

Appendix F

Lighting Upgrade Study, CertainTeed, 2019

Year:	2019
Customer:	Certainteed
Project:	Lighting Upgrade Provided by Graybar Canada

Project Summary

Site Information		Rate Information	Electrical Rates		Retrofit Savings						Project Costs					Simple Payback (Years)	
Site	Location	NSPI Rate Code	Demand Cost (\$/kW/m)	Energy Cost (\$/kWh)	Monthly Demand Savings (kW/mth)	Retrofit Energy Savings (kWh/year)	Months of use	Total Electrical Savings (\$/year)	Maintenance Savings (\$/year)	Other Non-Electrical Savings (\$/year)	Total Annual Savings	Engineering	Material	Installation	Other		Total
Site 1	North Warehouse	23M - Large Industrial	0.00	0.10000	11.8	174,493	12	\$17,449	\$0	\$0	\$17,449	\$0	\$0	\$0	\$0	\$0	0.0
Site 2	Wetend Transfer	23M - Large Industrial	0.00	0.10000	5.0	57,832	12	\$5,783	\$0	\$0	\$5,783	\$0	\$0	\$0	\$0	\$0	0.0
Site 3 A	Board Belt 2 Area	23M - Large Industrial	0.00	0.10000	4.2	36,516	12	\$3,652	\$0	\$0	\$3,652	\$0	\$0	\$0	\$0	\$0	0.0
Site 3B	Dry Cascade / MCC2 Area	23M - Large Industrial	0.00	0.10000	1.5	25,946	12	\$2,595	\$0	\$0	\$2,595	\$0	\$0	\$0	\$0	\$0	0.0
Site 4A	Maintenance Shop	23M - Large Industrial	0.00	0.10000	3.2	32,498	12	\$3,250	\$0	\$0	\$3,250	\$0	\$0	\$0	\$0	\$0	0.0
Site 4 B/C/D	Trades Room/Library	23M - Large Industrial	0.00	0.10000	0.2	8,142	12	\$814	\$0	\$0	\$814	\$0	\$0	\$0	\$0	\$0	0.0
Site 5 A/B Site 6 Site 7	South Warehouse	23M - Large Industrial	0.00	0.10000	17.2	191,148	12	\$19,115	\$0	\$0	\$19,115	\$0	\$0	\$0	\$0	\$0	0.0
Site 8	Mud Room	23M - Large Industrial	0.00	0.10000	1.9	20,486	12	\$2,049	\$0	\$0	\$2,049	\$0	\$0	\$0	\$0	\$0	0.0
Site 9	Belt 1/ small office	23M - Large Industrial	0.00	0.10000	2.4	20,624	12	\$2,062	\$0	\$0	\$2,062	\$0	\$0	\$0	\$0	\$0	0.0
Site 10	Chemical Room/ AIB Office	23M - Large Industrial	0.00	0.10000	0.5	4,831	12	\$483	\$0	\$0	\$483	\$0	\$0	\$0	\$0	\$0	0.0
Site 11/12/13	Paper Handling / Paper Storage / Forklift Shop /Loading Dock / BMA Rooms	23M - Large Industrial	0.00	0.10000	7.9	87,964	12	\$8,796	\$0	\$0	\$8,796	\$0	\$0	\$0	\$0	\$0	0.0
Site 14/15/16	Dry Additives - 1st - 5th Floor	23M - Large Industrial	0.00	0.10000	3.1	33,771	12	\$3,377	\$0	\$0	\$3,377	\$0	\$0	\$0	\$0	\$0	0.0
Site 17	Baghouse Tower	23M - Large Industrial	0.00	0.10000	5.6	53,077	12	\$5,308	\$0	\$0	\$5,308	\$0	\$0	\$0	\$0	\$0	0.0
Site 18A	Calcine Room Main Floor	23M - Large Industrial	0.00	0.10000	6.0	65,642	12	\$6,564	\$0	\$0	\$6,564	\$0	\$0	\$0	\$0	\$0	0.0
Site 18B	MCC1 / Calcine Area Office	23M - Large Industrial	0.00	0.10000	0.6	4,840	12	\$484	\$0	\$0	\$484	\$0	\$0	\$0	\$0	\$0	0.0
Site 19	Outside / Out Building's	23M - Large Industrial	0.00	0.10000	21.8	97,821	12	\$9,782	\$0	\$0	\$9,782	\$0	\$0	\$0	\$0	\$0	0.0
Site 20	Main Offices & Lab	23M - Large Industrial	0.00	0.10000	4.4	24,747	12	\$2,475	\$0	\$0	\$2,475	\$0	\$0	\$0	\$0	\$0	0.0
Totals					97	940,379		\$94,038	\$0	\$0	\$94,038	\$0	\$0	\$0	\$0	\$0	0.0

PAYBACK CALCULATION

- The attached analysis is an estimated cost and payback calculation for retrofit of the existing lighting system to an energy saving system.
- Note that all quantities and calculations are estimates only, and the actual outcome of the retrofit, if implemented, may vary from the attached analysis.
- Re-certification of retrofitted fixtures may be required and is not included in this calculation.
- Re-certification requirements are under the jurisdiction of the provincial electrical inspector.
- Final counts are the responsibility of the owner or contractor.
- Thorough fixture cleaning in most areas is definitely recommended.
- Labour is not included in calculations unless otherwise noted.
- We have not thoroughly audited, reviewed, or otherwise attempted to verify the accuracy or completeness of information provided. Readers are cautioned that the information we provided may not be appropriate for final decision making.
- In the event of the discovery of onsite PCBs. Any extra cost associated with the removal, storage or disposal is the responsibility of the client and or the contractor.

Year: 2019
 Customer: Certainteed
 Project: Lighting Upgrade Provided by Graybar Canada
 Site: Site 3B
 Location: Dry Cascade / MCC2 Area

Site Information			Existing Fixtures													New Fixtures										Load Reduction		Heating Penalty		Cooling Bonus		Net Electrical Savings		Existing Fixtures		New Fixtures		Total	Other Non-Electrical Savings (\$/Year)					
Area / Room / Zone	Zone Heat Source 1 = elec resistance 2 = #2 oil 3 = natural gas or propane 4 = air source heat pump 5 = ground source heat pump	Air Conditioning COP (enter 0 for no air conditioning)	Type	Fixture Quantity	Watts per Fixture	Lamp Life (hours)	Dimming Factor	Connected Load (kW)	Schedule (hr/week)	Schedule (wks/year)	Schedule (hr/year)	kWh/year	Type	Fixture Quantity	Watts per Fixture	Lamp Life (hours)	Dimming Factor	Connected Load (kW)	Schedule (hr/week)	Schedule (wks/year)	Schedule (hr/year)	kWh/year	Connected Load (kW)	kWh/year	Heat Gain Factor	% of Year	% of Year	% of Year	kWh/year	kWh/year	kW	Relamp Frequency (years)	Relamp Cost (\$/fixture, incl. labour and materials)	Total Annual Maintenance Cost	Relamp Frequency (years)	Relamp Cost (\$/fixture, incl. labour and materials)	Total Annual Maintenance Cost	Maintenance Savings (\$/year)						
Walk Way Beside Dry Cascade			6L T8 HB 4L T8 8' Night Light	20 2	220 108	30,000 30,000	100% 100%	4 0	168 168	52 52	8,736 1,887	38,438	LED High Bay LED 8' Strip	20 2	150 73	100,000 100,000	100% 100%	3 0	84 168	52 52	4,368 1,275	13,104	1 0	25,334 612	0.0000 0.0000	55% 55%	0 0	22% 22%	0 0	25,334 612	1.4 0.1	3.4 3.4	\$0 \$0	15.0 11.4	\$0 \$0	\$0 \$0	\$0 \$0	\$0 \$0	\$0 \$0	\$0 \$0	\$0 \$0	\$0 \$0	\$0 \$0	\$0 \$0
Totals																															\$0	\$0												

Year: 2019
 Customer: Certainteed
 Project: Lighting Upgrade Provided by Graybar Canada
 Site: Site 4A
 Location: Maintenance Shop

Site Information			Existing Fixtures											New Fixtures											Load Reduction		Heating Penalty		Cooling Bonus		Net Electrical Savings		Existing Fixtures		New Fixtures		Total	Other Non-Electrical Savings (\$/year)	
Area / Room / Zone	Zone Heat Source 1 = elec resistance 2 = #2 oil 3 = natural gas or propane 4 = air source heat pump 5 = ground source heat pump	Air Conditioning COP (enter 0 for no air conditioning)	Type	Fixture Quantity	Watts per Fixture	Lamp Life (hours)	Dimming Factor	Connected Load (kW)	Schedule (hr/week)	Schedule (wks/year)	Schedule (hr/year)	kWh/year	Type	Fixture Quantity	Watts per Fixture	Lamp Life (hours)	Dimming Factor	Connected Load (kW)	Schedule (hr/week)	Schedule (wks/year)	Schedule (hr/year)	kWh/year	Connected Load (kW)	kWh/year	Heat Gain Factor	% of Year	% of Year	% of Year	% of Year	kWh/year	kW	Relamp Frequency (Years)	Relamp Cost (\$/fixture, incl. labour and materials)	Total Annual Maintenance Cost	Relamp Frequency (Years)	Relamp Cost (\$/fixture, incl. labour and materials)	Total Annual Maintenance Cost	Maintenance Savings (\$/year)	Other Non-Electrical Savings (\$/year)
Maintenance Shop			400 MH HB	6	460	20,000	100%	3	168	52	8,736	24,111	LED High Bay	7	150	100,000	100%	1	84	52	4,368	4,586	2	19,525	0.0000	55%	0	22%	0	19,525	1.7	2.3	\$0	15.0	\$0	\$0	\$0	\$0	\$0
Remove 2 leave the night light			4L T8 8' Night Light	3	108	30,000	100%	0	168	52	8,736	2,830	LED 8' Strip	3	73	100,000	100%	0	168	52	8,736	1,913	0	917	0.0000	55%	0	22%	0	917	0.1	3.4	\$0	11.4	\$0	\$0	\$0	\$0	\$0
Remove			400W MH WP	3	460	2,000	100%	1	168	52	8,736	12,056													0.0000	55%	0	22%	0	12,056	1.4	0.2	\$0	0.0	\$0	\$0	\$0	\$0	\$0
Leave there			LED WP	2			100%	0			0	0													0.0000	55%	0	22%	0	0	0.0	0.0	\$0	0.0	\$0	\$0	\$0	\$0	\$0
							100%	0			0	0													0.0000	55%	0	22%	0	0	0.0	0.0	\$0	0.0	\$0	\$0	\$0	\$0	\$0
Totals								4			8736	38,998		1											0.0000	55%	0	22%	0	32,498	3.2		\$0	0.0	\$0	\$0	\$0	\$0	

Year: 2019
 Customer: Certainteed
 Project: Lighting Upgrade Provided by Graybar Canada
 Site: Site 5 A/B Site 6 Site 7
 Location: South Warehouse

Site Information			Existing Fixtures										New Fixtures										Load Reduction		Net Electrical Savings					Existing Fixtures		New Fixtures		Total	Other Non-Electrical Savings (\$/Year)				
Area / Room / Zone	Zone Heat Source 1 = elec resistance 2 = #2 oil 3 = natural gas or propane 4 = air source heat pump 5 = ground source heat pump	Air Conditioning COP (enter 0 for no air conditioning)	Type	Fixture Quantity	Watts per Fixture	Lamp Life (hours)	Dimming Factor	Connected Load (kW)	Schedule (hr/week)	Schedule (wks/year)	Schedule (hr/year)	kWh/year	Type	Fixture Quantity	Watts per Fixture	Lamp Life (hours)	Dimming Factor	Connected Load (kW)	Schedule (hr/week)	Schedule (wks/year)	Schedule (hr/year)	kWh/year	Connected Load (kW)	kWh/year	Heat Gain Factor	Heating Penalty		Cooling Bonus		Net Electrical Savings		Relamp Cost (\$/fixture, incl. labour and materials)	Total Annual Maintenance Cost	Relamp Frequency (years)	Relamp Cost (\$/fixture, incl. labour and materials)	Total Annual Maintenance Cost	Maintenance Savings (\$/year)	Other Non-Electrical Savings (\$/Year)	
																										% of Year	kWh/year	% of Year	kWh/year	kWh/year	kWh/year								
South Warehouse 5A			6L T8 HB	3	220	30,000	100%	1	168	52	8,736	5,766	LED High Bay	4	150	100,000	100%	1	84	52	4,368	2,621	0	3,145	0.0000	55%	0	22%	0	3,145	0.1	3.4	\$0	15.0	\$0	\$0	\$0	\$0	\$0
			400 MH HB	13	460	20,000	100%	6	168	52	8,736	52,241	LED High Bay	13	150	100,000	100%	2	84	52	4,368	8,518	4	43,724	0.0000	55%	0	22%	0	43,724	4.0	2.3	\$0	15.0	\$0	\$0	\$0	\$0	\$0
			4L T8 8' Night Light	3	108	30,000	100%	0	168	52	8,736	2,830	LED 8' Strip	3	73	100,000	100%	0	168	52	8,736	1,913	0	917	0.0000	55%	0	22%	0	917	0.1	3.4	\$0	11.4	\$0	\$0	\$0	\$0	
South Warehouse 5B			Reuse 8' Industrial's	3	134	100,000	100%	0	168	52	8,736	3,512	4' VT LED	1	40	100,000	100%	0	168	52	8,736	349	0	122	0.0000	55%	0	22%	0	122	0.0	3.4	\$0	11.4	\$0	\$0	\$0	\$0	
			4L T8 8' Night Light	3	108	30,000	100%	0	168	52	8,736	2,830	LED 8' Strip	3	73	100,000	100%	0	168	52	8,736	1,913	0	917	0.0000	55%	0	22%	0	917	0.1	3.4	\$0	11.4	\$0	\$0	\$0	\$0	
			400W MH HB	38	460	20,000	100%	17	168	52	8,736	152,705	LED High Bay	38	150	100,000	100%	6	84	52	4,368	24,898	12	127,808	0.0000	55%	0	22%	0	127,808	11.8	2.3	\$0	15.0	\$0	\$0	\$0	\$0	
			400 W WP	1	460	20,000	100%	0	168	52	8,736	4,019	Remove	1	460	20,000	100%	0	168	52	8,736	4,019	0	4,019	0.0000	55%	0	22%	0	4,019	0.5	2.3	\$0	0.0	\$0	\$0	\$0	\$0	
Storage Room #2 (Site 6)			6L T8 HB	2	220	30,000	100%	0	168	52	8,736	3,844	LED High Bay	2	150	100,000	100%	0	84	52	4,368	1,310	0	2,533	0.0000	55%	0	22%	0	2,533	0.1	3.4	\$0	15.0	\$0	\$0	\$0	\$0	
			400W MH HB	1	460	20,000	100%	0	168	52	8,736	4,019	LED High Bay	2	150	100,000	100%	0	10	52	520	156	0	3,688	0.0000	55%	0	22%	0	3,688	0.1	3.4	\$0	15.0	\$0	\$0	\$0	\$0	
Storage Room #3 (Site 7) (Remove 400W HB)			6L T8 HB	2	220	30,000	100%	0	168	52	8,736	3,844	LED High Bay	2	150	100,000	100%	0	10	52	520	156	0	3,688	0.0000	55%	0	22%	0	3,688	0.1	3.4	\$0	15.0	\$0	\$0	\$0	\$0	
			400W MH HB	1	460	20,000	100%	0	168	52	8,736	4,019	LED 8' Strip	2	73	100,000	100%	0	10	52	520	76	0	3,768	0.0000	55%	0	22%	0	3,768	0.3	2.3	\$0	15.0	\$0	\$0	\$0	\$0	
Storage room #4 (Site 7)			6L T8 HB	2	220	20,000	100%	0	168	52	8,736	3,844	LED 8' Strip	2	73	100,000	100%	0	10	52	520	76	0	3,768	0.0000	55%	0	22%	0	3,768	0.3	2.3	\$0	15.0	\$0	\$0	\$0	\$0	
Totals								27			8736	236,414		10								5090	45,266							191,148	17.2				\$0	\$0			

Year: 2019
 Customer: Certainteed
 Project: Lighting Upgrade Provided by Graybar Canada
 Site: Site 8
 Location: Mud Room

Site Information			Existing Fixtures										New Fixtures										Load Reduction		Heating Penalty			Cooling Bonus		Net Electrical Savings		Existing Fixtures			New Fixtures			Total
Area / Room / Zone	Source 1 = elec resistance 2 = #2 oil 3 = natural gas or propane 4 = air source heat pump 5 = ground source heat	Air Conditioning COP (enter 0 for no air conditioning)	Type	Fixture Quantity	Watts per Fixture	Lamp Life (hours)	Dimming Factor	Connected Load (kW)	Schedule (hr/week)	Schedule (wk/year)	Schedule (hr/year)	Wt/yr	Type	Fixture Quantity	Watts per Fixture	Lamp Life (hours)	Dimming Factor	Connected Load (kW)	Schedule (hr/week)	Schedule (wk/year)	Schedule (hr/year)	Wt/yr	Heat Gain Factor	% of Year	Wt/yr	% of Year	Wt/yr	kW	Relamp Frequency (years)	Relamp Cost (\$/fixture, incl. labour and materials)	Total Annual Maintenance Cost	Relamp Frequency (years)	Relamp Cost (\$/fixture, incl. labour and materials)	Total Annual Maintenance Cost	Maintenance Savings (\$/year)	Other Non-Electrical Savings (\$/year)		
																																					Heat Gain Factor	% of Year
Mud Rm			400W MH HB 4L T8 8' Night Light	1	460	20,000	100%	3	168	52	8,736	24,111	LED High Bay LED 8' Strip	1	150	100,000	100%	1	84	52	4,368	3,931	2	20,180	0.0000	55%	0	22%	0	20,180	1.9	2.3	\$0	\$0	\$0	\$0		
				1	108	30,000	100%	0	168	52	8,736	943		1	73	100,000	100%	0	168	52	8,736	638	0	306	0.0000	55%	0	22%	0	306	0.0	3.4	\$0	\$0	\$0	\$0		
							100%	0			0	0												0.0000	55%	0	22%	0	0	0.0	0.0	\$0	\$0	\$0	\$0			
							100%	0			0	0												0.0000	55%	0	22%	0	0	0.0	0.0	\$0	\$0	\$0	\$0			
							100%	0			0	0												0.0000	55%	0	22%	0	0	0.0	0.0	\$0	\$0	\$0	\$0			
							100%	0			0	0												0.0000	55%	0	22%	0	0	0.0	0.0	\$0	\$0	\$0	\$0			
Totals							100%	3			8736	25,055		1										0.0000	55%	0	22%	0	20,486	1.9		\$0	\$0	\$0	\$0			

Year: 2019
 Customer: Certainteed
 Project: Lighting Upgrade Provided by Graybar Canada
 Site: Site 17
 Location: Baghouse Tower

Site Information			Existing Fixtures									New Fixtures									Load Reduction		Net Electrical Savings			Existing Fixtures			New Fixtures			Total	Other Non-Electrical Savings (\$/Year)											
Area / Room / Zone	Zone Heat Source 1 = elec resistance 2 = #2 oil 3 = natural gas or propane 4 = air source heat pump 5 = ground source heat pump	Air Conditioning COP (Enter 0 for no air conditioning)	Type	Fixture Quantity	Watts per Fixture	Lamp Life (hours)	Dimming Factor	Connected Load (kW)	Schedule (hr/week)	Schedule (wks/year)	Schedule (hr/year)	kWh/year	Type	Fixture Quantity	Watts per Fixture	Lamp Life (hours)	Dimming Factor	Connected Load (kW)	Schedule (hr/week)	Schedule (wks/year)	Schedule (hr/year)	kWh/year	Connected Load (kW)	kWh/year	Heat Gain Factor	% of Year	% of Year	% of Year	% of Year	kWh/year	kW	Relamp Frequency (years)	Relamp Cost (\$/fixture, incl. labour and materials)	Total Annual Maintenance Cost	Relamp Frequency (years)	Relamp Cost (\$/fixture, incl. labour and materials)	Total Annual Maintenance Cost	Maintenance Savings	Total	Other Non-Electrical Savings (\$/Year)				
Calcine 1st Floor (weighbelt)			2L T12 8' MH WP (Remove)	2	138	20,000	100%	0	168	52	8,736	2,411	LED VT8'	3	57	100,000	100%	0	10	52	520	89	0	2,322	0.0000	55%	0	22%	0	2,322	0.1	2.3	\$0	15.0	\$0		\$0	\$0		\$0		\$0		
Bag House Room			400 W MH (Remove) 400 Wall Packs (Remove)	2 4	460 460	20,000 20,000	100% 100%	1 2	168 168	52 52	8,736 8,736	8,037 16,074	LED VT8' LED WP	3 2	57 64	100,000 100,000	100% 100%	10 84	52 52	520 4,368	89 559	1 2	7,948 15,515	0.0000 0.0000	55% 55%	0 0	22% 22%	0 0	7,948 15,515	0.7 1.7	2.3 2.3	\$0 \$0	15.0 15.0	\$0 \$0		\$0 \$0	\$0 \$0		\$0 \$0		\$0 \$0			
Rock Silos Tower			400W HB	4	460	20,000	100%	2	168	52	8,736	16,074	LED WP	3	64	100,000	100%	84	52	4,368	839	2	15,236	0.0000	55%	0	22%	0	15,236	1.6	2.3	\$0	15.0	\$0		\$0	\$0		\$0		\$0			
Totals				6	8736	54,652					8736	54,652		1	3934	###									0.0000	55%	0	22%	0	53,077	6		\$0	\$0		\$0		\$0		\$0		\$0		

Year: 2019
 Customer: Certainteed
 Project: Lighting Upgrade Provided by Graybar Canada
 Site: Site 18A
 Location: Calcine Room Main Floor

Site Information			Existing Fixtures							New Fixtures							Load Reduction		Heating Penalty		Cooling Bonus		Net Electrical Savings		Existing Fixtures		New Fixtures		Total										
Area / Room / Zone	Zone Heat Source 1 = elec resistance 2 = #2 oil 3 = natural gas or propane 4 = air source heat pump 5 = ground source heat pump	Air Conditioning COP (enter 0 for no air conditioning)	Type	Fixture Quantity	Watts per Fixture	Lamp Life (hours)	Dimming Factor	Connected Load (kW)	Schedule (hr/week)	Schedule (wks/year)	Schedule (hr/year)	W/yr	Type	Fixture Quantity	Watts per Fixture	Lamp Life (hours)	Dimming Factor	Connected Load (kW)	Schedule (hr/week)	Schedule (wks/year)	Schedule (hr/year)	W/yr	Heat Gain Factor	% of Year	W/yr	% of Year	W/yr	KW	Relamp Frequency (years)	Relamp Cost (\$/fixture, incl. labor and materials)	Total Annual Maintenance Cost	Relamp Frequency (years)	Relamp Cost (\$/fixture, incl. labor and materials)	Total Annual Maintenance Cost	Maintenance Savings (\$/year)	Other Non-Electrical Savings (\$/year)			
																																					Connected Load (kW)	W/yr	W/yr
Calcine Room Main Floor			400W MH HB	15	460	20,000	100%	7	168	52	8,736	60,278	LED High Bays	14	150	100,000	100%	2	48	52	2,496	5,242	5	55,037	0.0000	55%	0	22%	0	55,037	4.8	2.3	\$0	15.0	\$0	\$0		\$0	
			2L T12 Wrap 4'	2	72	20,000	100%	0	168	52	8,736	1,258	LED VT 4'	5	40	100,000	100%	0	168	52	8,736	1,747	0	-489	0.0000	55%	0	22%	0	-489	-0.1	2.3	\$0	11.4	\$0	\$0		\$0	
			2L T12 Strip 4'	2	72	20,000	100%	0	168	52	8,736	1,258	LED VT 8'	2	57	100,000	100%	0	168	52	8,736	996	0	262	0.0000	55%	0	22%	0	262	0.0	2.3	\$0	11.4	\$0	\$0		\$0	
			4L T8 8' Strip	1	108	30,000	100%	0	168	52	8,736	943	LED Wall Pack (No PE)	1	64	100,000	100%	0	168	52	8,736	559	0	384	0.0000	55%	0	22%	0	384	0.0	3.4	\$0	11.4	\$0	\$0		\$0	
			2L T12 8' Strip	2	138	20,000	100%	0	168	52	8,736	2,411																											
			400W MH WP	2	460	20,000	100%	1	168	52	8,736	8,037																											
							100%	0			0	0																											
							100%	0			0	0																											
							100%	0			0	0																											
							100%	0			0	0																											
Totals							100%	0		8	8736	74,186		2						4908	8,544			0.0000	55%	0	22%	0		65,642	6					\$0	\$0		

Year: 2019
 Customer: Certainteed
 Project: Lighting Upgrade Provided by Graybar Canada
 Site: Site 18B
 Location: MCC1 / Calcine Area Office

Site Information			Existing Fixtures										New Fixtures										Load Reduction		Heating Penalty		Cooling Bonus		Net Electrical Savings		Existing Fixtures		New Fixtures		Total						
Area / Room / Zone	Zone Heat Source 1 = elec resistance 2 = #2 oil 3 = natural gas or propane 4 = air source heat pump 5 = ground source heat pump	Air Conditioning COP (enter 0 for no air conditioning)	Type	Fixture Quantity	Watts per Fixture	Lamp Life (hours)	Dimming Factor	Connected Load (kW)	Schedule (hr/week)	Schedule (wks/year)	Schedule (hr/year)	kWh/year	Type	Fixture Quantity	Watts per Fixture	Lamp Life (hours)	Dimming Factor	Connected Load (kW)	Schedule (hr/week)	Schedule (wks/year)	Schedule (hr/year)	kWh/year	Connected Load (kW)	kWh/year	Heat Gain Factor	% of Year	kWh/year	% of Year	kWh/year	kWh/year	kWh/year	Relamp Frequency (years)	Relamp Cost (\$/fixture, incl. labour and materials)	Total Annual Maintenance Cost	Relamp Frequency (years)	Relamp Cost (\$/fixture, incl. labour and materials)	Total Annual Maintenance Cost	Maintenance Savings (\$/year)	Other Non-Electrical Savings (\$/year)		
Office			6L T8 HB	2	220	30,000	100%	0	168	52	8,736	3,844	LED 8' Strip	6	73	100,000	100%	0	168	52	8,736	3,826	0	17	0.0000	55%	0	22%	0	17	0.0	3.4	\$0	11.4	\$0	\$0	\$0	\$0	\$0	\$0	
			2L T12 4' Wrap	2	72	20,000	100%	0	168	52	8,736	1,258	LEDWrap 4'	2	42	100,000	100%	0	168	52	8,736	734	0	524	0.0000	55%	0	22%	0	524	0.1	2.3	\$0	11.4	\$0	\$0	\$0	\$0	\$0	\$0	
MCC Room			2L T12 8' Strip	2	138	20,000	100%	0	168	52	8,736	2,411																													
			4L T8 8' Strip	2	108	30,000	100%	0	168	52	8,736	1,887																													
Totals								1			8736	9,400		1				1							0.0000	55%	0	22%	0	4,840	1					\$0	\$0	\$0	\$0		

Year: 2019
 Customer: Certainteed
 Project: Lighting Upgrade Provided by Graybar Canada
 Site: Site 19
 Location: Outside / Out Building's

Site Information			Existing Fixtures										New Fixtures										Load Reduction		Heating Penalty		Cooling Bonus		Net Electrical Savings		Existing Fixtures		New Fixtures		Total	Other Non-Electrical Savings (\$/Year)					
Area / Room / Zone	Zone Heat Source 1 = elec resistance 2 = #2 oil 3 = natural gas or propane 4 = air source heat pump 5 = ground source heat pump	Air Conditioning COP (1 = 1.0 for air conditioning)	Type	Fixture Quantity	Watts per Fixture	amp Life (hours)	Dimming Factor	Connected Load (kW)	Schedule (hr/week)	Schedule (wks/year)	Schedule (hr/year)	Wt/Year	Type	Fixture Quantity	Watts per Fixture	amp Life (hours)	Dimming Factor	Connected Load (kW)	Schedule (hr/week)	Schedule (wks/year)	Schedule (hr/year)	Wt/Year	Connected Load (kW)	Wt/Year	Heat Gain Factor	% of Year	Wt/Year	% of Year	Wt/Year	Wt/Year	Relamp Frequency (years)	Relamp Cost (\$/fixture, incl. labour and materials)	Total Annual Maintenance Cost	Relamp Frequency (years)	Relamp Cost (\$/fixture, incl. labour and materials)	Total Annual Maintenance Cost	Maintenance Savings (\$/Year)	Other Non-Electrical Savings (\$/Year)			
Back of Calcine Area Silos/Front of Building/ Parking			400 Watt MH Wall Pack LED Wall Packs	18 16	460	20,000	100% 100%	8 0	84 0	52 0	4,368 0	36,167	LED Wall Packs With Photo Eye LED VT 4'	34 2	64 40	100,000 100,000	100% 100%	2 168	84 52	52 168	4,368 8,736	9,505 699	6 -699	26,662 0	0.0000 0.0000	55% 55%	0 0	22% 22%	0 0	26,662 -699	6.1 -0.1	4.6 0.0	\$0 \$0	15.0 11.4	\$0 \$0	\$0 \$0	\$0 \$0	\$0 \$0	\$0 \$0		
Out Building #1 Front Crusher Room			2L T12 8' Strip LED Wall Packs	1 2	138	20,000	100% 100%	0 0	84 0	52 0	4,368 0	603	LED Wall Pack Guard House With Photo Eye LED High Bay (Tents)	4 8	371 154	100,000 100,000	100% 100%	1 84	52 52	4,368 5,381	122 5,381	0 -1	480 -5,381	0 0	0 0	0.0000 0.0000	55% 55%	0 0	22% 22%	0 0	480 -5,381	0.1 -1.2	4.6 0.0	\$0 \$0	15.0 15.0	\$0 \$0	\$0 \$0	\$0 \$0	\$0 \$0	\$0 \$0	
Out Building #2 Front Rock Hopper			400 Watt MH Wall Pack	3	460	20,000	100%	1	84	52	4,368	6,028	LED High Bay Occ Sensor LED VT 4'	1 1	150 40	100,000 100,000	100% 100%	10 168	52 52	520 8,736	78 349	1 -349	5,950 -349	0 0	0 0	0.0000 0.0000	55% 55%	0 0	22% 22%	0 0	5,950 -349	1.2 0.0	4.6 0.0	\$0 \$0	15.0 11.4	\$0 \$0	\$0 \$0	\$0 \$0	\$0 \$0	\$0 \$0	
Conveyor Belt #4			2L T12 VT 4'	1	72	20,000	100%	0	84	52	4,368	314	LED WP LED VT 4'	8 1	64 40	100,000 100,000	100% 100%	1 168	84 52	4,368 8,736	2,236 349	-1 3	-2,236 1,367	0 0	0 0	0.0000 0.0000	55% 55%	0 0	22% 22%	0 0	-2,236 1,367	-0.5 3.3	0.0 15.0	\$0 \$0	15.0 11.4	\$0 \$0	\$0 \$0	\$0 \$0	\$0 \$0	\$0 \$0	
Rock Storage Pole outside			1000 MH Flood Lights	3	1,100	12,000	100%	3	10	52	520	1,716	LED VT 8'	4	57	100,000	100%	168	52	8,736	1,992	0	-1,992	0	0	0.0000	55%	0	22%	0	-1,992	-0.2	0.0	\$0	11.4	\$0	\$0	\$0	\$0	\$0	
Rock Storage Tent			400W MH	8	460	20,000	100%	4	84	52	4,368	16,074		0	0	0	0	0	0	0	0	0	0	0	0	0.0000	55%	0	22%	0	16,074	3.7	4.6	\$0	0.0	\$0	\$0	\$0	\$0	\$0	
Back of North Warehouse			1000W Flood 400W MH WP	1 3	1,100 460	12,000 20,000	100% 100%	1 1	84 84	52 52	4,368 4,368	4,805 6,028		0	0	0	0	0	0	0	0	0	0	0	0	0	0.0000 0.0000	55% 55%	0 0	22% 22%	0 0	4,805 6,028	1.1 1.4	2.7 4.6	\$0 \$0	0.0 0.0	\$0 \$0	\$0 \$0	\$0 \$0	\$0 \$0	\$0 \$0
Back of South Warehouse			400 Watt MH WP	5	460	20,000	100%	2	84	52	4,368	10,046		0	0	0	0	0	0	0	0	0	0	0	0	0	0.0000	55%	0	22%	0	10,046	2.3	4.6	\$0	0.0	\$0	\$0	\$0	\$0	\$0
Front of South Warehouse			LED Wall Pack 400 Watt MH WP 400 Watt HPS WP	5 4 1	460 464	20,000 24,000	100% 100% 100%	0 0 0	84 84 84	52 52 52	4,368 4,368 4,368	8,037 2,027 0		0	0	0	0	0	0	0	0	0	0	0	0	0	0.0000 0.0000 0.0000	55% 55% 55%	0 0 0	22% 22% 22%	0 0 0	8,037 2,027 0	1.8 0.5 0.0	4.6 5.5 0.0	\$0 \$0 \$0	0.0 0.0 0.0	\$0 \$0 \$0	\$0 \$0 \$0	\$0 \$0 \$0	\$0 \$0 \$0	
Guard House			Par 38 Bulbs	2	65	10,000	100%	0	84	52	4,368	568		0	0	0	0	0	0	0	0	0	0	0	0	0	0.0000	55%	0	22%	0	568	0.1	2.3	\$0	0.0	\$0	\$0	\$0	\$0	\$0
Crusher Rm out Building			400 Watt HB 4' VT T12	1 1	460 72	20,000 20,000	100% 100%	0 0	168 168	52 52	8,736 8,736	4,019 629		0	0	0	0	0	0	0	0	0	0	0	0	0	0.0000 0.0000	55% 55%	0 0	22% 22%	0 0	4,019 629	0.5 0.1	2.3 2.3	\$0 \$0	0.0 0.0	\$0 \$0	\$0 \$0	\$0 \$0	\$0 \$0	\$0 \$0
Air Slide Room			400 Watt WP 6L T8 HB	6 2	460 220	20,000 30,000	100% 100%	3 0	168 168	52 52	8,736 8,736	24,111 3,844		0	0	0	0	0	0	0	0	0	0	0	0	0	0.0000 0.0000	55% 55%	0 0	22% 22%	0 0	24,111 3,844	2.8 0.4	2.3 3.4	\$0 \$0	0.0 0.0	\$0 \$0	\$0 \$0	\$0 \$0	\$0 \$0	\$0 \$0
Totals				28			100%	28			5454	125,016		6					4901		27,195				0.0000	55%	0	22%	0	97,821	22				\$0	\$0	\$0	\$0	\$0		

