ENERGY ESTIMATION

Projected Savings from an Energy Efficient Lighting Retrofit

Project: City of Menasha
Description: LED Street Lighting Energy Estimation
Date: Winter 2014

Equations: [a] Reduced kW = [(Qty$_{existing}$) x (Watts$_{existing}$)] - [(Qty$_{proposed}$) x (Watts$_{proposed}$)] / 1000
[b] Annual kWh Saved = [(Qty$_{existing}$) x (Watts$_{existing}$) x (hours)] - [(Qty$_{proposed}$) x (Watts$_{proposed}$) x (hours)] / 1000

PROJECT	EXISTING FIXTURE					PROPOSED FIXTURE					SAVINGS			
			Annual Hours		Input			Annual Hours		Input	Reduced	Annual kWh[b] Saved		
Room or Area	Qty.	Description	On-Pk	Off-Pk	Watts	Qty.	Description	On-Pk	Off-Pk	Watts	kW[a]	On-Pk	Off-Pk	
Street Lights	24	100 W HPS	372	3,734	130	24	101 W LED	372	3,734	101	0.7	300	2,600	2,900
Street Lights	552	150 W HPS	372	3,734	188	552	101 W LED	372	3,734	101	48.0	17,900	179,300	197,200
Street Lights	236	250 W HPS	372	3,734	300	236	101 W LED	372	3,734	101	47.0	17,500	175,400	192,900
											96	35,700	357,300	
											Total On & Off Peak energy Savings		393,000	kWh/yr

Notes:
[1] Annual Dusk to Dawn hours calculated edoc#10968
[2] Change Mayor's assumption: use pricing for CREE XPS series 101W to replace existing HPS from WPPI Energy Joint Purchasing catelog

Replace ALL WITH 101W- NO LABOR COSTS

Labor & Materials Costs

Remove/Install	24	100W	$0	$0.00
	552	150W	$0	$0.00
	236	250W	$0	$0.00
Total Labor				$0
Material Cost	24	101 W	$ 235	$5,640.00
	552	101 W	$ 235	$129,720.00
	236	101 W	$ 235	$55,460.00
				$ 190,820
Total Labor & Materials	24	100s -->101W		$5,640.00
	552	150W -->101W		$129,720.00
	236	250W -->101W		$55,460.00
Total cost of Labor/Materials for all lights				**$190,820**

Proposed Monthly Fixed charges-existing Lights					Annual
24	$ 7.00	$ 168	100W	$	2,016
552	$ 7.25	$ 4,002	150W	$	48,024
236	$ 7.50	$ 1,770	250W	$	21,240

Proposed Monthly Fixed changes- Proposed lights					Annual
24	$ 3.35	$ 80	101W	$	965
552	$ 3.35	$ 1,849	101W	$	22,190
236	$ 3.35	$ 791	101W	$	9,487
Savings		$ 88	101W	$	1,051
		$ 2,153	101W	$	25,834
		$ 979	101W	$	11,753
Total annual Fixed cost savings				**$**	**38,638**

Energy Savings		Rate	Saved/annual kWh	
2,900	kWh	0.0657	$ 191	
197,200	kWh	0.0657	$ 12,956	
192,900	kWh	0.0657	$ 12,674	
393,000	total kWh		**$ 25,820**	Total/yr

TOTAL Energy & Fixed Cost Savings/yr

$ 1,241.73	
$ 38,789.64	
$ 24,426.33	
$ 64,457.70	Total Energy & Fix Cost savings/yr

Simple Payback 2.960391 yrs

FOE incentives:		Count	Incentive	total FOE
	100 W	24	0	$ -
	150 W	552	40	$ 22,080
	250 W	236	50	$ 11,800
	Total FOE Incentives			**$ 33,880**

(requires 40% savings with replacement lamp)

$	190,820	Total Cost
$	33,880	less FOE Incentive
$	64,458	Less First yr savings
$	**92,482**	**Net Cost**