate:</b>	4.5%
<b>Utility Rebate</b>	-\$87,734					Years:	5
<b>Net Project Cost</b>	\$304,725	(monthly/annual payments based on this number				Payments/ yr:	12
	= input						
<b>YEAR</b>	<b>Year 1</b>	<b>Year 2</b>	<b>Year 3</b>	<b>Year 4</b>	<b>Year 5</b>		
<b>PROJECT SAVINGS</b>							
Energy Savings (kWh)	908,996	908,996	908,996	908,996	908,996		
Energy Savings (\$)	\$63,630	\$63,630	\$63,630	\$63,630	\$63,630		
Total Non-Energy Savings Generated (utility rebate)	\$ -	?	?	?	?		
Maintenance Savings	\$ 5,400	\$ 5,400	\$ 5,400	\$ 5,400	\$ 5,400		
Avoided Costs	\$ 4,286	\$ 4,286	\$ 4,286	\$ 4,286	\$ 4,286		
<b>Total Value of Project Savings, \$</b>	<b>\$ 73,316</b>	<b>\$ 73,316</b>	<b>\$ 73,316</b>	<b>\$ 73,316</b>	<b>\$ 73,316</b>		
<b>CUSTOMER PAYMENTS</b>							
Rate for Energy Savings %	4.50%	4.50%	4.50%	4.50%	4.50%		
Payment for Energy Savings	(\$5,680.99)	(\$5,680.99)	(\$5,680.99)	(\$5,680.99)	(\$5,680.99)		
Rate for Non-Energy Savings %	0.00%	0.00%	0.00%	0.00%	0.00%		
Payment for Non-Energy Savings	\$ -	\$ -	\$ -	\$ -	\$ -		
End-of-Term Payment for Fair Market Value	\$ -	\$ -	\$ -	\$ -	\$ -		
<b>Total Customer Payments</b>	<b>\$ (68,171.84)</b>	<b>\$ (68,171.84)</b>	<b>\$ (68,171.84)</b>	<b>\$ (68,171.84)</b>	<b>\$ (68,171.84)</b>		
<b>NET CUSTOMER SAVINGS</b>							
Project Savings	\$73,316	\$73,316	\$73,316	\$73,316	\$73,316		
Project Payments	\$(68,172)	\$(68,172)	\$(68,172)	\$(68,172)	\$(68,172)		
<b>Net Cash Flow, yearly</b>	<b>\$5,144</b>	<b>\$5,144</b>	<b>\$5,144</b>	<b>\$5,144</b>	<b>\$5,144</b>		
Cumulative Project Savings	\$73,316	\$146,631	\$219,947	\$293,263	\$366,579		
Cumulative Customer Payments	\$(68,172)	\$(136,344)	\$(204,516)	\$(272,687)	\$(340,859)		
Cost Per kWh	\$0.070	\$0.070	\$0.070	\$0.070	\$0.070		

**POSITIVE CASH FLOW!**

# Tools: PACE Financing

**PACENation**  
Saving Energy & Creating Jobs



Source: [www.pacenation.us](http://www.pacenation.us)

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# Tools: PACE Financing

**PACENation**  
Saving Energy & Creating Jobs



Low interest rates: ~6%

Loan repaid through property taxes

Available 29 states + Washington, D.C.

Provides positive cash flow

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# Tools: PACE Financing



## Good for:

Building envelope upgrades

Renewable energy

Heavy capital intensive projects

Longer simple paybacks

## Not ideal when:

Projects require little capital

Simple returns are quick

Don't own property

Lower interest vehicle available

# Tools: Additional

# Tools: Sustainability



- Sustainability Certification
- Systematic way to benchmark
  - Waste Diversion
  - Energy Consumption
  - Employee Engagement

## Typical Findings:

- **Current sustainability efforts ~\$70,000 annual savings**
- **Typically find additional ~\$20,000 annual opportunities**
  - **Typically low cost-no cost**



# Summary & Takeaways

1. Legislation & Monies promoting efficiency
2. Opportunities to improve operations

## 3. INCREASE YOUR PROFITABILITY

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Thank You for Sharing Your Time ...

Questions?



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# Appendix

# Close-The-Case (CTC)

Adding glass doors to open multi-deck cases

- 80% reduction in refrigeration load
- 70% reduction in total power
- **Annual savings \$97/ft\***



\* Typical 5-deck dairy, \$0.11/kWh, 22 to 26F evap, 12.59 to 13.49 EER, fluor to LED lighting

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# LED Lighting Retrofits

## Vertical Fixtures for Glass Door Cases

- Coined optics provide unparalleled uniformity
- High-CRI LEDs (85 typ.) for accurate color rendering of your merchandise
- 50,000 Hour, 5-Year warranty
- 18w, 1000 lm, 4000K CCT
- 825 lux @ 4"
- **Annual savings \$77/door\***



\* Based on 60" 71 w/door fluor, 18w LED, refig EER 6.7, \$0.11/kWh

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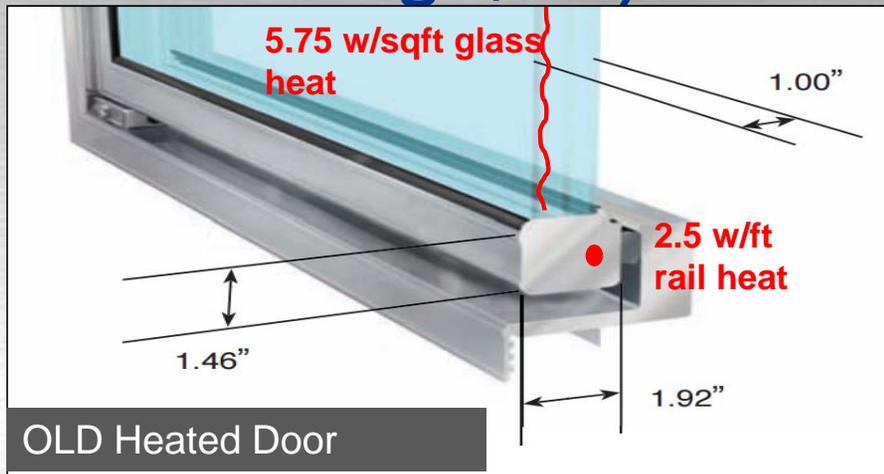
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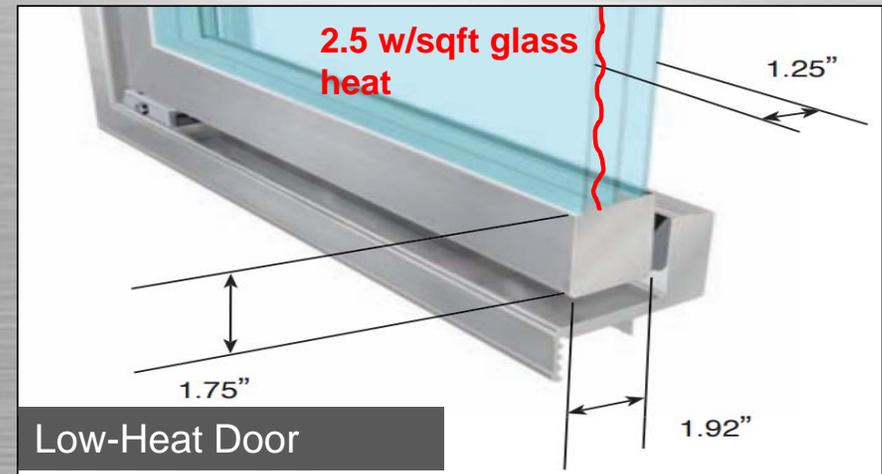
# Low-Heat Freezer Doors

## Replace heated doors with low-heat doors

- Superior insulation with higher R-value eliminates 78 w/door of anti-sweat heat
- **Annual savings \$114/door\***



R-Value (hr-ft<sup>2</sup>-F/Btu) = 3.9  
Power (W/door) = 106



R-Value (hr-ft<sup>2</sup>-F/Btu) = 6.3  
Power (W/door) = 28

\* Based upon 30"x65" LT door, \$0.11/kWh and refrigeration EER of 6.7.

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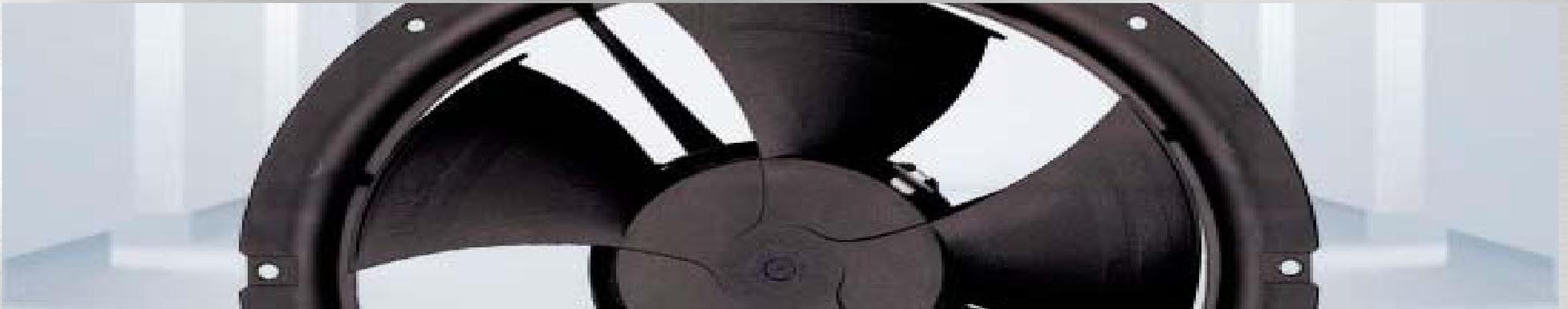
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# EC Motor Upgrades

Electronic motors replace inefficient SP & PSC

- Energy efficient ECM technology
- Drop-in replacement for walk-in & display case applications
- Fan assembly replaces existing motor, blade, and basket
- 2-year warranty
- **Annual savings \$100/motor<sup>1</sup>**
- **Annual savings \$39/fan<sup>2</sup>**



1. Based on 128w SP vs.46w ECM, MT refrigeration at 12.59 EER, and \$0.11/kWh
2. Based on 48w SP vs.16w ECM, MT refrigeration at 12.59 EER, and \$0.11/kWh

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# Sweat Mister Retrofits

## Electronic motors replace inefficient SP & PSC

- Monitors store temperature and humidity
- Pulses door heat up to 10x per sec as required based on dew point
- **Annual savings \$60.71/ door<sup>1</sup>**



1. Based 100 doors, 105 watts per door, 40% cycle on time, \$.11/ kWh

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# LED Lighting Retrofits

## T8 LED Lighting for General Illumination

- "No-compromise" color quality, 90 CRI, 60 R9
- 2160 lm, 18w, 100 lpw, 3500K and 4000K CCT
- Integrated 100-277 VAC driver
- Requires ballast bypass and un-shunted lampholder
- 50,000 hour life, 5-year warranty
- **Annual savings \$10.41/lamp<sup>1</sup>**
- **Annual maintenance savings over fluorescent \$5.90<sup>2</sup>**



1. Based upon 24/7 operation vs. 32w 0.9 BF T8 fluorescent, \$0.11/kWh.
2. Based on 24 mo. Relamp, \$10 per lamp, 1 spot maintenance per month @ \$180, 2400 lamps per store

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