

Wal-Mart

The Past, Present and Future of Energy Efficiency at Wal-Mart

**Charles R. Zimmerman
VP of Prototype and New Format Development**

Corporate Strategy & Business Sustainability

Wal-Mart

START YOUR OWN HEDGE FUND • THE FUTURE OF COMPUTING

FORTUNE

A photograph of Lee Scott, CEO of Wal-Mart, standing in a cornfield. He is wearing a light blue button-down shirt and khaki pants, holding a metal bucket filled with various vegetables like bell peppers and tomatoes. The background is a dense field of green corn stalks under a clear sky.

WAL-MART SAVES THE PLANET

Well, not quite. But CEO **LEE SCOTT**'s green campaign, which started as PR, is becoming a force of nature.

"What I thought was going to be a defensive strategy is turning out to be precisely the opposite."

DISPLAY UNTIL AUGUST 14, 2006

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www.fortune.com (AOL Keyword: Fortune)

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A photograph of Lee Scott, CEO of Wal-Mart, standing in a cornfield. He is wearing a light blue button-down shirt and khaki pants, and is holding a metal bucket filled with various vegetables like bell peppers and tomatoes. The background is a dense field of green corn plants under a clear sky.

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Lee Scott Quote

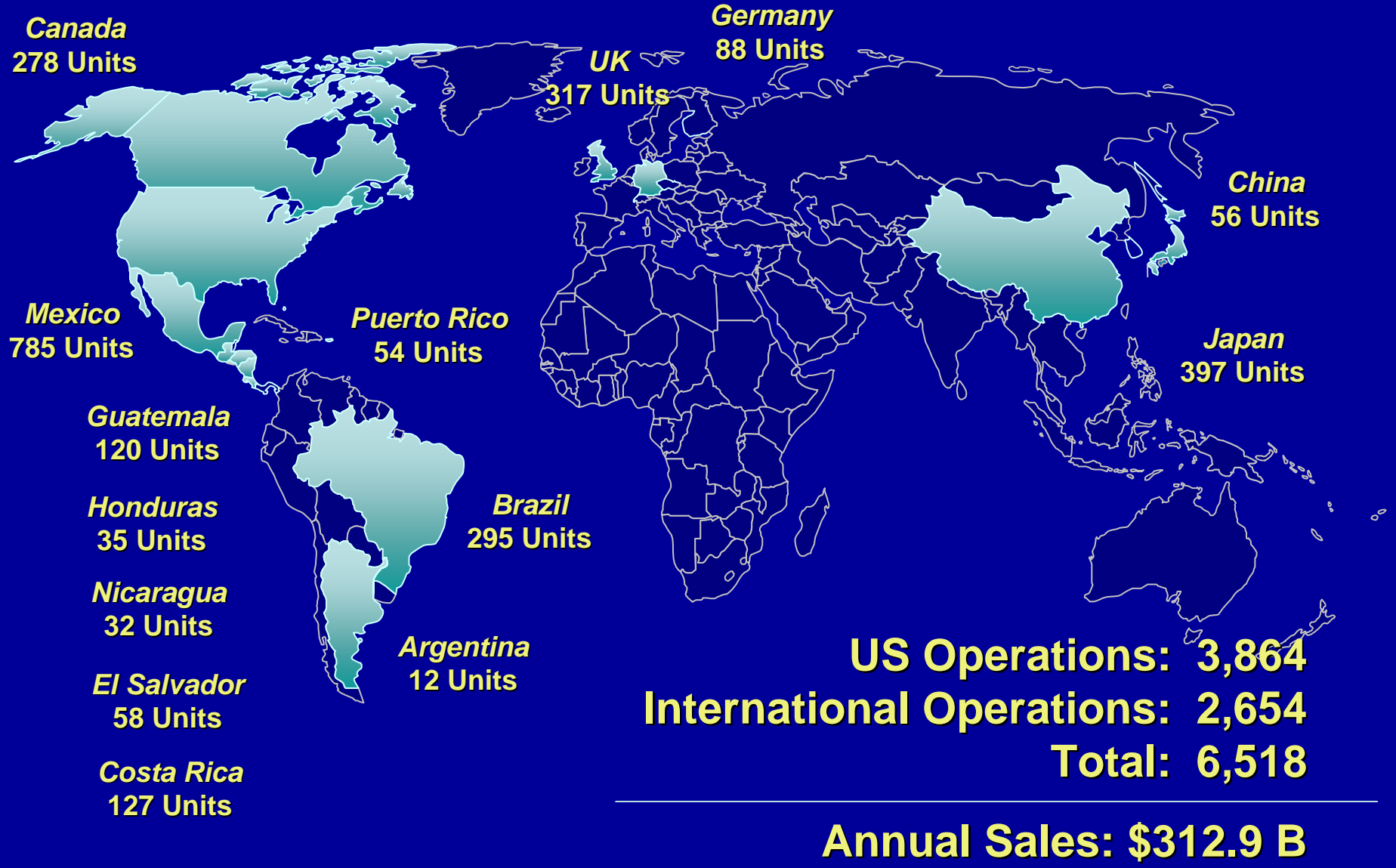
“We will not be measured by our aspiration; we will be measured by our action” – Lee Scott, July 12, 2006

Wal-Mart

**We are a global company with
global goals/expectations**

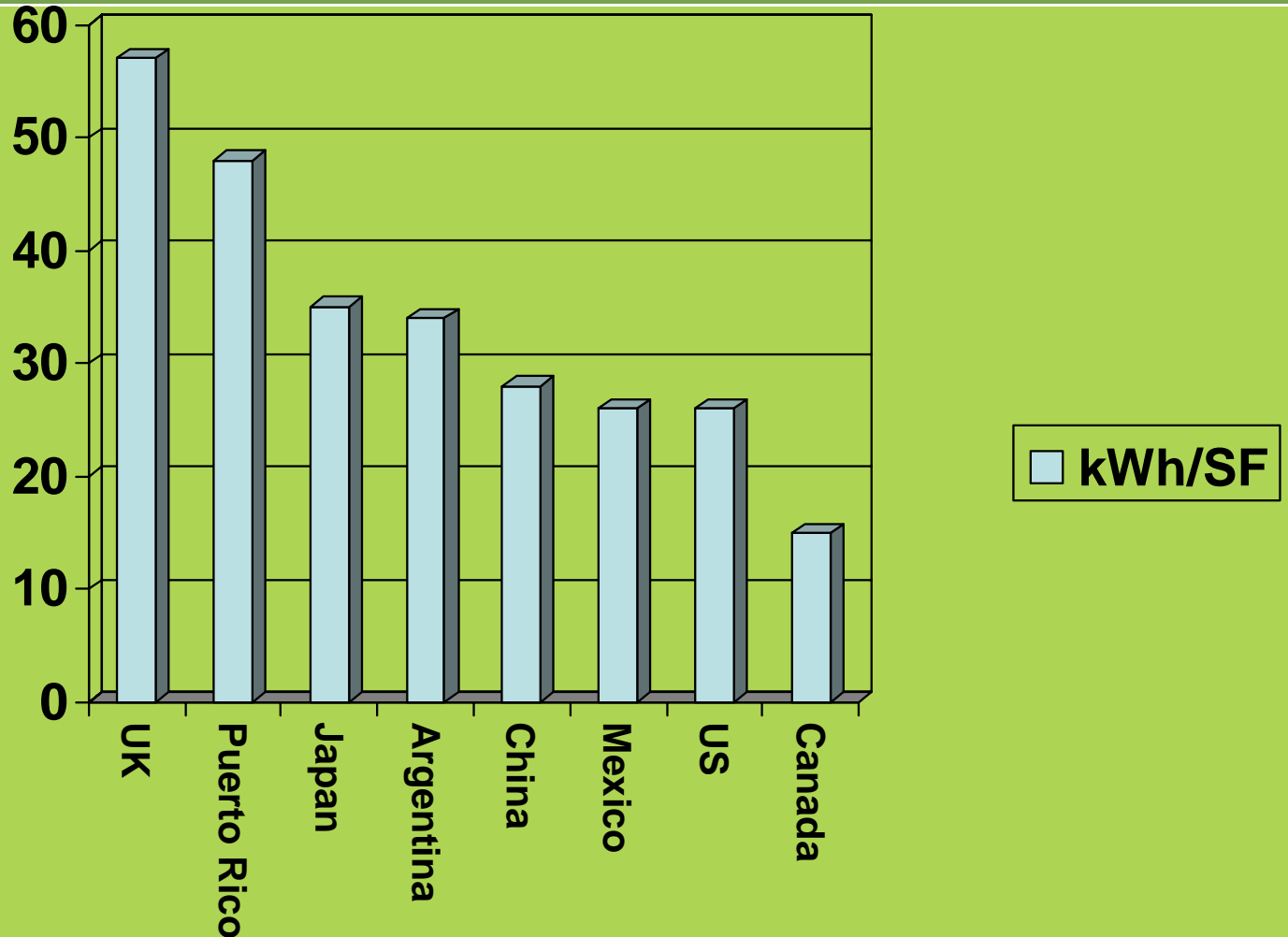
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Global Presence – April 6, 2006



Wal-Mart

Estimated Kwh/SF



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Why is US W/M so efficient?

Every Day Low Cost (EDLC)
=
Every Day Low Price (EDLP)





Wal-Mart

Daylight Harvesting

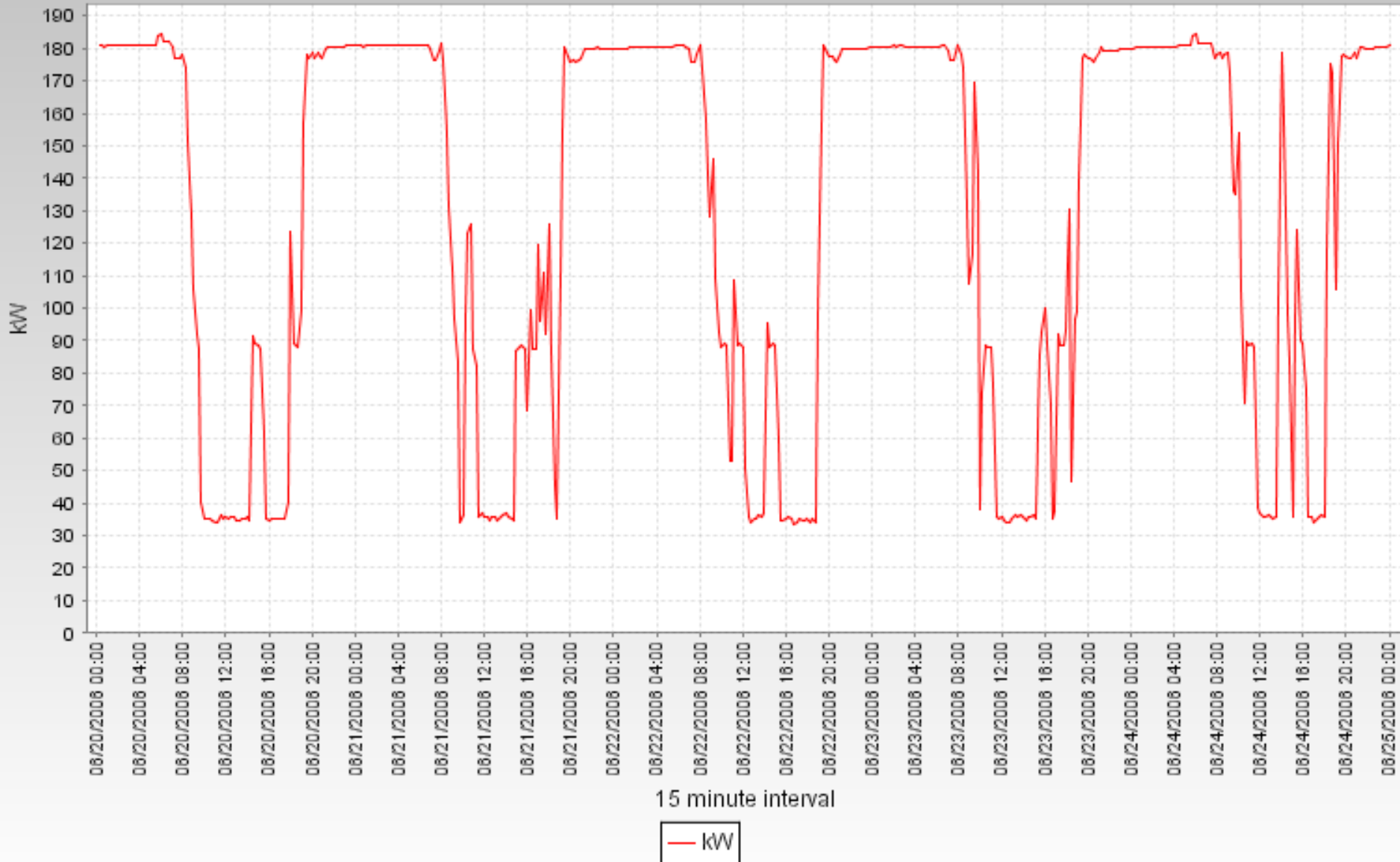


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Lighting: 15 Minute Data: KW

[06/20/2006 00:00 - 06/25/2006 00:00]

/Stores & DCs/Enerwise Stores/Enerwise #2688



Wal-Mart

Interior with Sales Floor lighting in “full off” mode

10 years

2,100 stores

330 million SF

**49% less
wattage than
ASHRAE 90.1**



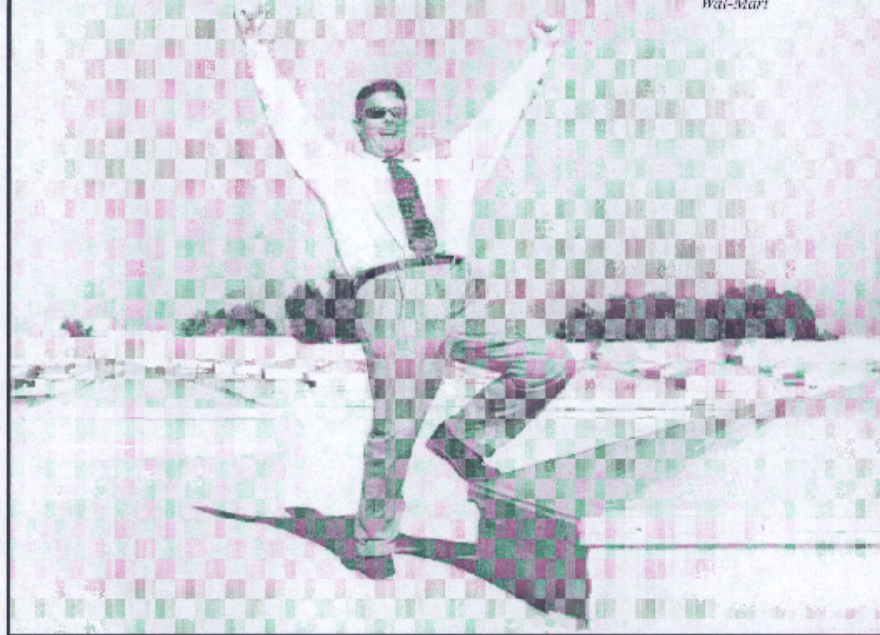
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Wal-Mart

"Our Roof Is Cool!"

Steve Youngs
Wal-Mart



Wal-Mart has stopped their business electricity costs from going through the roof. You can too!

The state of California has \$21,000,000 in cash rebates now available to California businesses that replace their old roofs with new, white, energy-efficient roofs. New construction projects are also eligible.

San Diego
REGIONAL
ENERGY
OFFICE



For details (LADWP Customers)
call 1-800-GreenLA (1-800-473-3652)
or log onto www.GreenLA.com
or (All Others)
1-866-SDENERGY (1-866-733-6474)
or log onto www.sdenergy.org/coolroof

Flex
your
POWER

Brought to you by the California Energy Commission as another way to "Flex Your Power"

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Heat Reclaim



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Current Efficiency Items

- **Daylight Harvesting**
- **“Cool” roofing**
- **Heat Reclaim**
- **High Efficiency HVAC (EER - 11-13)**
- **Centralized EMS/Monitoring**
- **Exterior LED Signage**
- **Active De-humidification**

Wal-Mart

Favorite Quote

“I have traveled extensively visiting retail in North America, Central America, South America, Europe and Asia. I can honestly say that in my opinion the stores Wal-Mart builds today in the US are the most energy efficient of any I have ever seen anywhere in the world” -

Wal-Mart

Goals

- **20% Energy/GHG reduction in existing stores within 7 years**
- **30% Energy/GHG reduction for new prototype within 4 years**

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File Edit View Insert Format Tools Data Window Help

Type a question for help

75%

Arial 10 B I U

Reply with Changes... End Review...

A38 1. Implementation plan based on new & relocation 5yr plan for supercentre, superstore and small town formats only (George, Living & Essentials non-food formats excluded)

UK	BETROFIT PROGRAM Initiative Description (HVAC, Refrigeration, Lighting, etc.; include brief scope)	Per Store Estimated Data						Implementation Plan - Target Number of Stores Completed per Year							Total Stores Completed	
		Target Format (supercenter, dept store, grocery, etc.)	Number of Stores (that initiative applies)	Projected Energy Reduction (% per store)	Projected Energy Savings (average £UK per store)	Estimated Capex (average £UK per store)	Simple ROI (per store in years)	2006 Total Stores Completed	2007 Total Stores Completed	2008 Total Stores Completed	2009 Total Stores Completed	2010 Total Stores Completed	2011 Total Stores Completed	2012 Total Stores Completed		
3	Refridgeration#1: trim heater controls, pack controllers, condensor controls, ecommissioning, optimisation & d/c fan motors	All excl. non-food formats (see note)	300	2.0%	£ 5,600	£ 5,600	1.00	300								300
4	Refridgeration#2: L.E.D lighting, full-glass doors, removal of undershelf lighting (rollout with remodels)	All remodel stores	126	5.0%	£ 20,000	£ 20,000	1.00		1	25	25	25	25	25	126	
5	HVAC#1: variable speed drives (VSDs) on extract systems, VSDs on larger air-handling units, ecommissioning	All excl. non-food formats (see note)	300	1.0%	£ 3,000	£ 12,000	4.00	180	120						300	
6	HVAC#2: adjust store heating and cooling parameters	All excl. non-food formats (see note)	300	1.0%	£ 3,000	£ 500	0.17		300						300	
7	Energy Management: metering, monitoring & targeting, colleague awareness	All excl. non-food formats (see note)	300	2.0%	£ 6,000	£ 50	50		250						300	
8	Lighting#1: reduce light levels during night-time/ low occupancy, remove H&B shelf lighting, retrofit lighting controls to offices/ external canopies, ecommissioning lighting controls	All excl. non-food formats (see note)	300	1.8%	£ 5,000	£ 10,000	2.00	300							300	
9	Lighting#2: replacement of inefficient lighting systems (eg. highbays, T12s etc)	Stores with old lighting systems	70	5.6%	£ 14,000	£ 80,000	5.71	10	10	10	10	10	10	10	70	
10	Renewables: wind turbines, load management & tbc depending on economic evaluation of renewables	TBC depending on new store trials	300	5.0%	£ 15,000	£ 300,000	20.00				100	100	100		300	
11	Wind Turbines (Distribution Centres): 6 * 2MW/turbines at 5 selected DCs	DCs	5	2.0%	£ 300,000	£ 1,700,000	5.67		6						6	

DRAFT

China / Germany / Japan / Korea / Mexico / Puerto Rico / UK - GBP / UK - USD / US

Ready

start

Calendar - Micr... Microsoft Power... C:\Documents a... Microsoft Excel ...

8:18 AM

Next Comment		Per Store Estimated Data							Implementation Plan				
Initiative Description:	Target Format (supercenter, dept store, grocery, etc.)	Total Number of Stores (at yr 2015)	Projected Energy Reduction (% per store)	Projected Energy Savings (average \$US per sq-ft)	Estimated Capex Required (average \$US per Sq-ft)	Simple ROI (per store in years)	2006 Total Stores Completed	2007 Total Stores Completed	2008 Total Stores Completed	2009 Total Stores Completed	Total		
1	BR.HE.1; Design stores considering upgraded and integrated EMS	Supercenter, Sam's, Supermarket	187	3.0%	\$ 0.07	\$ 0.39	5.6	10	17	20	20		
2	BR.HE.1; Sensors in Bathrooms and back offices	Supercenter, Sam's, Supermarket	180	0.3%	\$ 0.02	\$ 0.08	4.4	3	17	20	20		
3	BR.HE.2; Consider air curtains at freezers and coolers doors	Supercenter, Sam's, Supermarket	177	1.0%	\$ 0.05	\$ 0.19	3.9	0	17	20	20		
4	BR.HE.3; Light design according to merchandise islands and stores within stores	Supercenters	135	0.3%	\$ 0.03	\$ 0.04	1.3	0	0	5	10		
5	BR.HE.2; Specify refrigeration cases with high efficiency micromotors	Supercenter, Sam's, Supermarket	140	1.5%	\$ 0.07	\$ 0.07	1.4	0	5	10	10		
6	BR.HE.1; Rack house with heat recovery system	Supercenter, Sam's, Supermarket	177	2.5%	\$ 0.03	\$ 0.02	0.7	0	17	20	20		
7	BR.HE.2; Reduce of height of sales floor in 1 meter	Supercenter, Sam's, Supermarket	140	5.0%	\$ 0.14	\$ -	0.0	0	0	0	20		
8	BR.HE.4; Design stores considering integrated system to promote efficiency	All formats	156	2.0%	\$ 0.12	\$ 0.40	3.3	1	5	10	20		
TOTAL			1292					Total stores per year	14	78	105	140	
								Estimated capex required per year	\$ 260,970.22	\$ 1,453,976.94	\$ 1,957,276.65	\$ 2,609,702.19	
BR.n; additional new format developments will be ongoing. LED Lighting		Supercenter, Sam's, Supermarket											

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Lunch Meat



Cheese



CONDENSATION WATER IS RECYCLED AND REUSED TO IRRIGATE THE MOST SENSITIVE AREAS OF THE STORE.

Condensation (water) from air conditioning systems is usually a waste byproduct that is discarded. In this Supercenter, however, condensation from the store's refrigeration and air conditioning systems is collected, stored in a pond on the east side of the store, and used to help irrigate the most sensitive areas of the store.

FOR MORE INFORMATION VISIT THE MOST SENSITIVE AREAS OF THE STORE.



INDIVIDUALLY WRAPPED

LAND O'LAKES
REDUCED FAT CHEESE
TORTILLA CHIPS
CO-JACK
REAL SEMI-SOFT CHEESE

By Carbs

LAND O'LAKES

REDUCED FAT CHEESE
TORTILLA CHIPS
HEALTHY
REDUCED FAT

MILD CHEESE

By Carbs

Future Efficiency Items

- **Interior LED Lighting**
- **Variable Speed Fans/Motors (HVAC)**
- **Variable Speed Fans/Motors and floating Pressures (Refrigeration)**
- **Emerging Refrigeration Technologies (CO2 Secondary Loop)**
- **Additional Doors on Refrigerated Cases**
- **Geothermal**



Tire & Lube Express →

1-Hr. Photo

Pharmacy

Optical

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Goals

- **20% Energy/GHG reduction in existing stores within 7 years**
- **30% Energy/GHG reduction for new prototype within 4 years**
- **Other???**

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Supplier Energy Efficiency Program (SEEP)

- **30,000 Suppliers represent at approximately 10 times the energy/GHG footprint of Wal-Mart**
- **Manufacturer in GA, realized 71% energy reduction after implementing strategies**
- **Testing of approach currently underway with a few major suppliers**

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How Big is this?

- **HVAC**
- **Refrigeration**
- **Lighting**

Wal-Mart

Thank you