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Green Energy Management Solutions, LLC

Saving Analysis for *Induction Lighting*

Facility/Project Name: **United Food Groups**

Facility Management : **Jack Peterson**

Facility Address: **3425 E. Vernon Ave.**

Facility Engineer: **David Dumouchell**

Energy Savings

0.08

Electric kWh Rate:

Existing Fixtures

Description	CRI	Life Span	PF	THD	VOLTS	Watts	QTY	Hrs/Year	Total kW	Annual kWh	Annual Energy Costs	15yr Cycle Costs
2x2 square Canopy		11,000			277	475	377	8,760	179	1,568,697	\$ 125,496	\$ 1,882,436
High Bay Light		11,000			277	475	102	8,760	48	424,422	\$ 33,954	\$ 509,306
8 foot-2 bulb T8		20,000			277	148	45	8,760	7	58,342	\$ 4,667	\$ 70,010
4 foot 4 bulb T8		20,000			277	148	6	8,760	1	7,779	\$ 622	\$ 9,335
Wendy's 4 foot 2 bulb T8		20,000			277	150	65	8,760	10	85,410	\$ 6,833	\$ 102,492
4 foot 2 bulb T8		20,000			277	74	136	8,760	10	88,161	\$ 7,053	\$ 105,793
3 bulb 4footer		20,000			277	117	65	2,580	8	19,621	\$ 1,570	\$ 23,545
4-bulb 4 footer		20,000			277	147	14	2,580	2	5,310	\$ 425	\$ 6,372
2 bulb 4 footer		20,000			277	74	37	2,580	3	7,064	\$ 565	\$ 8,477
can lights		8,000			277	20	39	2,580	1	2,012	\$ 161	\$ 2,415
square Canopy		11,000			277	150	12	8,760	2	15,768	\$ 1,261	\$ 18,922
Flood light medium		11,000			277	175	24	8,760	4	36,792	\$ 2,943	\$ 44,150
Flood light large		11,000			277	250	8	8,760	2	17,520	\$ 1,402	\$ 21,024
Totals 277KW										2,336,897	\$ 186,952	\$ 2,804,277

Proposed Fixtures

Description	CRI	Life Span	PF	THD	VOLTS	Watts	QTY	Hrs/Year	Total kW	Annual kWh	Annual Energy Costs	15yr Cycle Costs
Retro w/ NEW bulb, ballast & LENSE	82+	100,000	0.95	<10%	277	202	377	8,760	76	667,109	\$ 53,369	\$ 800,531
High Bay HB-L-M-IN-200 New Fixture	82+	100,000	0.95	<10%	277	200	102	8,760	20	178,704	\$ 14,296	\$ 214,445
NEW Fixtures 18W LED tubes	84+	50,000	0.99	<10%	277	80	45	8,760	4	31,536	\$ 2,523	\$ 37,843
2x2 Troffer /80W induction new fixture	82+	100,000	0.95	<10%	277	80	6	8,760	0	4,205	\$ 336	\$ 5,046
Wendy's /New T5- 108W -100K hr FL	82+	100,000	0.95	<10%	277	108	65	8,760	7	61,495	\$ 4,920	\$ 73,794
4' 2blb 56 watt / 100K hour / T-8retro fit	82+	100,000	0.95	<10%	277	56	136	8,760	8	66,716	\$ 5,337	\$ 80,059
2x2 floor/40W induction new fixture	82+	100,000	0.95	<10%	277	40	65	2,580	3	6,708	\$ 537	\$ 8,050
2x2 office /80W induction retro fit	82+	100,000	0.95	<10%	277	80	14	2,580	1	2,890	\$ 231	\$ 3,468
2x2 office/40W induction retro fit	82+	100,000	0.95	<10%	277	40	37	2,580	1	3,818	\$ 305	\$ 4,582
A- Shaped lamp / 23 watt New induction	82+	100,000	0.95	<10%	277	23	39	2,580	1	2,314	\$ 185	\$ 2,777
13" x 13" square canopy New Fixture	82+	100,000	0.95	<10%	277	80	12	8,760	1	8,410	\$ 673	\$ 10,092
Flood light / 80W New Fixture	82+	100,000	0.95	<10%	277	80	24	8,760	2	16,819	\$ 1,346	\$ 20,183
Flood light / 120W New Fixture	82+	100,000	0.95	<10%	277	120	8	8,760	1	8,410	\$ 673	\$ 10,092
20Yr. Self powered Exit Signs		20 years							27			
wall mounted sensors									26			
New Lenses for 2'x2' White Canopies									377			
Emergency Backup Battery - 90 min.									50			
Totals 122KW										1,059,134	\$ 84,731	\$ 1,270,961

ENERGY COSTS SAVINGS

15 Years Total kWh Savings

Annual kWh Savings

Annual Energy Savings

15 Year Life Cycle Energy Savings

19,166,449

1,277,763

\$ 102,221

\$ 1,533,316



Labor Saving Analysis for Induction Lighting

Facility/Project Name: United Food Groups

Facility Management: Jack Peterson

Facility Address: 3425 E. Vernon Ave.

Facility Engineer: David Dumouchell

Labor Savings

Existing Lamps			\$200.00 per fixture				10yr Cycle Costs-Labor	15yr Cycle Costs-Labor
Bulb Type	Life Span/Hrs	Hrs/Year	Quantity	1 Bulb Change Cost	Aver. Labor Cost/1 Fixt	Total Annual Labor Costs		
2x2 square Canopy	11,000	8,760	377	\$65.00	65.00 @126 units	\$8,168.33	\$81,683	\$122,525
High Bay Light	11,000	8,760	102	\$65.00		\$2,210	\$22,100	\$33,150
8 foot-2 bulb T8	20,000	8,760	45	\$15.00		\$975	\$9,750	\$14,625
4 foot 4 bulb T8	20,000	8,760	6	\$15.00		\$120	\$1,200	\$1,800
Wendy's 4 foot 2 bulb T8	20,000	8,760	65	\$20.00		\$1,408	\$14,083	\$21,125
4 foot 2 bulb T8	20,000	8,760	130	\$15.00		\$650	\$6,500	\$9,750
3 bulb 4 footer	20,000	2,580	65	\$15.00		\$325	\$3,250	\$6,500
4-bulb 4 footer	20,000	2,580	14	\$15.00		\$70	\$700	\$1,050
2 bulb 4 footer	20,000	2,580	37	\$15.00		\$370	\$3,700	\$7,400
can lights	8,000	2,580	39	\$10.00		\$130	\$1,300	\$2,600
square Canopy	11,000	2,580	12	\$65.00		\$260	\$2,600	\$5,200
Flood light medium	11,000	2,580	24	\$65.00		\$520	\$5,200	\$10,400
Flood light large	11,000	2,580	8	\$65.00		\$173	\$1,730	\$3,460
Totals						\$15,380	\$153,797	\$239,585

Induction Bulb	Life Span/Hrs	Hrs/Year	Quantity	1 Bulb Change Cost	Aver. Labor Cost/1 Fixt	Yearly Labor Costs	10yr Cycle Costs-Labor	10yr Cycle Costs-Labor
Induction Retro fit kit SL-L-IN-200	100,000	8,760	377	\$0.00		\$0	\$0	\$0
High Bay HB-L-M-IN-200	100,000	8,760	102	\$0.00		\$0	\$0	\$0
2 / LED 8' Tubes	50,000	8,760	45	\$0.00		\$0	\$0	\$0
2x2 troffer /80W induction retro fit	100,000	8,760	6	\$0.00		\$0	\$0	\$0
Wendy's Packing Room / *SP T-5	100,000	8,760	65	\$0.00		\$0	\$0	\$0
4 foot 2 bulb / *SP T-8 floor	100,000	8,760	130	\$0.00		\$0	\$0	\$0
2x2 floor/40W induction retro fit	100,000	8,760	65	\$0.00		\$0	\$0	\$0
2x2 office /80W induction retro fit	100,000	2,580	14	\$0.00		\$0	\$0	\$0
2x2 office /40W induction retro fit	100000	2,580	37	\$0.00		\$0	\$0	\$0
A- Shaped lamp / 23 watt induction	100000	2,580	39	\$0.00		\$0	\$0	\$0
13" x 13" square canopy	100000	8,760	12	\$0.00		\$0	\$0	\$0
Flood light / 80 watt induction	100,000	8,760	24	\$0.00		\$0	\$0	\$0
Flood light / 120 watt induction	100,000	8,760	8	\$0.00		\$0	\$0	\$0
Totals						\$0	\$0	\$0

TOTAL MAINTENANCE LABOR SAVINGS	Annual Maintenance Labor Savings	15 Year Life Cycle Maintenance Labor Saving
	\$15,380	\$153,797

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United Food Groups

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Facility Engineer: David Dumouchell

Material Savings

Existing Lamps

Bulb Type	Life Span/Hrs	Hrs/Year	Quantity	Annual Material Cost	Annual Maintenance Costs	15yr Cycle Maintenance Costs
2x2 square Canopy	11,000	8,760	377	\$40.00	\$5,026	\$75,390
High Bay Light	11,000	8,760	102	\$40.00	\$1,360	\$20,400
8 foot-2 bulb T8	20,000	8,760	45	\$4.00	\$60	\$900
4 foot 4 bulb T8	20,000	8,760	6	\$2.00	\$6	\$90
Wendy's 4 foot 2 bulb T8	20,000	8,760	65	\$4.00	\$87	\$1,305
4 foot 2 bulb T8	20,000	8,760	130	\$2.00	\$87	\$1,305
3 bulb 4footer	20,000	2,580	65	\$2.00	\$43	\$645
4-bulb 4 footer	20,000	2,580	14	\$2.00	\$10	\$150
2 bulb 4 footer	20,000	2,580	37	\$2.00	\$25	\$500
can lights	8,000	2,580	39	\$9.00	\$113	\$2,264
square Canopy	11,000	2,580	12	\$25.00	\$70	\$1,407
Flood light medium	11,000	2,580	24	\$20.00	\$113	\$2,252
Flood light large	11,000	2,580	8	\$25.00	\$47	\$938
Totals					\$7,047	\$107,546

Induction Bulb	Life Span/Hrs	Hrs/Year	Quantity	Annual Material Cost	Yr Maintenance Costs	15yr Cycle Main. Costs
uction Retro fit kit SL-L-IN-2	100,000	8,760	377		\$0	\$0
High Bay HB-L-M-IN-200	100,000	8,760	102		\$0	\$0
2 / LED 8" Tubes	50,000	8,760	45		\$0	\$0
2x2 troffer /80W induction	100,000	8,760	6		\$0	\$0
Wendy's Packing Room /	100,000	8,760	65		\$0	\$0
4 foot 2 bulb / *SP T-8	100,000	8,760	130		\$0	\$0
2x2 floor/40W induction	100,000	2,580	65		\$0	\$0
2x2 office /80W induction	100,000	2,580	14		\$0	\$0
2x2 office /40W induction	100000	2,580	37		\$0	\$0
A- Shaped lamp / 23 watt	100000	2,580	39		\$0	\$0
13" x 13" square canopy	100000	2,580	12		\$0	\$0
Flood light / 80 watt	100,000	2,580	24		\$0	\$0
Flood light / 120 watt	100,000	2,580	8		\$0	\$0
Totals					\$0	\$0

TOTAL MAINTENANCE MATERIAL SAVINGS	Total Annual Material Savings	15 Year Life Cycle Total Material Savings
	\$7,047	\$107,546



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David Dumouchell

Total Combined NET Savings for 15 Year Cycle by Year

15 Years Cycle	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year10
Total Net Savings by Year	\$6,661.77	\$126,305.67	\$245,949.57	\$365,593.47	\$485,237.37	\$604,881.27	\$724,525.16	\$844,169.06	\$963,812.96	\$1,083,456.86
	Year 11	Year 12	Year 13	Year 14	Year 15					
	\$1,203,100.76	\$1,322,744.66	\$1,442,388.56	\$1,562,032.46	\$1,681,676.36					

Total Combined NET Savings for 15 Year Cycle by Type

15 Year Energy	\$1,533,315.89
15 Year Labor	\$153,796.60
15 Year Material	\$107,546.00
Total NET SAVINGS	\$1,794,658.49

Total Costs of Retrofit and Payback Years

	Cost Per Fixture	Total Cost of Fixtures
Retro w/ NEW 200W bulb, ballast AND LENSE	\$244.00	\$91,988.00
High Bay HB-L-M-IN-200 New Fixture	\$364.00	\$37,128.00
NEW Fixtures 4' / 2 fixtures =8' 18W LED tubes	\$325.00	\$14,625.00
2x2 Troffer /80W induction new fixture	\$312.00	\$1,872.00
Wendy's /New T5- 108W -100K hr FL	\$57.00	\$3,705.00
4' 2blb 56 watt / 100K hour / T-8retro fit	\$75.00	\$10,200.00
2x2 floor/40W induction new fixture	\$214.00	\$13,910.00
2x2 office /80W induction retro fit	\$250.00	\$3,500.00
2x2 office/40W induction retro fit	\$241.00	\$8,917.00
A- Shaped lamp / New Lamp 23W	\$54.00	\$2,106.00
13" x 13" square canopy New Fixture	\$221.00	\$2,652.00

	Labor Cost Per Fixture	Total Installation Labor
Induction Retro fit kit SL-L-IN-200	\$85.00	\$32,045.00
High Bay HB-L-M-IN-200	\$85.00	\$8,670.00
2 / LED 8' Tubes	\$85.00	\$3,825.00
2x2 Troffer /80W induction retro fit	\$85.00	\$510.00
Wendy's / T5- 108W -100K hr retro fit	\$85.00	\$5,525.00
4' 2blb 56W-100K hr. retro fit	\$85.00	\$11,560.00
2x2 floor/40W induction retro fit	\$85.00	\$5,525.00
2x2 office /80W induction retro fit	\$85.00	\$1,190.00
2x2 office/40W induction retro fit	\$85.00	\$3,145.00
A- Shaped lamp / 23 watt induction	\$1.00	\$3,315.00
13" x 13" square canopy	\$85.00	\$1,020.00

Flood light / 80W New Fixture	\$221.00	\$5,304.00
Flood light / 120W New Fixture	\$277.00	\$2,216.00
20Yr. Self powered Exit Signs	\$295.00	\$7,965.00
wall mounted sensors	\$43.75	\$1,137.50
New Lenses for 2X2 White Canopy	\$29.80	\$11,234.60
Emergency Backup Battery - 90 min.	\$85.00	\$4,750.00
Vernon Rebate		-\$75,000.00
<i>SEC 179 IRS Tax Credit this is a financing tool</i>		
EP-ACT 2005		-\$125,000.00
Price is good for 90 day from 10/19/2009		\$23,216.00
Total Project Cost (Fixtures + Labor - Rebates and Tax Credits) out of pocket expense is \$312,973.23		\$112,982.13

Flood light / 80 watt induction	\$85.00	\$2,040.00
Flood light / 120 watt induction	\$85.00	\$680.00
20 year Exit Signs	\$85.00	\$0.00
wall mounted sensors	1/2 hr per fixture	\$1,105.00
disposal per fixture	\$5.00	\$4,555.00
Backup Battery - 90 min.+shipping	\$20.00	\$1,500.00
License and permits from Vernon		3556.13
Electrician Labor \$85hr		\$89,766.13
Project Payback in Years		1.26

Summary of Savings

Facility/Project Name:	United Food Groups
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Life Cycle kWh Savings	19,166,449	<div style="border: 1px solid black; padding: 10px; font-size: 2em; font-weight: bold;">Simple Pay Back in Years</div> <div style="border: 1px solid black; padding: 20px; font-size: 3em; font-weight: bold; margin-top: 10px;">1.26</div>
Life Cycle Energy Cost Savings	\$1,533,315.89	
Life Cycle Labor Cost Savings	\$153,796.60	
Life Cycle Material Cost Savings	\$107,546.00	
Life Cycle Gross Cost Savings	\$1,794,658.49	
Life Cycle Net Cost Savings		

Summary of Benefits

Life cycle air pollution reduction (lbs of CO ₂)	27,408,021
Life cycle air pollution reduction (number of cars removed from the road)	23,709
Life cycle air pollution reduction equivalence (acres of forest)	37,375

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