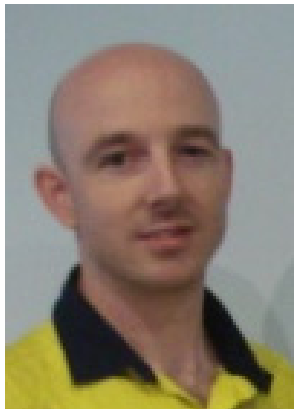


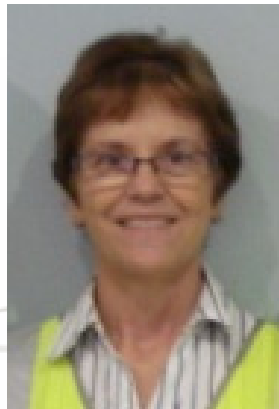
POWER SAVERS



Aussie Cup Presentation on Energy Usage at B&D Doors - Revesby



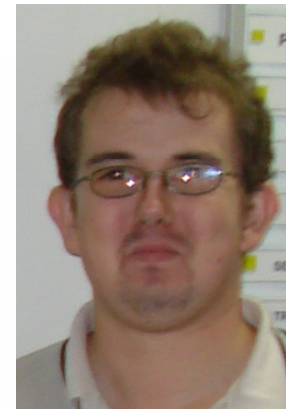
**Team Leader
Simon Kayess
Electrician**



**Pam Benson
Accountant**



**Chris Jara
Warehouse
Charge Hand**



**Shane Brack
Prod Planner &
Scheduler**



**Matthew Chenhall
NSW Operations
Manager**



***Special Micro Focused Process
Improvement Team***



COMPANY BACKGROUND – B&D DOORS & OPENERS

- 15 sites in Australia, New Zealand and China
- 650 Employees in total, 100 at Employees Revesby
- “Make to Order”
- 5 Day ex-factory lead-time
- Sales Volumes:
 - Roll-A-Door - 150,000 per annum
 - Panelift - 80,000 per annum
- Processes Employed:
 - Roll-forming
 - Brake pressing
 - Assembly
 - Braiding
 - Fabrication
 - Electronics & Assembly



TPM³ JOURNEY TO DATE – BRADBURY



TPM³ JOURNEY TO DATE – BRADBURY

Cross Functional Teams

- Panelifters Macro Focused Equipment and Process Improvement Team
- Cutting Edge Micro Focused and Process Improvement Team
- Chemical Brothers Micro Focused and Process Improvement Team
- Gun Hoppers – Mini Micro
- Gun Hoppers V.2 – Mini Micro

Area Base Teams

- 4 Work Area Management Teams
- 4 Operator Equipment Management – 1
- 4 Operator Equipment Management – 2

TPM³ JOURNEY TO DATE – SERIES 2



TPM³ JOURNEY TO DATE – SERIES 2

Cross Functional Teams

- Series 2 Improve Macro Focused Equipment and Process Improvement Team
- Coil-2-U Micro Focused Equipment and Process Improvement Team
- No Flow No Go Micro Focused and Process Improvement Team
- Let The Good Times Roll – Mini Micro
- Series 2 New Area Management

Area Base Teams

- 4 Work Area Management Teams
- 4 Operator Equipment Management – 1
- 2 Operator Equipment Management – 2

TPM³ JOURNEY TO DATE – SERIES 1



TPM³ JOURNEY TO DATE – SERIES 1 & SITE

Series 1

Cross Functional

- Series 1 Macro Focused Equipment and Process Improvement Team
- Flex-i-door New Area Management

Area Base

- Work Area Management
- Operator Equipment Management – 1

Site Wide

Cross Functional

- Waste Busters Special Micro Focused and Process Improvement Team
- Planning & Scheduling – Special Micro Focused and Process Improvement Team



MAINTENANCE / WAREHOUSE WORK AREA MANAGEMENT



TPM³ JOURNEY TO DATE – MAINTENANCE, WAREHOUSE & SITE

Maintenance

Area Base

- Work Area Management
- Support for Operator Equipment Management

Warehouse / Receiving

Area Base

- Work Area Management



COMPANY BACKGROUND – PRODUCTS



COMPANY BACKGROUND – PRODUCTS



COMPANY BACKGROUND – EXPORT MARKETS

- Saudi Arabia
- Kuwait
- Bahrain
- Iran
- United Arab Emirates
- Greece
- Spain
- Netherlands
- United Kingdom
- Ireland
- Canada
- China
- India
- Sri Lanka
- South Africa
- Israel
- Vietnam
- Malaysia
- Phillipines
- Thailand
- Taiwan

OUR TEAM MANDATE

- Categorise all energy sources into type and measureable areas / locations of use
- Determine current usage levels including time profile where appropriate
- Reduce total energy cost by 10% for the current volume of output without impacting negatively on any of the business goal aligned performance measures

Our mandate kept us focused on the expected outcomes.



OUR TEAM MANDATE

- Create a 3 year Vision of total energy usage based on findings and documented assumptions.
- Generate initial awareness of the need for energy reduction / conversation to all the site by conducting an employee survey
- Complete within 12 meetings

Our mandate kept us focused on the expected outcomes.



TEAM BOUNDARIES

Physical:

Total Revesby site

Technology:

No change to existing technology unless approved

Team Resources:

Use existing resources, any extra resources to be approved by the Leadership Team

Time for meetings per week: 1.0 hours; Time for support activities per week: 1.0 hour

Financial:

All improvement activities must be cost-benefit justified and funded within the company's delegation of authority and the business's current business plan

Our Team Boundaries gave us guidelines for our team to work within.



ENERGY COSTS FOR 2011

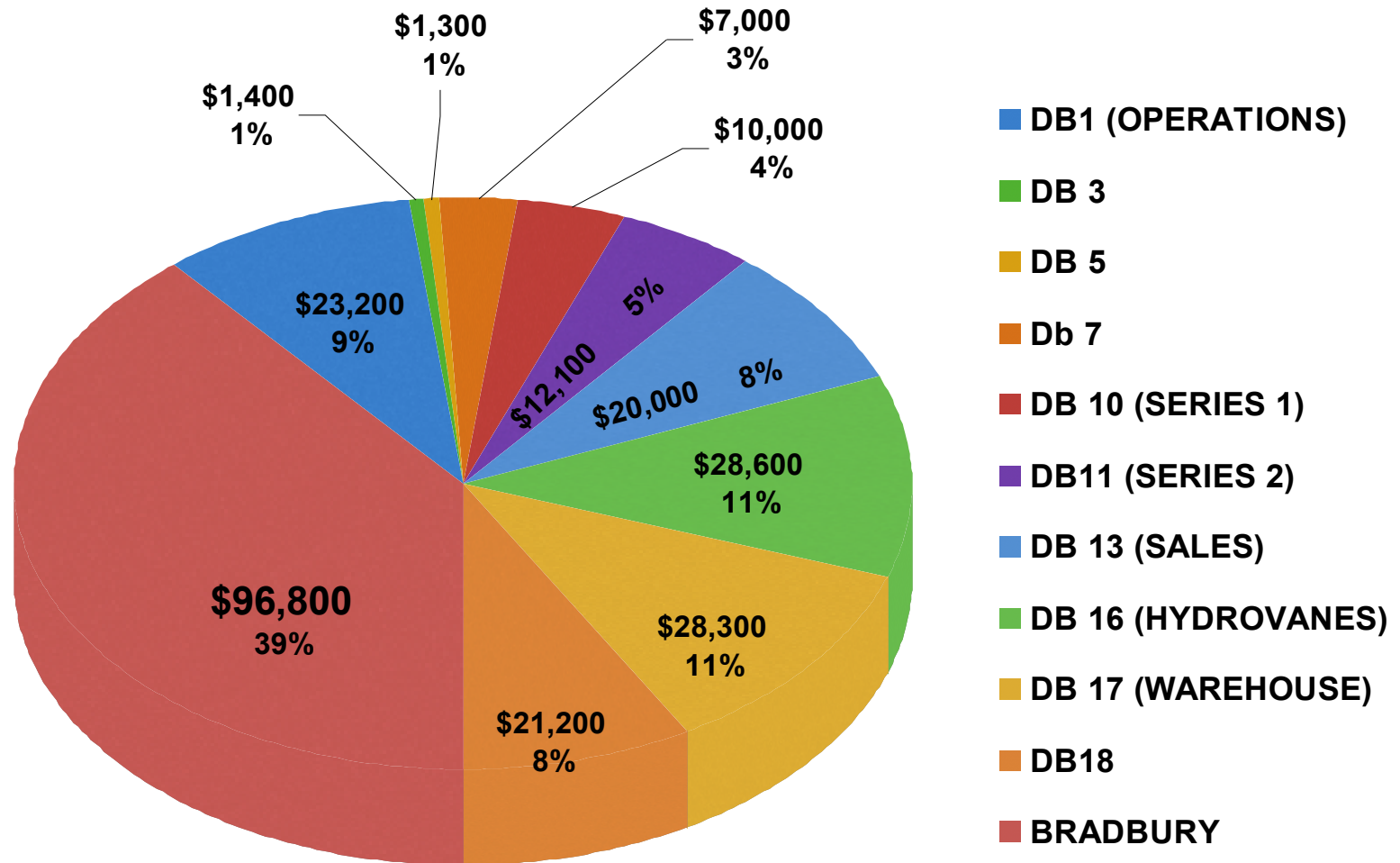
\$290,000

DISTRIBUTION OF ENERGY USAGE

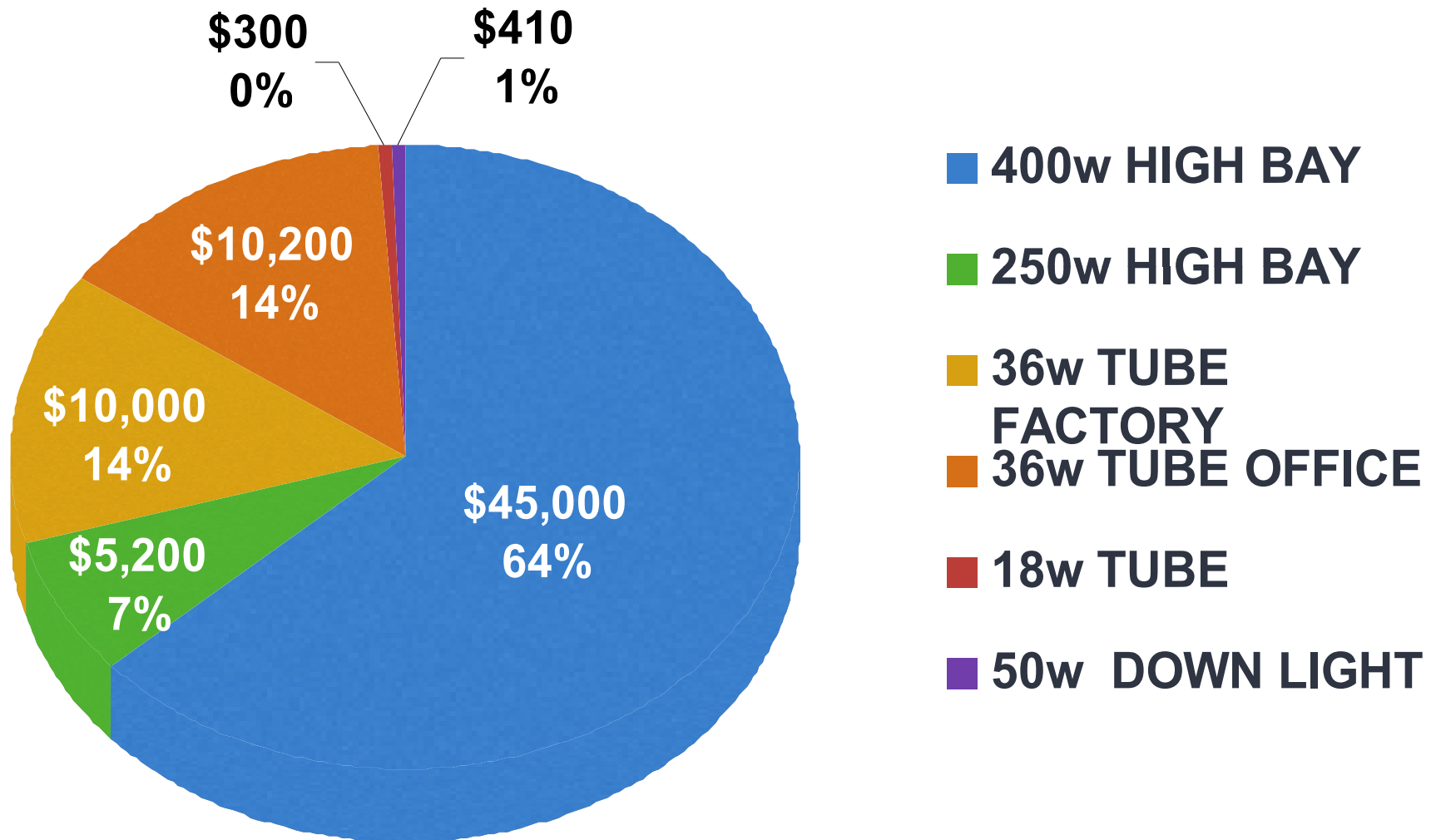
12 months Cost of Services

	Energy Classifications	Series 1/2	Bradbury	Factory General	Office/ Other	Totals
1	Electricity - Lighting			\$ 61,696	\$ 10,209	\$ 71,905
2	Electricity - Compressors			\$ 28,574		\$ 28,574
3	Electricity - General Processing		\$ 88,498	\$ 33,809		\$ 117,573
4	Electricity - Computers				\$ 22,000	\$ 22,000
5	Electricity - Car Park				\$ 1,882	\$ 1,882
6	LP Gas			\$ 33,859		\$ 33,859
7	Water Rates			\$ 1,631	\$ 684	\$ 2,315
8	Water - Water Usage			\$ 6,383		\$ 6,383
9	Water - Wastewater			\$ 3,709		\$ 3,709
		\$ -	\$ 88,498	\$ 172,661	\$ 34,775	\$ 287,200

BREAKDOWN OF ANNUAL COST OF ENERGY BY AREA



BREAKDOWN OF ANNUAL COST OF LIGHTING



KEY POINTS ON ENERGY COSTS

- Bradbury Presses use the most power (~\$88k/pa)
- Lighting is our next biggest energy expense (~\$71k/pa)
 - Hi-Bay Lights (~\$50k/pa)
 - Factory Fluorescent (~\$10k/pa)
 - Office Fluorescent (~\$10k/pa)

WE SURVEYED THE FACTORY

Factory Survey – Energy Usage

Rating	Water	Lighting	Electrical Equipment	Air Powered Equipment	Material Handling
Excellence	Best practice Water Mgmt System with site vision actively practiced. Capture and recycle systems exist. Minimal use of water as aid to manufacturer. High number of proactively implemented water saving initiatives.	Layout of workplace designed to minimise use of electrical lighting. Extensive use of natural light. High number of proactively implemented best practice electrical light reduction initiatives.	Equipment laid out to minimise use of power. Efficiency rating on all new equipment considered in purchasing decisions. High number of proactively best practice initiatives.	Active Air Management program with site vision. High number of proactively implemented saving initiatives.	Site lay out specifically to minimise movement of materials and maximise one piece flow. Minimal inventories required on site. Products designed to maximise standard componentry.
	Water Management System for site exists and promoted. Ongoing monitoring of consumption used to drive improvement & behaviour. Leaks promptly attended to & no excess use practices.	Use of lights restricted to when work areas in use. Broad use of light sensors and low wattage light efficient globes. Ongoing monitoring of consumption used to help drive improvement & behaviour.	Monitoring of consumption used to drive improvement & behaviour. Equipment actively turned off or in sleep mode when not in use. Highly inefficient / over-rated motors replaced.	Regular operator care & inspection to detect and ensure signs leading to leaks are attended to. Monitoring of consumption.	Forklift & conveying costs reviewed to drive inventory policies & other improvements. Commenced receiving supplies in small convenient quantities and taken directly to production line.
	Basic conservation awareness. Some basic savings initiatives in place such as water restrictors & half flush toilets.	Common practice to turn off lights after finish of shift. Some use of low wattage light efficient globes.	Equipment turned on only with sufficient time needed prior to use. Shut down of areas prior to shift end if scheduled work completed.	Air leaks are rare and attended to promptly. Air to area isolated & turned off after finish of shift.	Inventories well organised and moved around site only when needed & in quantities as required. Inwards & outwards docks are clear other than of current work.
	Water turned off after use. Leaks attended to. Little consideration to conservation.	Work area lighting mostly turned off after finish of shift. No use of low wattage light efficient globes.	Equipment powered up at beginning of shift for availability sometime within the shift. Shut downs completed at end of shift.	Some air leaks exist within plant. Air supply left on after finish of shift.	Components pushed out to production lines to make space within warehouse & often without regard of production requirements. Docks often cluttered. Large stocktake errors occur.
Innocence	Water left running after use. Leaks go unattended. Wasteful cleaning & hosing practices.	Lights left on when leaving work areas and at end of each day. No use of low wattage efficient globes	Machines left on after shift. Equipment sometimes left powered up throughout the day and night regardless of no scheduled work.	Many air leaks around plant which go unattended. Air supply left on after finish of shift.	Forklifts perform high number of inefficient long distance trips around site. Iles & production lines often cluttered with materials. Large amounts of old & unused inventory.

WE SURVEYED THE OFFICE

Office Survey – Energy Usage

Rating	Water	Lighting	Office Equipment & Appliances	Heating & Cooling
Excellence	Best practice Water Mgmt System vision actively practiced within admin & production support departments. Capture and recycle systems exist. Strong number of proactively implemented water saving initiatives.	Layout of workplace designed to minimise use of electrical lighting. Extensive use of natural light. High number of proactively implemented best practice electrical light reduction initiatives.	Equipment laid out to minimise power use & optimal sharing. Efficiency rating on all new equipment considered in purchasing decisions. Strong number of proactively best practice initiatives.	Workplace laid out to take best advantage of natural heating / cooling properties. Renewable based electricity used for heating & cooling where practical.
	Water Management System for site exists and promoted. Ongoing monitoring of consumption used to drive improvement & behaviour. Leaks promptly attended to & no excess use practices.	Use of lights restricted to when specific work area in use. Broad use of light sensors and low wattage light efficient globes. Ongoing monitoring of consumption used to help drive improvement & behaviour.	Monitoring of consumption used to drive improvement & behaviour. Equipment actively turned off or in sleep mode when not in use. Efficiency rating of existing equipment reviews and acted upon where cost beneficial.	Heating & cooling only used as genuinely required. Ongoing monitoring of heating & cooling expenses to help drive improvement & conservation practices.
	Basic conservation awareness. Some basic savings initiatives in place such as water restrictors & half flush toilets.	Common practice that lights are off at end of day. Some use of low wattage light efficient globes.	Equipment turned on only as needed. Majority of devices turn to sleep mode after reasonable time without use.	Existence of basic conservation awareness. Simple initiatives such as thermostat & personnel detection systems in place.
	Water turned off after use. Leaks attended to. Little consideration to conservation.	Work area lighting mostly turned off after finish of day. No use of low wattage light efficient globes.	Most equipment powered up at beginning of day out habit not necessity. Turned off at end of day.	Doors & windows closed at most times to assist heating & cooling. Use of heaters & air-cons used out of habit not necessity. Turned off at end of shift.
Innocence	Water left running after use. Leaks go unattended. Wasteful cleaning practices.	Lights left on when leaving work areas and at end of each day. No use of low wattage efficient globes.	Devices left on regardless of activity within area, sometimes throughout the day and night.	Wasteful heating / cooling practices. Usual that doors & windows needlessly left open. Often on even if area unattended.

KEY POINTS FROM FACTORY SURVEYS

- Bradbury not powered down between day and afternoon shifts.
- Machines often left on after shift finished.
- Machines sometimes left powered up even though no work scheduled.
- Lights often left on at end of shift.
- Do we need all the lights on during the day?
- There are lots of air leaks.

KEY POINTS FROM OFFICE SURVEYS

- We don't do much in terms of energy conservation
- Computers left on at the end of the day.
- Air-conditioners – set to 18° in summer and 28° in winter.
- Lights – we should limit usage or re-organise to reduce energy consumption.

HOW COULD WE REDUCE COST BY 10%?

OPPORTUNITY FOR SAVING								
	Energy Classifications	Series 1/2	Bradbury	Factory General	Office/ Other	Totals	%	How
1	Electricity - Lighting			18,546		18,546	25%	Requires investment to achieve
2	Electricity - Compressors			1,700		1,700	6%	Fix air leaks, shut down when not in use, change to energy efficient compressors
3	Electricity - General Processing		6,855			6,855	6%	Power down presses between shifts (1.5 hours x 230 days x \$19.87) and when not in use
4	Electricity - Computers					-	0%	
5	Electricity - Car Park					-	0%	
6	LP Gas					-	0%	
7	Water Rates					-	0%	
8	Water - Water Usage			1,277		1,277	20%	Water saving taps & toilets
9	Water - Wastewater			742		742	20%	Water saving taps & toilets
		-	6,855	22,265	-	\$29,120	10%	

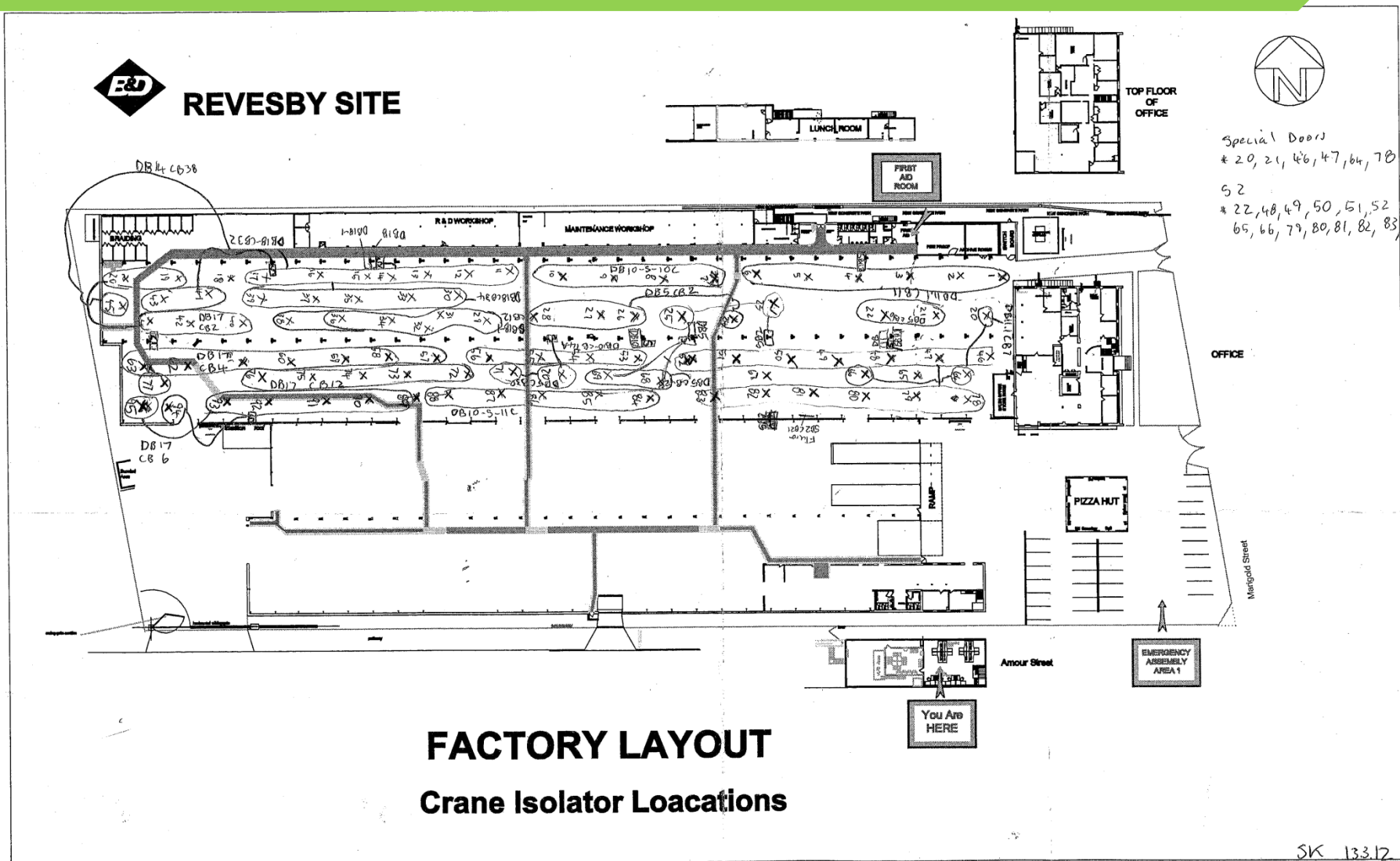
WHAT WE WOULD LIKE TO AIM FOR – WITH MINIMAL SPEND.

OPPORTUNITY FOR SAVING								
	Energy Classifications	Series 1/2	Bradbury	Factory General	Office/ Other	Totals	%	How
1	Electricity - Lighting			10,000		10,000	13%	Rewire Distribution Boards & install sensors or timers to turn off lights when not required. (50% daytime)
2	Electricity - Compressors							A big job requiring capital investment. To be parked
3	Electricity - General Processing		6,855			6,855	6%	Power down presses between shifts (1.5 hours x 230 days x \$19.87) and when not in use
4	Electricity - Computers					-	0%	
5	Electricity - Car Park					-	0%	
6	LP Gas					-	0%	
7	Water Rates					-	0%	
8	Water - Water Usage					-	0%	Requires capital. To be parked
9	Water - Wastewater					-	0%	Requires capital. To be parked
		-	6,855	10,000	-	\$16,855	6%	

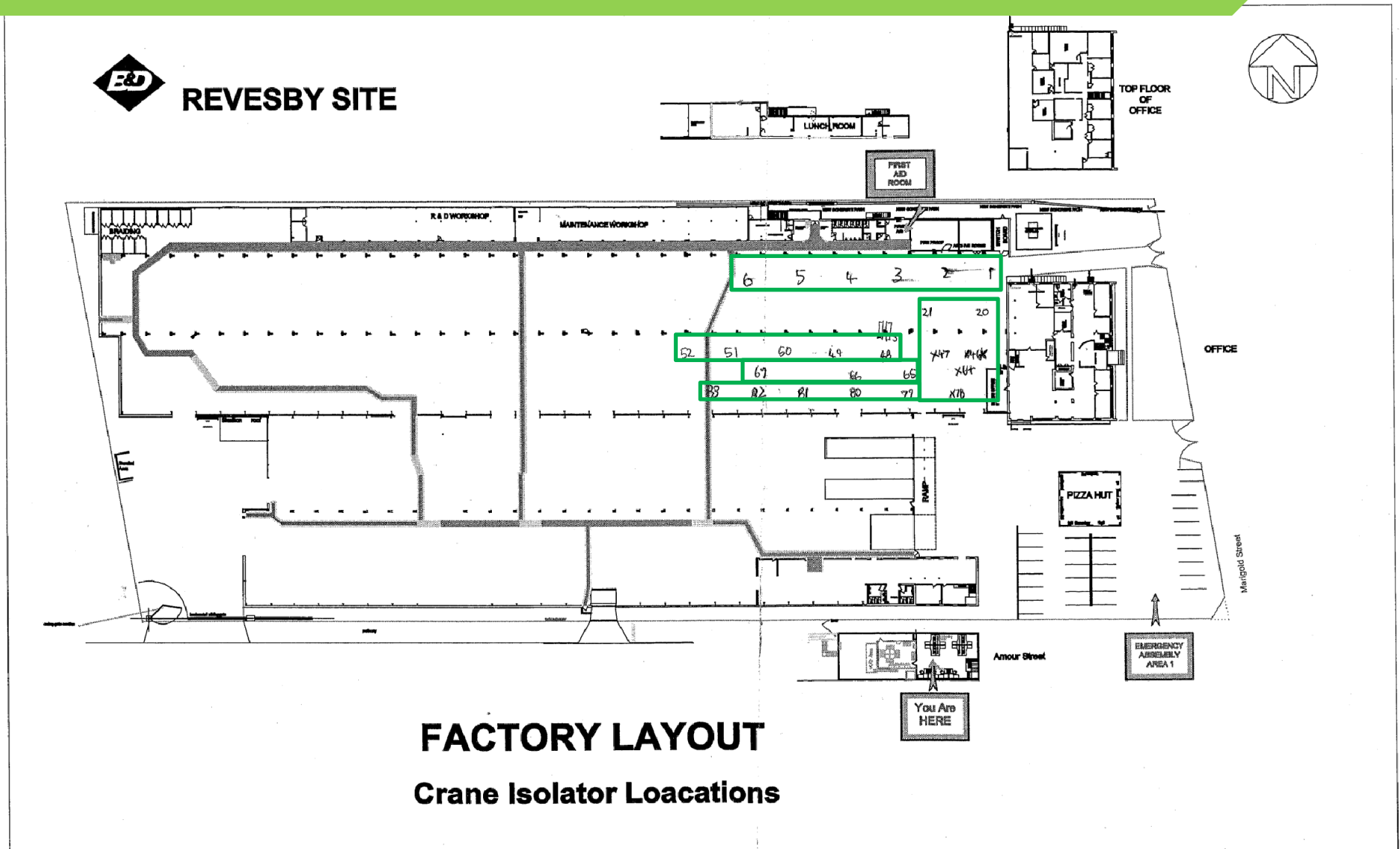
THIS WAS OUR ACTION PLAN

1. Power Down Bradbury Presses between shifts when not in use
2. Rewiring lighting according to define production area to enable switching off areas individually
3. Timers or sensors to be installed for switching off lights when not required.
4. Remove lights that are not required due to high lux levels
5. No further purchasing of old style fluoro tubes. Purchase energy saving tubes in future for replacements

CURRENT LIGHT LAYOUT – VERY MESSY



PROPOSED LIGHT LAYOUT - TO MAKE IT EASY TO ISOLATE



WAREHOUSE LIGHTS – “ON”





WAREHOUSE LIGHTS – “OFF”



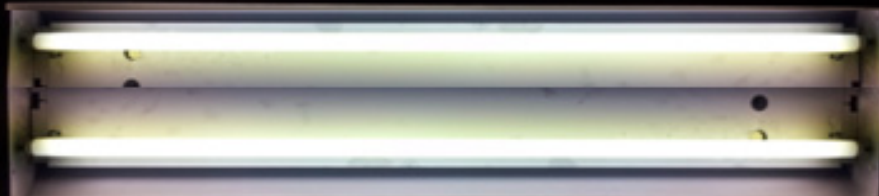
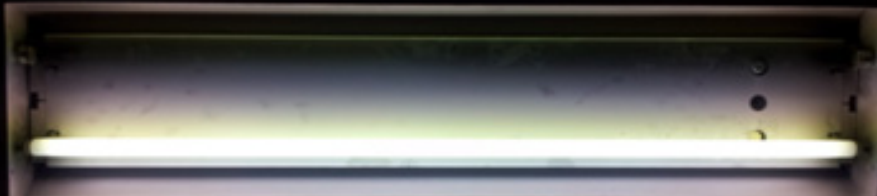
LUX LEVEL STANDARDS

TYPE OF TASK OR ACTIVITY	LUX LEVEL STANDARDS
HALLWAYS / WALKWAYS	40
LOADING BAYS	80
MACHINE WORK / GENERAL FABRICATION	160
KITCHENS / COUNTERS FOR TRANSACTIONS	240
OFFICE TASK	320
PAINTING & FINISHING	600

IMPROVEMENT SHEETS

Team Name:	Power Savers	Location:	Warehouse	Initiated Date:	1/4/2012
Team Type:	Power Savers	Item:	Light switching	Completed Date:	1/5/2012
Initiator:	Sim on				
1. Problem (Plan)					
Multiple switches for warehouse and inconvenient to access. Cant be manually overridden from the factory entrance.					
2. Current Situation (Plan)			3. Proposed Change / Approved Improvement (Do)		
Photo: 					
Improvement Target:	Change light switch location & reduce the buttons		Cost:		Expected Saving:
4. Results: (Check)			5. Future Actions: (Act)		
Single switch installed at back dock office. Switch will automatically reset when switched from factory entrance.			Apply to other areas of the factory. Install fully automated light switches in production areas.		
Approved by:		Shift A	Shift B	Shift C	Shift D
Team Leaders to sign off acceptance of Proposed Change		SK	RW	AT	MC
CTPM Australasia		Page 15			


IMPROVEMENT SHEETS

Team Name:	Power Savers	Location:	Office	Initiated Date:	15/04/12
Team Type:	Special Micro	Item:	Fluro Lights	Completed Date:	30/04/12
Initiator:	Shane Brack				
1. Problem (Plan)					
Too many lights in the office which is wasting more power than necessary. Each light has 2 fluros each					
2. Current Situation (Plan)			3. Proposed Change / Approved Improvement (Do)		
					
Improvement Target:	To remove at least one fluro from each light to reduce light consumption		Cost:	Nil	Expected Saving: \$6,500 p.a
4. Results: (Check)			5. Future Actions: (Act)		
Removed 1 fluro from each light fitting without falling below the Australian Lux Level Standard			Place on teams noticeboard to share our learning's		
CTPM Australasia	Approved by:	Shift A	Shift B	Shift C	Shift D
	Team Leaders to sign off acceptance of Proposed Change	SK	RW	AT	MC
					Page 15

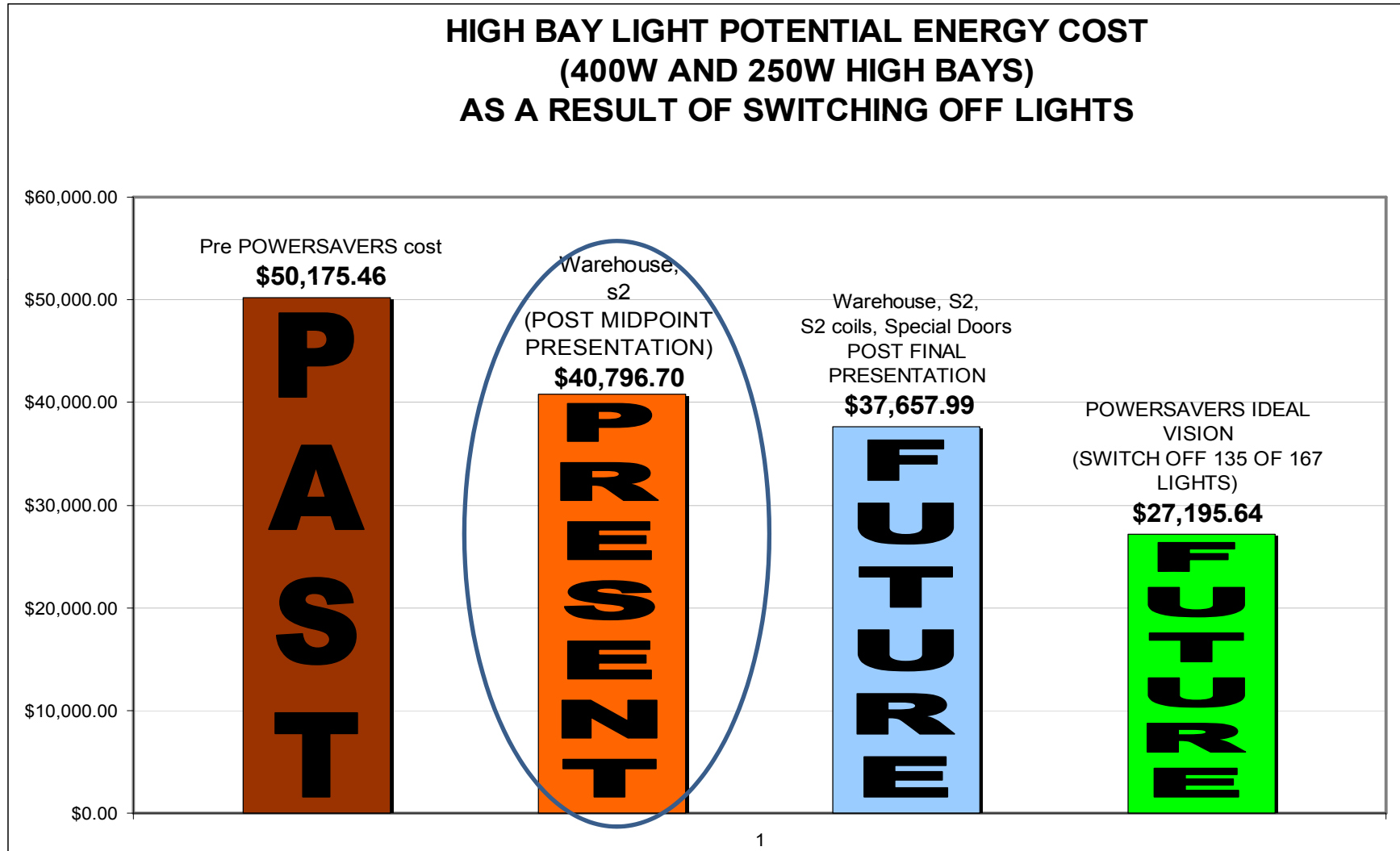
THIS IS THE HOW WE CALCULATED OUR POTENTIAL COST SAVINGS

- ELECTRICITY = 16.41c/1000 WATTS/HOUR

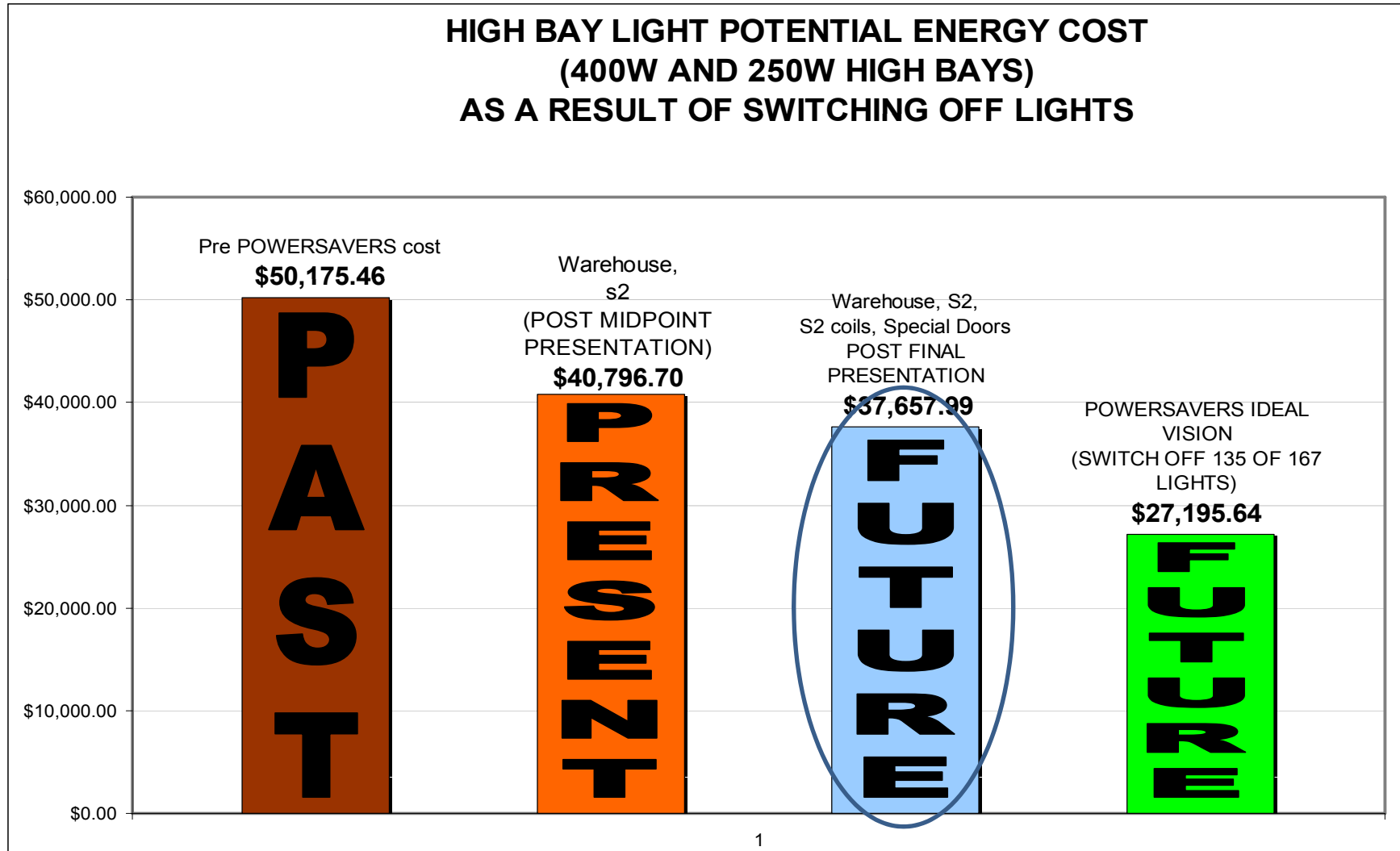
- 450 WATTS =  1 x 400watt high bay

-  = 7.34c/HOUR

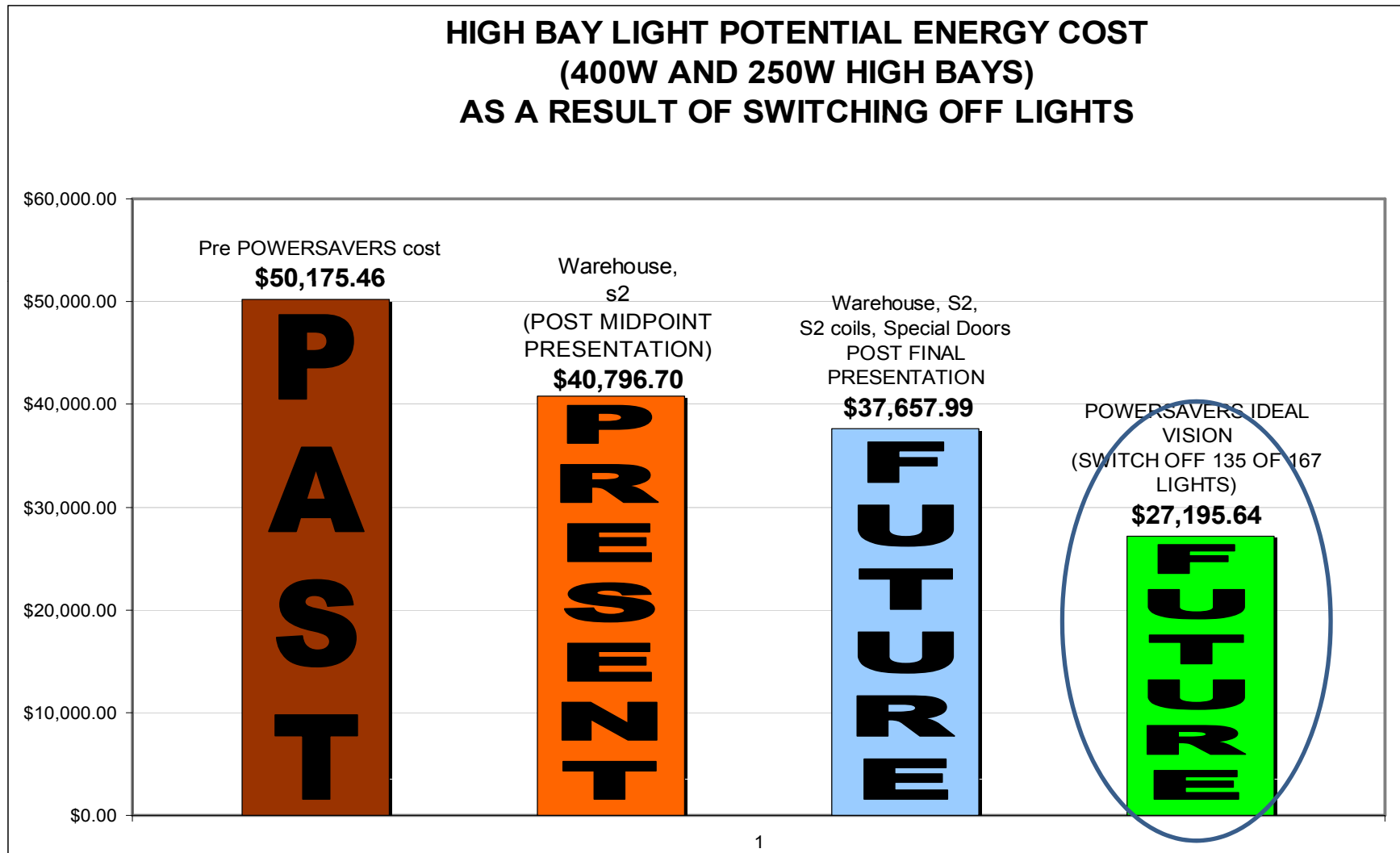
TURNING OFF HIGH BAYS IN WAREHOUSE WILL SAVE US \$10K/YR INITIALLY



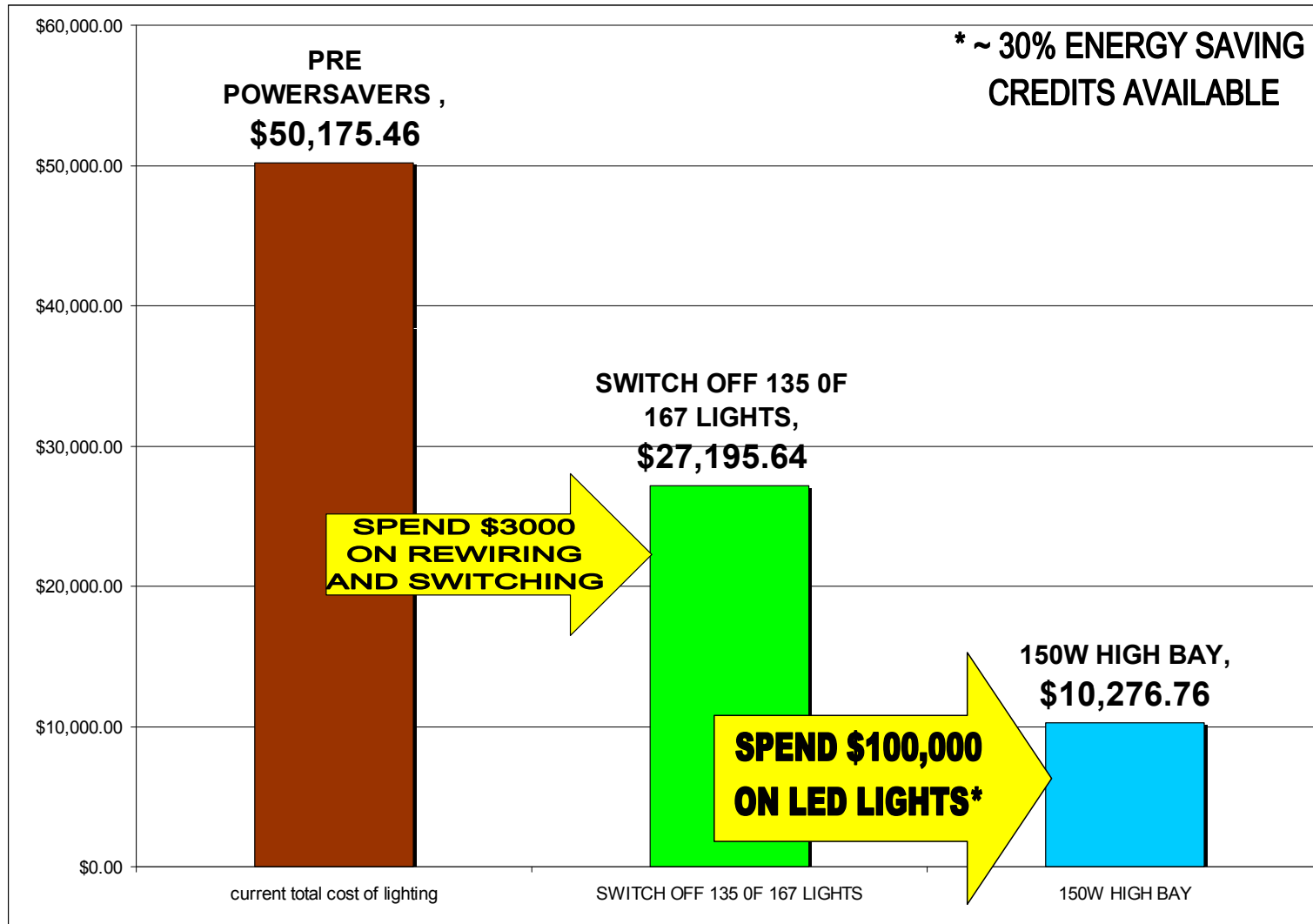
TURNING OFF HIGH BAYS IN WAREHOUSE & S2 WILL SAVE US \$13K/YR INITIALLY



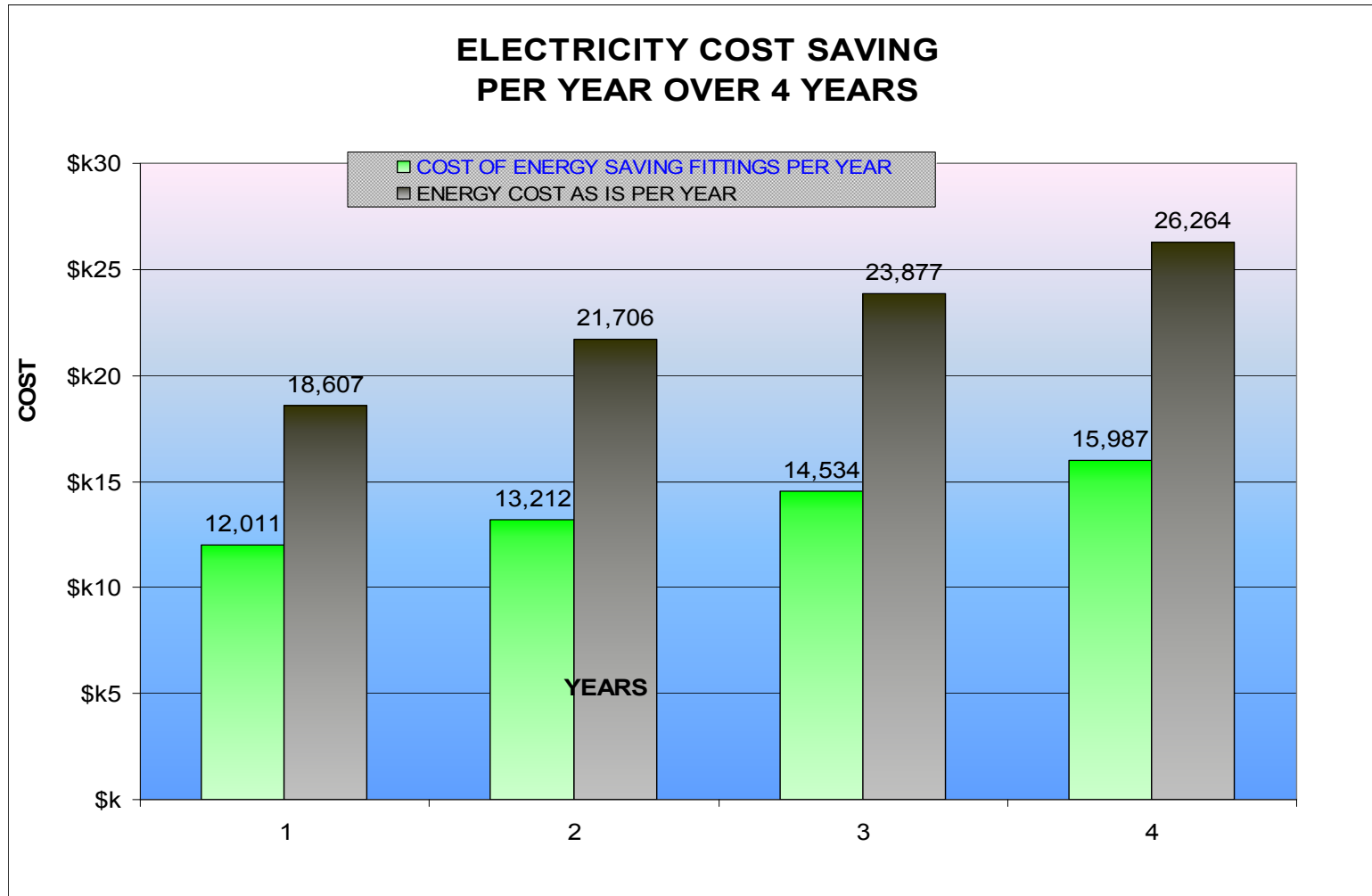
TURNING OFF 135 of 167 HIGH BAYS WOULD SAVE \$23K/YR INITIALLY



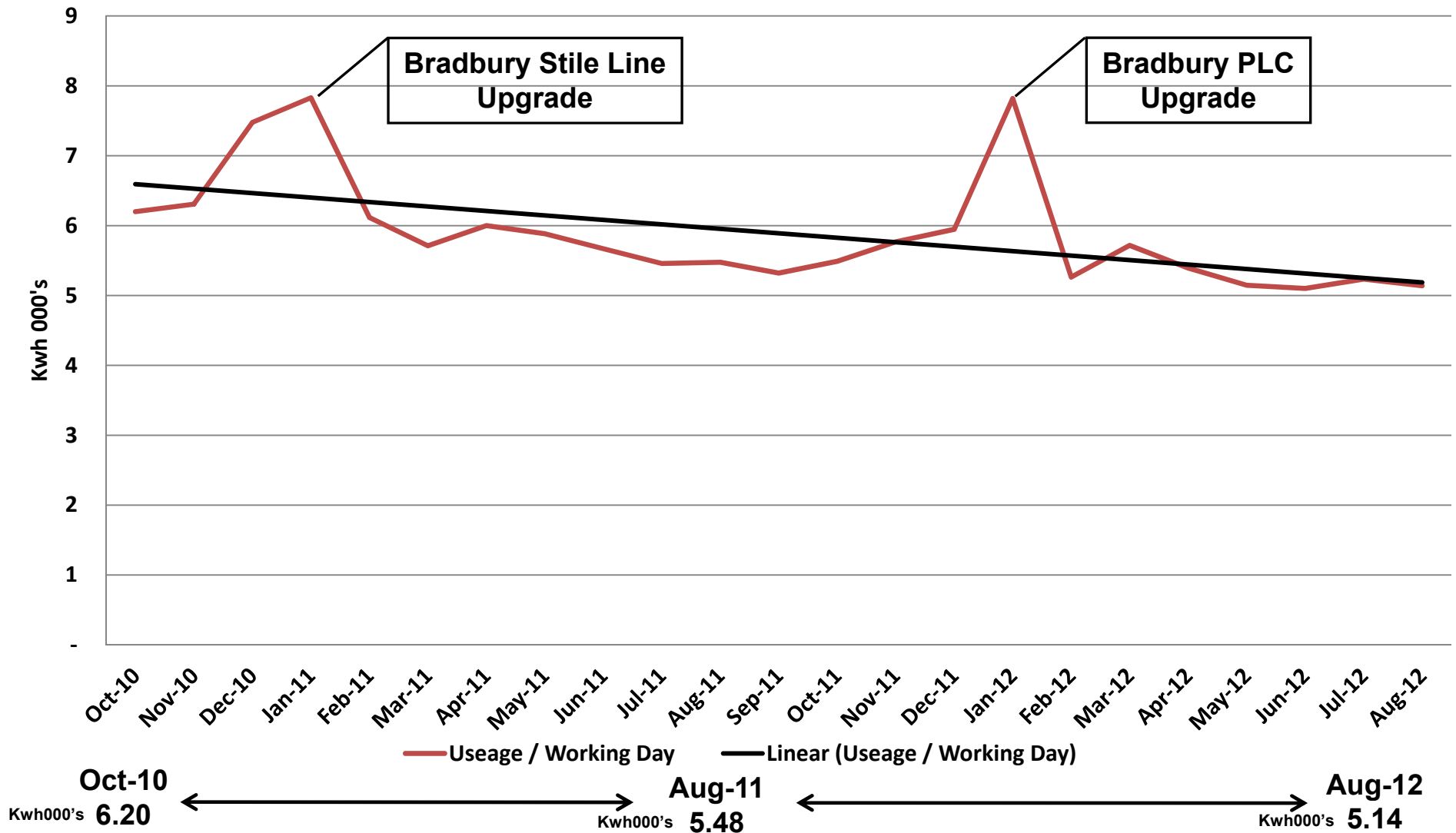
WE COULD SAVE \$40K/YR BY CHANGING TO ENERGY SAVING LED LIGHTS ...at a cost of ...



POTENTIAL SAVINGS WITH ENERGY EFFICIENT FLUORESCENT TUBES ... BUT AT A COST!!



REVESBY ELECTRICITY USAGE



PARKING LOT ISSUES

- Compressor Air Leaks
- Water Saving Taps & Toilets
- LP Gas used in Forklifts – requires WAM team & Purchasing to review.
- End Of Shift Shutdown Procedure for the Bradbury Line

KEY LEARNING'S TO DATE

- Cost of Power Usage by different parts of the business
- Bradbury line uses largest % of power (39%)
- Lighting presents best opportunity for cost savings over next 3 years
- Employee perception of energy use practices are at low levels
- Diversity of team members brings different perspectives to the team.