EPA Energy Star

Energy Treasure Hunts

LEAR. CORPORATION

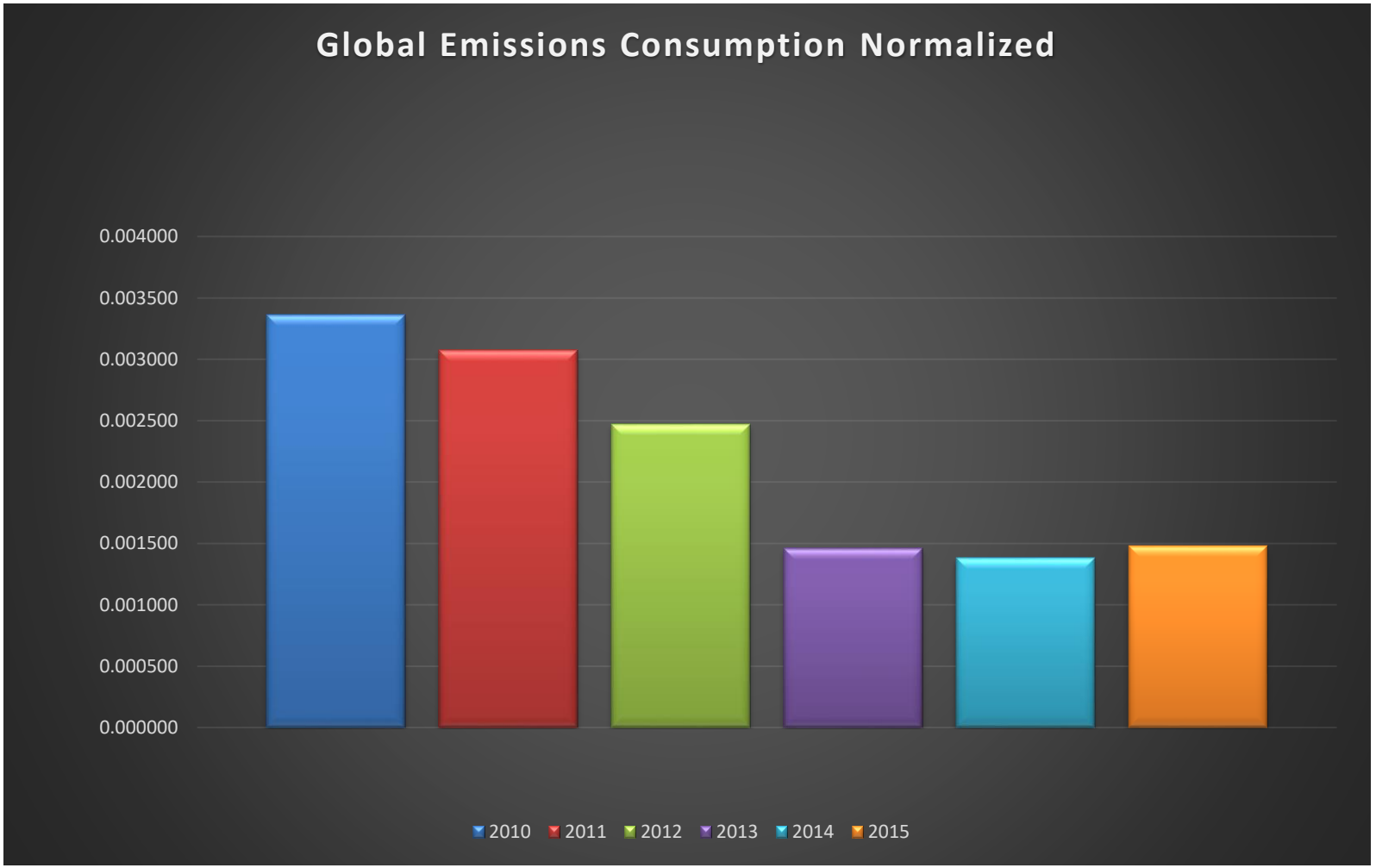
Global Sustainability Goals

- Below are Lear's Global Goals for 2020 from a 2013 baseline

Metric	Goal
Energy Use	15% Reduction (Per Operational Man-hours)
GHG Emissions	15% Reduction (Per Operational Man-hours)
Water Usage	10% Reduction (Per Operational Man-hours)
Social Projects	All Plants Have at Least One Social Project Per Year to Help Local Communities

Emissions by Year

- Lear also achieved a 12.7% reduction in Greenhouse Gas Emissions in 2013 when compared with 2010 baseline using absolute* values.



Treasure Hunt Support

ENERGY STAR AWARD 2016

PARTNER OF THE YEAR

Sustained Excellence

Toyota Engineering & Manufacturing North America, Inc. (TEMA)

&

IMA / LEAR

June 7th 2016

Toyota Energy Team

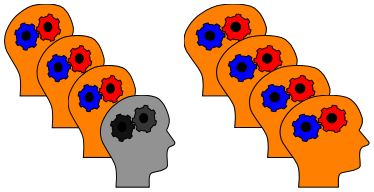
LEAR. CORPORATION

Treasure Hunt-What is it?

Treasure Hunt is an Energy Program Tool to Engage Employees in Learning a Culture of Energy Continuous Improvement

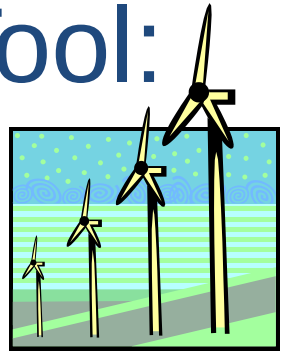
Treasure Hunt Training

Purpose of Treasure Hunt Tool:



Combine knowledge of T/Ms (TEMA, Suppliers, Prod & Maintenance)

Go and see



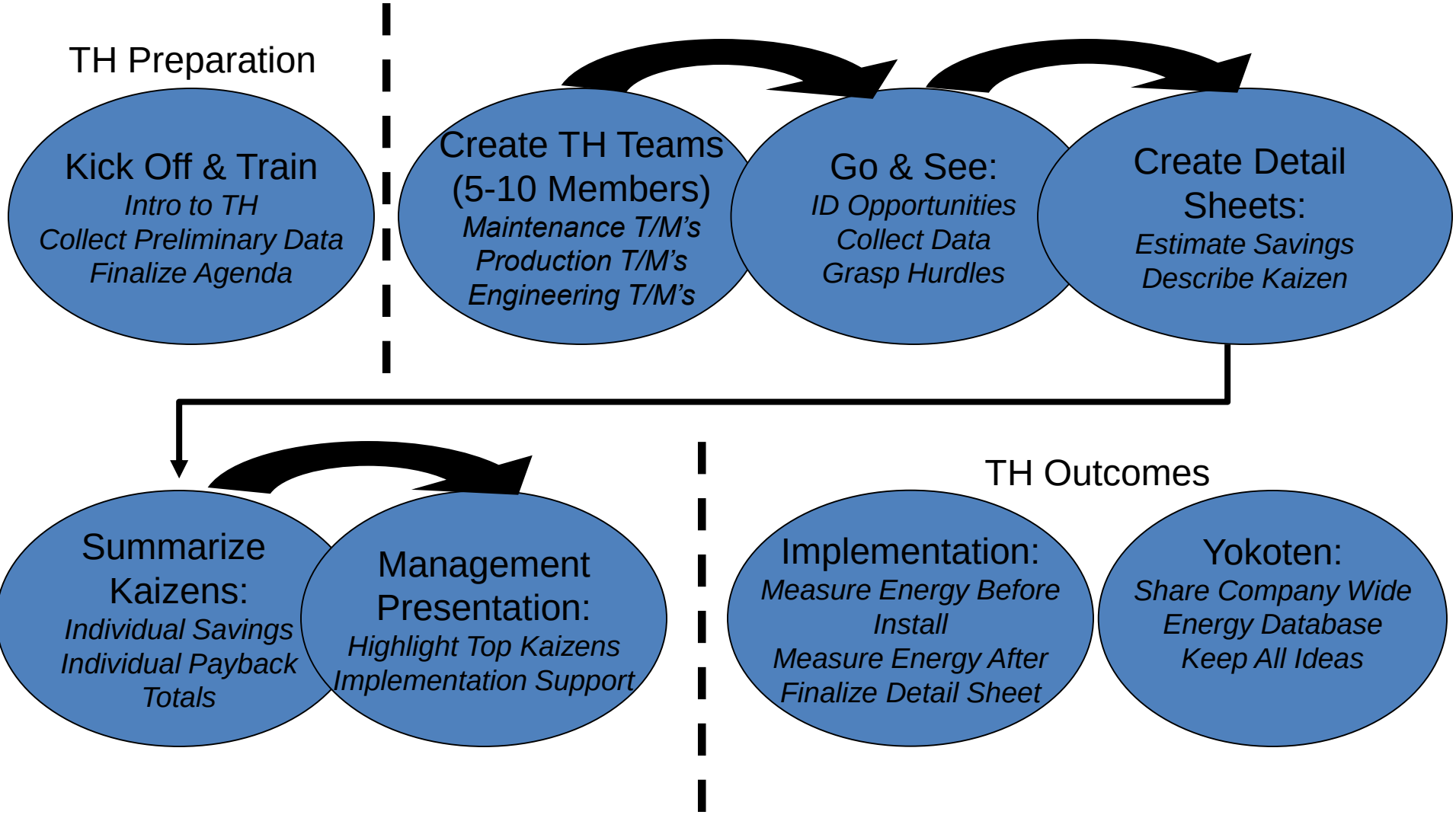
Identify energy use in the workplace

Conceive new ideas and yokoten existing ones

Find ways to save

Increase energy awareness

Treasure Hunt Process Flow



TEMA Detail Sheet

Kaizen Location

Kaizen Title:	LED Lighting over MAP		
Plant:	Highland Park	Shop:	MAP
Process/Equipment:			
Kaizen Type:	○ Operational	● Equipment Modification	○ Major Equipment Change
Kaizen ID #		Plant ID#:	

Originating Location

Originator:	Team 2		
NAMC:	Highland Park	Cost Center:	
Dept:		Date:	6/6/2016
Phone #:			

Electric Utility Emissions Data			Gas Emissions	
CO2	2.016	lbs/kWH	CO_2/MMBTU	
SO2		lbs/MWH	117.1	lbs/MMBtu
Nox		lbs/MWH		

Resource

Check all that apply: → Electricity ☑ | Natural Gas ☐ | Comp. Air ☐ | Steam ☐ | Chilled Water ☐ | Water ☐ | WWT ☐ | POTW ☐ | Other ☐

Kaizen Description

Background/Description: Replace all 55w T-5 Flourescent bulbs in HP Plant area with retrofit 22w LEDs (No ballast replacement needed)

Current Situation (Before Kaizen)				Projected Situation (After Kaizen)			
Production Hours		Non-Production Hours		Production Hours		Non-Production Hours	
24	Hrs/Day	24	Hrs/Day	24	Hrs/Day	24	Hrs/Day
21	Days/Month	9	Days/Month	21	Days/Month	9	Days/Month
12	Months	12	Months	12	Months	12	Months
193	# of units	193	# of units	193	# of units	193	# of units

Photo

Insert Picture From File...

Energy/ENV Usage

Energy units		Energy Use Before Kaizen (Energy units/yr)	Energy Use After Kaizen (Energy Units/yr)	Energy Savings (Energy Units/yr)
Electricity (kWh)	Non-prod	733,708.8	293,483.5	440,225.3
Gas (MMBtu)		-	-	-
Compressed Air (kSCF)		-	-	-
Steam (kLB)		-	-	-
Chilled Water (kTon)		-	-	-
Water (kGal)		-	-	-
WWT (kGal)		-	-	-
POTW (kGal)		-	-	-
Other: Explain		-	-	-
CO_2 (metric tons)		671.1	268.4	402.7

Savings

Implementation Cost		$/unit	Projected Annual Savings	
Engineering Services:		$ 0.12	Electricity (kWh)	$ 52,386.81
Material:	$ 22,632.00	$ 6.67	Gas (MMBtu)	$ -
Labor: Contract	$ 10,000.00	$ 0.45	Compressed Air (kscf)	$ -
Labor: In House		$ 11.61	Steam (kLB)	$ -

Compressed Air Control

Current Situation: Compressors running 24/7.

Ideal Situation: Turn off Compressors when no production demands compressed air

Energy Reduction = $31,000/yr

Savings opportunity of $31,000 Annually, with an estimated implementation cost of less than $15,000 including DTE Rebate 0.47 yr payback

Additional Actions: Compressed Air Leak Identification and Repair. DTE rebates available to improve savings from $750-$1,800/ leak repair.

POWER

Lighting Change to LED Lamps

Current Situation:
1512 T-5 Fluorescent Bulbs using 55 watts

Ideal Situation:
LED retrofit tubes using 22 watts

Energy Reduction = $52,000/yr

Additional Actions:
Shut Down Lighting over FGIs. MAP FGI savings $4,500/year minimal cost.

Savings opportunity of $52,000 Annually, with an estimated implementation cost of less than $33,000 without including DTE Rebate 0.62 years payback

2016 Summary Results

- 6 Energy Treasure Hunts Conducted in 2016
- 181 Opportunities for energy reductions
- All return on investments less than 2 years
- Average of 20 % reduction is cost at each plant
- $450,000 in potential cost savings
- Best Practices shared globally
- More Energy Treasure Hunts planned.

Plant 1 Information

- Size: 223,000 ft^2
- Electricity ~$ 330k /year
  - 3,955,120 kWh
- Natural Gas ~$ 91k /year
  - 21,601 MMBtu's

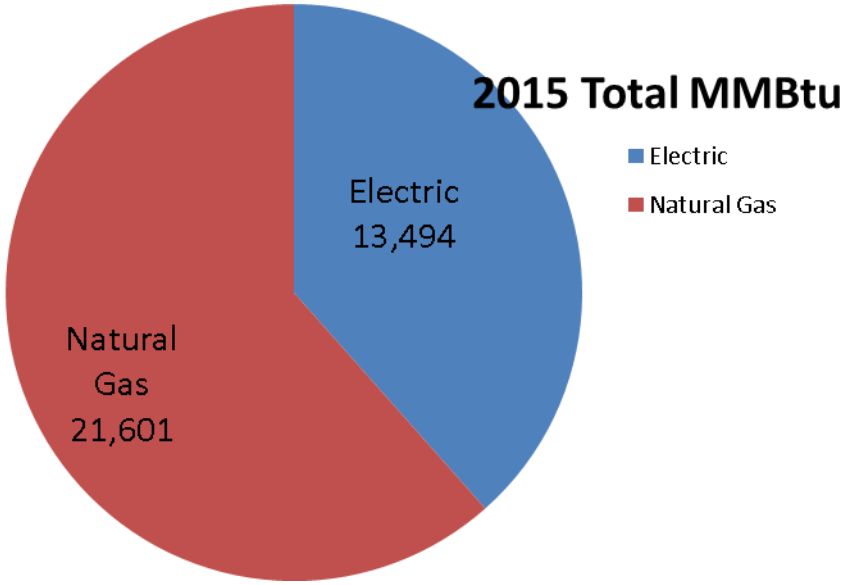
#	Kaizen	MMBtu
1	HMI to sleep mode	7
2	Reduce Lighting - 10 each six lamp fixtures	54
3	Turn off Lighting in EOL	9
4	Reduce Lighting 3 fixtures	14
5	Reduce Lighting on 90 each 6 lamp fixtures	171
6	Set back heat during non production	335
7	Turn off Big Ass Area Fan	14
8	Big Ass Fans	10
9	Turn off Comfort Fans - small black units	9
10	Turn off Comfort Fans - yellow units	8
11	Exhaust Fan DTS8000 6	143
12	Exhaust Fan, MIG Weld, DTS-13000-10	63
13	Exhaust Fan, Laser welder, PL-26000-20	78
14	Turn off Chiller	128
15	Turn off Monitors	53
16	Turn off Printers	17
17	Air Compressor System Controls	1309
18	Eliminate Compressed Air Leaks	76
19	Eliminate Compressed Air Leaks	45
20	Eliminate Compressed Air Leaks	0
21	Hi Lo Battery Charging Station	76
22	Breakroom Freezer	1
23	Break room refridgerators and vending machine lighting on 24/7.	1
24	Break room refridgerators and vending machine lighting on 24/7.	9
25	Area Lighting	106
26	Exterior Lighting (Wallpacks) on 24/7	46
27	Inspection Lighting left on over weekend.	19
28	Steamers in Production Area	234
29	Hot Water tank size for the front office	16
30	Retrofit existing Exit Signs to LED	15
31	Personal Fan Control	179
	Total MMBtu Reduction	**7,566**

Detail Sheet and Summary

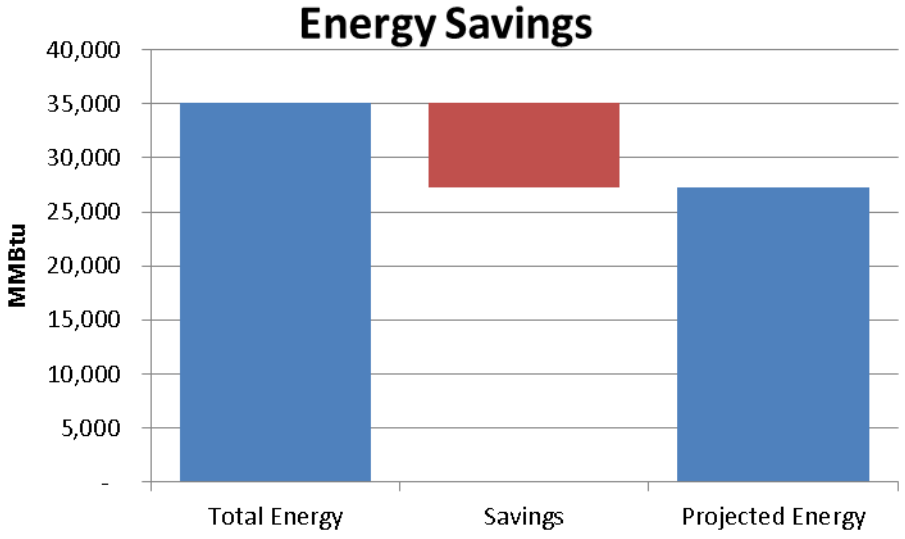
All less than 2 year payback !

Savings Summary

- Total Savings: $97,100
- Total Energy Savings: 7,566 MMBtu / yr
- ROI: 0 to 2 yrs



Total energy reduction is 20% total energy



Plant 2 Information

- Size: 141,000ft^2
- Electricity ~$ 340,549 /year
  - 2,839,207 kWh
- Natural Gas ~$124,478k /year
  - 16,548 MMBtu's

#	Kaizen	Items
1	LPS Screens (sleep mode or turn off)	89
2	Thin Clients (Sleep mode or turn off)	89
3	Production Screens on Stand mode	12
4	Turn off Exhaust Fans (Plant)	
5	Turn off OCS Lanes	7
6	Turn off Zebra Printers	13
7	Power off Inverters	12
8	Turn off Stack Lights	70
9	Turn off Shaker Room Lights	1
10	Turn off Control Panel - HMI	5
11	Floor Computers	4
12	Desk Lights in offices	4
13	Pull breaker for lights or unscrew light bulbs for refrigator/vending machine	2
14	Eliminate Compressed Air leaks	37
15	Control HVAC Programming (offices	3
16	Sleepmode Office PC's	4
17	Turn off lights and change to LEDs	56
18	Turn off Flatscreens	12
19	Lighting	193
20	Remove bulbs from vending machines (warehouse)	3
21	Turn off exhaust Fans (warehouse)	2
22	Turn off Personal Fans	5

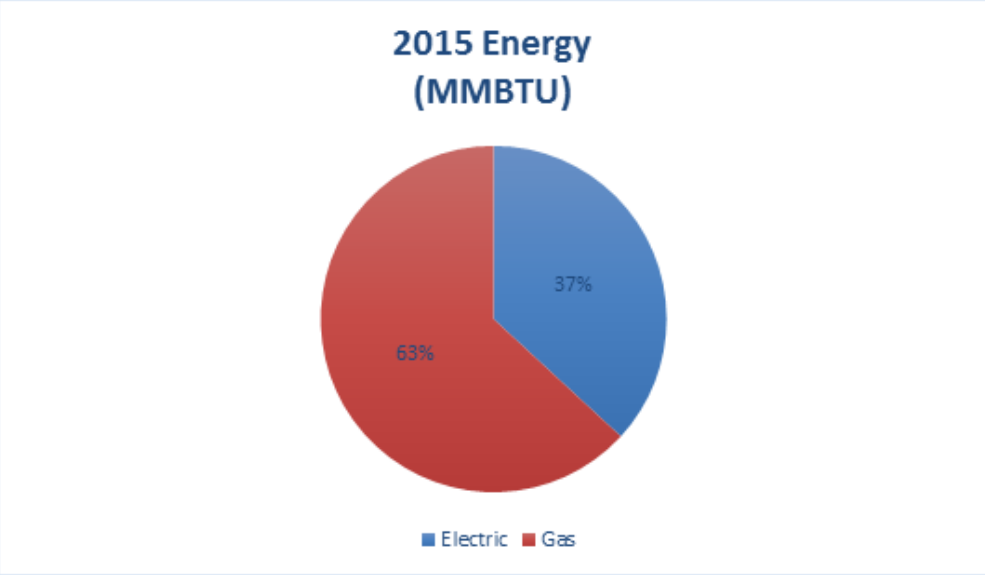
Detail Sheet and Summary

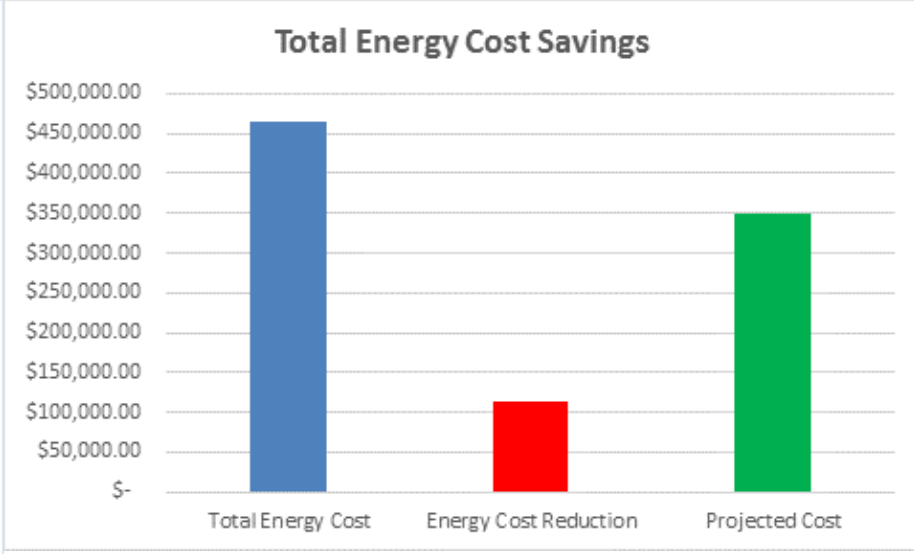
All less than 2 year payback !

Savings Summary

- Total Savings: $114,468
- Total Energy Savings: 967,091 Kwh/ yr
- ROI: 0 to 2 yrs

Total energy reduction is 24.6% total energy





Rochester Hills Plant Information

- Size: 94,800 ft^2
- Electricity ~$185,468 /year
  - 1,944,040 kWh
- Natural Gas ~$ 32,643 /year
  - 5,011 MMBtu's

Detail Sheet and Summary

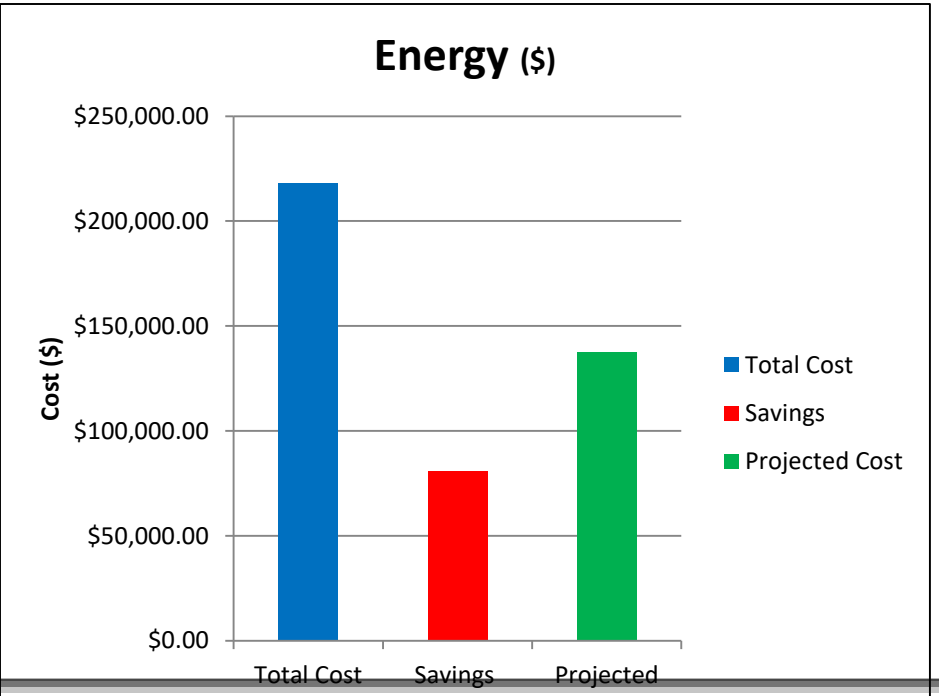
#	Kaizen	MMBtu	Savings ($)
1	Admin Offices HVAC	121	$ 4,226.51
2	Carline Andon Lights	26	$ 918.49
3	Carline Inverter	57	$ 1,546.80
4	Carline LPS Screens	233	$ 6,286.01
5	Carline Zebra Printers	69	$ 1,854.72
6	Carline Inverter Air leak	10	$ 280.42
7	Large Printers	11	$ 287.47
8	Maint Lighting 4' Reduce	23	$ 625.73
9	Maint Lighting 4' Shut Off	12	$ 325.58
10	Maint Lighting 8' Shut Off Inspection	4	$ 120.82
11	Office Printers	13	$ 344.96
12	Production HVAC	1,030	$ 35,941.60
13	Production Lighting	646	$ 17,430.27
14	Production Offices HVAC	38	$ 1,313.19
15	Rivet Gun Air Leak	45	$ 1,206.62
16	Screw Gun Air Leak	7	$ 198.45
17	Server and Admin HVAC	35	$ 1,215.27
18	Truck Line Andon	15	$ 523.54
19	Truck Line Inverter	8	$ 278.21
20	Truck Line LPS Fans	23	$ 612.30
21	Truck Line LPS Screens	63	$ 1,701.82
22	Truck Line Zebra Printer	21	$ 556.42
23	Vending Machines 18 watt	9	$ 244.48
24	Vending Machines 24 watt	60	$ 1,608.78
25	Water Coolers	38	$ 1,034.89

All less than 2 year payback !

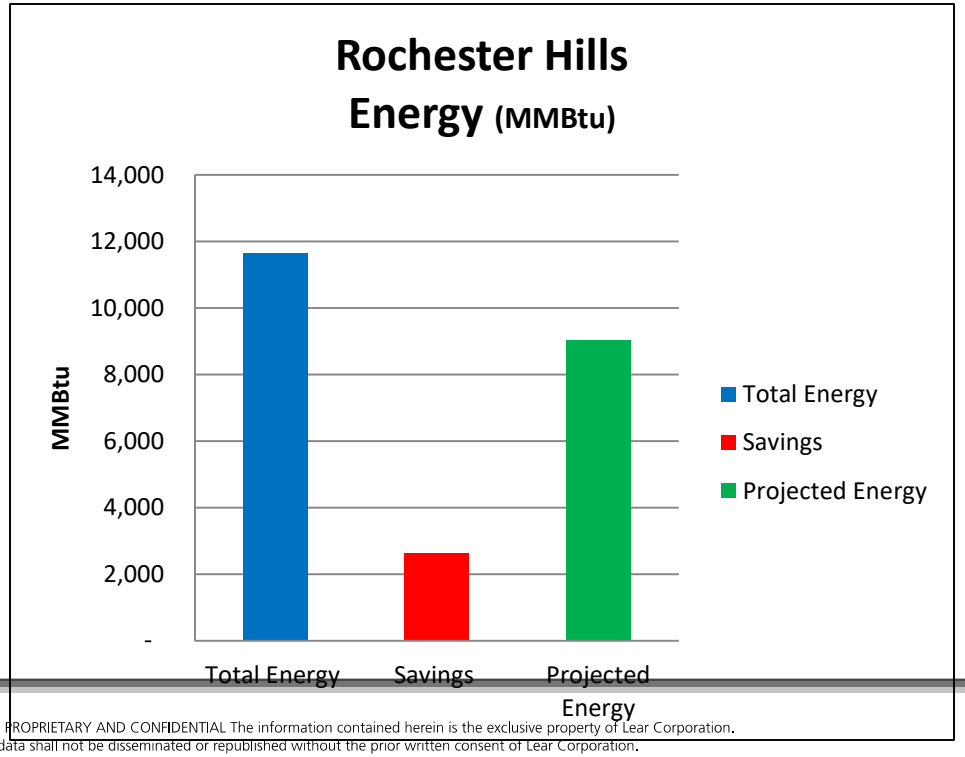
Savings Summary

- Total Savings: $80,683
- Total Energy Savings: 2,616 MMBtu / yr
- ROI: 0 to 2 yrs

Total energy savings is 36% total energy



Total energy reduction is 22% total energy



Continuous Improvement

Energy Treasure Hunt

Juarez Plant / July 2016

Lear Electrical – Americas

LEAR. CORPORATION

Plant Profile

- Size: 332,000 ft^2
- Electricity ~$ 558k /year
  - 6,907,085 kWh

Findings Summary

Kaizen List

#	Item	Quantity	Savings
1	Transformador Seco 75kba	7	$ 23,686.67
43	Fuga en tinaco mezzanine pasillo principal	1	$ 3,975.00
7	Lamparas T8	34	$ 3,821.09
45	Compress air leaks	7	$ 2,412.00
36	Aire acondicionado encendido 10 ton	3	$ 2,370.00
5	Prueba Electrica	40	$ 2,287.92
34	HDI Arbotantes	63	$ 2,169.21
44	Fuga de agua en lavadoras de aire	1	$ 2,029.00
10	Extractores de banos y cafeteria	7	$ 1,757.65
2	Equipo de Computo KOMAX	79	$ 1,552.62
3	Monitores	69	$ 1,356.09
15	Bebederos	7	$ 1,297.98
37	Cafeteria Leaks	4	$ 1,237.23
42	Wall packs Exterior	37	$ 1,233.17
41	Condensador de refrigeracion	3	$ 1,211.64
14	Soldadora Telsonic	22	$ 924.29
17	Impresora hp	4	$ 892.10
35	AC - Central offices	3	$ 849.09
38	Bombas de agua sumergibles encendidas 1/8 220	6	$ 809.61
4	Impresoras Zebra	41	$ 805.79
6	CPU	34	$ 668.22
40	Fuga de agua en unidades evaporativas 2,3	3	$ 515.39
39	Fuga de agua en lleves de cafereria	4	$ 252.00
33	Cortina de aire 100 wats	1	$ 170.91
32	HVAC		$ 170.91
12	Troqueladora	7	$ 133.46
18	Andon Lights	112	$ 132.80
8	Blindadora Kabatek	7	$ 106.77
			$ 59,212.05

Continuous Improvement

Energy Treasure Hunt

Monarca Plant / September 2016

E-Systems – Americas

LEAR. CORPORATION

Plant Profile

Plant: Monarca

City: Juárez

Country: México

Building size: 274,983 sq ft

Manufacturing area: 191,900 sq ft

Owned/Leased: Lear owned facility

Electricity ~$ 624 k /year

– 7,551,351 kWh

Findings Summary

TEAM MONARCA					
#	Location	Kaizen Item	Quanti	Responsible	Savings
2	Corte	Maquina # 13 con fuga	1	3	$ 12,955.61
3	Produccion Omega	Fuga de Aire	4	1	$ 12,955.61
1	Produccion Gamma	Fugas de aire	38	2	$ 5,354.71
4	Gamma	Danylab + OLTT	46	2	$ 2,837.91
5	Corte	Maquina #20 con fuga	1	3	$ 2,169.32
6	Exterior	Lavadoras de aire	2	1	$ 2,169.32
7	Corte	Monitores prendidos	69	1	$ 1,398.19
8	Produccion Gamma	Danylab tablero de dimensiones	37	2	$ 732.00
9	Gamma	Impresora zebra prendida	50	2	$ 531.25
10	Procesos Gamma	Maquinas telsonic prendidas	20	3	$ 466.10
11	Procesos Gamma	Trenzadoras prendidas	20	3	$ 284.84
12	Procesos Gamma	Maquina soldadora jenzano prendida	3	3	$ 269.17
13	Cuarto de compresores	Bomba de agua prendida	1	1	$ 267.48
14	mba Procesos / Produccion Gamr	Bebederos prendidos	6	2	$ 233.75
15	Produccion Gamma	Kabatec encendida	6	2	$ 184.65
16	ocesos Gamma / Produccion Gamr	Luces prendidas	47	2	$ 180.50
17	Corte	Maquinas cortadoras prendidas	58	3	$ 124.00
18	Corte / Produccion Gamma	Luces andon	105	1	$ 124.00
19	Produccion Gamma	CPU	9	2	$ 98.92
20	Procesos Gamma	Luces de banos prendidas	84	2	$ 71.43
21	Produccion Gamma	Insertadora de ploga encendido	2	2	$ 66.76
22	Procesos Omega	Pull test prendido	2	3	$ 46.61
23	Procesos Omega	Impresora hojas prendida	2	1	$ 42.37
24	Produccion Gamma	Lamparas individuales OLTT	3	2	$ 41.03
25	Procesos Omega	Hi pot prendido	2	1	$ 40.50
26	Procesos Gamma	Despachadoras de tape prendidas	5	3	$ 38.84
27	Procesos Gamma	Quemadora de manga prendida	3	3	$ 23.31
28	Almacen	Cargadores prendidos	6	3	$ 17.09
29	Procesos Omega	Punto de soldadura prendido	2	3	$ 15.54
30	Procesos	Prensa Mecal prendida	1	1	$ 14.59
		TOTAL ANNUAL SAVINGS			$ 43,755.40

Continuous Improvement

Energy Treasure Hunt

Nova Plant / September 2016

E-Systems – Americas

LEAR CORPORATION

Plant Profile

- Size: 151,970 ft^2
- Electricity ~$ 292 k /year
  - 3,303,660 kWh

Findings Summary

	Findings	Metric
Offices & Exterior	Luces de oficina de Gerardo prendidas	Lighting
	Luces oficinas generales prendidas	Lighting
	Computadora de sonido encendida	Electricity
	Clima de sala baseasachi prendido	Electricity
	Bebedero de agua prendido	Electricity
	Luces prendidas de pasillo de banos	Lighting
	Luces prendidas de banos	Lighting
	Luces exteriores prendidas (calle tecnologico)	Lighting
	Lavadora 6 de N2 encedida	Electricity
	Iluminacion de cuarto de compresores N2 encendida	Lighting
	Fuga de aire en manguera de compresor	Electricity
	Fuga de aire en UBT 1	Electricity
	Fuga de aire en OLTT UBT2	Electricity
	Fuga de aire en bajada de OLTT de UBT12 y en modulo	Electricity
	Fuga de aire en T.D. de 14335 C489	Electricity
	Unidad clima de muestras N2 no sive boton de encendido	Electricity
	Equipo de Vision con fuga de aire en pistola en area de piezas de servicio	Electricity
	Iluminacion exterior oficina de Lorena Robles encencida	Lighting
	Fuga de agua en lavadora 4 de N1	Water
	Relojes de TM de cortadoras encendidas	Electricity
Final Assembly	***Ensamble final***	
	Luz general prendida	Lighting
	OLTT prendidas en general	Electricity
	Oficina de supervisores prendida	
	Dos CPUs prendidas	Electricity
	Aire en fresco Bajo Oficina de Roque	Electricity
	Impresora prendida HP Nova Q16	Electricity
	Banos mujeres lado de oficina de supervisores	
	Luces prendidas T8 7 gabetas de 3 lamparas 4 de 1	Lighting
	llaves de bano duran de 8 a 10 seg. Prendidas	Water
	Lado izquierdo no tiene apagador	Lighting
	Bano de Hombres oficina de Supervisor	
	fuga de agua de bano N2H11	Water
	Reloj prendido	Electricity
	UBT 2	
	Vision Prendida	Electricity
	UBT3	
	Fuga de aire en electrovalvula	Electricity
	Gemba	
	2 CPU's prendidas	Electricity
	Corte de tubing	
	Maquina Versas prendidad 3	Electricity
	maquinas slice prendidas 2	Electricity
	Oficinas IT	
	dos monitores prendidos	Electricity
	Area de finish goods prendida	Lighting
	Oficinas de de materiales embarques	
	3CPUS prendidos	Electricity
	1 Impresora	Electricity
	Fuga de aire en tablero de dimensiones OLTT de linea 055	Electricity
	Mesa de sellos prendida en ares GFC520FB	Electricity
	Fuga de aire	Electricity
	Almacen de equipo de muestras	
	tablero de dimensiones prendido	Electricity
	Ex oficina de Miguel Alarcon	
	1 impresora prendida	Electricity
	Oficina de Drafters	
	2 CPUS prendidos	Electricity
	Baños de lado de enfermeria	
	Luces prendidas no apagan	Lighting
	Oficinas de sindicato prendidas	Lighting
	UBT 82 fuga de aire en tablero de dimensiones	Electricity
	Kabatech prendida	Electricity
	UBT 80	
	Torque y OLTT prendida	Electricity
	UBT 4	
	Andon prendido y apagador no sirve	Electricity
Lead Prep	Prueba electrica de OLTT 079 con fuga y encendida	Electricity
	Tablero de dimensiones 167 WT con fuga de aire	Electricity
	Tablero de electrica con fuga de aire	Electricity
	taller de mantenimiento con focos prendidos	Electricity
	Area de troquelados con computadoras prendidas	Electricity
	y luces prendidas	Electricity
	Lavadora enchufada	Electricity
	OLTT de ubt 50 prendida	Electricity
	Electrica de NYT encendida	Electricity
	Electrica del 15k858 encendida	Electricity
	Computadora de area de entrenamiento prendida	Electricity
	Cubiculo de supervisor del area de calidad con computadoras prendidas	Electricity
	Bebedero conectado en tunel	Electricity
	Radios conectados	Electricity
	Area de macro con fugas y equipos prendidos	Electricity
	Area de corte con fugas	Electricity
	CPU de hold area prendida	Electricity

Findings Summary

#	Item	Quantity	Savings
1	Shop floor Lighting On	499	$ 8,579.00
2	Office Lighting On	140	$ 2,252.00
3	Printers On	6	$ 124.13
4	Electric test On	138	$ 15,327.00
5	HVAC On	3	$ 8,606.00
6	CA leaks	26	$ 12,952.41
7	Water leak	1	$ 4,699.88
8	Andons On	10	$ 11.54
9			
10			
11			
12			
			$ 52,551.96

28 Findings